

MISSISSIPPI

STATE WILDLIFE ACTION PLAN

2025-2035

MISSISSIPPI WILDLIFE, FISHERIES, & PARKS

MISSISSIPPI Museum of Natural Science



The mission of the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) is to conserve and enhance Mississippi wildlife, fisheries, and parks, provide quality outdoor recreation, and engage the public in natural resource conservation.

Lynn Posey,
MDWFP EXECUTIVE DIRECTOR

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THE 2025 MISSISSIPPI STATE WILDLIFE ACTION PLAN
IS DEDICATED TO THE MEMORY OF



Kathy Riggs Shelton

OCTOBER 16, 1964 — JULY 17, 2019

Kathy Riggs Shelton was the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) South Regional Conservation Biologist and made significant contributions to our knowledge of nongame species in Mississippi and the Southeast U.S. She passed away unexpectedly in Biloxi on July 17, 2019 at age 54.

Kathy grew up in Greensboro, North Carolina and received her B.S. in Wildlife Science from North Carolina State University in 1995. After completing her M.S. in Wildlife Science at Mississippi State University in 2000, she worked for the Mississippi Department of Marine Resources (MDMR) and later for the MDWFP. After serving in the MDWFP Wildlife Bureau she transferred to MDWFP's Museum of Natural Science in 2007. Kathy's wealth of experience working with diverse habitats, species, and expertise in conservation and management of Species of Greatest Conservation Need (SGCN) made her a standout biologist in the Southeast. She served as the state lead for gopher tortoises, black pine snakes, gopher frogs, and bats. As the lead bat biologist her efforts greatly improved our knowledge of bats in the state when they were severely understudied and faced the threat of white-nose syndrome.

Kathy authored many articles and conservation plans during her career. She was instrumental in drafting the predecessor to this document, the 2015 *Mississippi State Wildlife Action Plan*, and she penned the first Mississippi Bat Conservation Plan. She was a dedicated member and leader in many conservation groups including The Wildlife Society and the Mississippi Bat Working Group. Kathy left a legacy of leadership and service to wildlife education, conservation, and research in our state. We will be forever grateful for her leadership, service and devotion to habitat conservation. She was loved and valued and is greatly missed.

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2025 SWAP Technical Committee

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Kurt Snider
Isaac Hollingsworth

The foundations for this third generation of Mississippi's SWAP are the original 2005 plan and the 2015 update which were developed in close collaboration with representatives from several other local, state, and federal agencies, non-government organizations, industry, and academia.

This planning effort involved hundreds of people working over the past 25 years to develop the first version and update it along the way as conditions changed and new data were gathered. It is impossible to recognize each person who contributed their time, energy, knowledge, and resources in the revision of this 2025 SWAP, but we hope you know how grateful we are for your help. Your contributions of data, expert opinion, edits, thoughtful reviews, and your patience and devotion to the process have improved the new SWAP immeasurably. See Appendix 2 for more details on expert, stakeholder, and public involvement in this 2025 update.

While the SWAP is the culmination of the hard work and long hours of planning, review, writing, editing and collaboration, it is also the result of a long-term commitment by all state wildlife agencies in the U.S. to work together to improve biodiversity. From the first iteration of Mississippi's SWAP to now, this long-term planning effort has resulted in increased collaboration among resource agencies, organizations, business, and academia in our state that began with the development of the first Advisory Committee. As we stated throughout the development of the first SWAP to this third iteration, the ultimate test of this SWAP will be the success of future partnerships that evolve from this planning process to implement the conservation actions recommended herein.

Finally, we want to thank Mississippi Governor Tate Reeves, our Mississippi Senators and Congressmen, the Mississippi Legislature, MDWFP Executive Director Lynn Posey and the Mississippi Commission on Wildlife Fisheries and Parks for their leadership, support, and commitment to conserving SGCN in Mississippi.

Executive Summary

Introduction

This Mississippi State Wildlife Action Plan (SWAP) is a ten-year comprehensive update to the original SWAP (2005) which served as the foundation for this revision, and marked a major milestone in conservation planning in the U.S. It was the first time each state wildlife agency led a collaborative effort to design a conservation "blueprint" for all wildlife species in their jurisdiction. To accomplish this, each state worked with partners and experts to identify Species of Greatest Conservation Need (SGCN), to describe their habitats and key threats, and recommended conservation actions necessary to prevent more species from becoming threatened or endangered, to spur recovery, and to keep common species common. The SWAP was updated in 2015. This 2025 document is the third iteration of Mississippi's plan.

History of SWAP

The development of SWAPs for each state and territory began in 2001 as a nationwide planning initiative when the U.S. Congress created the State Wildlife Grants (SWG) program and the related Wildlife Conservation and Restoration Program (WCRP). To make the best use of federal funds from the WCRP and SWG program, Congress mandated each state and territory to create a state-level plan with eight required elements to be addressed. With an **overarching goal** *to provide a guide to effective and efficient long-term conservation of biodiversity,* Congress directed states to identify and focus on Species of Greatest Conservation Need (SGCN) while addressing the full array of wildlife and wildlife-related issues.

Over the past two decades, Mississippi's first SWAP has served as a guide to investments of over $15 million in federal SWG funds that has been matched with over $5 million in non-federal funds for additional research, monitoring, and survey work focused on SGCN and on-the-ground implementation of conservation actions identified in the original plan and its updates.

Mississippi's SWAP is also the state-wide reference for conservation activities recommended to improve biodiversity and sets forth a vision for how fish and wildlife habitats should be protected. Developed by the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) through its Mississippi Museum of Natural Science (MMNS) Conservation Biology staff, Mississippi's SWAP has been used extensively by public and private resource managers, land planners, decision-makers, landowners, and others as a resource since the first iteration in 2005.



Museum biologist monitoring bats for white-nose syndrome. *Credit: Calvin Rezac*

2025 SWAP Update

For this 2025 SWAP update, MDWFP again enlisted the help of several individuals, organizations, agencies and academia who served as expert reviewers and commenters. MDWFP approached this comprehensive vision in a similar manner to the original SWAP development but with some additions and refinements.

Major changes to the 2025 SWAP are:

- Adoption of a standardized approach to determining SGCN and conservation status tiers based on recommendations from the Southeastern Association of Fish and Wildlife Agencies (See SWAP Prioritization of SGCN in Appendix 10)
- Revision of the SGCN (now 1,060 species) to include plants for the first time, and additional marine and insect species
- Addition of a Regional Chapter (Chapter 2)
- Adoption of the U.S. Environmental Protection Agency's (EPA) Level III and Level IV Ecoregions of Mississippi as a framework for organizing the habitats
- Incorporation of NatureServe's Ecological System classification in the description of habitats
- Eight (8) new Conservation Opportunity Areas developed in conjunction with the Southeast Conservation Blueprint (Chapter 7)

Other changes were made to improve the use of the SWAP such as presenting habitat descriptions in the statewide context (versus by ecoregion as in the prior SWAP), presenting more data in tables versus narrative format and updating all habitat maps to a statewide view (versus by ecoregion). As in past SWAP development, a SWAP Coordinator organized all aspects of the development of this strategy in conjunction with an in-house Technical Committee composed of MDWFP wildlife, fisheries, and museum and private lands biologists, with input from experts, tribal representatives and stakeholders from around the state and region. We believe the 2025 SWAP update has been greatly improved with their help and insights and the reorganization that will better align with surrounding states' SWAPs.

MDWFP's objective for this second comprehensive update is to provide an even more useful resource for our state while continuing to meet the original purpose and eight elements set forth by Congress, as summarized below.

State Wildlife Action Plan Eight Required Elements

The following are the eight elements required by Congress and how the State of Mississippi, through MDWFP and its many collaborators, approached each element to create this update.

1 Information on the distribution and abundance of species of wildlife, including low and declining populations as the State fish and wildlife agency deems appropriate, that are indicative of the diversity and health of the State's wildlife.

The Mississippi Natural Heritage Program (MNHP) operates under the auspices of the MDWFP through the MMNS bureau. It maintains a database of approximately 1,500 species of animals in Mississippi including vertebrates and invertebrates native to the state that can be tracked. Many of these are common and are not tracked. Tracking is focused on species known or suspected to occur in low numbers. To develop conservation priorities, each of these species is ranked according to the number of occurrences, population trends, and threats. Animals in Mississippi which can be tracked by the MNHP include all of the representatives of the groups *gastropoda* (snails); *bivalvia* (mussels); *malacostraca* (amphipods, crayfish, shrimp, isopods); *arachnida* (spiders, mites, ticks); insects; fish (including the *cephalaspidomorphi* - jawless fish/lampreys) and the *osteichthyes* (bony fish); amphibians (frogs and salamanders); reptiles (lizards, snakes, turtles, alligators); birds; and mammals. MDWFP maintains a database on occurrence localities, population status, and habitat conditions for tracked species and is focused upon species known or suspected to occur in low numbers called "Animals of Special Concern".

During the development of the original SWAP in 2005, the Animals of Special Concern list was evaluated by scientists with expertise relative to those species. For this 2025 update, the revised list was reviewed and updated by MDWFP's Technical Committee with input from taxa experts and advisors from other agencies, academia, and non-government organizations (NGOs) using the new conservation status ranking approach recommended by the USFWS and the Southeast Association of Fish and Wildlife Agencies or SEAFWA (Appendix 10). For the first time, vascular and non-vascular plants were added, and the number of invertebrates and marine species were increased based on extensive input from taxa experts.

Mississippi's 2025 SWAP includes 1,060 SGCN in the following taxa groups: amphibians (23), birds (83), fish (99), invertebrates (212), mammals (19), reptiles (37), and plants (587). The list of SGCN with their Conservation Status rank is in Chapter 4 and Appendix 8.

TAXA GROUP	TOTAL
Amphibians	23
Birds	83
Fish	99
Invertebrates	212
Mammals	19
Reptiles	37
Plants	587
Total SGCN	**1,060**

Table E.1. 2025 Mississippi SGCN by Taxa Group

Scientists with knowledge of these declining species were also enlisted to identify SGCN habitat preferences, the greatest threats facing these species and potential conservation actions needed to abate those problems or stressors (Chapter 6). Mississippi SGCN were assigned a conservation status rank in accord with the USFWS and SEFWA recommendations and those ranks were adjusted after input and consultation with taxa experts and stakeholders

SGCN Priority Tier	Tier Definition
1 - Highest Conservation Concern	Critically imperiled species that may become extirpated from my state in the near future unless conservation efforts are continued or enhanced. The population(s) in my state are very important to the global conservation of the species.
2 - High Conservation Concern	Imperiled species that may continue to decline in my state unless conservation efforts are continued or enhanced. The population(s) in my state are important to the global or regional conservation of the species.
3 - Moderate Conservation Concern	Species that may be currently stable but of long-term conservation concern due to increasing or emerging threats or species that are currently stable but are representative of an ecosystem or community in need of conservation or species that are currently stable but represented by a strong population or unique genetic diversity that is worthy of conservation within my state.
4 - Data Deficient	Species that may be imperiled, but lack of information on their conservation status, taxonomy, life history, and threats precludes the identification of conservation actions.

SOURCE: SOUTHEAST ASSOCIATION FISH AND WILDLIFE AGENCIES

Table E.2. Reference guide used to help assign Mississippi SGCN to priority tiers

2 Descriptions of locations and relative condition of key habitats and community types essential to conservation of SGCN.

For this SWAP, the 159 ecological community types used in the MNHP were condensed into 19 broad habitat types and 49 subtypes. To improve the utility of these descriptions for the reader, the MDWFP Technical Team re-organized the habitat descriptions by the four ecoregions in Mississippi described by the U.S. EPA to better align with the ecoregional organization of SWAPs with the surrounding states.

This approach allows Mississippi's SWAP to be incorporated into a national synopsis that will demonstrate to Congress and the public that all states have conducted a coordinated, scientifically rigid account of the nation's "at risk" wildlife and their habitat.

In addition to a more detailed range map and summary of the condition of each habitat sub-type in Mississippi, each of the 19 habitat descriptions herein includes a list of the SGCN associated with that type. Threats and stressors and recommended conservation actions are summarized and presented across all habitat types.

MDWFP added a chapter on the regional context of Mississippi (Chapter 2) and revised our Conservation Opportunity Areas (COAs). COAs are large, loosely defined, geographic areas based within the state that have been identified as priority areas for management. They may contain priority habitats or SGCN or may represent areas that have unique habitats (e.g. prairies) within them, but they are composed of many different habitats and organized by HUC12 watersheds. A HUC12 is a 12-digit numerical system for a hydrologic unit code developed by the U.S. Geologic Service (USGS). A HUC12 defines a boundary of a subwatershed, the smallest unit of watershed classification in the USGS system. The new COAs were developed by state species data (driven by SGCN), and took into consideration COAs of neighboring states, existing protected lands, other landscape plans and data from the Southeast Conservation Blueprint. These COAs are priority areas and are important for SGCN but should not exclude work in other areas of the state. The COAs were chosen to help direct limited resources to the most critical areas. Investments in COAs will allow conservation actions to benefit a wider range of species or priority habitats and can be a guide to public and private entities seeking to focus on important areas as well as an opportunity to develop local partnerships.

Mississippi's New Conservation Opportunity Areas for the 2025 SWAP are:

- Mississippi Alluvial Plain
- Loess Bluff
- North Central Hills
- Prairie Grasslands
- Northeast Mississippi
- Piney Woods
- Coastal Flatwoods
- Barrier Islands

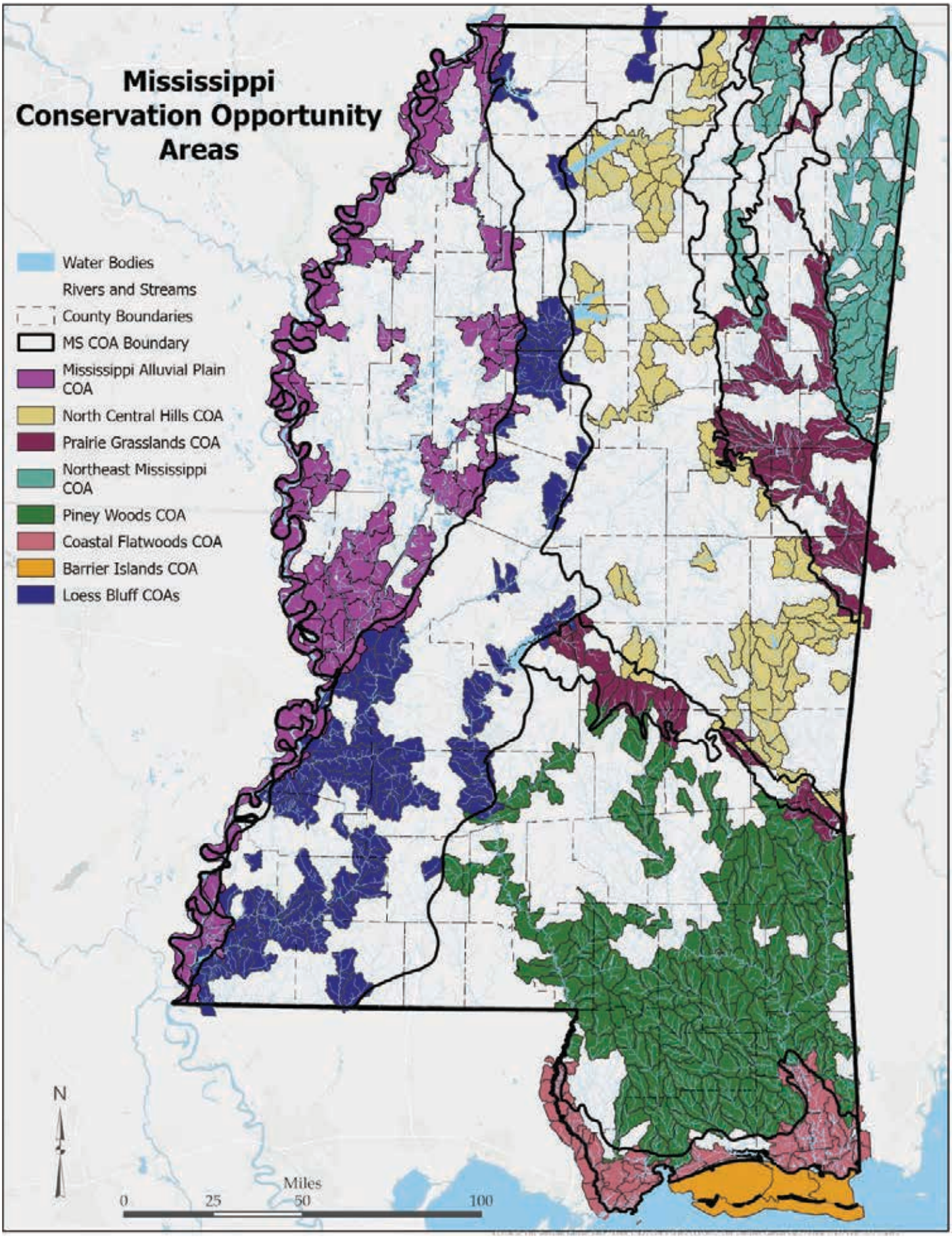


Figure 7.1 Conservation Opportunity Areas in Mississippi.

3 Descriptions of problems which may adversely affect species identified in (1) or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats.

Stresses are some attribute of an ecosystem that is impaired either directly or indirectly by humans. A stress is a symptom that results from a threat. A threat is the activity or the processes that have caused or may be causing the destruction, degradation, and/or impairment of an ecosystem. Direct threats are sources of stress. Threats may be historic, current, or potential.

In a nationwide effort to unify classifications of stresses and conservation actions within each SWAP, Mississippi adopted the recommendations in *A Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions* (Salafsky et. al., 2008) which classifies 11 major threat categories:

1. Residential/commercial development
2. Agriculture/aquaculture
3. Energy production/mining
4. Transportation and service corridors
5. Biological resource use
6. Human intrusions and disturbance
7. Natural system modifications
8. Invasive and other problematic species and genes
9. Pollution
10. Geological events
11. Climate change and severe weather

Table E.3 Standard Threat Categories used in Mississippi's SWAP

To help further define threats the Technical Committee also assigned a *high*, *medium*, or *low* rank to the identified threats to aid in determining the most critical problems for each identified habitat subtype and to facilitate identification of priority conservation actions. From these rankings, a new section and discussion on the impact of major statewide threats (invasive species, urban sprawl, energy development, altered fire regime, climate change) to SGCN was developed for this updated SWAP.

Notably, Mississippi's landscape has changed dramatically since European settlement. There are almost no places in the state left that have not been affected by man. Urbanization, oil and gas exploration, agriculture, fencing, dams and stream channelization, commercial forestry and many other actions have modified wildlife and fisheries habitat. Many of these land use changes have come at a great cost to wildlife. It is not our intent to debate the benefits and detriments of land use changes and historical activities on Mississippi's landscape, but rather to take a meaningful look at the landscapes and habitats as they exist today and to develop habitat restoration, conservation and protection plans that benefit fish and wildlife with a focus on SGCN.

Survey and research needs were updated based on progress made since the original SWAP was published in 2005 and the 2015 update. These recommendations focus on individual species, assemblages and habitats.

4 Descriptions of conservation actions proposed to conserve the identified species and habitats and priorities for implementing such actions.

Conservation actions are interventions or priorities that should be undertaken by resource managers or others to reach conservation goals. Associating SGCN with their habitats guided the process of prioritizing conservation actions to be taken on a landscape scale for assemblages of SGCN.

Like the classifications of threats (above), MDWFP adopted and employed the following seven categories of conservation actions in the *Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions.*

1. Land/water protection
2. Land/water management
3. Species management
4. Education/awareness
5. Law/policy
6. Livelihood, economic and other incentives
7. External capacity building

Table E.4 Standard Conservation Actions used in Mississippi's SWAP

For each threat linked to habitat subtypes for Mississippi's SGCN, we assigned appropriate conservation actions consistent with the standards. For the discussion on the impact of major statewide threats (development, climate change and severe weather, invasive species, and natural system modifications) we included a list of conservation actions tailored to address these key threats. Severe weather and climate threats are discussed in more detail in a regional context in Chapter 2. For example, for invasive species such as cogongrass, fire ants, wild hogs and fungal pathogens that are discussed in more detail, we recommend specific conservation actions under the standard categories.

5 Proposed plans for monitoring species identified in (1) and their habitats, for monitoring the effectiveness of the conservation actions proposed in (4), and for adapting these conservation actions to respond appropriately to new information or changing conditions.

Evaluating the effectiveness the SWAP has been and will continue to be accomplished by the MNHP through an approach which incorporates short-term performance measures of actions implemented, progress toward goals and additional planning, and long-term monitoring status of SGCN populations, their habitats, and key biological communities. The extent to which the SWAP is implemented and actions performed should provide initial indications of effectiveness of the SWAP. Examples of initial indicators may include acres or stream miles enhanced or protected, conservation plans completed and basic research and survey projects initiated or completed. Due to limited baseline information and the strategic scope of this document, performance measures are necessarily broad and must realistically remain adaptive as new information becomes available and methods improve. Over the next ten years as data become more available and the SWAP continues to be "stepped down" into more detailed species, habitat or community specific conservation plans, additional target performance benchmarks should be developed and pursued.

Significant changes in status of SGCN, habitat and biological communities are generally evident only through longer-term monitoring. However, baseline information must be established to most effectively assess changes over time. Substantial baseline information is currently available for some SGCN and key communities. Information available for others is limited or deficient and must be acquired before changes may be adequately tracked. This need for additional baseline information has been a key undertaking of MDWFP through the SWG program and will continue under this third iteration of SWAP.

Numerous programs, projects and plans to monitor species, habitats, communities and conservation actions exist that are being used to monitor the SWAP. Although MDWFP through MNHP regularly performs these activities, many others are carried out through other international, national, regional, state and local programs. To effectively monitor the success of Mississippi's SWAP implementation, it is essential that the efforts of all stakeholders continue to be identified, coordinated and included.

The 2005 SWAP and its 2015 update identified priority survey, research and monitoring needs for SGCN that have been followed and implemented by MDWFP with funding from SWG, Section 6, and other sources for 20 years. Since its inception, survey and monitoring work from SWG funding in Mississippi has resulted in the downgrading of ranks for four SGCN, in the determination that listing is not necessary for nine species, the recovery of five species, and the rediscovery of three species thought to be extirpated from the state (e.g. Ironcolor Shiner, Rock Bass, and Big Black Rocksnail). A complete list of SWG and Section 6 investments guided by the SWAP since the beginning of the program in Mississippi is in Appendix 9.

6 Descriptions of procedures to review the strategy at intervals not to exceed ten years.

This document represents the second comprehensive revision of the Mississippi SWAP. MDWFP, through its MNHP, intends to complete an interim five-year review for certain species and habitats. For Mississippi's SWAP to meet its ongoing objective to improve biodiversity in the state, MDWFP considers the SWAP a living document and process, and we aim to continually update, refine and revise the data and recommendations herein. Thus, it is our goal to review, evaluate and update SWAP sections on a five-year basis as needed and adjust conservation status ranks on an annual basis as appropriate.

To accomplish these planned updates, MDWFP will continue to enlist the assistance of the SWAP stakeholders (experts and advisors) in the review process. The continued engagement of outside advisors and taxa experts will allow the MDWFP SWAP Technical Committee to collaborate with conservation partners and interested stakeholders in the future plan iterations that should result in better implementation of conservation actions, and ultimately improved health of species of concern and their habitats.

This review process will be synchronized with our agency's annual budget planning cycle. MDWFP will also use its existing annual performance reports for Federal Aid projects and SWG funds to document progress on SWAP-related activities.

New data on species and habitats will continue to be incorporated into the MNHP database as part of MDWFP's normal course of business through the MNHP. The SWG Coordinator and Technical Committee are responsible for implementing the annual review and evaluation of the SWAP and will report annually to the MDWFP Executive Director as part of the SWG program.

7 Plans for coordinating the development, implementation, review, and revision of the plan with Federal, State, and local agencies and Indian tribes that manage significant land and water areas within the State or administer programs that significantly affect the conservation of identified species and habitats.

The 2025 update was accomplished in coordination with several public wildlife agencies, universities, conservation organizations and land managers in Mississippi and in the Southeast

U.S. This coordination was ensured by inclusion of representatives of these agencies and organizations serving as advisors and taxa experts, through individual briefings and presentations, distribution of SWAP elements to them for review and input, through meetings and professional conferences, and by contact with the members of the MDWFP Technical Committee. Conservation planning documents and tools provided by other agencies were gathered and incorporated into the SWAP where possible. Other interested parties also contributed to the process through comments via the MDWFP website.

There is one Native American tribe listed on the federal register in Mississippi – the Mississippi Band of Choctaw Indians. They own and manage over 35,000 acres of fee and trust lands in several counties primarily in east-central Mississippi. The tribal representatives participated in activities related to the revisions, in person and online meetings, and email correspondence.

Collaboration with bordering states and other SWAP coordinators occurred primarily during national and regional meetings hosted by the Association of Fish and Wildlife Agencies (AFWA).

8 Congress also affirmed through this legislation that broad public participation is an essential element of developing and implementing these plans, the projects that are carried out while these plans are developed, and the Species of Greatest Conservation Need (SGCN) that Congress has indicated such programs and projects are intended to emphasize.

For this ten-year update, our stakeholder and public outreach efforts included many approaches. Representatives from natural resources agencies, conservation organizations, agriculture and forest products industries, technical experts, conservation educators and academics as well as individuals and MDWFP district and other staff were invited via email or personal contact to participate during the original plan development and both ten year updates. During the 2025 revision process, these stakeholders communicated primarily via email, and through individual and small group meetings and submitted comments through the SWAP page on the MDWFP website. Public and stakeholder input was also invited to provide input and review updated SWAP chapters during 2023 - 2025 through:

1. A Mississippi SWAP page on the MDWFP website.
2. Press releases announcing the SWAP update and changes as updates sections were released on the agency website and social media.
3. Multiple invitations to stakeholders to comment on SWAP elements as they were drafted.
4. Presentations at professional conferences and science meetings.

This comprehensive 2025 SWAP is a refinement and update of the significant information, analyses and recommendations on all habitat types and the SGCN that use them. The SWAP is a work in progress and should continually be refined as more data and improvements in data analysis enable better decision making.

The SWAP was never intended to be a plan for MDWFP, but rather a comprehensive strategy for all in Mississippi seeking to protect and conserve habitat. It is critical that we continue to work with stakeholders to identify partnerships to address and abate threats to SGCN and their habitats, to implement conservation actions and to ensure this entire process of conservation planning continues on a statewide basis.

Changes to the 2025 SWAP

MDWFP is pleased to provide this comprehensive SWAP update. We have implemented several changes and enhancements to the SWAP as recommended by the Association of Fish and Wildlife Agencies in their *Best Practices for State Wildlife Actions Plans* (2011) including:

- The SWAP was reorganized by US EPA Level III and Level IV Ecoregions.
- SGCN have been updated using a standard conservation status ranking approach recommended by the Southeastern Association of Fish and Wildlife Agencies (for uniformity in approach with other states in the region).
- Plants were added to the SGCN list for the first time.
- NatureServe Terrestrial Ecological Systems (TES) have been cross referenced to habitat types and subtypes within the habitat descriptions.
- Threats and recommended conservation actions have been updated for each habitat type.
- Research and survey needs have been updated based on the investigations over the past 10 years.
- Conservation Opportunity Areas were redesigned.
- A new chapter on the regional context was added.
- New information on culturally significant species has been added based on input from tribal representatives.
- Habitat maps were updated.
- A list of reference sites in Mississippi for habitats has been updated.

This document represents the summation of a conservation planning effort that officially began in 2005 in response to the congressional mandate and builds on many years of research and data accumulation by MDWFP and its partners, and the conservation planning efforts of many other organizations and agencies.

We hope you find it to be a useful guide and resource to your work for fish and wildlife conservation in Mississippi.

CHAPTER 1

Introduction and Purpose

History of the State Wildlife Action Plan

This *Mississippi State Wildlife Action Plan (2025)* or SWAP is a comprehensive update to the previous SWAP published in 2015 and the *Mississippi Comprehensive Wildlife Conservation Strategy* (CWCS) published by the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) in 2005. The development of the original CWCS (hereafter referred to as SWAP) was a major milestone in conservation planning for Mississippi and the nation. It marked the first time in U.S. history that each state and territory wildlife agency and the broader conservation community cooperated in the design of a conservation "blueprint" for all wildlife species. Each state had for the first time identified species and habitats in greatest conservation need, key threats, and conservation actions necessary to prevent endangered species listings and spur recovery. From 2005 to 2025, these state "blueprints" have served as a collective guide and reference for conservation actions and a vision for how our lands, waters, fish and wildlife should be protected for the future. They have been used extensively by public and private resource managers, land planners, decision-makers, landowners and others as a resource.



Biologist searching burrows for Gopher Tortoise.
Credit: Calvin Rezac

SWAP Goal: Conservation of Mississippi's Biodiversity

The overarching goal of this comprehensive update of Mississippi's SWAP is: *to provide a guide to effective and efficient long-term conservation of Mississippi's biological diversity*. To achieve this long-term goal, the lead agency MDWFP embarked on a multi-year, dynamic process to first develop a foundational conservation strategy in 2005 as directed by Congress, and then to refine it each ten years through a comprehensive update. By state statute MDWFP is charged with conserving, developing, and protecting Mississippi's natural resources and providing outdoor recreational opportunities. In developing this 2025 SWAP update, MDWFP coordinated the update through its Conservation Biology Section housed at the Mississippi Museum of Natural Science (MMNS) and enlisted the help of many other resource agencies, organizations, technical experts, volunteers, staff and partners.

Eight Required Elements

This national planning effort was inspired by the nationwide Teaming with Wildlife Coalition. Since the early 1990s, the Teaming with Wildlife Coalition has worked to secure funding for state fish and wildlife agencies to take preventative actions to keep rare species from becoming endangered and common species abundant. In 2001, Congress responded to this need by establishing the State Wildlife Grants (SWG) program and the related Wildlife Conservation and Restoration Program (WCRP). To make the best use of federal funds from the WCRP and SWG program, Congress mandated each state and territory to develop a SWAP to guide conservation investments at the state level. In the authorizing legislation, Congress identified eight required elements to be addressed in each state's SWAP and directed that the plans must identify and be focused on the Species of Greatest Conservation Need (SGCN) yet address the full array of wildlife and wildlife-related issues. Below is a list of the eight required elements and the chapters and appendices where each element is addressed in this 2025 SWAP update:

Required Element 1: Species - Information on the distribution and abundance of species of wildlife, including low and declining populations as the state fish and wildlife agency deems appropriate, that are indicative of the diversity and health of the state's wildlife. (Chapters 4, 5, 7, Appendix 3, 8).

Required Element 2: Habitats - Descriptions of extent and condition of habitats and community types essential to conservation of species identified in (1). (Chapters 4, 5, Appendix 5).

Required Element 3: Threats - Descriptions of problems which may adversely affect species identified in (1) or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats. (Chapters 6, 7, 8, Appendix 11).

Required Element 4: Conservation Actions - Descriptions of conservation actions proposed to conserve the identified species and habitats and priorities for implementing such actions. (Chapters 5, 6, 7, 8, Appendix 11).

Required Element 5: Monitoring Species and Effectiveness - Proposed plans for monitoring species identified in (1) and their habitats, for monitoring the effectiveness of the conservation actions proposed in (4), and for adapting these conservation actions to respond appropriately to new information or changing conditions. (Chapter 8, Appendix 12).

Required Element 6: Review and Revision - Descriptions of procedures to review the plan at intervals not to exceed ten years. (Chapter 9).

Required Element 7: Partnerships with Land Management Agencies and Tribes - Plans for coordinating the development, implementation, review, and revision of the plan with federal, state, and local agencies and Indian tribes that manage significant land and water areas within the state or administer programs that significantly affect the conservation of identified species and habitats (Chapter 9, Appendix 1 and 2).

Required Element 8: Public Participation - Broad public participation is an essential element of developing and implementing these plans, the projects that are carried out while these plans are developed, and the species in greatest need of conservation (Appendix 1 and 2).

Development of the Comprehensive Ten Year Update for 2025

Required Element 5 above mandates that each state complete a comprehensive update of SWAP at least every ten years. To aid each state and territory in achieving a meaningful review and revision of their SWAP, the Association of Fish and Wildlife Agencies (AFWA) provided *Best Practices for State Wildlife Action Plans* (2011) as *voluntary* guidance that should result in greater consistency and standardization of SWAPs across the county. AFWA has encouraged the use of these *Best Practices* to improve efforts to measure success in conserving targeted species and natural communities, to better track progress on population recovery and habitat goals, and to foster more collaboration across state lines. MDWFP has adopted these *Best Practices* where possible in this revised 2025 plan.

To meet the requirements set forth by Congress and develop a useful resource, MDWFP began the update process in the same manner as the development of the previous two SWAPs. Our objectives from the beginning have been to base the SWAP on the best currently available data on the distribution and abundance of wildlife species in the state, particularly rare and declining species which are defined as Mississippi's SGCN. The plan assesses the extent and condition of habitats required by these species, as well as existing and potential threats and conservation opportunities for these habitats. It outlines the current research and survey needs as well as monitoring needs for SGCN and provides a method for MDWFP and its partners to review and revise the SWAP every ten years. A broad set of recommended conservation actions that may be applied locally and statewide to achieve the ultimate goal of protecting and improving Mississippi's diversity of native species and habitats are included. Through the refined and updated eight Conservation Opportunity Areas (COAs), our 2025 SWAP identifies geographic regions (identified by watersheds) in Mississippi where resources should be concentrated, and emphasis placed to protect and restore habitat for SGCN. Where data are deficient to provide a clear picture of conservation objectives, research priorities are indicated. Where the data are sufficient to provide direction for species and habitat protection, restoration or management, these recommendations are stated.

Coordination with agencies, organizations and corporations that manage land or administer wildlife conservation programs in Mississippi continues to be a key component of addressing SGCN and their habitats. MDWFP views the SWAP not as an agency plan, but rather as a biodiversity guide for the entire state. After the previous 2015 SWAP was approved by the USFWS, it did not collect dust on the shelf. The MDWFP SWAP Technical Committee of MDWFP wildlife, fisheries and museum biologists and experts continued to collaborate to update and refine the SGCN, habitat descriptions based on the findings of research, survey and monitoring.

For the 2025 update, MDWFP invited input from almost 300 experts, stakeholders, tribal representatives and interested individuals beginning in 2023 to review and update the SGCN list, threats, actions, habitat descriptions and to identify research, survey and monitoring needs where needed. MDWFP invited a broad cross section of experts and stakeholders to help us update the plan through email, SWAP webpage, online and in person meetings and presentations. Our Technical Committee worked with other scientists around the state and region with expertise on SGCN and their habitats to help compile and synthesize the data for review and input. A Core Committee of MDWFP managers ensured the process followed Congressional guidelines and met the eight required elements. Plan updates were posted on the MDWFP website for public review and input over a two year period (2023 - 2025) for continued stakeholder and public input and refinement as plan elements were updated.

Through this 2025 update, MDWFP strived to improve efficiency and effectiveness for all users. The previous SWAP plans are the foundation for this update. Many species, threats, recommended conservation actions and research and survey needs are the same. Significant progress has also occurred over the past 10 years in the conservation and our understanding of fish and wildlife species and their needs and new data regarding SGCN and their habitat needs have been incorporated.

Mississippi's SWAP in Action: Investments and Results in Species Conservation and Recovery

From 2001 - 2025, over $1 billion has been allocated to state wildlife agencies across the U.S. using a formula based on population and land area to the SWG program. During that period, MDWFP has received over $15 million in federal SWG funding that has been matched with over $5 million in non-federal funds for developing and implementing programs that benefit SGCN and their habitats in Mississippi as recommended in Mississippi's SWAP (see Appendix 9 for our cumulative investments through SWG and the Cooperative Endangered Species Fund or Section 6 funding). In addition to informing SWG and Section 6 investments across the state, the SWAP has served as a strategic guide and reference for natural resource managers, as a basis for other state and federal grant funds for wildlife conservation, and as a foundation for more detailed resource planning. It has been a useful tool for implementation of conservation actions locally, and has helped address gaps in research, survey and monitoring of species and habitats.

The following are just a few examples of how the Mississippi SWAP continues to be used by MDWFP and its partners across the state to achieve better results in efforts to protect and conserve fish and wildlife habitat.

How SWAP has supported other conservation planning and implementation efforts

The SWAP served as a guide and resource for other strategic conservation planning, such as:

- A technical resource for ongoing federal, regional and state planning efforts such as the RESTORE Act and post Deepwater Horizon Gulf ecosystem recovery planning by the Mississippi Department of Environmental Quality and the federal RESTORE Council, Partners in Flight priorities, Southeast Conservation Blueprint, migratory bird Joint Venture planning, Mississippi Bat Working Group, Southeast Partners for Amphibian and Reptile Conservation, USDA Farm bill program investments, and many others.
- A technical resource for grant programs and investments to protect, restore and enhance habitat for SGCN such as the North American Wetland Conservation Act, and the USDA Forest Legacy Program.
- Informing the development of a Regional Species of Greatest Conservation Need (RSGCN) list for the Southeast U.S.
- Informing the development of a potential Sentinel Landscape Partnership in east Mississippi.
- As a framework for the *Mississippi Forest Action Plan Update (2020)* – Threats and conservation actions from the 2005 SWAP served as foundation for many recommendations for forest conservation, protection and restoration in this statewide forest action plan (Mississippi Forestry Commission/USDA Forest Service)
- As a framework for the Mississippi Forest Legacy Program - Descriptions of forested habitats and species of greatest conservation need dependent on those habitats served as the basis for the *Forest Legacy Program Assessment of Need* (Mississippi Forestry Commission/USDA Forest Service) which is the guiding plan for Forest Legacy Program investments.
- Southeast Aquatic Habitat Plan (Southeast Aquatic Resources Partnership)
- Southeastern Coastal Plain Aquifer System
- Lower Mississippi Valley Joint Venture
- East Gulf Coastal Plain Joint Venture
- As a technical resource for mitigation banks, conservation easements on private lands and other private and public land habitat initiatives across the state.



Mississippi Crayfish Working Group.
Credit: Calvin Rezac

Grants and proposals for implementing conservation actions

Priority species and actions to address identified threats described in the previous SWAPs have been the basis for many successful government and non-government conservation grants in Mississippi including:

- Endangered Species Grants (USFWS)
- State Wildlife Grants Programs (led by MDWFP)
- Partners for Fish and Wildlife (USFWS/Partners)
- Landowner Incentive Program (MDWFP)
- North American Wetlands Conservation Act (USFWS/partners)
- National Fish and Wildlife Foundation (private/public partnerships)
- Gulf Coastal Restoration efforts through MDMR, NFWF, the USFWS, NOAA and the ongoing Deepwater Horizon Oil Disaster Recovery efforts
- Farm Bill programs (USDA) such as EQIP (Environmental Quality Improvement Program), the Agricultural Land Easement Program (ALE)

- Forest Legacy Program (USDA Forest Service)
- State Acres for Wildlife/Conservation Reserve Program (USDA) for black belt prairie, black bear habitat, bob-white quail habitat
- Development of the Mississippi Sound Estuary Program (MDEQ)

Blueprint for survey, research and monitoring of species and habitats of concern

- The 2005 SWAP and its 2015 update identified priority survey, research and monitoring needs for SGCN that have been followed and implemented by MDWFP with funding from SWG, Section 6, and other sources for 20 years. Since its inception, survey and monitoring work from SWG funding in Mississippi has resulted in the downgrading of ranks for four SGCN, in the determination that listing is not necessary for nine species, the recovery of five species, and the rediscovery of three species thought to be extirpated from the state (Ironcolor Shiner, Rock Bass, and Big Black Rocksnail). A complete list of SWG and Section 6 investments guided by the SWAP from the beginning of the program in Mississippi is in Appendix 9. Throughout this new 2025 update, we have incorporated species profiles for each taxa group to highlight the value of the SWAP and the SWG investments in species research, conservation and recovery.

Improved coordination with other agencies/ partners/resource managers

- Well-described habitats and identification of suites of species of concern and recommended conservation actions have helped MDWFP managers and other agencies, non-profits, private landowners, and partners focus their limited funds for conservation of species.
- The MS SWAP is frequently used as reference and guide for baseline documents for conservation easements and other best practices on private lands across Mississippi and in establishment of mitigation banks.



Big Black Rocksnail *Rediscovered*

One of the greatest conservation success stories in Mississippi over the past decade is the rediscovery of the thought to be extinct, **Big Black Rocksnail** ***(Lithasia hubrichti).***

The Big Black Rocksnail is a small, fully aquatic snail that was first discovered in the Big Black River near Edwards, Mississippi and recognized as a new species to science in 1965. Despite efforts to find the species again following its description, none were successful. By the 1990s it was pronounced extinct. Scientists speculated that the species had died out due to pollution and habitat loss resulting from river channel modification. However, like many of Mississippi's freshwater invertebrates it needed an expanded survey effort. In 2021, while performing a SWG funded freshwater mussel population survey, MDWFP museum biologists found a damaged dead-shell of what appeared to be a Big Black Rocksnail in a unique gravel section of the mostly sandy bottom Big Black River. A year later, during historically low-water levels, they returned to the site of the dead-shell along with USFWS biologists, and to their surprise found live Big Black Rocksnails!

The re-discovery of a live Big Black Rocksnail marked the first documentation of the species in nearly 60 years and is important to the conservation of Mississippi's biodiversity as it is the only mollusk endemic to the state. A follow up survey in 2023 resulted in finding the species at four other locations within a three mile stretch of river. Because of the species' specialized need for rocky, stable shoals, and the lack of gravel within most of the Big Black River, the snail's habitat appears to be confined to one specific section of the river.

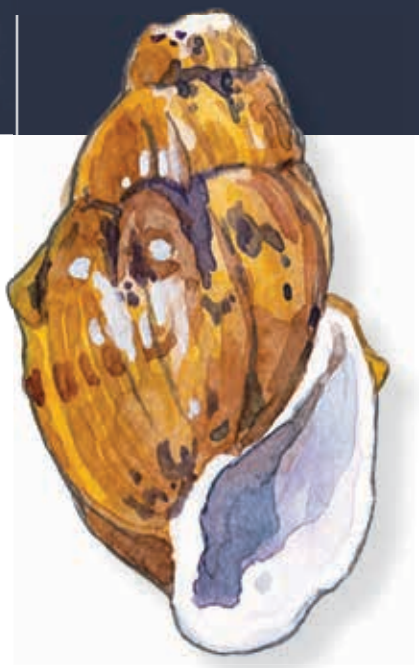
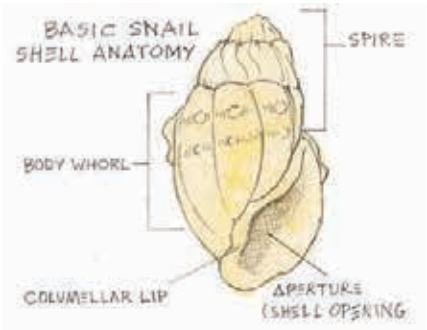
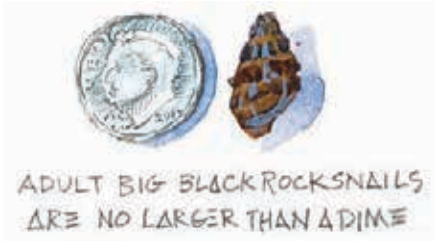
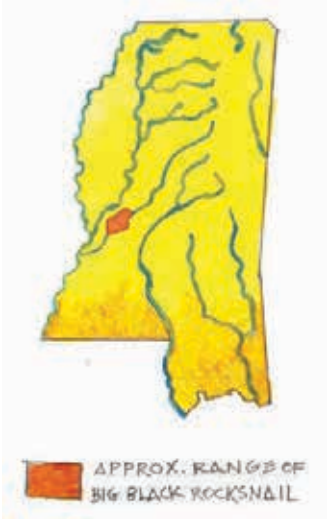


Illustration of Big Black Rocksnail
Credit: Sam Biebers







Changes to the 2025 SWAP

MDWFP is pleased to provide this comprehensive SWAP update for the entire state to improve the usefulness of this Plan as a resource and a means for conserving biodiversity. We have implemented several changes and enhancements to the SWAP as recommended by Teaming with Wildlife Committee in their voluntary *Best Practices for State Wildlife Actions Plans* (2011) including:

- Species of Greatest Conservation Need (SGCN) have been updated, and plants were added to the list
- Habitat types and subtypes organized by U.S. EPA Level III and Level IV ecoregions
- NatureServe's Terrestrial Ecological Systems have been incorporated into the habitat descriptions
- Threats and recommended conservation actions have been updated for each habitat type
- Research and survey needs have been updated based on the investigations over the past 10 year
- Conservation Opportunity Areas (COAs) in Mississippi has been redefined into eight new areas organized by watersheds with assistance from the USFWS and their Southeast Conservation Blueprint tool
- Habitat maps are refined and more detailed
- A list of reference sites in Mississippi for habitats has been updated
- Profiles of SGCN for each taxa group are incorporated into the SWAP illustrating the value of SWG investments and the need for future conservation, research, survey and monitoring
- Input from tribal representatives on culturally significant species and marine species experts have been incorporated
- A list of regional SGCN (RSGCN) and a regional overview has been added

This document represents the summation of a conservation planning effort that officially began in 2003 in response to the congressional mandate, but which builds on over 20 years of research and data accumulation by MDWFP and its partners, and the conservation planning efforts of many other organizations and agencies. We hope you find it to be a useful guide to fish and wildlife conservation in Mississippi.

CHAPTER 2

A Regional Perspective for Mississippi's Land, Waters and Species



Monarch butterflies. *Credit: Holley Muraco*

The following information and analysis were provided for this 2025MS SWAP by the USFWS Southeast Conservation Blueprint and the USGS's Southeast Climate Adaptation Science Center to assist us in describing the regional context, landscape and considerations for Mississippi in its efforts to conserve SGCN and their habitats.

In 2018, the Association of Fish and Wildlife Agencies (AFWA) adopted a resolution on landscape conservation that recognized "the importance of collaborating at landscape scales to help fish and wildlife agencies meet their statutory and regulatory responsibilities to conserve fish and wildlife and their habitats." In response to the resolution, AFWA established a President's Task Force on Shared Science & Landscape Conservation Priorities in 2020, which recommended that SWAPs serve as a framework for regional coordination and collaboration.

Within this Plan, Mississippi has identified SGCN and outlined strategies to sustain them, including conservation actions to promote species recovery and prevent the need for federal listings under the Endangered Species Act. But to sustain the species that are the responsibility of Mississippi to protect - and also reflect the rich biodiversity, culture, and history of the state - Mississippi must consider its role and the influences of the larger Southeast landscape.

This chapter examines regional, landscape-scale considerations and serves as a means for the State to find potential collaborations to best support the State's SGCN and Regional SGCN (RSGCN). Additionally, some of the threats that impact SGCN (e.g., climate change, extreme weather events) have consequences locally, statewide, and regionally. Addressing these threats effectively requires aligning conservation strategies across state boundaries. By using consistent regional information shared by other states to inform their own SWAPs, Mississippi can better contribute to regional conservation priorities, identify potential landscape-level threats, and help connect the Southeast region's lands and waters.

Mississippi's conservation portfolio: Connecting the region's lands and waters

Mississippi supports a wide diversity of habitats, culturally and historically significant landscapes, and natural areas that provide benefits to the state as well as the wider Southeast region. Mississippi plays an important role in connecting the lands and waters of the Southeast Region as well as hosting regionally important ecosystems and habitat types like longleaf pine forest, Black Belt prairie, and the Mississippi River Alluvial Plain and the Gulf of America.

Many regional and local partners and partnerships are working with the MDWFP to help conserve the state's waters and landscapes. According to the Protected Areas Database of the United States (PAD-US, v4.1), approximately 2.18 million acres of the state are considered protected in either a fee-simple or easement status (Figure 2.1). This includes important landscapes like national forests and wildlife refuges, national parks, state wildlife management areas, state forests, state and local parks, university and military lands and private conservation easements and preserves.

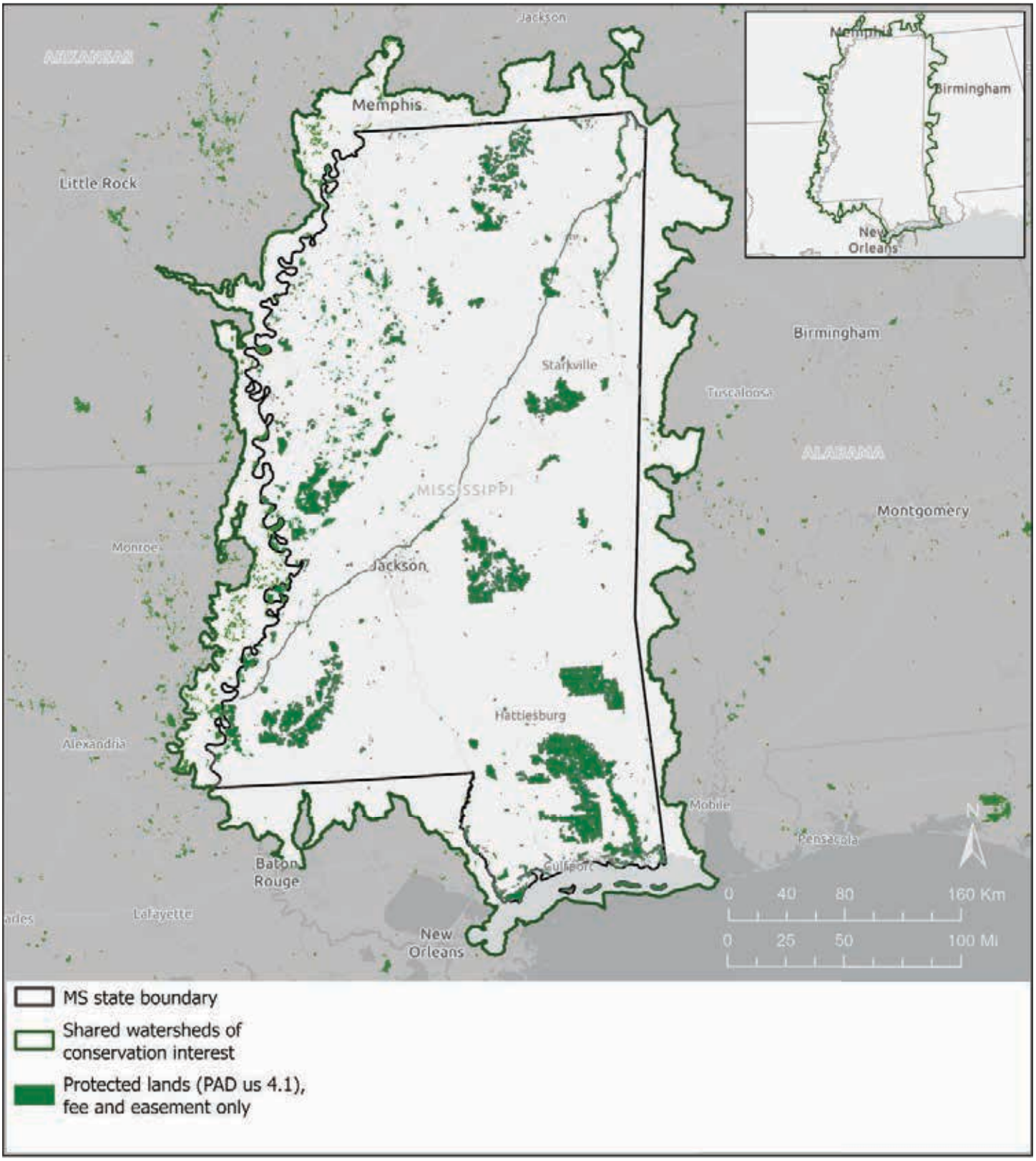


Figure 2.1. Protected areas within and surrounding Mississippi (fee and easement only). Protected lands are represented by the USGS Protected Areas Database of the United States (PAD-US). PAD-US is the nation's inventory of protected areas, including public land and voluntarily provided private protected areas. It is regularly updated to reflect new places.

In addition to contributing to the conservation landscape of the Southeast, Mississippi's lands and waters also benefit the state's economy. In 2023, the Bureau of Economic Analysis estimated that the outdoor recreation economy generated $4.0 billion in value for the state's Gross Domestic Product and another $1.5 billion in wages and salaries (U.S. Bureau of Economic Analysis for Outdoor Recreation, 2023). Beyond providing recreational value, natural landscapes also support working lands such as agriculture and timber. As of 2024, Mississippi supported more than supported more than 10.2 million acres of farmland across 30,800 farms and crop production alone was valued at more than $1.97 billion (U.S. Department of Agriculture, 2024).

Mississippi and the Southeast Conservation Adaptation Strategy (SECAS)

The Southeast Conservation Adaptation Strategy (SECAS) is a regional conservation initiative that spans the Southeastern United States and Caribbean. SECAS brings together diverse partners around an ambitious goal: a 10% or greater improvement in the health, function, and connectivity of Southeastern ecosystems by 2060. The Southeast Conservation Blueprint is the primary product of SECAS. The Blueprint is a living, spatial plan that identifies priority areas where conservation action would make an impact toward creating a connected networks of lands and waters, based on a suite of natural and cultural resource indicators and a connectivity analysis.

So far, more than 2,500 people from over 650 different organizations have been actively involved in developing the Blueprint. Several staff from the MDWFP have participated in workshops to review and improve the Blueprint, along with many other conservation practitioners from across the State. Since 2014, the Blueprint has been used by a broad suite of partners to inform many different conservation actions across the State.

Maps of the Blueprint and other regional data are provided within this chapter. These maps also include a boundary that extends beyond the State and includes watersheds where Mississippi shares a conservation or species management interest with its neighboring states. This boundary was developed by identifying all watersheds (Hydrologic Unit Code or HUC 10) within 1.5 kilometers of the State boundary. By looking beyond the State's boundaries, Mississippi can consider how to best align conservation actions and identify cross-jurisdictional opportunities with neighboring states to maximize benefits for SGCN with wider ranges.

The Southeast Blueprint recognizes more than 13.1 million acres, or roughly 42.5% of the state of Mississippi, as a priority for connecting the region's lands and waters (Table 2.1, Figure 2.2). About 5.2 million acres are rated as highest or high priority. An additional 5.6 million acres are rated as medium priority and about 2.29 million acres are considered priority connections, or key linkages between priority areas that can help facilitate the flow of species and ecological processes within the State while also considering connectivity within the broader region.

Together, these classes represent the most important areas for shared conservation action to connect lands and waters and improve ecosystem health. The Blueprint includes more than 60 indicators that collectively represent ecosystem health, function, and connectivity across terrestrial, freshwater, coastal and marine systems. Examples include imperiled aquatic SGCN, cores of intact natural habitat, natural floodplain landcover, prescribed fire frequency, and more. Indicator data is available online on the Blueprint page of the SECAS Atlas.

The Blueprint recognizes the vast majority (94%) of Mississippi's protected areas as a priority for connecting the lands and waters of the Southeast (Table 2.1). This means that while these conserved areas are contributing to the state-wide landscape and represent unique habitats and locally important areas, many of them are also contributing to a wider regional conservation strategy. The State's conservation portfolio exemplifies a complementary landscape-scale approach to conservation that links local actions with conservation outcomes that contribute to a broader geographic scale.

The Southeast Blueprint also includes a least-cost path connectivity analysis that identifies corridors that link coastal and inland areas and span climate gradients. The corridors connect hubs across the shortest distance possible, while also routing through as much Blueprint priority as possible. The hubs that anchor the connectivity analysis are large patches of highest priority Blueprint areas and/or protected lands. About 8.4 million acres (27%) within Mississippi are considered a hub or corridor, providing many conservation opportunities to support species movement and migration—an important strategy for helping wildlife adapt to landscape-level changes (Figure 2.3).

Priority for a connected network	Acres of each Blueprint (v2024) priority category within MS	Protected land and waters (acres and percent) within the state of conserved lands (PAD-US 4.1) recognized as Blueprint priority
Highest	1,968,526 (6.4%)	642,175.68 (29%)
High	3,248,906 (10.5%)	586,158.29 (27%)
Medium	5,650,734 (18.2%)	726,301.74 (33%)
Priority connections	2,299,145 (7.4%)	41,703.19 (2%)
Lower priority	17,831,573 (57.5%)	188,279.63 (9%)
Total	**30,998,884 (100%)**	**2,184,618.54 (100%)**

Table 2.1. Lands and waters considered protected within Mississippi. These numbers are estimates based on the Protected Areas Database of the United States (PAD-US v3.0) and may not reflect the most up-to-date assessments.

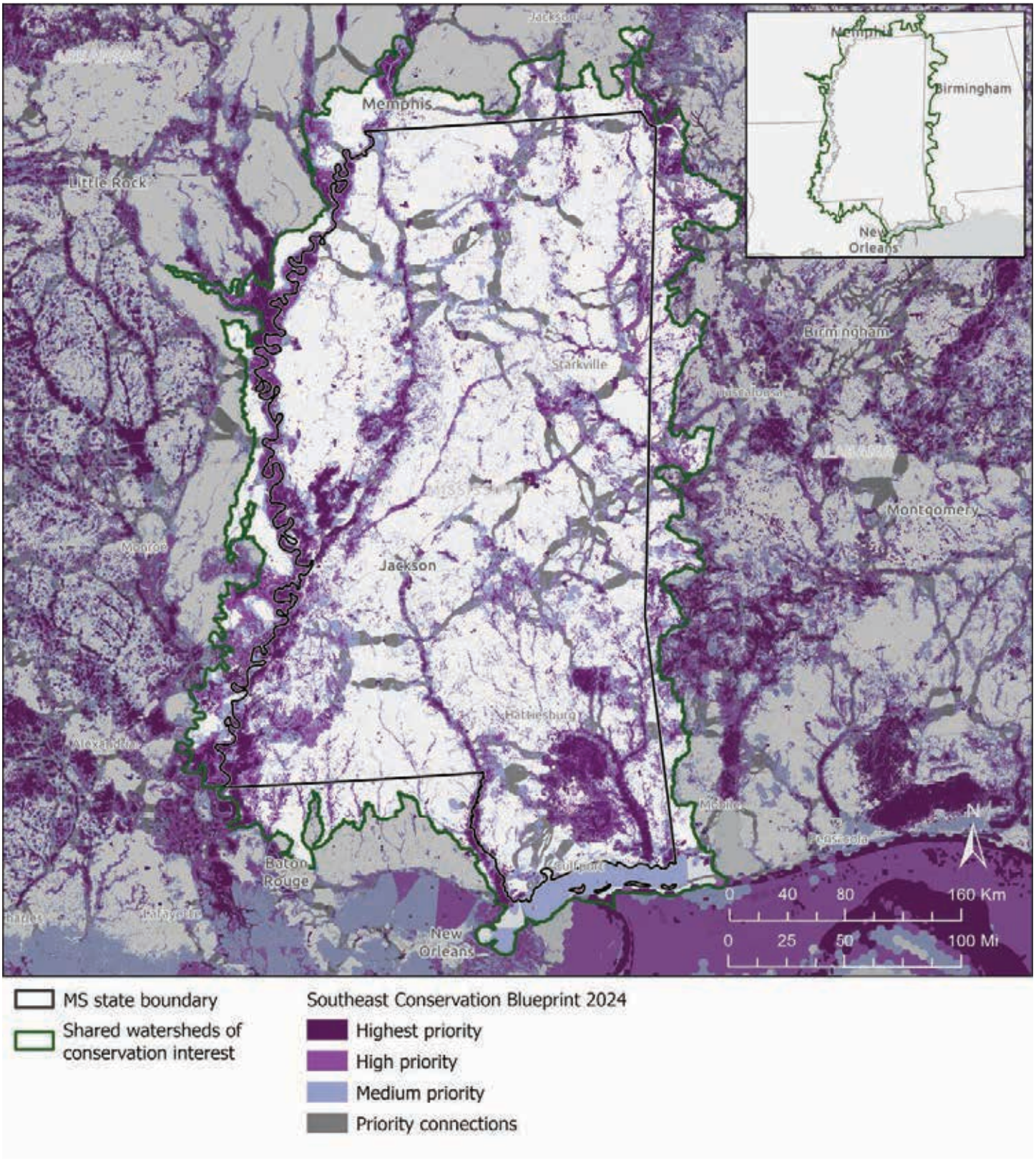


Figure 2.2. This map represents the Southeast Blueprint (v2024) priorities within Mississippi and surrounding watersheds (HUC 10) shared with neighboring states.



Figure 2.3. Southeast Blueprint connectivity analysis showing hubs and corridors in Mississippi and surrounding watersheds shared with neighboring states. The Blueprint uses a least-cost path connectivity analysis to identify corridors that link hubs across the shortest distance possible, while also routing through as much Blueprint priority as possible. In the continental Southeast, hubs are large patches (~5,000+ acres) of highest priority Blueprint areas and/or protected lands.

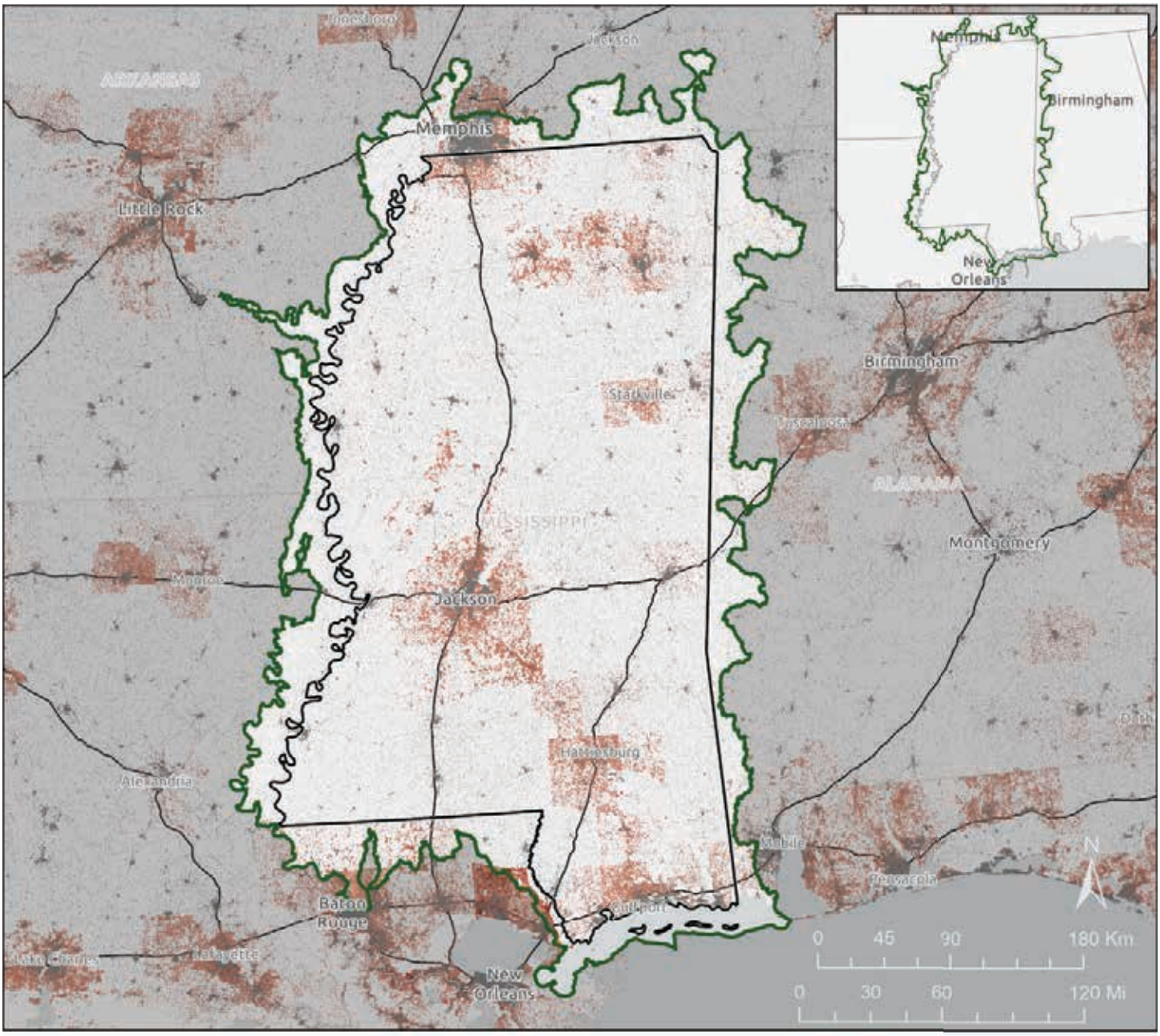


Figure 2.4. Past and current (2019) urban levels based on developed land cover classes from the National Land Cover Database. Future urban growth estimates derived from FUTURES model projections for the contiguous United States. Data provided by the Center for Geospatial Analytics, NC State University.

Ensuring landscape connectivity across jurisdictional boundaries is becoming increasingly important for species management as changes in land use, climate, and weather patterns shift species distributions. Collaborating with the neighboring states of Alabama, Louisiana, Arkansas, and Tennessee to identify cross-boundary species migration and habitat pathways can increase regional connectivity for state SGCN and RSGCN. Figure 2.4 represents places in the State that are already considered urban as well as places that are predicted to urbanize by 2060.

One lens to characterize the landscape of Mississippi is by its ecoregions, as defined by the Level III ecoregions of the continental United States (Omernik 1987, 1995): Mississippi Alluvial Plain, Mississippi Valley Loess Plains, Southeastern Plains, and Southern Coastal Plain (Figure 2.5).

Ecoregions are identified by analyzing areas where ecosystems and the type, quality, and quantity of environmental resources are generally similar. The ecoregion framework is derived from Omernik (1987) and from mapping done in collaboration with EPA regional offices, other Federal agencies, state resource management agencies, and neighboring North American countries. For the purposes of this SWAP update, we have elected to adopt EPA's ecoregional framework to organize our presentation of habitats and SGCN. Level III and Level IV EPA ecoregions are described in *Chapter 5: Ecoregions and Habitats of Mississippi*.

Mississippi ecoregions	Acres of ecoregion prioritized by the Blueprint	Percent of ecoregion within MS prioritized by the Blueprint
MS Alluvial Plain	2,234,529.64	44%
MS Valley Loess Plains	2,686,411.694	39%
Southeastern Plains	7,350,001.45	40%
Southern Coastal Plain	441,252.48	62%

Table 2.2. Land and waters within each ecoregion of Mississippi identified by the Southeast Blueprint (2024)

Mississippi and the SECAS goal

Through SECAS, partners work together to design and achieve a connected network for the benefit of ecosystems, species, and people, and to achieve the SECAS goal: a 10% or greater improvement in the health, function, and connectivity of Southeastern ecosystems by 2060. The work of MDWFP and other conservation partners within the State help advance this goal. In addition to the Southeast Blueprint, SECAS releases an annual report - Recent Trends in Southeastern Ecosystems - that assesses progress toward the SECAS goal using the best available data. This report assesses progress toward the SECAS goal using information from existing monitoring programs and is intended to facilitate discussion around conservation actions needed to meet the goal.

Recent Trends in Southeastern Ecosystems (2024) synthesizes 13 different assessments to evaluate 20 indicator trends. Some assessments, like eBird, inform multiple indicators.Assessments encompass a range of sources from remotely sensed data (like the National Land Cover Database) to long-term citizen science monitoring programs (such as eBird). States can use this SECAS goal report to assess their own progress (see Table 2.3 below) and overall trends for the broader Southeast Region. However, not all SECAS goal indicators can be assessed at the state-level because they do not apply to the geography or because of limitations with the source information used to inform the indicators. Out of the total 20 SECAS goal indicators, 14 are assessed herein for Mississippi. The following tables describe the species driving Southeastern states' progress towards the four bird category goals.

Recent trends in ecosystem indicators in Mississippi compared to the Southeast US

Like other states in the Southeast, Mississippi has:

- Increases in forested wetland area, forested wetland birds, upland forest birds, longleaf pine area, and working lands conservation.
- Declines in areas without invasive plants, beach birds, grassland and savanna area, grassland and savanna birds, landscape condition, and undeveloped land in corridors.

Unlike other states in the Southeast, Mississippi has:

- Steeper declines in beach birds. Declines are across multiple species. They are similar to steep declines in Alabama.
- Increases instead of declines in salt marsh area. This trend is from 2010 – 2016, the 6 years after the gulf oil spill, and is likely influenced by restoration projects occurring during that time.
- Increases instead of declines for natural landcover in the floodplain.
- Declines instead of increases in water quality.

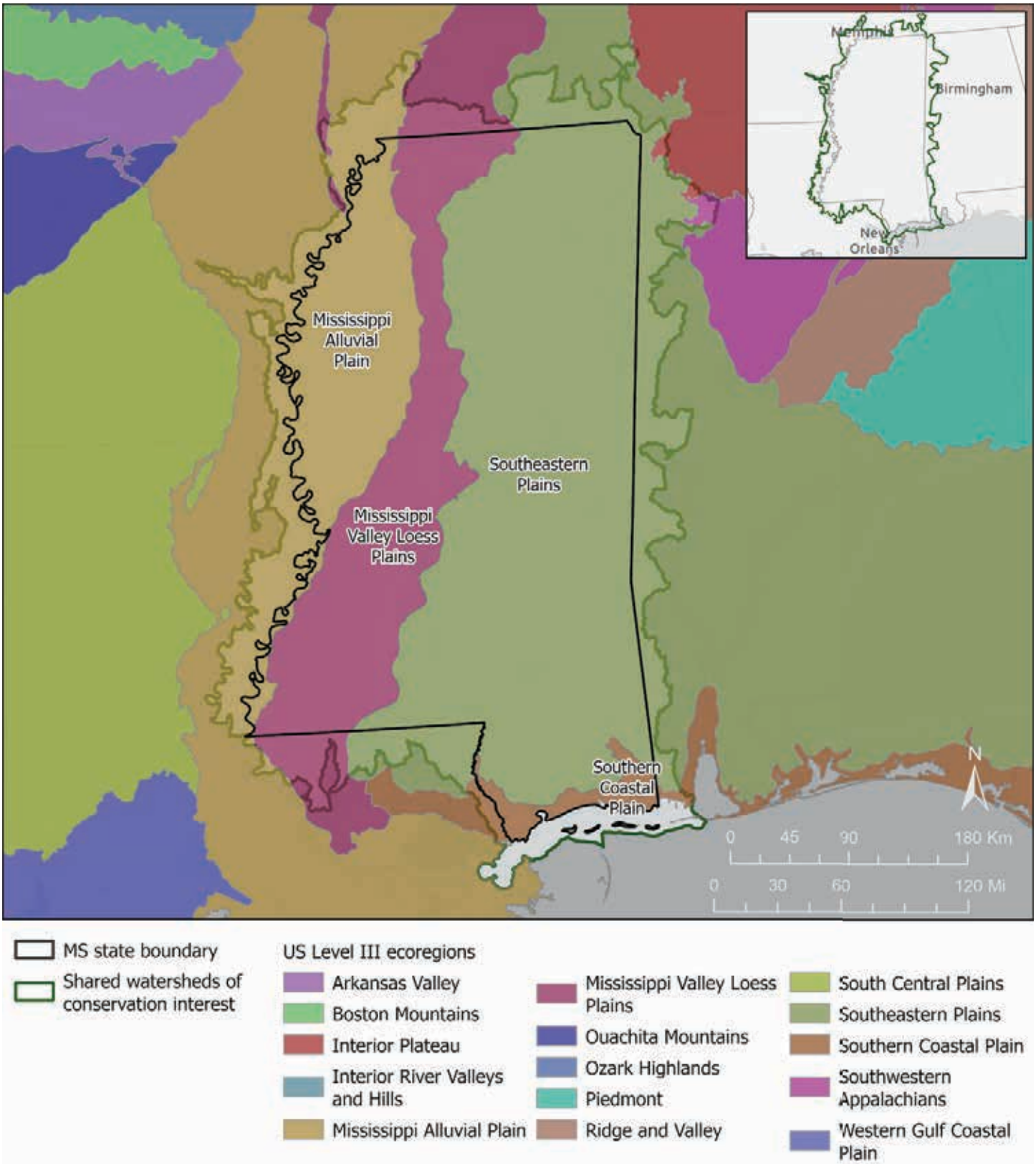


Figure 2.5. Level III EPA ecoregions of Mississippi and surrounding area

Ecosystem	Type	Indicator	Mississippi yearly % change	Southeast yearly% change
Terrestrial	Health	Areas without invasive plants	0.53% decline	0.33% decline
		Beach birds	2.19% decline	1.42% decline
		Forested wetland area	0.2% increase	0.08% increase
		Forested wetland birds	2.26% increase	2.85% increase
		Grassland & savanna area	0.72% decline	0.31% decline
		Grassland & savanna birds	3.12% decline	2.2% decline
		Longleaf pine area	6.3% increase	4.5% increase
		Salt marsh area	0.04% increase	0.03% decline
		Upland forest birds	0.62% increase	0.98% increase
	Function	Working lands conser-vation	9.5% increase	11% increase
	Connectivity	Landscape condition	0.001% decline	0.02% decline
		Undeveloped land in corridors	0.01% decline	0.02% decline
Freshwater	Health	Natural landcover in floodplains	0.02% increase	0.008% decline
	Function	Water quality	0.01% decline	0.003% increase

Figure 2.3. Overview of recent trends in ecosystem indicators comparing Mississippi and the Southeast US. Indicators shown in green are on track to meet the goal (≥1% increase every 4 years); indicators shown in yellow (<1% increase) and red (declines) are not.

	American oystercatcher	Black skimmer	Gull-billed tern	Least tern	Piping plover	Royal tern	Willet
AL	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High		Decline | Off track | Low	Decline | Off track | High
AR				Decline | Off track | High			
FL	Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | Low	Decline | Off track | High
GA	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High		Decline | Off track | High	Decline | Off track | High
KY				Decline | Off track | Low			
LA	Increase | On track | Low	Decline | Off track | High	Increase | On track | High	Decline | Off track | High		Increase | On track | High	Decline | Off track | High
MO				Decline | Off track | High			
MS	Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | High		Decline | Off track | High	Decline | Off track | High
NC	Increase | On track | Low	Decline | Off track | High	Increase | On track | Low	Increase | Off track | Low	Decline | Off track | High	Increase | On track | High	Decline | Off track | High
OK				Decline | Off track | High			Decline | Off track | High
SC	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High		Decline | Off track | High	Decline | Off track | High
TN				Decline | Off track | High			
TX	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High		Increase | On track | High	Decline | Off track | High
VA	Decline | Off track | Low	Decline | Off track | Low	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High
PR	Increase | On track | High		Increase | On track | Low	Increase | On track | High		Increase | On track | High	Decline | Off track | High
VI	Increase | On track | High			Increase | On track | High		Increase | On track | Low	

Table 2.4. Goal status by state for each beach bird species from 2012-2022, abbreviated for space. “Increase/off track” indicates a small increase insufficient to meet the goal, while “increase/on track” indicates a larger increase. “High” indicates higher confidence and “low” indicates lower confidence in the trend. Selected bird species are Southeast Regional Species of Greatest Conservation Need (SGCN) associated with this habitat and with sufficient data for eBird trend analysis

	Prothonotary warbler	Swainson's warbler	Swallow-tailed kite	Yellow-throated warbler
AL	Increase | On track | Low	Increase | On track | High	Increase | On track | High	Increase | On track | High
AR	Increase | On track | High	Increase | On track | High		Increase | On track | High
FL	Decline | Off track | High	Decline | Off track | Low	Increase | On track | High	Increase | On track | Low
GA	Increase | Off track | Low	Increase | On track | High	Increase | On track | High	Increase | On track | High
KY	Increase | On track | High	Increase | On track | High		Increase | On track | High
LA	Decline | Off track | Low	Increase | On track | High	Increase | On track | High	Increase | On track | High
MO	Increase | On track | High	Increase | On track | High		Increase | On track | High
MS	Increase | On track | High	Increase | On track | High	Increase | On track | High	Increase | On track | High
NC	Decline | Off track | Low	Increase | On track | High	Increase | On track | High	Increase | On track | High
OK	Increase | On track | High	Increase | On track | High		Increase | On track | High
SC	Decline | Off track | Low	Increase | On track | High	Increase | On track | High	Increase | On track | High
TN	Increase | On track | High	Increase | On track | High		Increase | On track | High
TX	Increase | On track | High	Increase | On track | High	Increase | On track | High	Increase | On track | High
VA	Decline | Off track | Low	Increase | On track | High		Increase | On track | High
WV	Increase | On track | High	Increase | On track | High		Increase | On track | Low

Table 2.5. Goal status by state for each forested wetland bird species from 2012-2022, abbreviated for space. "Increase/off track" indicates a small increase insufficient to meet the goal, while "increase/on track" indicates a larger increase. "High" indicates higher confidence and "low" indicates lower confidence in the trend. Selected bird species are Southeast Regional Species of Greatest Conservation Need (SGCN) associated with this habitat and with sufficient data for eBird trend analysis.

	American kestrel	Eastern meadowlark	Grasshopper sparrow	Loggerhead shrike	Northern bobwhite	Prairie warbler	Red-cockaded woodpecker	Scissor-tailed flycatcher
AL	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | Low	Decline | Off track | High
AR	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Increase | On track | High	Decline | Off track | High
FL	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	
GA	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High
KY	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High		Decline | Off track | High
LA	Decline | Off track | High	Decline | Off track | High		Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High
MO	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High		Decline | Off track | High
MS	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | Low	Decline | Off track | High
NC	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Increase | On track | Low	Increase | On track | Low
OK	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Increase | On track | High	Increase | On track | High	Decline | Off track | High
SC	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | Low
TN	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High		Decline | Off track | High
TX	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Increase | Off track | Low	Increase | On track | Low	Decline | Off track | High
VA	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Increase | On track | High	Decline | Off track | High
WV	Decline | Off track | Low	Decline | Off track | High	Decline | Off track | High	Decline | Off track | High	Decline | Off track | Low	Decline | Off track | High		Decline | Off track | High
PR	Decline | Off track | Low		Decline | Off track | High					
VI	Decline | Off track | Low							

Table 2.6. Goal status by state for each grassland and savanna bird species from 2012-2022, abbreviated for space. "Increase/off track" indicates a small increase insufficient to meet the goal, while "increase/on track" indicates a larger increase. "High" indicates higher confidence and "low" indicates lower confidence in the trend. Selected bird species are Southeast Regional Species of Greatest Conservation Need (SGCN) associated with this habitat and with sufficient data for eBird trend analysis.

	Cerulean warbler	Louisiana waterthrush	Wood thrush	Worm-eating warbler
AL	Decline | Off track | High	Increase | On track | High	Increase | On track | High	Decline | Off track | High
AR	Increase | On track | High	Increase | On track | High	Increase | On track | High	Decline | Off track | Low
FL		Decline | Off track | Low	Increase | On track | High	
GA	Decline | Off track | High	Increase | On track | High	Increase | On track | High	Decline | Off track | High
KY	Decline | Off track | High	Increase | On track | Low	Increase | On track | High	Decline | Off track | High
LA		Increase | On track | Low	Increase | On track | High	Increase | On track | Low
MO	Decline | Off track | High	Decline | Off track | Low	Increase | On track | High	Decline | Off track | High
MS	Decline | Off track | Low	Increase | On track | High	Increase | On track | High	Decline | Off track | High
NC	Decline | Off track | High	Increase | On track | Low	Increase | On track | High	Decline | Off track | High
OK	Increase | On track | Low	Increase | On track | High	Increase | On track | High	Decline | Off track | High
SC	Decline | Off track | High	Increase | On track | High	Increase | On track | High	Decline | Off track | High
TN	Decline | Off track | High	Increase | Off track | Low	Increase | On track | High	Decline | Off track | High
TX		Increase | On track | High	Increase | On track | High	Increase | On track | High
VA	Decline | Off track | High	Increase | On track | Low	Increase | On track | High	Decline | Off track | High
WV	Decline | Off track | Low	Increase | On track | High	Increase | On track | High	Decline | Off track | High

Table 2.7. Goal status by state for each upland forest bird species from 2012-2022, abbreviated for space. “Increase/off track” indicates a small increase insufficient to meet the goal, while “increase/on track” indicates a larger increase. “High” indicates higher confidence and “low” indicates lower confidence in the trend. Selected bird species are Southeast Regional Species of Greatest Conservation Need (SGCN) associated with this habitat and with sufficient data for eBird trend analysis.

Regional Species of Greatest Conservation Need

Each state's SWAP identifies SGCN, or the species most in need of proactive conservation attention (see Chapter 4 and Appendix 3 for a list of Mississippi's SGCN). After the 2015 SWAP revisions, the combined lists of SGCN for the 15 SEAFWA states totaled nearly 7,086 species with the most common taxa represented being plants (2,174), insects (1,259), fishes (707), invertebrates (571), and birds (280).

However, many SGCN occur across multiple states. Effectively managing and conserving these species requires actions and management strategies that will best allow for species movement and ensure the availability of key ecological attributes provided by different habitats across the landscape at different times. To help support long-term conservation goals for imperiled plant and animal species conservation partners have developed Regional Species of Greatest Conservation Need (RSGCN) lists.

Animal RSGCN

In 2019, the National Wildlife Federation, as part of the Vital Futures project funded by the U.S. Geological Survey, prioritized the large number of SGCN collectively identified in the previous iteration of 15 Southeastern SWAPs. Across the 15 southeastern states, the combined lists of SGCNs totals nearly 6,700 species (National Wildlife Federation 2023). The Southeastern Association of Fish and Wildlife Agencies (SEAFWA) Wildlife Diversity Committee collaborated with the National Wildlife Federation and other partners to evaluate these species across the 15 states and produce a list of 960 regional priority species (1,034 including subspecies), or animal RSGCN and also a report that outlines the process and results. This effort aligns with the Northeast Association of Fish and Wildlife Agencies' similar project to develop a RSGCN list for the Northeast Region. Out of the total animal RSGCN list, two-thirds are freshwater fish, crayfish, and freshwater mussels.

Identifying animal RSGCN drew upon a collaborative process among Southeastern state fish and wildlife agencies and partners that involved more than 100 experts and used a set of consistent criteria to review current scientific information and evaluate state-identified SGCN. Species were evaluated based on several primary factors, including: **1)** the level of conservation concern (i.e. extinction risk), **2)** regional stewardship responsibility (i.e. importance of the Southeast in conservation of the species), and **3)** biological or ecological significance (e.g., unique evolutionary lineages). The regional assessment focused on species in key taxonomic groups, including vertebrates (mammals, birds, reptiles, amphibians, and fishes) as well as several better-known groups of invertebrate animals (freshwater mussels, crayfish, and bumblebees; Table 2.8, Figure 2.8). Scientific experts in each of these groups convened to evaluate and identify those species that warranted identification as a regional priority. Additionally, the science teams characterized the level of conservation concern for each regional priority, ranging from moderate to high and very high concern. Through this established process, the RSGCN list can be updated as the states' SGCN lists change over time.

The number of RSCGN that are considered the stewardship responsibilities of each state varies widely. These patterns reflect the underlying diversity of species in each state–particularly the number of imperiled and/or limited range species–which is also influenced by a state's size and diversity of habitats. These patterns are also influenced by the "regional stewardship responsibility" criterion in the assessment of priority species.

Nearly 70% of regional priority species are endemic to the 15-state SEAFWA region. Overall, more than half (55%) of RSGCN are shared by three or more states, presenting opportunities for cross-state conservation collaboration. The remaining 45% of RSGCN have narrow ranges and are found in just one or two states. By taxa, fish and crayfish represent 47% of all RSGCN within the region. Many aquatic habitats and ecosystems within the Southeast are highly fragmented, resulting in severe limitations to ecosystem integrity and species persistence regionwide. Habitat fragmentation in rivers and streams is a determining factor in the decline in abundance of numerous species such as Eastern brook trout, freshwater mussels, and amphibians such as Eastern hellbender.

ANIMAL RSGCN TAXONOMIC GROUP	VERY HIGH CONCERN	HIGH CONCERN	MODERATE CONCERN	TOTAL
Amphibians	30	52	34	116 (11%)
Birds	10	56	18	84 (8%)
Bumblebees	2	1	2	5 (.4%)
Crayfish	53	86	34	173 (17%)
Fishes	101	120	96	317 (30%)
Mammals	18	37	30	85 (8%)
Mussels	69	55	13	139 (13%)
Reptiles	18	58	39	115 (11%)
TOTAL	**302**	**466**	**266**	**1,034 (100%)**

Table 2.8. List of Southeast animal RSGCN by taxa and their level of concern (very high, high, or moderate). Fish have the most species categorized as "very high concern" and represent 30% of all RSGCN within the Southeast region.

Several regional datasets can help Mississippi identify lands and waters that support animal RSGCN habitats and find opportunities to collaborate with other states. For example, habitat maps at the species level from the USGS Gap Analysis Project (GAP) are available for approximately 290 animal species, and 90 sub-species, on the RSGCN list. While GAP does not include species habitat maps for invertebrates or plants, it does include a high percentage of vertebrate RSGCN (93% of amphibians, 92% of birds, 76% of mammals, and 77% of reptiles). Figures 2.6 through 2.9 show Southeast RSGCN richness using GAP species habitat models.

This data, in combination with other tools like the Southeast Blueprint, can help identify areas where conservation actions are likely to yield co-benefits for RSGCN as well as other species, habitats, and ecosystem services. As recommended by AFWA, cross jurisdictional or regional strategies can enhance ecosystem resiliency, function, and connectivity–especially in the face of changing weather patterns and habitat shifts. All data, including model inputs, are available from the USGS Gap Analysis Project Species Habitat Maps on their website: https://www.usgs.gov/programs/gap-analysis-project.

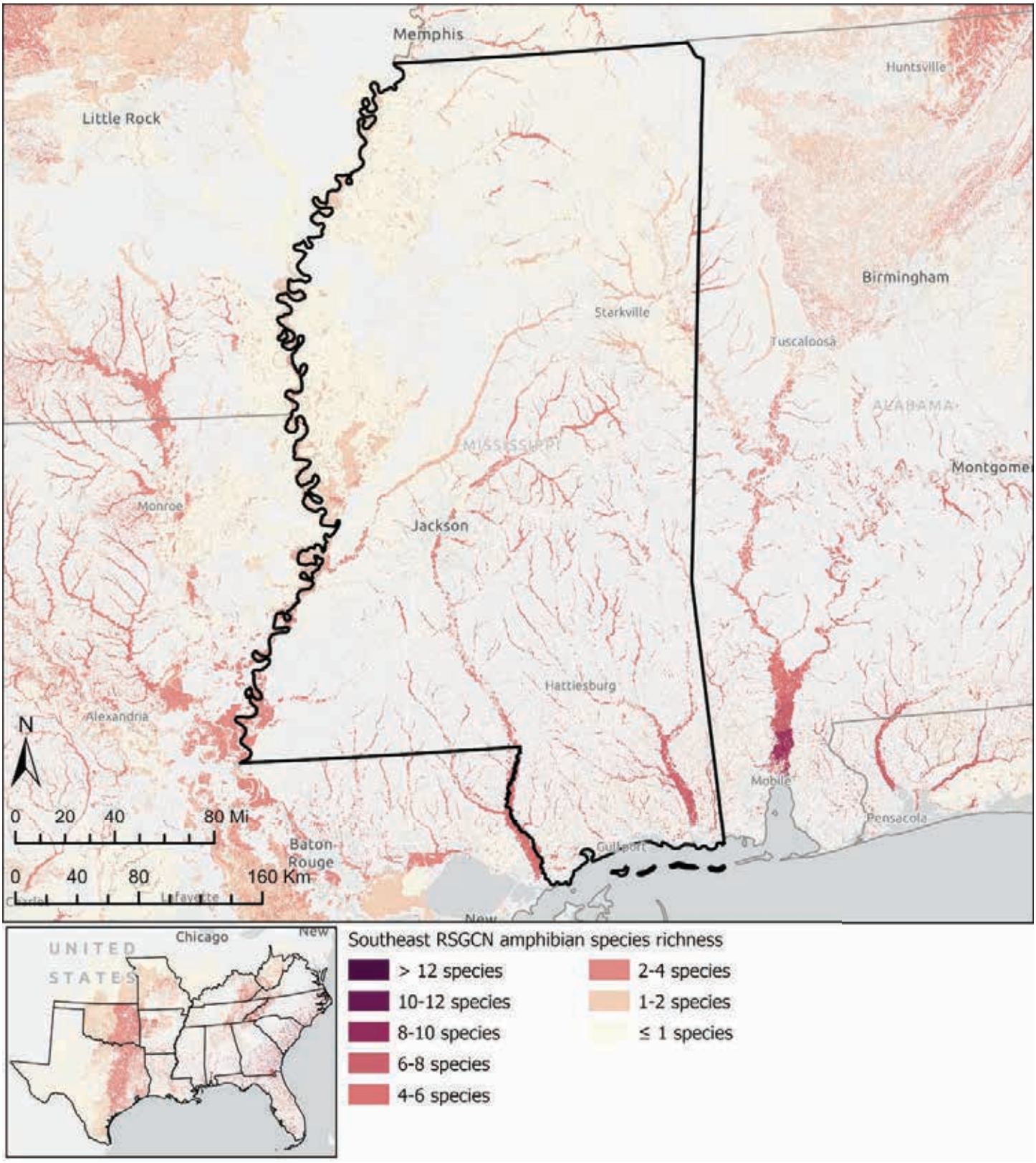


Figure 2.6. Species richness for amphibian RSGCN that are considered very high or high concern. Species richness is represented using available GAP species-habitat models (using 2016 landcover) for 66 of the 72 amphibian RSGCN in the very high or high concern category.

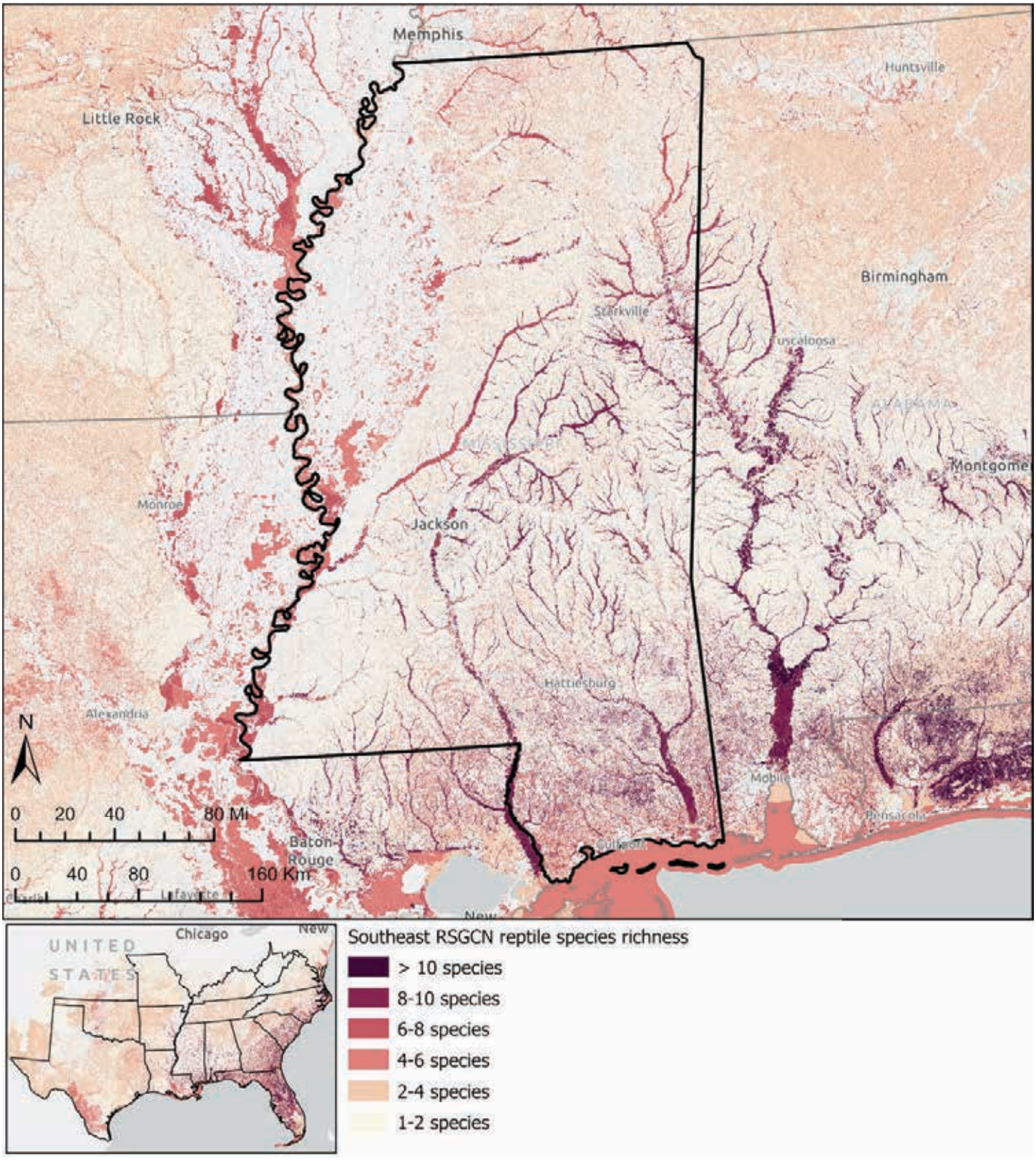


Figure 2.7. Species richness of reptile RSGCN that are considered very high or high concern. Species richness is represented using available GAP species-habitat models (using 2016 landcover) for 49 of the 58 reptile RSGCN in the very high or high concern category.

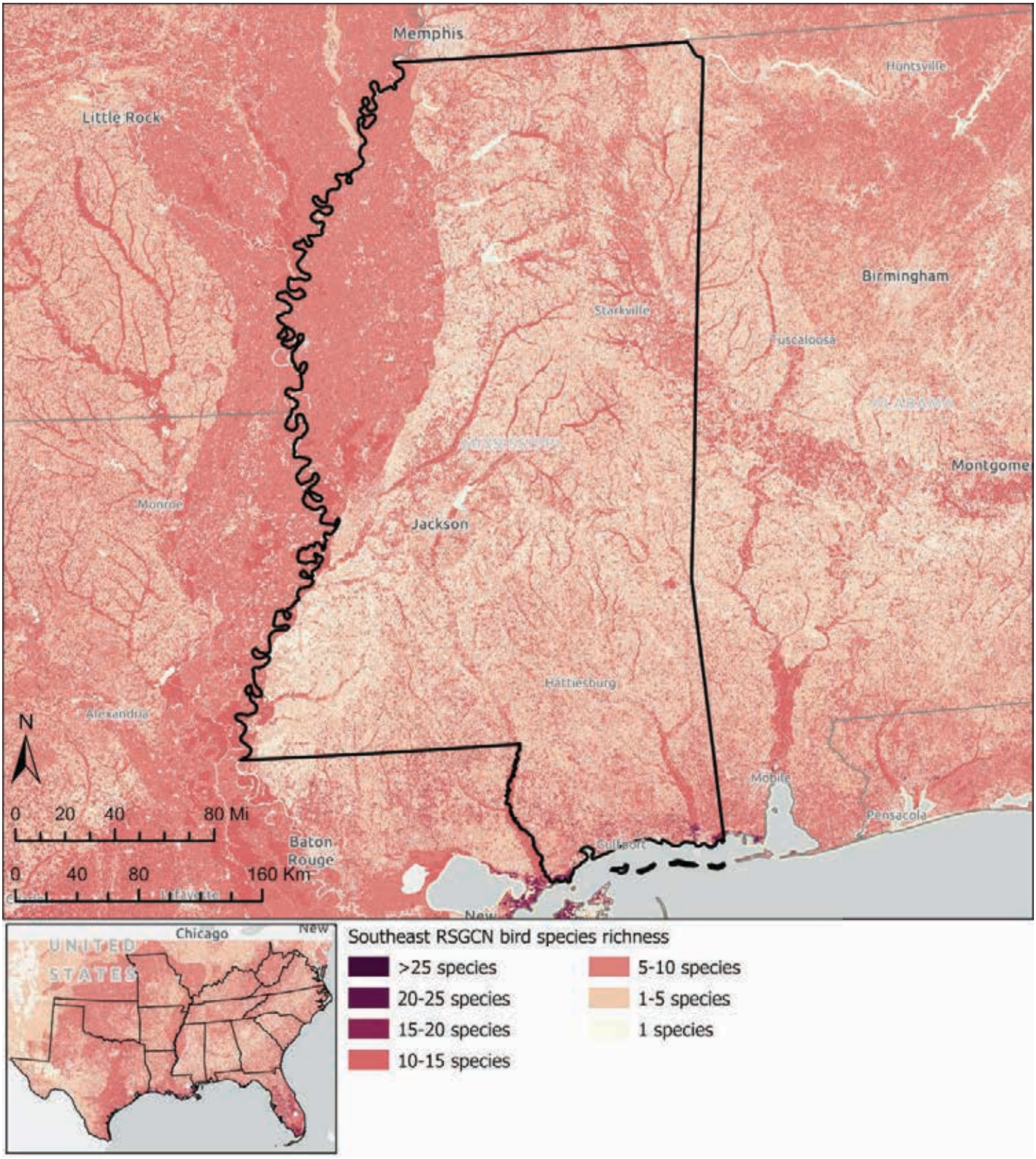


Figure 2.8. Species richness of bird RSGCN that are considered very high or high concern. Species richness is represented using available GAP species-habitat models (using 2016 landcover) for 50 of the 57 bird RSGCN in the very high or high concern category.

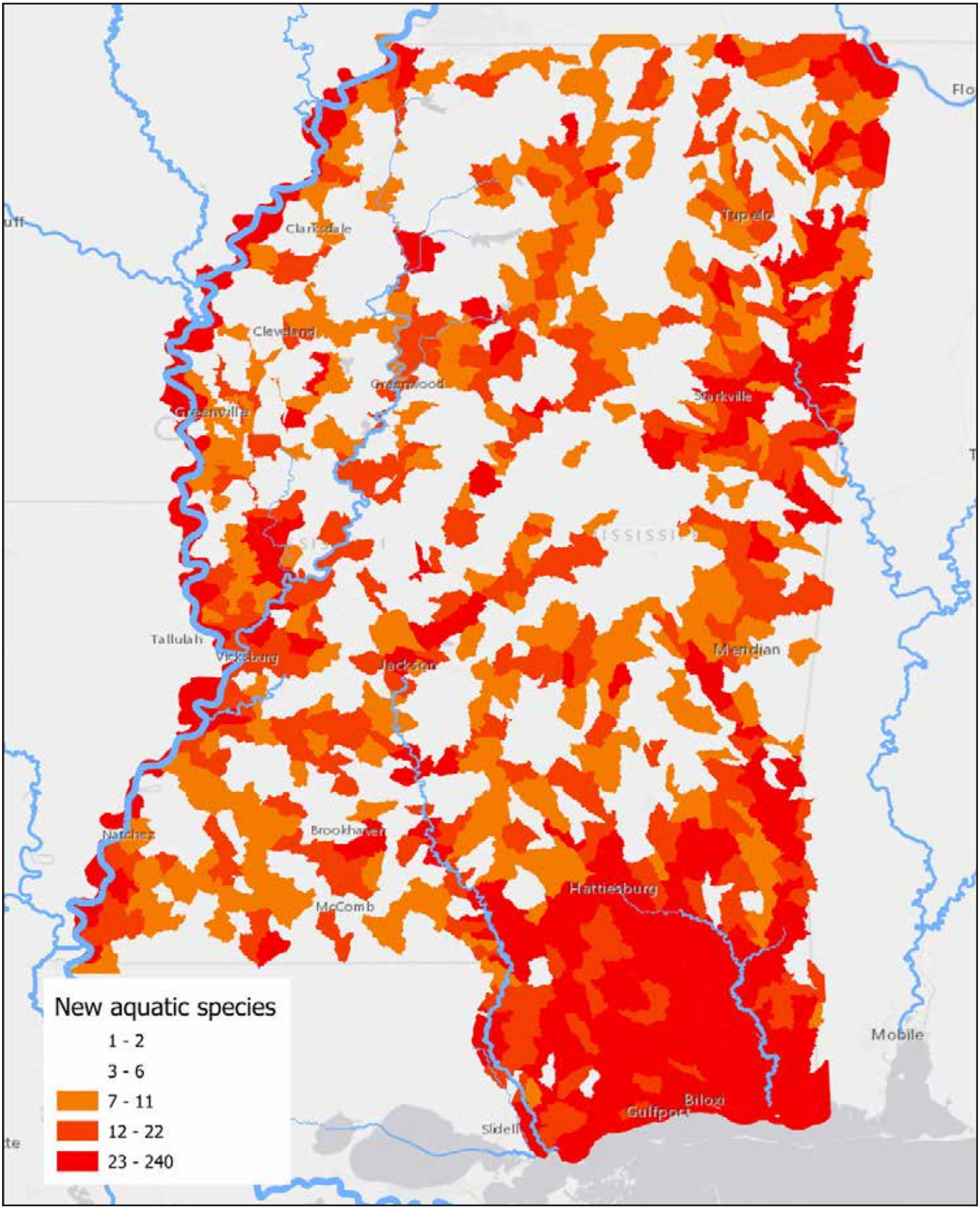


Figure 2.9. Species richness of aquatic RSGCN that are considered very high or high concern. Species richness is represented using available the weighted species score by HUC 12

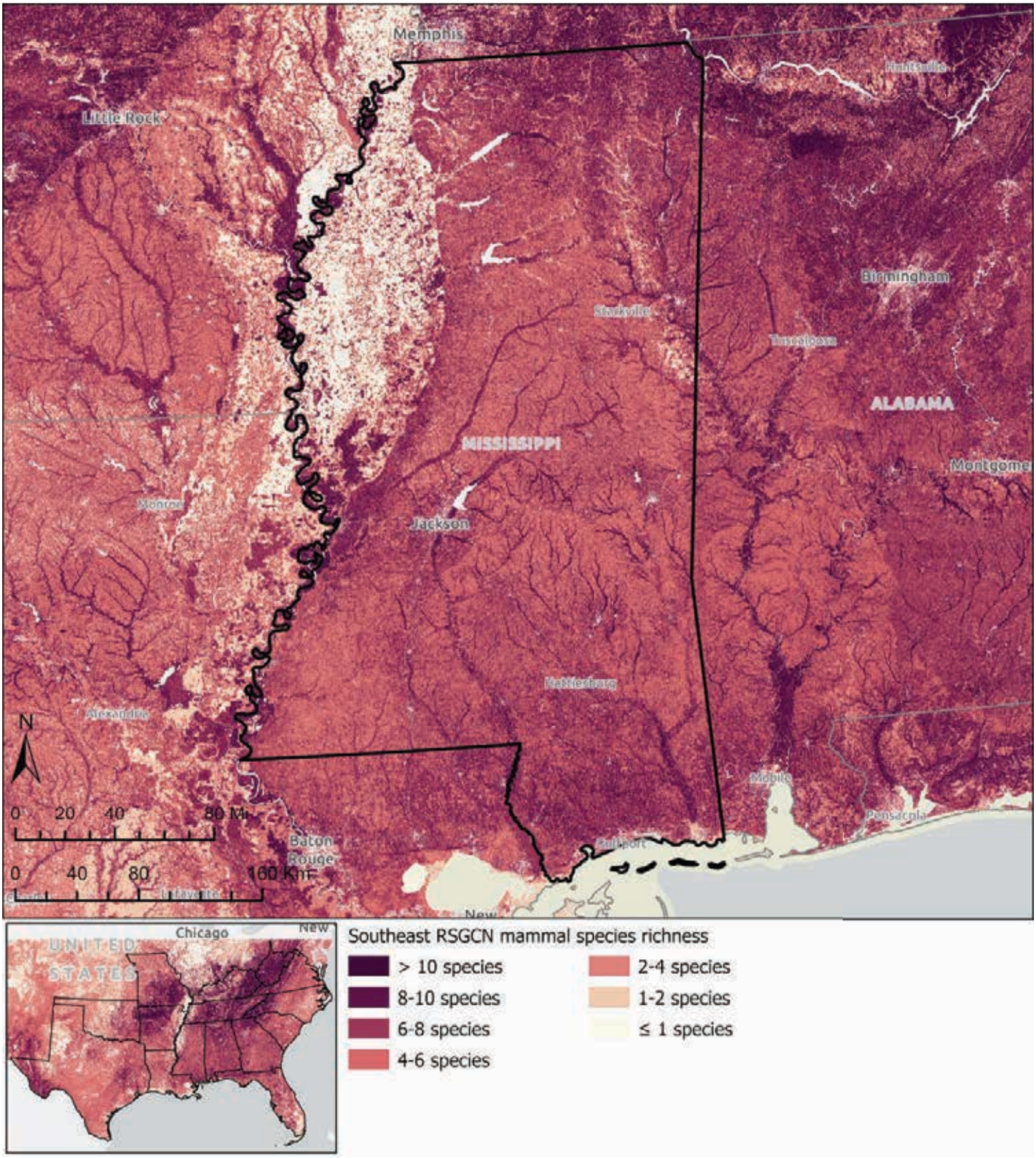


Figure 2.10. Species richness of mammal RSGCN that are considered very high or high concern. Species richness is represented using available GAP species-habitat models (using 2016 landcover) for 33 of the 37 mammal RSGCN in the very high or high concern category.

Southeast Plant RSGCN

The Southeast is home to more than 11,000 native plant species, 30% of which are endemic (i.e., found only in the Southeast). In 2023 the Southeast Plant Conservation Alliance (PCA) released the first plant RSGCN list in the nation. The PCA worked with a broad coalition of partners including the Atlanta Botanical Garden, NatureServe, and Terwilliger Consulting, and received funding from the U.S. Fish and Wildlife Service. This list narrows down the vast number of plants native to the Southeast to 1,824 species that are a regional conservation priority based on criteria such as rarity, threats, and needed conservation actions. The plant RSGCN list complements the Southeastern animals RSGCN list developed in 2019 to create a more complete picture of the region's exceptional biodiversity. The report, "Southeastern Plants Regional Species of Greatest Conservation Need (Radcliffe et al. 2023)," and the dataset of plant RSGCN are available online at https://www.se-pca.org/southeastern-plants-rsgcn.

To develop a pool of potential species to draw from, the PCA worked with NatureServe to compile a list of more than 10,000 vascular plants native to any of the SEAFWA considering each species' G-Rank (global rarity), S-Rank (state rarity) and endemism. Unfortunately, due to data limitations, plants native to Puerto Rico and the U.S. Virgin Islands could not be included. The full list received extensive review from botany experts, a technical team composed of representatives from each state, and NatureServe. Based on partner feedback, the technical team assigned each species a level of conservation concern rating ranging from low to very high or "manual review needed". Any plant scoring moderate or above was ultimately considered an RSGCN. After cleaning the data to remove redundancies, the complete Southeastern plant list evaluated 9,271 species and prioritized 1,824 as RSGCN. Southeast endemic species make up 72% of the plant RSGCN list.

The RSGCN plant list was used as a foundation for the development of a state list of plant SGCN for this 2025 update of the MS SWAP.

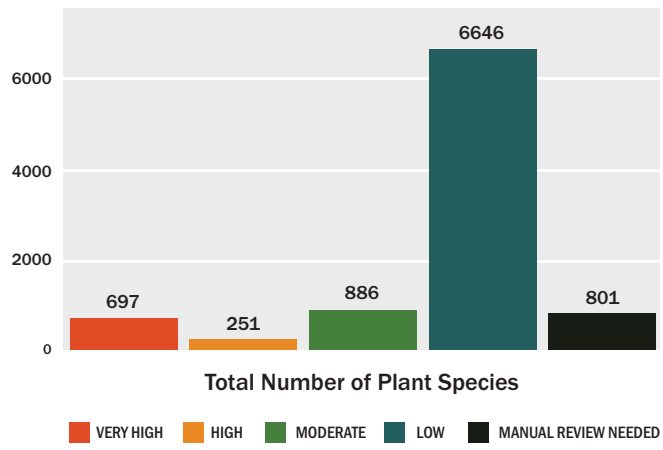


Figure 2.11. Plants with a very high, high, or moderate level of conservation concern are considered plant RSGCN.



Illustration of Mississippi Quillwort
Credit: Sam Biebers

Searching for MISSISSIPPI QUILLWORT

Mississippi Quillwort (*Isoetes mississippiensis*) was described in 2016 from collections of a plant discovered in 1996 by Steve Leonard during his surveys for Louisiana Quillwort in South Mississippi.

It differed from known quillworts by having very long and numerous sporophylls bearing megaspores with a smooth surface rather than the irregularly reticulate texture of the Louisiana Quillwort. Only two populations have been found in tributaries of the Pearl River: Moody Branch and Lotts Creek in Pearl River County, and these constitute the only known populations in the world

The leaves (sporophylls) of quillworts are grass-like, bright green, and spirally arranged. The leaves may grow to 40 cm. long, with the spore-bearing portion at the base of leaves, a feature of the quillworts. The velum (a covering over the spores) is incomplete, protecting only one-third of the sporangium wall. The megaspores are white and globose and the microspores are fusiform and pale brown when massed.

Field work is required to find more populations, focusing particularly on the Old River Wildlife Management Area, the Pearl River Wildlife Management Area of Louisiana, and the Bogue Chitto National Wildlife Refuge.

The Mississippi Department of Transportation manages the right-of-way where a population occurs along Mississippi Highway 43. Pearl River County manages the right-of-way on Walkiah Bluff Road. A management plan should be prepared to ensure the continuation of these populations.

USNVC groups serving as primary habitat	Number of plant RSGCN
Wet-Mesic Longleaf Pine Open Woodland	**80**
Xeric Longleaf Pine Woodland	**43**
South Florida Slash Pine Rockland	**29**
Central Interior Alkaline Open Glade & Barrens	**29**
Appalachian - South-central Interior Mesic Forest	**28**
Tamaulipan Dry Mesquite & Thornscrub	**28**
South Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie	**22**
Blackland & Coastal Tallgrass Prairie	**21**
Florida Xeric Scrub	**18**
South Atlantic & Gulf Coastal Dune & Grassland	**17**
Atlantic & Gulf Coastal Plain Seep	**16**
Southern Coastal Plain Mixed Evergreen Swamp	**13**
Southern Mesic Beech - Oak - Mixed Deciduous Forest	**12**
Southern Appalachian Rocky Outcrop	**11**
Southeastern Coastal Plain Barrens & Glade	**9**
Central Interior-Appalachian Riverscour Barrens & Prairie	**9**
Caribbean Hardwood Hammock & Coastal Strand Forest	**9**
Coastal Live Oak - Hickory - Palmetto Forest	**9**
Appalachian Mafic Barrens	**8**
Central & Southern Appalachian Seep	**8**

Table 2.9. The top 15 U.S. National Vegetation Group Classification (USNVC) Assignments for all Southeast plant RSGCN, showing longleaf ecosystems supporting this highest number of priority plants.

To better understand shared plant needs and threats at the ecosystem level, the PCA cross-walked each plant RSGCN to its primary habitats using U.S. National Vegetation Classification (USNVC) "Groups". The USNVC provides a widely used, standardized system of classifying vegetation types and habitats. The distribution of RSGCN across ecosystems demonstrates their diversity and broad geographic extent. A total of 31 USNVC Groups contained at least 10 plant RSGCN, indicating that many of the region's ecosystems support plant species of conservation need. As many of these same habitats tend to provide crucial habitat for animal RSGCN as well, conserving these ecosystems can safeguard regional biodiversity more broadly.

USNVC groups serving as primary habitat	Number of plant RSGCN
Wet-Mesic Longleaf Pine Open Woodland (G190)	**21**
South Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie (G915)	**6**
Appalachian - South-central Interior Mesic Forest (G020)	**5**
Xeric Longleaf Pine Woodland (G154)	**4**
Southern Mesic Beech - Oak - Mixed Deciduous Forest (G166)	**4**
Southeastern Coastal Pocosin & Shrub Bog (G186)	**3**
South Atlantic & Gulf Coastal Plain River & Basin Freshwater Marsh & Wet Meadow (G188)	**3**
Southern Coastal Plain Mixed Evergreen Swamp (G037)	**2**
Southern Ash - Elm - Willow Floodplain Forest (G759)	**2**
Southern Mesic Beech - Magnolia - Oak Forest (G007)	**1**

Table 2.10. The USNVC groups serving as primary habitat that support the most plant RSGCN within Mississippi (Very high and high concern only)

By far the USNVC group that supports the most plant RSGCN within the State is *wet-mesic longleaf open woodland*. These wet open woodlands occur within coastal plains and include wet pine flatwoods and wet pine savannas (NatureServe Explorer, 2024). These habitats are dominated by longleaf pine with grassy understories (NatureServe Explorer, 2024).

Mississippi's stewardship of animal RSGCN

About 249 animal RSGCN occur within Mississippi. The most common RSGCN taxa represented within the State are fish (including diadromous and marine fish) (n=68), birds (n=57) and reptiles (n=40) (Figure 2.11).

While Mississippi has shared stewardship with many RSGCN, it has the most in common with Alabama, Louisiana, Georgia and Florida. By identifying shared RSGCN, Mississippi can prioritize conservation actions that not only provide benefits within its boundaries but also support a regional landscape. For example, conservation strategies aimed at improving aquatic health and connectivity in Mississippi can contribute to Alabama's mussel and fish populations and benefit the wider region as well

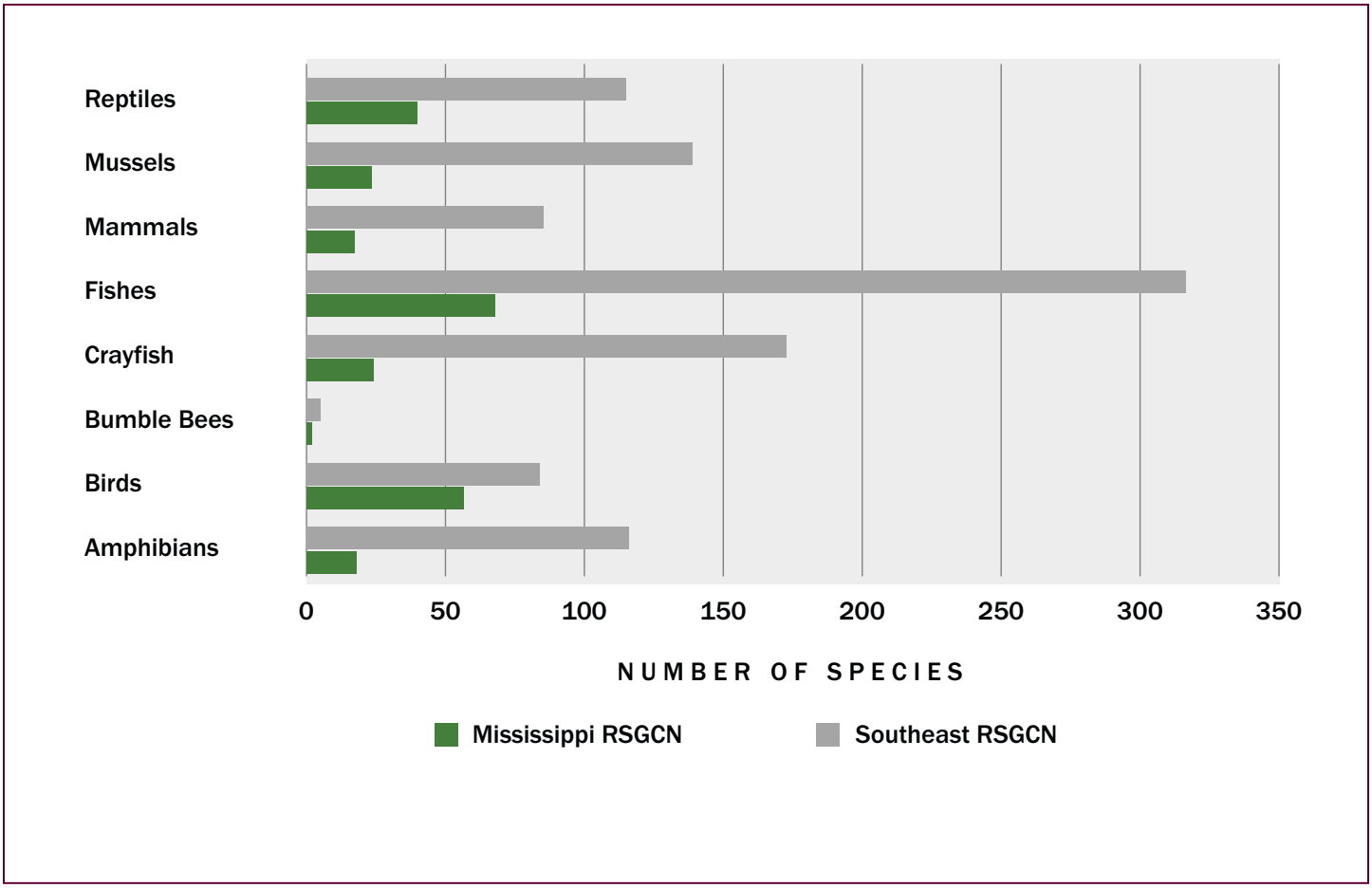


Figure 2.12. The number of Southeast animal RSGCN that occur in Mississippi compared to overall region.

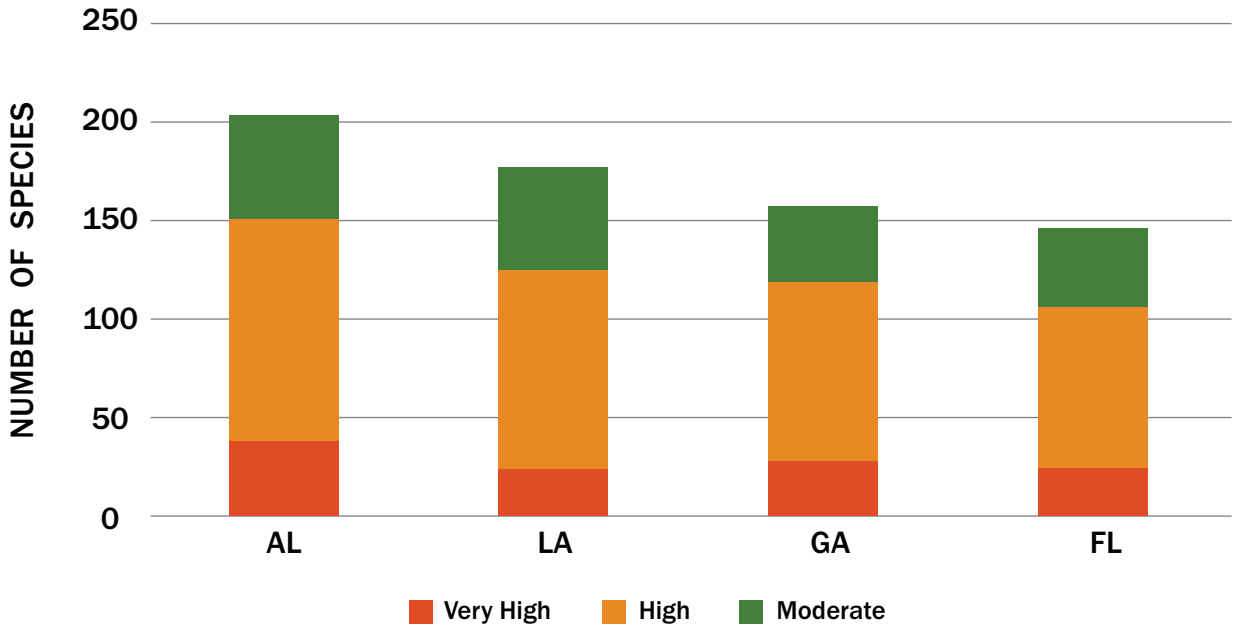


Figure 2.13. Mississippi shares the most Animal RSGCN in common with Alabama, Louisiana, Georgia, and Florida.

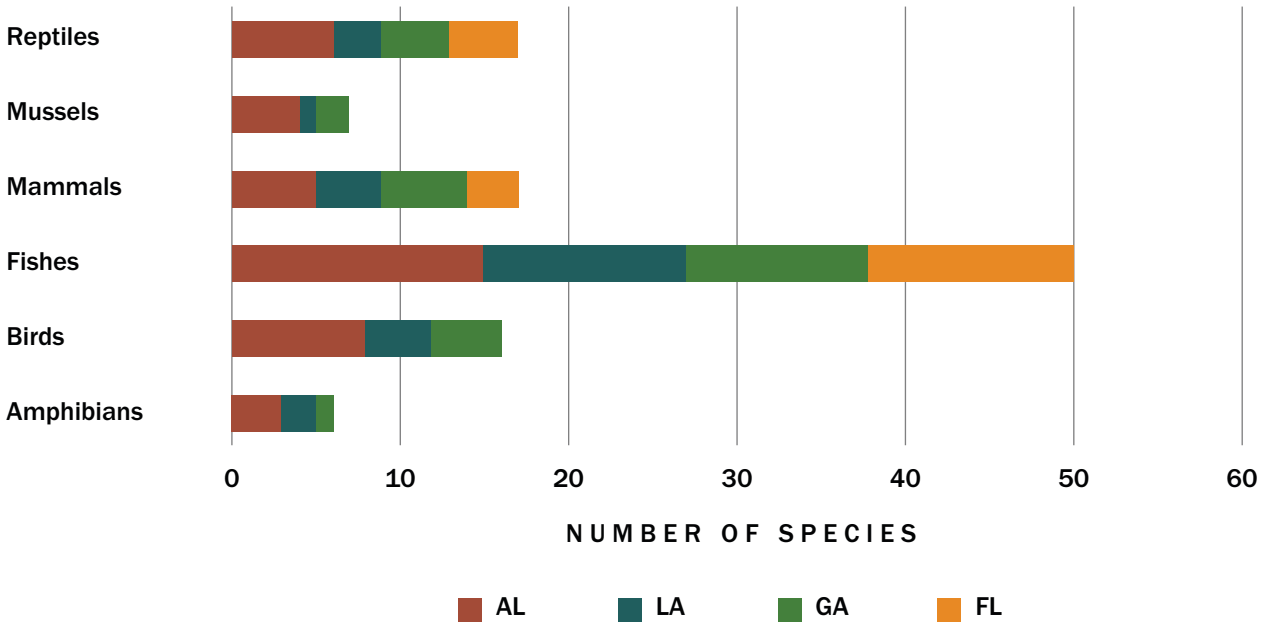


Figure 2.14. Number of animal RSGCN that occur within Mississippi that are considered "Very High Concern" that occur within the states that Mississippi has the most RSGCN in common.

By identifying shared RSGCN, Mississippi can prioritize actions that not only provide local benefits but support a regional landscape. For example, Mississippi can identify conservation strategies aimed at improving conditions contributing to marine fish habitat, as they share many of these RSGCN species in common with Alabama, Louisiana, Georgia, and Florida in particular. For instance, many of the fish species that are considered "very high concern" are marine fishes.

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Mississippi's Resiliency in a Changing World

Many factors impacting the Southeast regional landscape are often too pervasive for any one agency to address independently, like sea-level rise, changing weather patterns, and habitat loss. While Mississippi could evaluate the impact of landscape level stressors like land use change within its own boundaries, management efforts could also be coordinated on a regional scale.

The Association of Fish and Wildlife Agencies' voluntary guidance for states to incorporate adaptation into SWAPs and formal encouragement from the U.S. Fish and Wildlife Service (USFWS) in 2012 provided recommended steps for developing and implementing adaptation strategies. Much of the guidance includes taking a broader, regional approach to incorporating adaptation into SWAPs.

Using available environmental data and information that assumes a specific global warming level (GWL) or shared socioeconomic pathway (SSP) allows land managers to consider possible future conditions. Figure 2.14 demonstrates how and when different GWLs can be reached depending on SSPs.

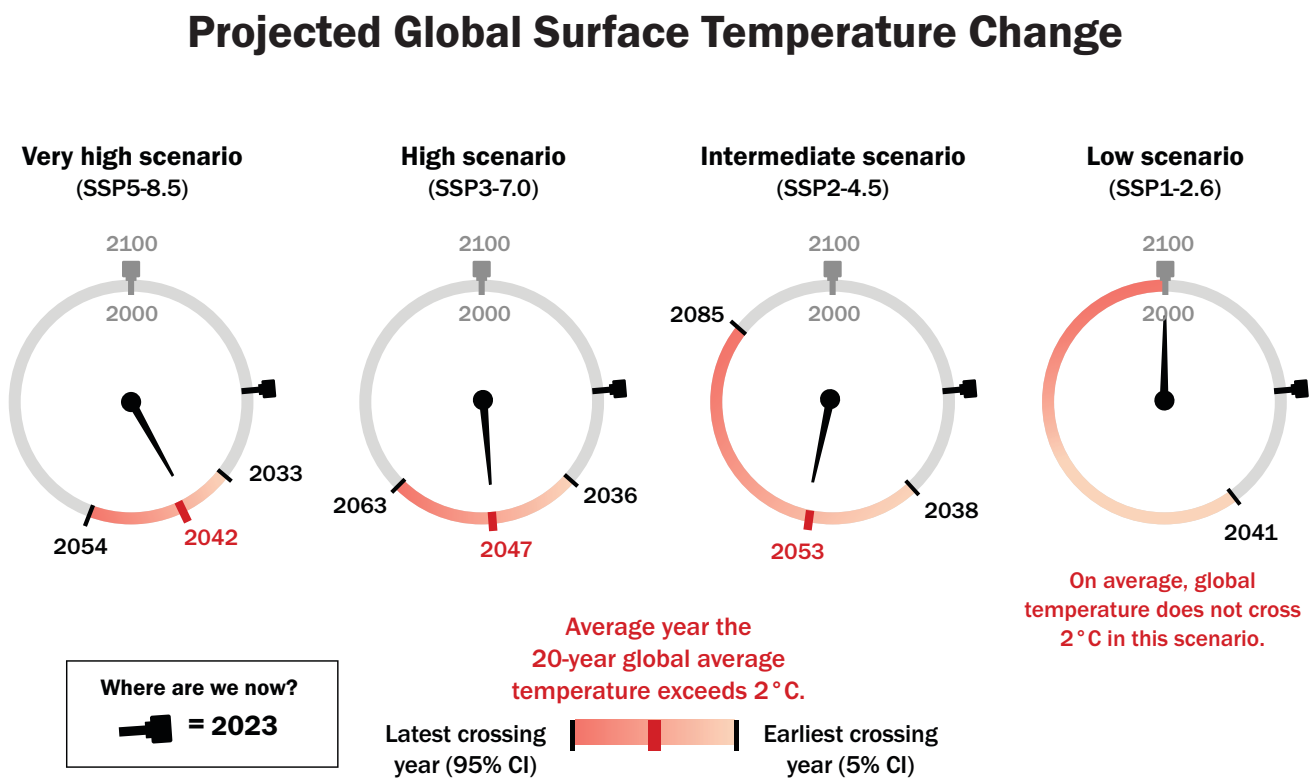


Figure 2.15. This figure represents an example of how various scenarios can be linked to specific GWLs and different timescales and is taken from the NCA5, Figure 11 (Marvel et al. 2023). In this example, warming projections were assessed for four future scenarios, with projected years at which the 2°C (3.6°F) global warming level would be reached. For example, under a very high scenario (SSP5-8.5), models project reaching 2°C between 2033 and 2054, with an average estimate of 2042. Under a low scenario (SSP1-2.6), the 5% CI (confidence interval) range begins in 2041, but the average projection shows that warming would actually stay below 2°C.

For the remainder of this chapter, existing data collections of both historical climatology and future projections were summarized by EPA Ecoregion Level III, including the creation of maps derived from spatial data in the NCA5 Interactive Atlas (Hoffman et al., 2023). Information pertaining to sea-level rise, as well as easy-to-understand state-level summaries, are available from the National Oceanic and Atmospheric Administration (NOAA) via their Sea-level Rise Technical Reports and Sea-level Rise Viewer Tool (Runkle and Kunkel et al., 2022; Sweet et al., 2022).

In the Southeast, changing environmental conditions may have pervasive impacts on natural habitats, ecological processes, and ecosystem services and regional efforts to mitigate or adapt to these impacts could be extremely important(Crimmins et al.,, 2023). Recent assessments indicate that current trends will likely continue such as increasing frequency, intensity, and duration of heatwaves, increasing wildfire risk, and rising sea levels (Crimmins et al., 2024). The most pertinent projected changes include extreme heat, extreme precipitation events, drought, sea-level rise, and tropical cyclones, as well as decreases in the intensity and frequency of cold-season events. Despite the significant threat changing environmental conditions pose to the landscape, understanding the tools and resources available to address climate change and develop effective strategies is difficult. As part of the survey administered to SWAP coordinators in 2021, the majority of SEAFWA states/territories reported integrating adaptation as one of the most challenging aspects of the upcoming SWAP revision (SECAS, 2021). Anecdotally, some SWAP coordinators noted that it is difficult to discern what tools are available, decide which tool is the right one to use, and choose the appropriate scale and timeframe when using tools (SECAS, 2021).

Mississippi and changing environmental conditions

Like the rest of the Southeast, Mississippi is predicted to experience a number of impacts from changing environmental conditions, though the magnitude of change often varies by ecoregion, scenario, and future timeframe (Figure 2.14). Generally, these impacts include hotter summers, warmer winters, more frequent extreme precipitation events, and rising sea levels (Hoffman et al., 2023).

Hotter days, warmer nights, and more intense droughts

Temperatures in Mississippi have not risen much since the beginning of the 20th century - one of the few areas globally to experience no net warming, however, recent years have been very warm, and the warmest consecutive 5-year interval was the most recent, 2016–2020 (Runkle et al., 2022). Table 2.11 summarizes historical observed and future projections of extremely hot days (maximum temperatures ≥95°F) under different SSP scenarios for Mississippi ecoregions. Another way to look at future projections is through the lens of GWLs - if the earth surpasses a GWL of 1.5 (2.7°F) or 2 (3.6°F) for a sustained period of time, the number of extremely hot days may increase across the state, compared to the past 30 years (1991-2020) (Figure 2.15).

Estimates of when these GWL might be reached depend on the shared socioeconomic pathway (Figure 1). Overall, the number of extremely hot days (maximum temperatures ≥95°F) may increase across Mississippi, with the most pronounced increases projected to occur in the eastern portion of the state, though the magnitude of change often varies greatly by GWL or SSP and location within the state (Hoffman et al., 2023).If the warming trends continue, future heat waves are likely to be more intense. Heatwaves in the U.S. have become hotter, more frequent, larger, and longer lasting in recent decades and are projected to continue, which has implications for drought in the region (Hoffman et al., 2023).

Higher temperatures throughout the year could increase the rate of soil moisture loss (i.e., evapotranspiration) during dry spells, which may lead to more intense droughts (Runkle et al., 2022). In other words, more days of extreme heat can exacerbate drought conditions. The Southeast has, in general, received more precipitation in the fall seasons but experienced drier conditions in spring and summer (Hoffman et al., 2023). There are no robust trends in total annual precipitation for Mississippi, meaning future changes in average precipitation are uncertain, but the frequency and intensity of extreme rainfall is projected to increase (Runkle et al., 2022; Hoffman et al., 2023). Any increases in temperature could cause more rapid loss of soil moisture during consecutive dry days (i.e., consecutive days without rainfall), increasing the intensity of naturally occurring droughts in the future (Runkle et al., 2022). Although hydrological droughts have become less frequent in eastern regions of the country since the 19th century, higher increases in evapotranspiration (the processes by which water is transferred to the atmosphere from Earth's surface) have generally made the Southeast more drought-prone than the Northeast (Hoffman et al., 2023). A recent example of extreme drought for the state was when excessive heat and drought parched the Mississippi River in the summer and early fall of 2023 resulting in extreme and exceptional drought and low water levels for the entire southern half of Mississippi (Cassidy, 2023). However, future changes in the annual number of consecutive extreme dry days in Mississippi are fortunately not projected to increase substantially: by 1% to 5% increase by 2025-2049, and by 1% to 6% increase by 2050-2074 depending on ecoregions and SSP (Alder, 2024).

Additionally, as low temperatures rise, some species may also be impacted. Warmer nights can have a profound impact on animal and plant health because temperatures are generally lower at night, normally allowing the environment to cool down. Overall, the number of extremely cold days (days with low temperatures of ≤ 32°F) may decrease across Mississippi, with the most pronounced decreases occurring throughout the northern part of the state, but the magnitude of change often varies greatly by SSP and location within the state (Table 2.12). If the Earth surpasses a GWL of 1.5 (°F) or 3 (°F) for a sustained period of time, the number of extremely cold days may decrease across the state, compared to the past 30 years (1991-2020) (Figure 2.16). Estimates of when these GWLs might be reached depend on the SSP and are depicted in Figure 2.14.

Table 2.11 - Historical & Future Projections: Number of Days with Maximum Temperatures ≥ 95°F.

SSP	Observed Historical: 1950-2014	2025-2049 projections (percent change from historical simulation)	2050-2074 projections (percent change from historical simulation)
Mississippi Alluvial Plain Ecoregion			
Low (SSP2-4.5)	18 days/year	57 days/year (164%↑)	73 days/year (238%↑)
Moderate (SSP3-7.0)		54 days/year (152%↑)	76 days/year (254%↑)
High (SSP5-8.5)		59 days/year (173%↑)	88 days/year (303%↑)
Mississippi Valley Loess Plains Ecoregion			
Low (SSP2-4.5)	18 days/year	48 days/year (222%↑)	66 days/year (344%↑)
Moderate (SSP3-7.0)		45 days/year (200%↑)	70 days/year (369%↑)
High (SSP5-8.5)		51 days/year (239%↑)	82 days/year (446%↑)
Southeastern Plains Ecoregion			
Low (SSP2-4.5)	18 days/year	46 days/year (200%↑)	63 days/year (310%↑)
Moderate (SSP3-7.0)		43 days/year (183%↑)	67 days/year (335%↑)
High (SSP5-8.5)		49 days/year (216%↑)	79 days/year (412%↑)
Southern Coastal Plain Ecoregion			
Low (SSP2-4.5)	19 days/year	28 days/year (275%↑)	45 days/year (494%↑)
Moderate (SSP3-7.0)		27 days/year (256%↑)	49 days/year (555%↑)
High (SSP5-8.5)		32 days/year (325%↑)	63 days/year (739%↑)

Table 2.11. Approximate observed historical and the future projected number of extremely hot days per year (i.e., days with high temperatures of at least 95 °F) by EPA Level III ecoregions within Mississippi. The table summarizes projected future number of days for low, moderate, and high Shared Socioeconomic Pathways (SSPs) using CMIP6-LOCA2 threshold and extreme event metric projections (Alder, 2024) summarized at the ecoregion level. For each future time period, numbers in parentheses represent the percent change between the models' future projections and the models' historical simulations. Observed historical summaries were generated with data from Pierce et al. (2021).

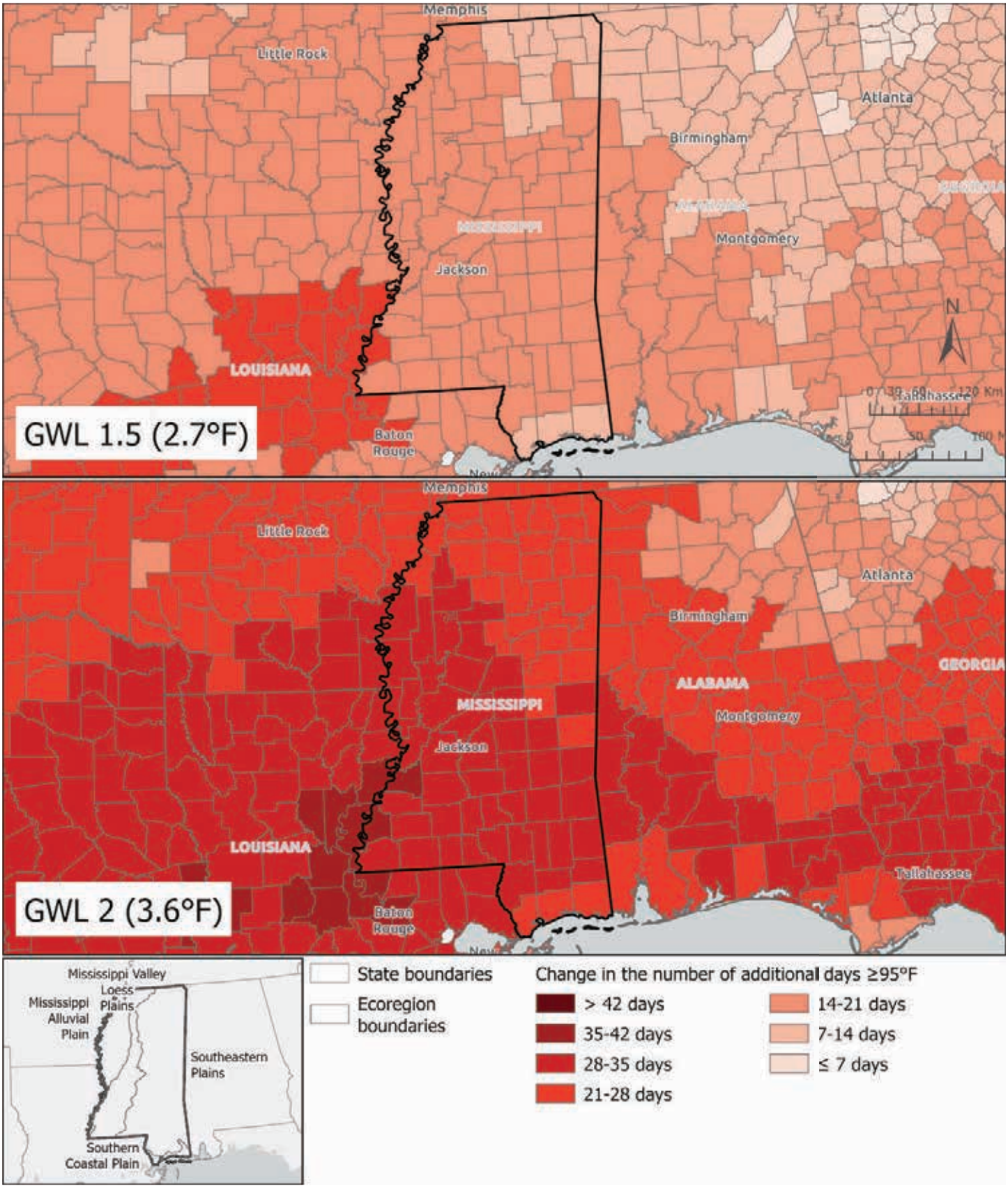


Figure 2.16. Projected future changes in the number of days of Extreme Maximum Temperatures (threshold temperature of 95°F) compared to preindustrial levels (1851-1900) in Mississippi based on GWL 1.5 (global temperature increase of 2.7°F) and GWL 2 (global temperature.

Table 2.12 - Historical & Future Projections: Number of Days with Minimum Temperatures ≤ 32°F

SSP	Observed Historical: 1950-2014	2025-2049 projections (percent change from historical simulation)	2050-2074 projections (percent change from historical simulation)
Mississippi Alluvial Plain Ecoregion			
Low (SSP2-4.5)	45 days/year	31 days/year (32%↓)	27 days/year (43%↓)
Moderate (SSP3-7.0)		32 days/year (30%↓)	25 days/year (46%↓)
High (SSP5-8.5)		30 days/year (35%↓)	22 days/year (52%↓)
Mississippi Valley Loess Plains Ecoregion			
Low (SSP2-4.5)	47 days/year	33 days/year (31%↓)	28 days/year (41%↓)
Moderate (SSP3-7.0)		34 days/year (29%↓)	27 days/year (44%↓)
High (SSP5-8.5)		31 days/year (34%↓)	24 days/year (50%↓)
Southeastern Plains Ecoregion			
Low (SSP2-4.5)	52 days/year	37 days/year (29%↓)	32 days/year (38%↓)
Moderate (SSP3-7.0)		38 days/year (27%↓)	31 days/year (41%↓)
High (SSP5-8.5)		36 days/year (31%↓)	27 days/year (47%↓)
Southern Coastal Plain Ecoregion			
Low (SSP2-4.5)	19 days/year	12 days/year (41%↓)	10 days/year (50%↓)
Moderate (SSP3-7.0)		12 days/year (36%↓)	9 days/year (54%↓)
High (SSP5-8.5)		11 days/year (42%↓)	8 days/year (60%↓)

Table 2.12. Approximate observed historical and the future projected number of extremely cold days per year (i.e., days with low temperatures of at least 32°F) by EPA Level III ecoregions within Mississippi. The table summarizes projected future number of days for low, moderate, and high Shared Socioeconomic Pathways(SSP) using CMIP6-LOCA2 threshold and extreme event metric projections (Alder, 2024) summarized at the ecoregion level. For each future time period, numbers in parentheses represent the percent change between the models' future projections and the models' historical simulations. Observed historical summaries were generated with data from Pierce et al. (2021).

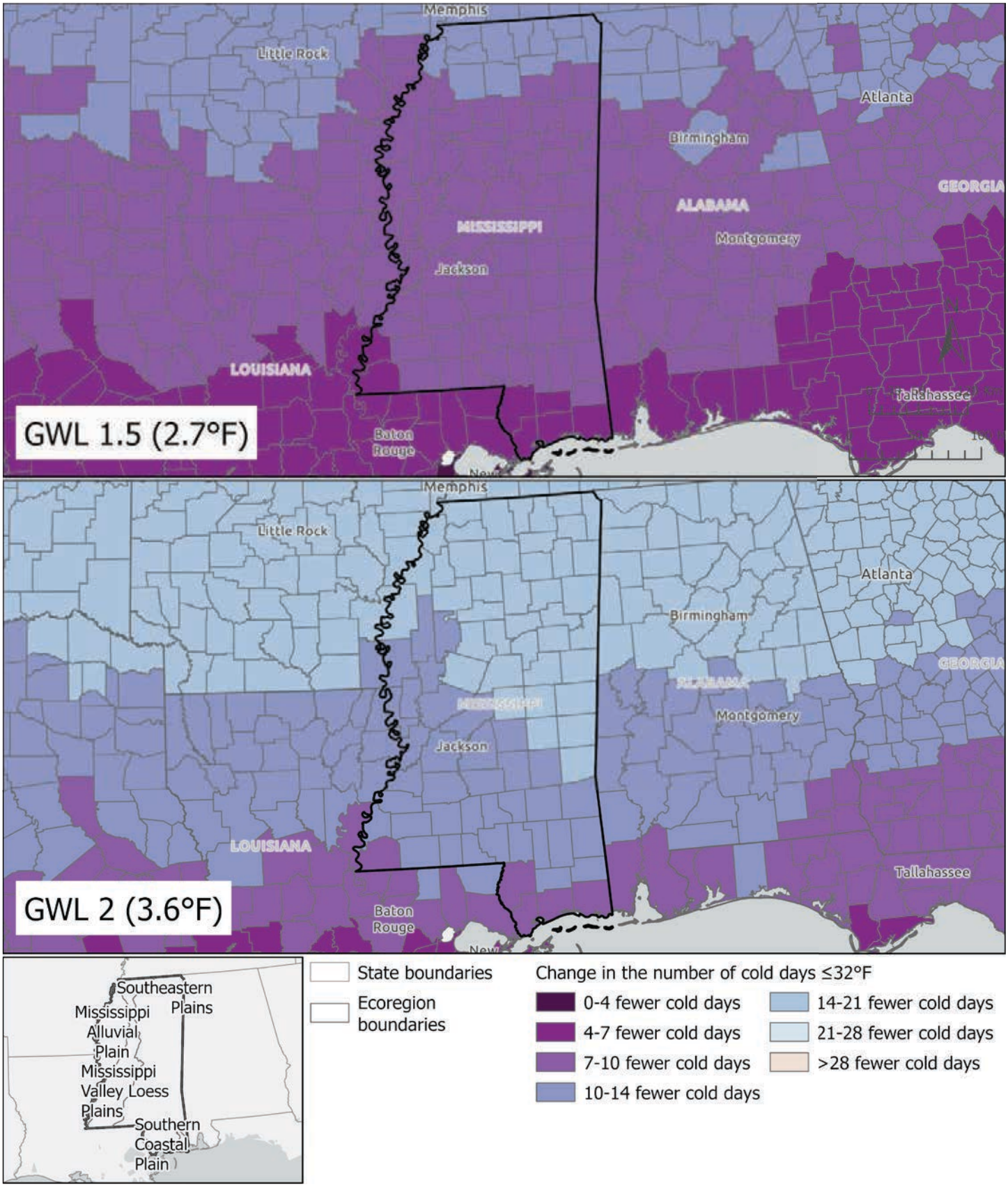


Figure 2.17. Change in days with minimum temperatures that reach or drop below freezing (32°F) in Mississippi compared to preindustrial levels (1851-1900) based on GWL 1.5C (global temperature increase of 2.7°F) and GWL 3C (global temperature increase of 2.7°F). Figure created from data in the "NCA5 Interactive Atlas

Extreme weather events and altered flows

Other potential climate hazards may impact Mississippi, such as extreme precipitation events, which are expected to increase in the future and often manifest as extreme weather and increased flooding (Wong et al., 2014). Future projections suggest that the Southeast as a region may get wetter overall, with increases to some seasonal averages and the annual average (Hoffman et al., 2023). Also, extreme precipitation amounts may increase across the Southeast, driven mainly by more extreme events (e.g., precipitation of 3 or more inches in 24 hours) at higher levels of global warming (Hoffman et al., 2023). Extreme precipitation events are expected to increase for Mississippi in the future and often manifest as extreme weather and increased flooding due to compounded affects from high tides or storm surges that inundates low-lying areas on the coast (Wong et al., 2014; Runkle et al., 2022).Table 2.13 summarizes approximate values for future projected changes of extreme rainfall under different SSPs for Mississippi ecoregions; while Figure 2.17 shows the projected future percent change in the number of days per year with extreme precipitation (e.g., days with the top 1% of rainfall events) in Mississippi at GWL 1.5 (2.7°F warming) and GWL 2 (3.6°F warming) compared to the last 30 years. Estimates of when these GWL might be reached depend on the SSP and are depicted in Figure 2.14. While all ecoregions within Mississippi may experience changes in days with extreme precipitation, the northern part of the state, in the Southwestern Appalachians and Piedmont Ecoregions, is projected to experience the greatest percent change by GWL 2 (Figure 2.17; Table 2.13).

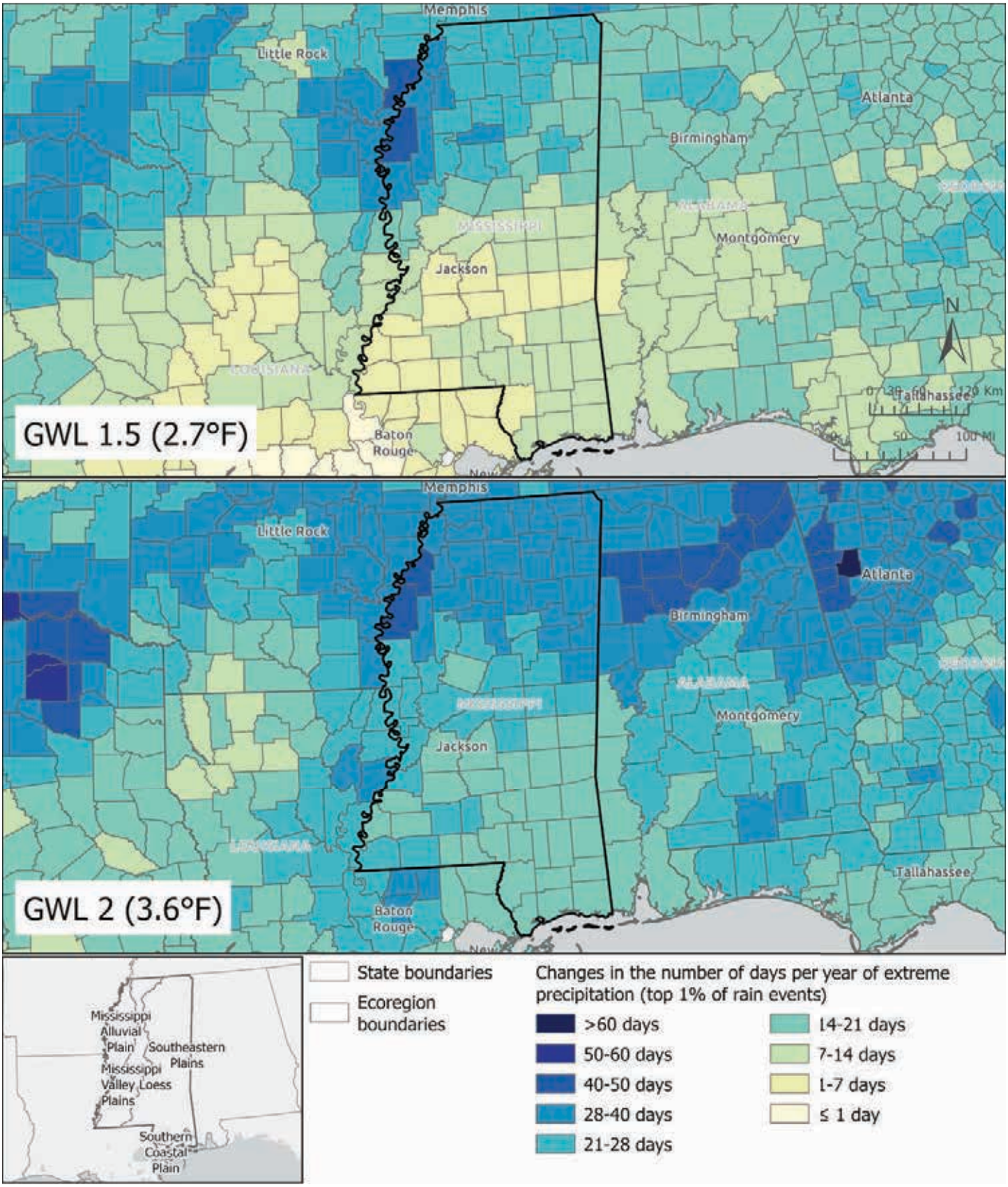


Figure 2.18. Future projected changes in the number of days per year of extreme precipitation (top 1% of rain events) in Mississippi counties compared to preindustrial levels (1851-1900) based on GWL 1.5 (global temperature increase of 2.7 °F) and on GWL 2 (global temperature increase of 3.6 °F). Figure created from data in the "'NCA5 Interactive AtlasAtlas of the 5th National Climate Assessment" web tool.

Table 2.13 - Historical & Future Projections: Number of Days with Extreme Rainfall

SSP	Observed Historical: 1950-2014	2025-2049 projections (percent change from historical simulation)	2050-2074 projections (percent change from historical simulation)
Mississippi Alluvial Plain Ecoregion			
Low (SSP2-4.5)	3.5 days/year	28% ↑	35% ↑
Moderate (SSP3-7.0)		32% ↑	39% ↑
High (SSP5-8.5)		30% ↑	50% ↑
Mississippi Valley Loess Plains Ecoregion			
Low (SSP2-4.5)	3.6 days/year	23% ↑	27% ↑
Moderate (SSP3-7.0)		29% ↑	32% ↑
High (SSP5-8.5)		23% ↑	40% ↑
Southeastern Plains Ecoregion			
Low (SSP2-4.5)	3.5 days/year	25% ↑	31% ↑
Moderate (SSP3-7.0)		32% ↑	36% ↑
High (SSP5-8.5)		25% ↑	40% ↑
Southern Coastal Plain Ecoregion			
Low (SSP2-4.5)	4 days/year	15% ↑	25% ↑
Moderate (SSP3-7.0)		19% ↑	22% ↑
High (SSP5-8.5)		17% ↑	26% ↑

Table 2.13. Approximate observed historical and future projected number of days per year with extreme precipitation events (in the top 1% of historical rainfall events) for EPA Level III ecoregions within Mississippi. The table summarizes projected future number of days for low, moderate, and high Shared Socioeconomic Pathways (SSP) using CMIP6-LOCA2 threshold and extreme event metric projections (Alder, 2024) summarized at the ecoregion. For each future time period, numbers represent the percent change between the models' future projections and the models' historical simulations. Observed historical summaries were generated with data from Pierce et al. (2021).

In the Southeast coastal region, extreme weather events are generally characterized by hurricanes and storms that may likely increase in frequency and magnitude (USGCRP, 2018). Tropical storms have been responsible for some of the Southeast's biggest and most damaging flooding events since 2018 and hurricane-associated storm intensity and rainfall rates are projected to increase (Hoffman et al., 2023). The likelihood of hurricanes slowing down or stalling near the Atlantic coastline and the Gulf has increased, which exacerbates the rainfall-related flooding threats from these storm systems (Hoffman et al., 2023). Changing environmental conditions are expected to strengthen North Atlantic hurricanes to at least Category 4 intensity and to undergo rapid intensification, as well as potentially increase the likelihood of storms making landfall (Hoffman et al., 2023). On average (1900–2020), Mississippi is directly impacted by a hurricane about once every 6 years (Runkle et al., 2022). Hurricanes bring strong winds that can spawn tornadoes and cause widespread wind damage besides flooding (Coleman et al., 2024).

Tornadoes and hurricanes are two of the deadliest weather hazards in Mississippi. Between 1895 and 2019, an estimated 43 tornadoes, typically occurring in the spring and fall, touched down in Mississippi each year (Runkle et al., 2022).Extreme rainfall events also contribute to increases in river and stream flooding across the landscape, which have different effects across different ecoregions and topography. Flooding and large amounts of surface water runoff from extreme precipitation events and tropical storms could negatively impact wildlife including increased sediment and contaminated floodwater draining into waterways, flooding of animal nests, and erosion and more (Dolloff et al., 1994). Nuisance flooding events in Mississippi may occur more frequently as global and local sea levels continue to rise in combination with increased extreme precipitation events (Runkle et al., 2022).

The Southeast has the highest aquatic diversity of any temperate system; however, the ecological relationships and life histories of many of the endemic species are not yet well understood within the constraints of changing environmental conditions (Ingram et al., 2013). Impacts on rare species of fish and mussels are of particular concern in the context of changing environmental conditions The combined effects of warming temperatures and changes in precipitation may alter overall hydrology including increased evapotranspiration and reduced stream base flow. Impacts of changing environmental conditions on riverine and wetland ecosystems are also predicted to include increased water temperatures, which dictate many species ranges and exacerbate low dissolved oxygen conditions (Ingram et al., 2013). In general, temperature regimes of freshwater ecosystems are projected to increase in parallel with shifts in air temperatures, which in turn may alter plant and animal communities including migratory birds (Princé and Zuckerberg, 2015).

Sea-level rise

Beyond potential changes in temperature and precipitation, sea-level rise may also impact Mississippi. Sea level along the Mississippi coast has risen at the rate of 1.6 inches per decade, faster than the global rate (Runkle et al., 2022). Coastal and low-lying areas may experience a myriad of changes due to sea-level rise like flooding, erosion, and submergence (Wong et. al. 2014). Due to the magnitude of sea-level rise projected throughout the 21st century and beyond—coupled with subsidence—coastal systems and low-lying areas may increasingly experience adverse impacts such as submergence, flooding, and erosion (Wong et. al., 2014). Historically, coastal ecosystems in the region have adjusted to sea-level rise by vertical (accretion) and horizontal movement across the landscape. As sea levels continue to rise, some coastal ecosystems may be submerged and converted to open water, and saltwater intrusion may allow salt-tolerant coastal ecosystems to move inland at the expense of upslope and upriver ecosystems (Wong et. al., 2014).

The National Oceanic and Atmospheric Administration (NOAA) 2022 Sea Level Rise Technical Report, *Global and Regional Sea Level Rise Scenarios for the United States*, provides the most recent projections available to all U.S. coastal areas out to the year 2150 (Sweet et. al 2022). The following tables show the predicted extent of flooding for coastal Mississippi at the average highest daily tide due to sea-level rise (Table 2.14) and the projected amount of sea-level rise by decade under various emissions scenarios (Table 2.15). Figure 2.18 also provides a statewide map of areas likely to experience flooding at high tide based on each foot of sea-level rise above current levels.

Feet of Sea-Level Rise	Acres	Percent of Area
0 feet	535,278	1.7%
1 foot	572,401	1.8%
2 feet	597,478	1.9%
3 feet	613,216	2.0%
4 feet	626,417	2.0%
5 feet	639,873	2.1%
6 feet	654,871	2.2%
7 feet	667,808	2.2%
8 feet	683,025	2.2%
9 feet	701,309	2.3%
10 feet	719,453	2.3%
Not projected to be inundated by up to 10 feet	**939,210**	**3.0%**
Sea-level rise unlikely to be a threat (inland counties)	**29,334,730**	**94.6%**
Sea-level rise data unavailable	**5,491**	**<0.1%**
TOTAL AREA	**30,998,884**	**100%**

Table 2.14. Extent of flooding by projected average highest daily tide due to sea level rise within Mississippi. Values from the NOAA sea-level rise inundation data.

SLR Scenario	2020 (ft)	2030 (ft)	2040 (ft)	2050 (ft)	2060 (ft)	2070 (ft)	2080 (ft)	2090 (ft)	2100 (ft)
Low	0.42	0.64	0.87	1.1	1.3	1.5	1.6	1.8	2
Intermediate-Low	0.45	0.7	0.97	1.2	1.5	1.8	2	2.3	2.6
Intermediate	0.45	0.72	1	1.4	1.7	2.2	2.7	3.3	4
Intermediate-High	0.45	0.76	1.1	1.6	2.1	2.9	3.7	4.6	5.6
High	0.45	0.77	1.2	1.8	2.5	3.5	4.7	5.9	7.2

Table 2.15. Projected sea-level rise by decade in Mississippi. Values are based on area-weighted averages of decadal projections for 1-degree grid cells that overlap this area based on NOAA's 2022 Sea Level Rise Report.

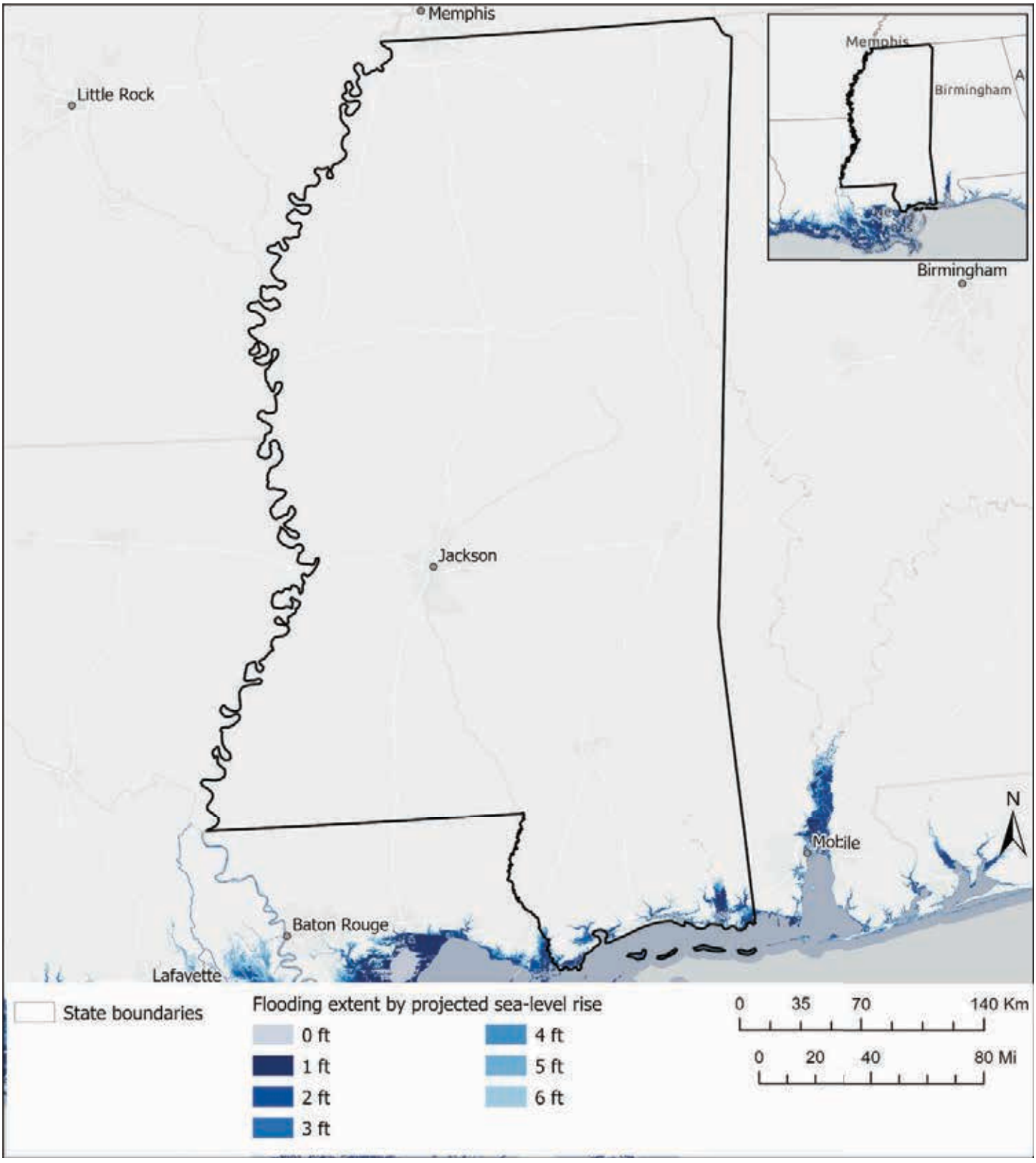


Figure 2.19. NOAA's sea-level rise (SLR) inundation models represent areas in Mississippi likely to experience flooding at high tide based on each foot of SLR above current levels. Darker blue areas will experience flooding first, and at greater depth, compared to lighter blue areas. These models are not linked to a future timeframe; see the projections in tables 2.14 and 2.15. NOAA calculates the inundation footprint at "mean higher high water", or the average highest daily tide. The area covered in each SLR scenario includes areas projected to be inundated at lower levels. For example, the area inundated by 4 ft of SLR also includes areas inundated by 3 ft, 2 ft, 1 ft, and 0 ft of SLR (where 0 ft represents current levels).

Average Historic Flooding Days

Decade	Flooding Days Per Year
2020-2024	14.2
2010-2019	7.2
2000-2009	4.4
1990-1999	3.2
1980-1989	2.5
1970-1979	3.0

Projected High Tide Flooding Days

Scenario	2030	2040	2050	2060	2070
High	25	65	175	310	360
Int. High	25	60	135	260	345
Intermediate	25	50	105	190	280
Int. Low	20	45	85	145	215
Low	20	35	65	110	155

Figure 2.20. Average historic flooding days above National Ocean Service Minor Threshold MHHV and projected high tide flooding days for Bay Waveland, MS on the Gulf coast (Sweet et al. 2018). Future projected flooding days are presented by decade to 2070 and are provided for each sea level rise scenario based on sea-level rise scenarios outlined in the 2022 Sea Level Rise Technical Report (Sweet et al. 2022). Both historical and projected days are provided for the National Ocean Service flood thresholds.

Additionally, rising sea levels have affected changes in flood frequency and extreme flood events in coastal areas of Mississippi. For example, Bay Waveland, MS saw a 97.22% increase in high tide flooding days per year from the 2010-2019 decade to the current 2020 decade (Figure 2.20). Projected high tide flooding days for the location are projected to increase from approximately 14 days per year to between 20 days per year at the lowest scenario to 25 days per year at a high scenario, representing a 78.6% increase (Figure 2.20).

Species' responses to changing environmental conditions

Identification of species of greatest conservation need (SGCN) and regional SGCN (RSGCN) that are vulnerable to changing environmental conditions may be important to developing adaptive management strategies. A species may be considered vulnerable if it is both sensitive to changing environmental conditions and also exposed to the impacts of that change (Williams et al., 2008). Two common tools that have been used to determine a species' vulnerability to changing environmental conditions include 1) assessments like NatureServe's CCVI tool (Lyons et al. 2024), and 2) environmental niche modeling-based vulnerability estimates produced by the academic research community. The CCVI is a worksheet-based tool where users apply readily available information about a species' natural history, distribution, landscape circumstances, and expert opinions to predict whether it will likely suffer a range contraction and/or population reduction due to changing environmental conditions (e.g., temperature, precipitation) that then produces a vulnerability score. By design, this score is distinct from NatureServe's global and national conservation status ranking system that considers other threats. For example, a species could score as not particularly vulnerable in terms of its Global or State rank (G-or S-rank), which is based on other factors but could still rate as vulnerable to climate change. To date, several Southeastern Association of Fish and Wildlife Agencies (SEAFWA) states have used the CCVI tool to conduct assessments of their SGCN in order to inform previous SWAPs, management priorities, and research and conservation planning, and these previous assessments can serve as references for what has been done before and to shape planning and conservation efforts (Armsworth et al. 2025a). Ecological niche models (also called species distribution models) start by identifying shared environmental conditions (i.e., the species' niche) at sites where a species is known to have occurred and then predict where similar conditions may be found on the landscape in the future. Some models also consider the ability of a species to disperse to reach any new areas that may become suitable. The resulting predictions from these models allow researchers to create spatially explicit estimates of whether suitable environmental conditions for a species are likely to remain stable, become more widespread in the landscape (i.e. increase), or become more geographically rare in the future (i.e. decrease).

Niche model results may be used in tandem with CCVI estimates to enhance the understanding of a given species' vulnerability, because assessments and niche models have complementary strengths that may help land managers make informed conservation decisions. Niche models offer spatially explicit predictions (i.e., changes in suitable habitat) about the direct exposure of a species to changing environmental conditions but are only available for a limited set of species, in part because the models require extensive data on a species before they can be applied.

Assessments use an expert judgment-based approach that allows integration of different types of information about species and what might make them vulnerable (e.g., their natural history).

Therefore, outputs from both of these tools may be used to paint a full picture of a given species 'vulnerability while keeping in mind the geographic (e.g., region or habitat that was evaluated) and biological contexts (e.g., estimated dispersal distance) used.

Summary of available vulnerability indices for Mississippi SGCN

For Mississippi, 124 SGCN have been evaluated to date using the NatureServe's CCVI tool across nine organizations (Armsworth et al., 2025a): drawing from CCVI assessments published in four SWAPs in the Southeast (West Virginia, Byers & Norris, 2011; Tennessee, Glick et al., 2015; Florida, DuBois et al., 2011; and Louisiana, Holcomb et al., 2015) as well as the Illinois SWAP (Walk et al., 2011), Natural Heritage Programs in the Northeast (Schlesinger et al., 2011, Furedi et al., 2011), the Appalachian and North Atlantic Landscape Conservation Cooperatives (Sneddon & Galbraith, 2015, Sneddon & Hammerson, 2014), and the National Park Service Cumberland Piedmont Network (Bruno et al., 2012), all of which were informed by state conservation practitioners (Mckenny et al., 2007; Iverson et al., 2008; Matthews et al., 2011; Sutton et al., 2014; Bucklin et al., 2015; Struecker & Milanovich, 2017; Pandey & Pape , 2018; Bateman et al. 2020; Lawler et al., 2020; Zellmer et al., 2020; Zhu et al., 2021; Lyon & Pape , 2022).

Mississippi bird SGCN have had the most CCVI assessments done for them to date at 33 (Figure 2.20). Many of these CCVI assessments indicate that while some bird species may be vulnerable, a larger proportion may remain stable or increase under changing environmental conditions (Figure 2.20). Though more assessments could be done for other taxa, especially those that are not as well studied (e.g., invertebrates), these current CCVI estimates show that fish, invertebrates and plants have the largest proportions of Mississippi's SGCN estimated to be vulnerable (Figure 2.20). For example, all of the assessed invertebrate SGCN in Mississippi were estimated to be vulnerable (Figure 2.20).

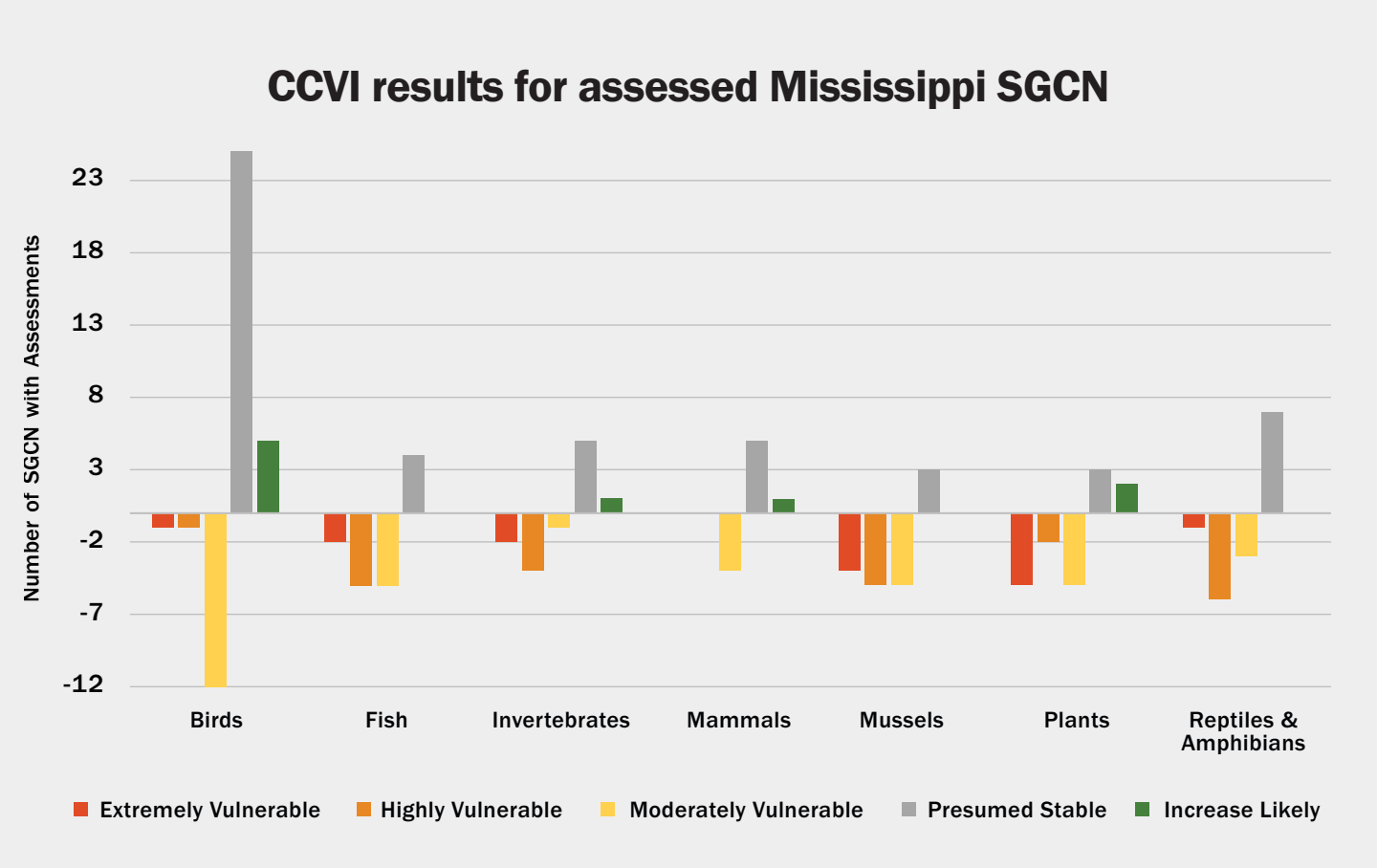


Figure 2.21. Mississippi species of greatest conservation need (SGCN) that are considered vulnerable, stable, or may increase in population based on available NatureServe CCVI estimates.

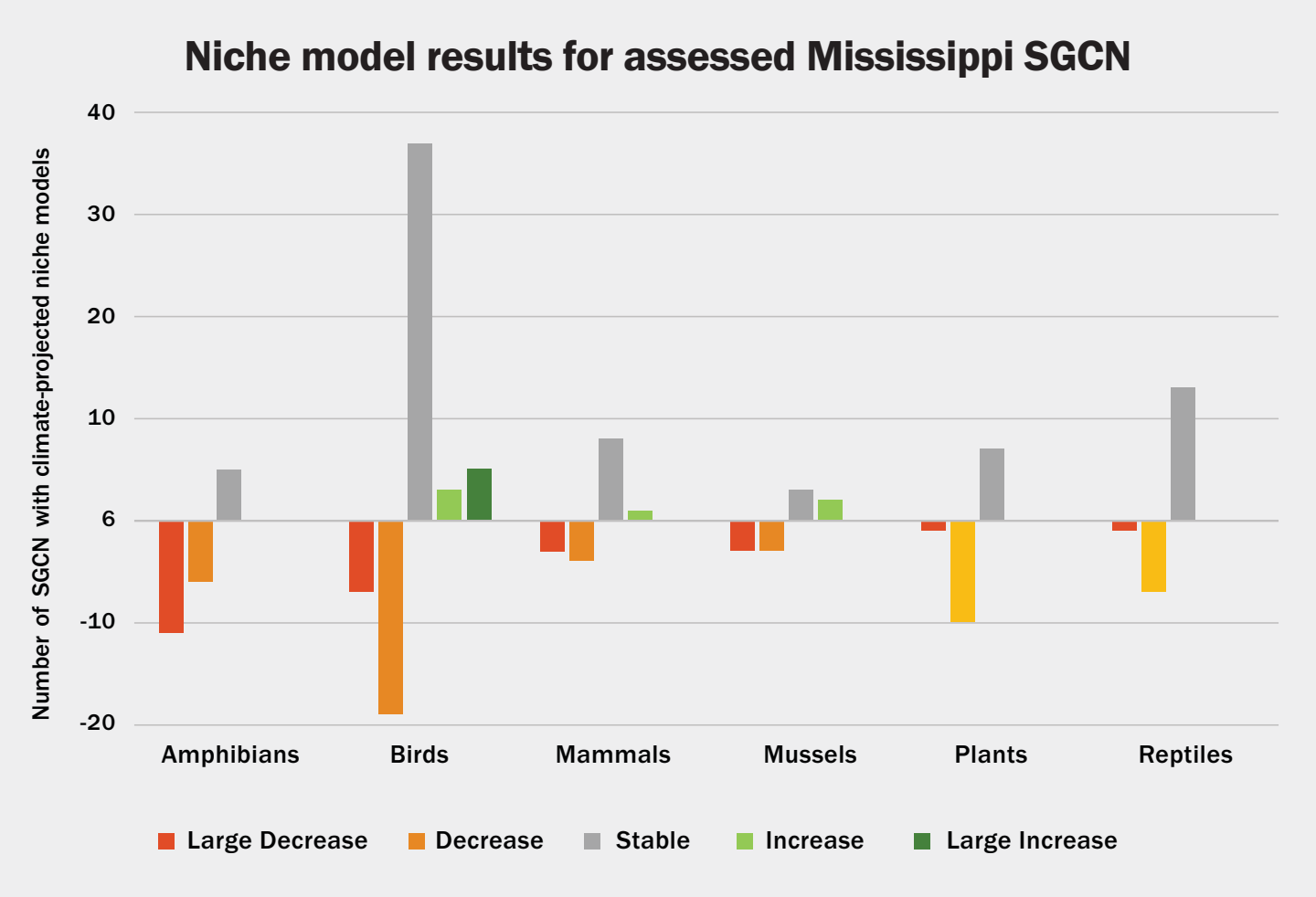


Figure 2.22. Mississippi Species of Greatest Conservation Need (SGCN) that may decrease, remain stable, or increase based on vulnerability scores from available ecological niche models across 12 studies.

Comparing CCVI and available ecological niche models results

Comparing the results of the ecological niche models to the CCVI estimates for SGCNs within Mississippi reveals similar trends for taxa that were evaluated using both methods. However, it is not uncommon for different approaches of assessing risk to have varying results, as each of the two methods includes different types of information. For example, we can see that some SGCN from all Mississippi's evaluated taxa are estimated to experience some vulnerability (i.e., moderately, highly, extremely vulnerable) and some decreases (i.e., decrease or large decrease) in their range (Figures 2.20 & 2.21). Birds have the greatest number of SGCN with predicted stable or increasing populations across both approaches, partially due to how many more bird SGCN have been evaluated compared to other taxa (Figures 2.20 & 2.21). Currently, few species overlap between both the CCVI and ecological niche model datasets, which limits the scope of comparisons. But looking beyond birds, results from both CCVI and niche models suggest that plant SGCN in Mississippi are projected to have many vulnerable SGCN (Figures 2.20 & 2.21). In particular, niche model estimates are not yet available for many aquatic species such as fishes; which the scientific literature suggests may be some of the most vulnerable to changing environmental conditions in Mississippi and the Southeast region (Halpern and Kappel, 2012; Poff et al., 2012; Ingram et al., 2013). However, the available CCVI for these aquatic taxa suggest that there are more fish SGCN predicted to be extremely and highly vulnerable to changing environmental conditions than stable (Figure 2.20)

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CHAPTER 3

Approach and Methods



Mississippi Bat Working Group. *Credit: Katelin Cross*

Organizational Structure of the SWAP Team

The primary responsibility for developing the Mississippi SWAP was given to the MMNS which functions as the MDWFP's non-game wildlife program and includes the MNHP. Similar to the process used to develop the previous SWAPs, two committees (Technical and Core Committees) and a group of wildlife experts and stakeholders were engaged to help revise and update the SWAP. For a full list of committee members and advisors, see Appendix 1. Each committee is described below.

The **SWAP Technical Committee** was composed of MDWFP's wildlife, fisheries, private lands, and museum biologists. They gathered and analyzed information needed to identify Mississippi's species and habitats, threats/limiting factors and potential conservation actions. They met monthly or as needed over a period of three years (2023 - 2025), and significant correspondence and work occurred between meetings. They also coordinated their efforts with expert advisors, tribal representatives, and stakeholders composed of scientists in the state and region with expertise on the SGCN, and who provided additional input on species, habitats, threats and conservation actions. These experts also gave feedback individually to members of the Technical Committee on an as needed basis.

A **Core Committee** of SWAP state coordinators worked to ensure overall coordination of plan development and incorporation of the eight required elements. They approved plan formatting, plans for stakeholder and public involvement, plan review and revision and the agency approval process. They met regularly and communicated on an as needed basis through email and online meetings.

Stakeholder and Public Input

Representatives from natural resources agencies, conservation organizations, agriculture and forest products industries, technical experts, conservation educators and academics as well as individuals and additional MDWFP district and other staff were invited via email or personal contact to participate in the original plan development and in the review and update of the Mississippi SWAP. During the revision of the SWAP, these stakeholders communicated primarily via email, and through individual and small group meetings and submitted comments through the SWAP page on the MDWFP website. Their role was to provide input and advice during the SWAP update process, recommend existing plans or strategies for incorporation, and to review and comment on draft chapters and elements of the SWAP as they were developed prior to submission to the USFWS.

Several stakeholders representing public agencies, non-government organizations, tribal interests and individuals provided comments which were considered by the Technical Committee and incorporated into this revised plan throughout the three year process of updating the SGCN, habitat descriptions, threats, actions and other elements. In addition to the assistance solicited from members of the committees, experts and stakeholders, public input was invited through the MDWFP website and social media. A Mississippi SWAP page on the MDWFP website was developed in 2023 and plan elements were posted and announced as they were updated. The website was the primary method of providing SWAP revisions to the public and stakeholders for additional review and comments and included a direct link to email for feedback. The site will remain active as the 2025 SWAP is implemented and additional planning iterations are developed. More details and a summary of stakeholders, agency, tribal and public participation and outreach are in Appendix 1 and 2.

Coordination with Other Agencies

Development of this document was accomplished in coordination with several public wildlife agencies, universities, conservation organizations and land managers in Mississippi and in the Southeast U.S. This coordination was ensured by inclusion of representatives of these agencies and organizations serving as advisors, experts, through individual briefings and presentations and through contact with the Technical Committee. Conservation planning documents and tools provided by other agencies were gathered and incorporated into the SWAP where possible. Other interested parties also contributed to the process through comments via the MDWFP website or during one on one meetings, or during professional meetings, trainings and conferences related to SGCN and their habitats.

SWAP element seven mandated by Congress in the development of each state's SWAP requires the lead agency to coordinate with *"Indian tribes that manage significant land and water areas within the state or administer programs that significantly affect the conservation of identified species and habitats."* There is one Native American tribe listed on the federal register in Mississippi – the Mississippi Band of Choctaw Indians (MBCI). They own and manage almost 35,000 acres in several counties primarily in east-central Mississippi. The tribal biologist and representatives participated in activities related to the revisions, including webinars and email correspondence. Members of the Technical Committee met with tribal representatives to invite help and gather information and recommendations about culturally significant species that may also be SGCN. The Core Committee also presented an overview of the SWAP at the Mississippi Tribal Summit in 2023 which included tribal representatives from the MBCI as well as several tribes with cultural interests in Mississippi. A description of engagement with agency and tribal representatives is in Appendix 1.

Selection and Revision of Species of Greatest Conservation Need (SGCN)

The revision of the SGCN list for the 2025 SWAP involved reviewing and updating the information used to develop the previous lists. New information gathered on species was considered as well as any changes in State or Global ranks (according to NatureServe that assigns range wide or global status and status within the state - http://explorer.natureserve.org/nsranks.htm), federal or state threatened or endangered status, and other conservation status rankings. Experts throughout the state and region were consulted during this evaluation of the original list and the subsequent revisions. This evaluation of the original list resulted in the addition or removal of several species over the past 20 years. The current 2025 SGCN list was revised based on recommendations from the Southeast Association of Fish and Wildlife Agencies (SEAFWA) to improve the identification, assessment, and prioritization of SGCN using four priority tiers. See Appendix 10 for a description of the prioritization approach used to determine the 1060 SGCN in the 2025 SWAP. More information on ranks, tiers and the process of selecting SGCN can be found in Chapter 4.



Alligator snapping turtle survey. *Credit: Calvin Rezac*

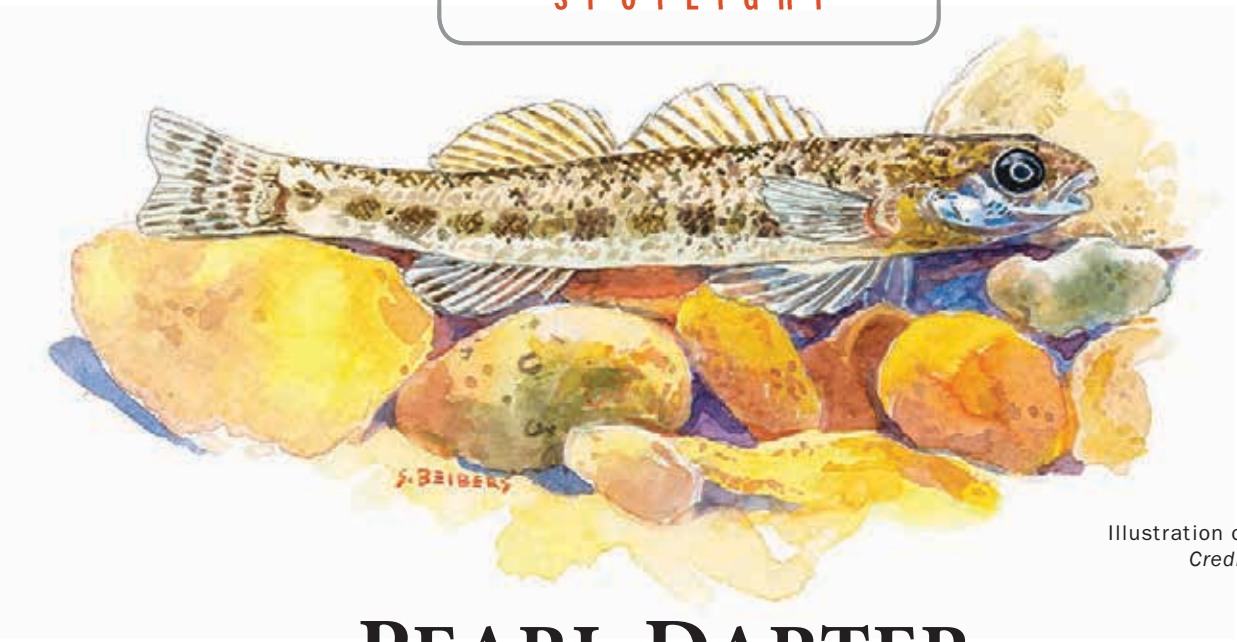


Illustration of Pearl Darter
Credit: Sam Biebers

PEARL DARTER:
Returning to the Pearl

The Pearl Darter *(Percina aurora),* a tiny fish belonging to the Pearch Family, is named for the opalescent coloration along its opercle or cheek.

The species was listed as federally threatened in 2017 due to its disappearance from the entire Pearl River drainage in Mississippi and Louisiana in the 1970s. While this species still persists in the Pascagoula River drainage, it has not been re-discovered in the Pearl, leading state and federal experts to consider it extirpated from the drainage. This species normally inhabits sluggish areas along river sandbars adjacent to flowing water but can be found over swift gravel shoals during spawning in springtime.

In 2022 the USFWS and MDWFP began a partnership to propagate broodstock from the Leaf and Chunky Rivers at the Private John Allen National Fish Hatchery. As a result, 39 Pearl Darter individuals were re-released back into the Strong River in 2023, marking the species first appearance in the Pearl River drainage in 50 years. The USFWS and MDWFP will continue to monitor the species, collect broodstock and release progeny back into the Strong River, and the Private John Allen National Fish Hatchery alongside Conservation Fisheries, Inc. in Knoxville, TN will continue to propagate individuals for release into the Pearl River drainage. MDWFP began annual surveying for the species in the Strong River in 2025. If this species can be successfully established within the Pearl River drainage, the Pearl Darter could one day be de-listed from the Endangered Species Act.

Several MDWFP surveys for this species, as well as annual broodstock collection were funded by SWG. Future propagation efforts may also be funded by SWG.





Threats and Conservation Actions

The third element required by Congress in the development of the SWAP involves the description of problems that may adversely affect SGCN or their habitats. There are several different approaches noted in the literature, but most rely on identification of "stresses" or "threats" and/or "sources of stress" in the environment. *The Best Practices for State Wildlife Action Plans* (2012) recommends using the definitions and hierarchy found in the Salafsky et al. (2008) paper entitled *A Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions*. Creating consistency across state plans will make multi-state cooperation and projects easier to design by identifying shared threats and actions across states. The Technical Committee adopted Salasfsky's standardized classification of threats and actions and assigned a high, medium, or low rank to the identified threats to aid in determining the most critical problems for each identified habitat subtype and to facilitate identification of priority conservation actions. More information on threats and conservation actions associated with Mississippi's SGCN and their habitats can be found in Chapter 5 and Chapter 6.

Classifying Wildlife Habitats in Mississippi

Element two requires each state to produce "descriptions of locations and relative condition of key habitats and ecological community types essential to conservation of species identified as SGCN". To address this element in the first SWAP, experts responded to a detailed survey to identify and note the relative significance of the habitats and ecological communities for potential SGCN. Associating SGCN with their habitats and communities guided the process of prioritizing conservation actions to be taken. Targeting key habitats for conservation actions is often an effective way to ensure long-term survival of many SGCN. Prioritizing and implementing actions that protect, conserve or enhance habitats or communities shared by multiple SGCN should increase return on investments.

For 2025, Mississippi adopted the use of the EPA Level III and IV Ecoregions as a new geographic framework for presenting habitat classifications and incorporated for the first time the descriptions of NatureServe's Terrestrial Ecological Systems (TES) along with updated and refined the descriptions of habitat types and subtypes occurring in the state. Thus, for the 2025 SWAP, Mississippi is organized into four EPA ecoregions, and 19 major habitat types and 49 subtypes classified in the broad categories of terrestrial, major drainages, marine and estuarine, and artificial. See Chapter 5 for general descriptions and conditions for habitat types and subtypes located within the four EPA ecoregions of Mississippi. See Chapter 6 for the new Conservation Opportunity Areas.

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CHAPTER 4

Selecting and Prioritizing Mississippi's Species of Greatest Conservation Need

The MNHP operates under the auspices of the MDWFP through the MMNS Bureau. It maintains a database of animals (vertebrates and invertebrates) and plants native to the state. To develop conservation priorities, each species is ranked according to the number of occurrences, population trends, and threats.

There are approximately 1,500 known species of animals in Mississippi which can be tracked by the MNHP, including all of the representatives of the groups gastropoda (snails); bivalvia (mussels); malacostraca (amphipods, crayfish, shrimp, isopods); arachnida (spiders, mites, ticks); insects; fish (including the cephalaspidomorphi - jawless fish/lampreys) and the osteichthyes (bony fish); amphibians (frogs and salamanders); reptiles (lizards, snakes, turtles, alligators); birds; and mammals. Tracking entails maintaining a database on occurrence localities, population status, and habitat conditions for tracked species. Many of the animals in the groups listed above are common, however, and are not tracked. Tracking is focused upon species known or suspected to occur in low numbers (with conservation rankings of S1 - Imperiled through S3 - Vulnerable including the borderline ranking of S3S4 - see Nature Serve Conservation Status ranking definitions below). These are designated as Species of Special Concern. There are 388 special concern animals, which include 8 gastropods, 53 bivalves, 34 crawfish and shrimp, 1 arachnid, 69 insects, 1 lamprey, 76 fish, 21 amphibians, 38 reptiles, 68 birds, and 19 mammals; and 658 special concern plant species, which include 32 non-vascular plants, 32 ferns and fern allies, 4 gymnosperms, and 589 angiosperms. An additional 153 plant species are designated as "watch" status.

Development of the Original SGCN: Historical Context

The initial SGCN list developed in 2005 for the first Mississippi SWAP was created from MDWFP's *Animals of Special Concern* and further evaluated by the SWAP Technical Committee and an Expert Team consisting of biologists with expertise relative to those species. These biologists assessed the ranks and provided extensive input via a formal survey regarding those ranks and the population status, species distribution, and habitat status. This original survey was sent to 81 individuals around the state and region, and 46 responded by completing 1,004 surveys. A similar survey was conducted to gather consistent data about each new species for the 2015 update. The original SGCN were sorted into four tiers to help determine the priorities for conservation actions. At the time, there was no national standardized method for states to follow in prioritization of the relative conservation needs of SGCN. Thus, the Technical Committee selected a set of criteria that can be applied objectively across the entire range of animal taxa included in this report (mammals, birds, reptiles, amphibians, fish, crustaceans and mussels).



Four-toed salamander. *Credit: Tom Mann*

The Technical Committee elected to evaluate species based on seven relatively objective criteria that could be broadly applied. The original 2005 ranking system was based on seven criteria that included the NatureServe Global, National and State Ranks (See Appendix 6 for an interpretation of all NatureServe ranks), eligibility of species to receive funding, percent of population size or range in Mississippi, trend in population size, quality and quantity of available data and extent of known data about a species.

Development of the New 2025 SGCN List: Our Approach

For this 2025 SWAP update, the Technical Committee began with the prior SGCN list as the foundation and applied a new set of criteria based on recommendations from the Southeastern Association of Fish and Wildlife Agencies' (SEAFWA) Wildlife Diversity Committee and their SWAP Standardization Subcommittee to state wildlife agencies in 2022. Our goal in revising the SGCN list for this 2025 iteration of the SWAP was to adopt a standardized approach taken by other states in the region to help us better implement conservation on a regional scale where warranted. The following is a summary of the approach we used to develop the SGCN list. We also added plant species for the first time. An explanation of how the first SGCN list of plants was developed is below.

The 2025 SGCN list is presented at the end of this chapter (Table 4.3). See Appendix 3 for a list organized by ecoregion and Appendix 8 for a list of the SGCN with their conservation rankings.

Table 4.1. Mississippi SGCN Total by Taxa

Taxa	Subcategory	Number of SGCN	Total SGCN
Invertebrates	Mussel	50	
Invertebrates	Snail	6	
Invertebrates	Crayfish	44	
Invertebrates:	Arachnid	2	
Invertebrates	Insect	110	
Invertebrates Total			**212**
Fish: Freshwater	Freshwater	79	
Fish: Marine	Marine	20	
Fish Total			**99**
Amphibians		**23**	**23**
Reptile	Non-marine	32	
Reptile	Marine	5	
Reptiles Total			**37**
Birds		**83**	**83**
Mammals	Land	18	
Mammals	Marine	1	
Mammals Total			**19**
Plants: Non-Vascular	Non-Vascular	31	
Plants: Vascular	Vascular	556	
Plants Total			**587**
Total SGCN		**1060**	**1060**

Steps to Updating the SGCN for 2025

The following are the data consulted and steps the Technical Committee followed to update Mississippi's SGCN list. The entire list and subsequent updates were distributed to an extensive group of experts, stakeholders, tribal representatives and other interested individuals in 2023 and 2024 and posted on the MDWFP website for public comment (See Appendix 2). Each comment was considered and the SGCN list adjusted where appropriate and justified.

Refer to Appendix 6 for a detailed interpretation of the NatureServe Conservation Status Ranks.

1. **SGCN Potential List.** The 2015 SGCN list for Mississippi was used as the beginning baseline with the understanding that some species could be added or removed during later stages of the revision. The list was supplemented with any additional species from the following groups:
   - **a.** Endangered, Threatened, and Candidate Species currently listed by the U.S. Fish and Wildlife Service or the National Oceanic and Atmospheric Administration.
   - **b.** NatureServe - Critically Imperiled or Imperiled (G1-G2) species, including any species with rounded ranks within this range (i.e., G2G3 species and G1G3 species). G3 species are Vulnerable.
   - **c.** Regional Species of Greatest Conservation Need (RSGCN)
   - **d.** State Listed Species
   - **e.** State Rarity Rank - Critically Imperiled or Imperiled (S1-S2) species, including any species with rounded ranks within this range (i.e., include S2S3 and S1S3 species). Species ranked SU (Unrankable), SH (Possibly Extirpated), and SX (Presumed Extirpated) should be considered on a case-by-case basis (see 2 below)
   - **f.** USFWS at-risk species.
   - **g.** International Union for Conservation of Nature (IUCN) species ranked as Critically Endangered (CR), Endangered (EN), and (Vulnerable) VU.
   - **h.** Partner's In Flight Category of Continental Importance: Red Watchlist, Yellow Watchlist, and Common Birds in Steep Decline.
2. **Historic, Extirpated Species, and Uncertain species.** Species ranked as SX (Extirpated) , SH (Historic), and SU (Unrankable) were considered on a case-by-case basis. Species that could potentially be rediscovered through additional surveys were included in the assessment. Similarly, species that are likely to be reintroduced or could recolonize restored habitats were considered for inclusion. Unrankable species that are potentially imperiled were considered.

3. **Undescribed Species.** If an undescribed species had strong evidence for inclusion, such as publications, reports that include genetic or morphological data, or recognition of the taxon by a professional society or conservation organization, we considered them.
4. **Additional SGCN.** Experts were asked for any additional recommendations such as recently described species, species with emerging threats or any other species with significant conservation needs that were not captured on the initial SGCN list.
5. **Assessing Conservation Status.** Where state rarity ranks were not updated (within the last five years), we used the NatureServe ranking methodology to update state rarity ranks for potential SGCN.
6. **Southeastern SGCN Database.** We also consulted the Regional SGCN database.
7. **Prioritize SGCN.** After completing the species assessment using the steps and data above and garnering initial input from experts,we applied the SGCN priority tier reference guide to assign SGCN species to one of four priority levels: *1 - Highest Conservation Concern, 2 - High Conservation Concern, 3 - Moderate Conservation Concern, and 4 - Data Deficient.* Species that merit prioritization by meeting any one of the listed reference criteria were included, but the prioritization was based on an overall synthesis of the priority tier definition and the most suitable criteria for assessing the status of a particular SGCN.
8. **Deviations.** Deviation from reference criteria was deemed appropriate for certain SGCN such as some migratory birds and species with very limited ranges in the state. Deviations from the above approach also included consideration of species with low population density, low reproductive potential and/or narrow geographic distributions that may not be included in endangered, threatened, imperiled or at-risk classifications (or are thought to be declining rapidly) and recommendations from experts (particularly with regard to the updates to the bird list, and the addition of marine species, insects, and plants).

   Additionally, species identified as a conservation priority under national plans and peer-reviewed publications were considered for inclusion on the SGCN list. Examples of peer-reviewed publications which identify species as conservation priorities are: *Partners In Flight North American Landbird Conservation Plan, U.S. Shorebird Conservation Plan, North American Waterfowl Management Plan, and the North American Waterbird Conservation Plan*. Fish species identified as threatened or vulnerable by the American Fisheries Society and freshwater mussel species identified as endangered, threatened, or special concern by the American Fisheries Society were also considered. As noted above, some species on the MNHP's list of Animals of Special Concern were excluded from selection as SGCN. However, these animals will continue to be tracked by the NHP and may appear on future iterations of the SGCN.

New SGCN Priority Tiers

The Definitions for the 2025 SGCN priority levels are as follows. A table with the complete reference criteria considered for each level and explanation of the new approach based on the SEAFWA recommendations is in Appendix 10.

Tier 1 - Highest Conservation Concern: Critically imperiled species that may become extirpated from Mississippi in the near future unless conservation efforts are continued or enhanced. The population(s) in our state are very important to the global conservation of the species. Species that are in need of immediate conservation action and/or research because of extreme rarity, restricted distribution, unknown or decreasing population trends, specialized habitat needs and/or habitat vulnerability.

Tier 2 - High Conservation Concern: Imperiled species that may continue to decline in Mississippi unless conservation efforts are continued or enhanced. The population(s) in our state are important to the global or regional conservation of the species. Species that are in need of timely conservation action and/or research because of rarity, restricted distribution, unknown or decreasing population trend, specialized habitat needs or habitat vulnerability or significant threats.

Tier 3 - Moderate Conservation Concern: Species that may be currently stable but of long-term conservation concern due to increasing or emerging threats or species that are currently stable but are representative of an ecosystem or community in need of conservation or species that are currently stable but represented by a strong population or unique genetic diversity that is worthy of conservation within Mississippi. Species that are of less immediate conservation concern but are in need of planning and effective management due to unknown or decreasing population trends, specialized habitat needs or habitat vulnerability.

Tier 4 - *Data Deficient:* Species that may be imperiled, but lack of information on their conservation status, taxonomy, life history, and threats precludes the identification of conservation actions. Species listed as extirpated from Mississippi, of historical occurrence only, or accidental. While no conservation action or research is recommended at this time, these species remain SGCN in the event that taxa may be rediscovered, reintroduced from populations existing outside the state, or are discovered to be regular, non-accidental components of the Mississippi's fauna.

Not SGCN: Species in this status category do not merit recognition as SGCN.

Not Applicable: This status category should not be used to prioritize SGCN for my taxonomic group because it may include species that do not merit SGCN or it may exclude species that do warrant SGCN status.

Cobblestone Tiger Beetle: *Extirpated?*

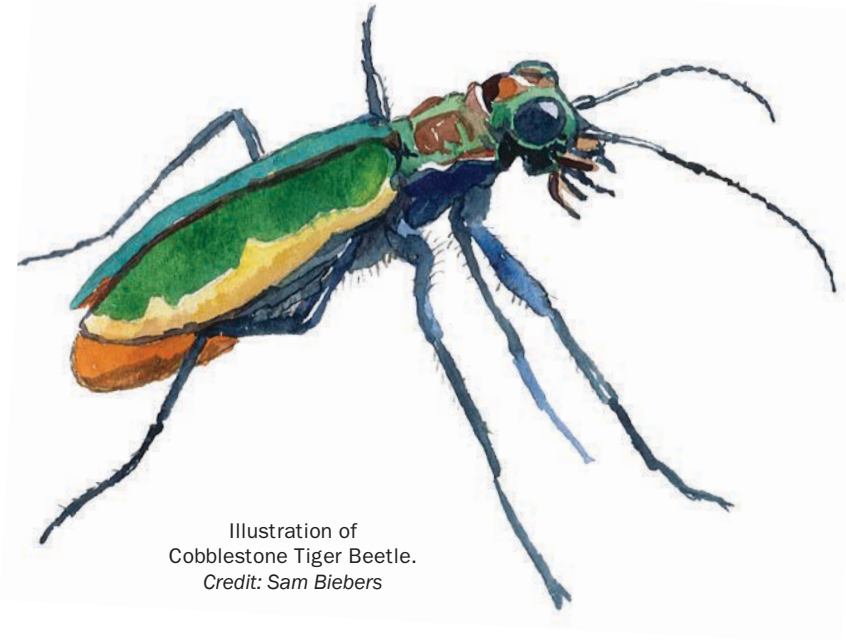


Illustration of Cobblestone Tiger Beetle.
Credit: Sam Biebers

The Cobblestone Tiger Beetle *(Cicindela marginipennis)* is a small beetle in the Ground Beetle Family (Carabidae). They are named for their dependence on cobble/gravel islands and for their "tiger-like" method of hunting prey.

This species was reviewed by USFWS in 2019 and found not to warrant listing, despite its limited number of occurrences and the high risk it faces, range wide. In Mississippi, this species was only known from a limited area along the Tombigbee River Watershed in Lowndes County. The population was lost to the construction of the Tennessee-Tombigbee Waterway, and the species is now considered extirpated in Mississippi. New surveys may reveal occurrences in another part of the drainage.

Active in summer in the Southeastern U.S., the Cobblestone Tiger Beetle is known to occur on sparsely-vegetated bars and islands composed of gravel/cobble on large streams and rivers. All stages of its lifecycle take place in this habitat. Historically, severe scouring or extended inundation would have eliminated occurrences, though adults could disperse along riparian corridors to establish new occurrences.

While no literature was found on reintroduction efforts specific to this species, reintroductions have been studied with other tiger beetles. There are complications to pursuing such actions with the Cobblestone Tiger Beetle. The nearest populations are in Alabama, in another drainage. And there is reason to suspect that these populations may substantially differ from those that historically occurred in Mississippi, though this is difficult or impossible to know with the current dearth of material to compare. Additionally, the dynamic and volatile hydrology of the small, fragmented habitats they occupy, as well as the threats faced by the donor populations, make for a very high risk and low probability of success.

Additional surveys will be conducted in sections of the Tombigbee drainage with suitable habitat, should any exist. These surveys will likely further confirm that the species is extirpated in the state and watershed. Should any occurrences be located, collection of voucher material and diligent monitoring would be necessary. Subsequent surveys for additional populations would be conducted. Though propagation of new populations from native donor materials is possible, suitable habitat is likely too fragmented for natural dispersal in the modified watershed.

NatureServe Ranks For *Animals Of Special Concern*

Below is a summary of the Natureserve ranks referenced for the SGCN table below (state and global heritage ranks listed) and in the SGCN in Appendix 8. For a complete list of the NatureServe ranks, see Appendix 6.

Heritage Ranks: The MNHP uses the Heritage ranking system developed by The Nature Conservancy (http://explorer.natureserve.org/nsranks.htm). Each species is assigned a **GRANK** representing its range wide or global status and an **SRANK** representing its status in the state.

S1 Critically imperiled in Mississippi because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres of habitat) or because of some factor(s) making it vulnerable to extirpation.

S2 Imperiled in Mississippi because of rarity (6 to 20 occurrences) or because of some factor(s) making it vulnerable to extirpation.

S3 Rare or uncommon in Mississippi (21-100 occurrences).

S4 Widespread, abundant, and apparently secure in the state, but with cause for long-term concern.

S5 Demonstrably widespread, abundant, and secure in the state.

SH Of historical occurrence in Mississippi, perhaps not verified in the past 20 years and suspected to be extant.

An element would also be ranked SH if the only known occurrence(s) were destroyed, or if it had been sought extensively and unsuccessfully looked for. Upon verification of an extant occurrence, SH-ranked elements would typically receive an S1 rank.

SU Possibly in peril in Mississippi but status uncertain; need more information. May also be represented by S?

S? Unranked: Element is not yet ranked in the state.

SX Element is believed to be extirpated from the state.

SE Exotic: An exotic established in the state; may be native in nearby regions (e.g. pecans along the eastern seaboard of the US)

SA Accidental: accidental or casual in the state (i.e. infrequent and far outside usual range).

SNA Not Applicable: A conservation status rank is not applicable because the species is not a suitable target for conservation activities

SP Potential: Element potentially occurs in the state, but no occurrences reported.

SR Reported: Element reported in the state but without persuasive demonstration which would provide a basis for either accepting or rejecting (e.g. misidentified specimen) the report.

SRF Reported falsely: Element erroneously reported in the state and the error has persisted in the literature.

HYB Hybrid: Element represents hybrid of species.

SSYN Synonym

Breeding Status: (Applicable to migratory species, mainly birds, but also includes sea turtles, some fish and some insects).

B = Breeding Status
N = Non-breeding Status

Qualifiers:
? = Inexact
C = Captive or Cultivated only

GRANK: Criteria follow those of SRANK except for species having several subspecies. In these cases, a subrank, made up of the letter "T" plus a number or letter (1,2,3,4,5,H,U,X,?), is added to the GRANK.

STATE STATUS: Eighty-six animals have been designated as state endangered through the Mississippi State Law, the Nongame and Endangered Species Conservation Act of 1974. Plants receive no formal legal protection by state law in Mississippi other than that provided for in the trespass laws.

FEDERAL STATUS: The following is a guide to acronyms taken from the Federal Register.

LE **Endangered.** A species which is in danger of extinction throughout all or a significant portion of its range.

LT **Threatened.** A species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

PT **Petitioned Species.** A species for which a formal request has been made by the public or organization to the USFWS to evaluate its status and consider listing it as endangered or threatened.

PP **Proposed Species.** A species that has been formally reviewed and determined to warrant listing as endangered or threatened but has not yet been finalized in the regulatory listing process.

PS **Population Segment / Distinct Population Segment.** The species or subspecies is listed in a portion of the population or range. The Distinct Population Segment is described geographically instead of biologically.

Adding Plants: Our Approach to the 2025 SWAP

In 2020, the Southeast Plant Conservation Alliance (SE-PCA) recognized the need for most states to integrate plant species into their SWAPs. In 2022, they paired with NatureServe, Terwilliger Consulting Inc, the Atlanta Botanical Garden, the Southeastern Association of Fish and Wildlife Agencies, and the Southeast Flora team to organize meetings with state and regional experts to create a list of plant species that were recognized as in need of conservation. The Southeastern Plants Regional Species of Greatest Conservation Need (RSGCN) list was completed in September 2023 and is the first plant RSGCN in the nation. The project started with NatureServe's Ranked Taxa list and determined a need for updated information for many species. A survey was sent to the state and regional experts, and this data was compiled into an initial list. Several meetings were held to finalize the list.

The NatureServe Ranked Taxa list selected species that:

1. A mode S-Rank of less than two within the region (with SH or SX equivalent to 0.5);
2. A G-Rank of G1, G2, G3, GH, or GX, or in some cases as G4 if at least five states ranked the taxon as S1, S2, SH, or SX and the taxon had at least 50% Regional Responsibility.

RSGCN were categorized as ***Very High***, ***High***, ***Moderate***, and ***Low Level of Conservation Concern*** for ranking species.

RSGCN CONSERVATION RANKS ARE DEFINED AS:

Very High: GX, GH, G1 (including G1G2, G1?), or G2 (including G2?)

High: G2 (including G1G3, G2G3) or G3 (including G3?) with only rounded S1, S2, SH, or SX state ranks

Moderate: G3 (including G3?) with SNR or rounded S3, S4 or other rounded G3 (including G2G4, G3G4) or G4 (including G4?) with more or less states with rounded S1, S2, SH, or SX state ranks

Low: G4 (including G3G5, G4?, G4G5), G5 (including G5?), or GNA

Mississippi has 214 RSGCN of the 1,824 plant total species present on the regional list. Of these 13 are ranked *Very High* regionally, 20 are *High*, and 181 are *Moderate*. These species were used as the foundation of the state's plant SGCN list in the development of the 2025 SWAP. However, seven species were rejected as they were falsely attributed to Mississippi and 43 species were removed because they are not of conservation concern currently within the state (Table 4.2).

Additionally, 384 species of vascular plants from the Mississippi Natural Heritage Program Special Plant Tracking List 2025 were added to the state SGCN list due to their rarity in the state if they had a Global Rank of G1, G2, G3, G3G4, or combinations of these global ranks, or a State Rank of S1, S2, or a combination of these state ranks. The decision was made to include 31 non-vascular plants that are recognized by NatureServe as rare to the Southeastern United States. SE-PCA is initiating a review of these species, but as of 2025 the project is still in development.

All plant species added to the SGCN list were placed in four tiers based on the same criteria as the existing animal list described above and detailed in Appendix 10.

References

Association of Fish and Wildlife Agencies (AFWA). 2012. Best Practices for State Wildlife Action Plans—Voluntary Guidance to States for Revision and Implementation. Washington (DC): Association of Fish and Wildlife Agencies. 80 pages.

Association of Fish and Wildlife Agencies (AFWA). 2021. Leading At-risk Fish and Wildlife Conservation: A Framework to Enhance Landscape-Scale and Cross-Boundary Conservation through Coordinated State Wildlife Action Plans. A report from the AFWA State Wildlife Action Plan and Landscape Conservation Work Group to the AFWA Wildlife Diversity Conservation and Funding Committee. Washington, D.C. 29 pages.

NatureServe. www.natureserve.org

Southeast Association of Fish and Wildlife Agencies (SEAFWA). 2022. Recommendations to Improve the Identification, Assessment, and Prioritization of Species of Greatest Conservation Need in the SEAFWA Region. 48 pages.

Radcliffe, C. et al. 2023. Southeastern Plants Regional Species of Greatest Conservation Need. Atlanta, Georgia: Southeastern Plant Conservation Alliance.

Table 4.2. Excluded RSGCN species from the Mississippi SGCN plant list.

Scientific Name	SRank	Reason for Omission
Agalinis aphylla	S3	Not of conservation concern
Amorpha schwerinii	SRF	Reported falsely for state
Asplenium platyneuron var. *bacculum-rubrum*	SNR	Not of conservation concern
Carex decomposita	S3	Not of conservation concern
Carex lupuliformis	S4	Not of conservation concern
Carex reniformis	S4	Not of conservation concern
Carex socialis	S4	Not of conservation concern
Cayaponia quinqueloba	S4	Not of conservation concern
Chamaecrista deeringiana	SRF	Reported falsely for state
Collinsonia tuberosa	S3S4	Not of conservation concern
Crataegus pulcherrima	S3S4	Not of conservation concern
Dalea pinnata var. *trifoliata*	S3S4	Not of conservation concern
Dasistoma macrophylla	S3S4	Not of conservation concern
Drosera tracyi	S3S4	Not of conservation concern
Eleocharis equisetoides	S3S4	Not of conservation concern
Eriocaulon ravenelii	SRF	Reported falsely for state
Lachnocaulon digynum	S3	Not of conservation concern
Limnobium spongia	S4	Not of conservation concern
Neottia bifolia	S4	Not of conservation concern
Malus angustifolia var. *puberula*	SNR	Not of conservation concern
Matelea flavidula	SRF	Reported falsely for state
Palafoxia hookeriana var. *hookeriana*	SE	Not of conservation concern
Paspalum dissectum	S4	Not of conservation concern
Peltandra sagittifolia	S3	Not of conservation concern
Phacelia maculata	SRF	Reported falsely for state
Physalis angustifolia	S3	Not of conservation concern
Pinguicula primuliflora	S3S4	Not of conservation concern
Platanthera flava var. *flava*	S4	Not of conservation concern
Pseudognaphalium helleri ssp. *helleri*	S4	Not of conservation concern
Rhynchospora macra	S3	Not of conservation concern
Rhynchospora scirpoides	S3	Not of conservation concern
Rhynchospora stenophylla	S3	Not of conservation concern
Rubus mirus	SNR	Not of conservation concern
Sceptridium simplex var. *simplex*	SRF	Reported falsely for state
Schoenoplectus etuberculatus	S3S4	Not of conservation concern
Scutellaria parvula var. *missouriensis*	SNR	Problematic taxonomy
Sorghastrum apalachicolense	S3	Not of conservation concern
Sphenopholis filiformis	S4	Not of conservation concern
Stewartia malacodendron	S3S4	Not of conservation concern
Symphyotrichum texanum	S3	Not of conservation concern
Triadenum tubulosum	S4	Not of conservation concern
Verbesina walteri	S3S4	Not of conservation concern
Zigadenus leimanthoides	SRF	Reported falsely for state

Table 4.3. Mississippi Species of Greatest Conservation Need with State and Federal Ranks and Status and Regional Species of Greatest Conservation Need Ranks

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Mussels								
Unionidae	2	*Actinonaias ligamentina*	Mucket	G5	S1		LE	
Unionidae	2	*Arcidens confragosus*	Rock Pocketbook	G4	S2			
Unionidae	2	*Cyclonaias tuberculata*	Purple Wartyback	G5	S2		LE	
Unionidae	4	*Cyprogenia aberti*	Western Fanshell	G2G3	SX	LT		3
Unionidae	2	*Ellipsaria lineolata*	Butterfly	G4G5	S2			
Unionidae	1	*Elliptio arca*	Alabama Spike	G2G3	S1	PT		2
Unionidae	1	*Elliptio arctata*	Delicate Spike	G2G3Q	S1	PT	LE	2
Unionidae	1	*Epioblasma brevidens*	Cumberlandian Combshell	G1	S1	LE, XN	LE	1
Unionidae	1	*Epioblasma penita*	Southern Combshell	G1	S1	LE	LE	1
Unionidae	1	*Epioblasma triquetra*	Snuffbox	G3	SX	LE	LE	1
Unionidae	2	*Eurynia dilatata*	Spike	G5	S1		LE	
Unionidae	1	*Hamiota perovalis*	Orange-nacre Mucket	G1	S1	LT	LE	3
Unionidae	2	*Lampsilis fasciola*	Wavy-rayed Lampmussel	G5	S1			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Unionidae	2	*Lampsilis hydiana*	Louisiana Fatmucket	G4	S2			
Unionidae	2	*Lampsilis ovata*	Pocketbook	G5	S2			
Unionidae	2	*Lasmigona alabamensis*	Alabama Heelsplitter	G3	S2			
Unionidae	3	*Lasmigona complanata*	White Heelsplitter	G5	S3			
Unionidae	2	*Lasmigona costata*	Flutedshell	G5	S2			
Unionidae	1	*Ligumia recta*	Black Sandshell	G4G5	S1			
Unionidae	1	*Medionidus acutissimus*	Alabama Moccasinshell	G2	S1	LT	LE	2
Unionidae	2	*Obovaria arkansasensis*	Southern Hickorynut	G3	S1			2
Unionidae	1	*Obovaria* cf. *unicolor*	Undescribed Hickorynut		S1	PT		
Unionidae	1	*Obovaria subrotunda*	Round Hickorynut	G4	S1	LT	LE	2
Unionidae	1	*Obovaria unicolor*	Alabama Hickorynut	G3	S1	PP		2
Unionidae	1	*Plethobasus cyphyus*	Sheepnose	G3	S1	LE	LE	1
Unionidae	2	*Pleurobema beadleianum*	Mississippi Pigtoe	G2G3	S3			
Unionidae	4	*Pleurobema curtum*	Black Clubshell	G1	SX	LE	LE	
Unionidae	1	*Pleurobema decisum*	Southern Clubshell	G2	S1	LE	LE	2
Unionidae	1	*Pleurobema perovatum*	Ovate Clubshell	G1	S1	LE	LE	1

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Unionidae	1	*Pleurobema riddellii*	Louisiana Pigtoe	G1	S1	PP		1
Unionidae	1	*Pleurobema sintoxia*	Round Pigtoe	G2G3	S1		LE	2
Unionidae	4	*Pleurobema taitianum*	Heavy Pigtoe	G1	SX	LE	LE	2
Unionidae	1	*Pleuronaia barnesiana*	Tennessee Pigtoe	G2G3	S1	PP		2
Unionidae	1	*Pleuronaia dolabelloides*	Slabside Pearlymussel	G2	S1	LE	LE	2
Unionidae	3	*Potamilus alatus*	Pink Heelsplitter	G5	S3			
Unionidae	1	*Potamilus capax*	Fat Pocketbook	G2	S1	LE	LE	1
Unionidae	1	*Potamilus inflatus*	Inflated Heelsplitter	G1G2Q	S1	LT	LE	2
Unionidae	2	*Pseudodontoides subvexus*	Southern Creekmussel	G3	S2			3
Unionidae	2	*Ptychobranchus fasciolaris*	Kidneyshell	G4G5	S1		LE	
Unionidae	3	*Quadrula nobilis*	Gulf Mapleleaf	G4	S3			
Unionidae	2	*Quadrula rumphiana*	Ridged Mapleleaf	G4	S2			
Unionidae	2	*Strophitus pascagoulaensis*	Pascagoula Creekshell	GNR	S2			
Unionidae	1	*Strophitus radiatus*	Rayed Creekshell	G2	S2			2
Unionidae	2	*Strophitus undulatus*	Creeper	G5	S1			
Unionidae	1	*Theliderma cylindrica cylindrica*	Rabbitsfoot	G3G4T3	S1	LT	LE	2

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Unionidae	4	*Theliderma metanevra*	Monkeyface	G4	SX		LE	
Unionidae	1	*Toxolasma lividum*	Purple Lilliput	G3	S1			
Unionidae	3	*Uniomerus declivis*	Tapered Pondhorn	G5	S3			
Unionidae	3	*Utterbackiana hartfieldorum*	Cypress Floater	G4	S3			2
Unionidae	2	*Villosa vanuxemensis*	Mountain Creekshell	G4	S1			2
Snails								
Gastropoda	1	*Elimia cylindracea*	Cylinder Elimia	G2	S1			
Gastropoda	2	*Lithasia armigera*	Armored Rocksnail	G3	S1			
Gastropoda	1	*Lithasia hubrichti*	Big Black Rocksnail	GX	S1			
Gastropoda	1	*Lithasia lima*	Warty Rocksnail	G2	S1			
Gastropoda	2	*Lithasia verrucosa*	Varicose Rocksnail	G4	S2			
Gastropoda	4	*Pleurocera vestita*	Brook Hornsnail	G3	SU			
Crayfishes								
Cambaridae	2	*Cambarellus diminutus*	Least Crayfish	G3	S2			2
Cambaridae	2	*Cambarellus lesliei*	Angular Dwarf Crayfish	G3	S2			2
Cambaridae	2	*Cambarus girardianus*	Tanback Crayfish	G5	S2			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Cambaridae	2	*Cambarus rusticiformis*	Depression Crayfish	G5	S1			
Cambaridae	4	*Cambarus striatus*	Ambiguous Crayfish	G5	S5			
Cambaridae	2	*Creaserinus burrisi*	Burris' Burrowing Crayfish	G3	S2			2
Cambaridae	1	*Creaserinus danielae*	Speckled Burrowing Crayfish	G2	S2	PT		2
Cambaridae	4	*Creaserinus fodiens*	Digger Crayfish	G5	S5			
Cambaridae	1	*Creaserinus gordoni*	Camp Shelby Burrowing Crayfish	G1	S1		LE	1
Cambaridae	3	*Faxonius erichsonianus*	Reticulate Crayfish	G5	S3			
Cambaridae	4	*Faxonius etnieri*	Ets Crayfish	G4G5	SU			
Cambaridae	1	*Faxonius hartfieldi*	Yazoo Crayfish	G2	S1			2
Cambaridae	3	*Faxonius jonesi*	Sucarnoochee River Crayfish	G3	S3			3
Cambaridae	3	*Faxonius mississippiensis*	Mississippi Crayfish	G3	S3			
Cambaridae	4	*Faxonius palmeri*	Gray-Speckled Crayfish	G5	S5			
Cambaridae	2	*Faxonius placidus*	Bigclaw Crayfish	G5	S2			
Cambaridae	2	*Faxonius validus*	Powerful Crayfish	G5	S2			
Cambaridae	1	*Faxonius wrighti*	Hardin Crayfish	G2	S1	PT		2
Cambaridae	2	*Faxonius yanahlindus*	Spinywrist Crayfish	GNR	S2			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Cambaridae	1	*Hobbseus attenuatus*	Pearl Rivulet Crayfish	G2	S2			2
Cambaridae	1	*Hobbseus cristatus*	Crested Rivulet Crayfish	G3	S2	PT		2
Cambaridae	1	*Hobbseus orconectoides*	Oktibbeha Rivulet Crayfish	G1	S1	PT		1
Cambaridae	3	*Hobbseus petilus*	Tombigbee Rivulet Crayfish	G2	S3	PT		2
Cambaridae	3	*Hobbseus prominens*	Prominence Rivulet Crayfish	G4G5	S3			
Cambaridae	1	*Hobbseus valleculus*	Choctaw Rivulet Crayfish	G1	S1			1
Cambaridae	1	*Hobbseus yalobushensis*	Yalobusha Rivulet Crayfish	G2	S2	PT		2
Cambaridae	3	*Lacunicambarus dalyae*	Jewel Mudbug	GNR	S3			
Cambaridae	1	*Lacunicambarus freudensteini*	Banded Mudbug	G1	S1			
Cambaridae	2	*Lacunicambarus mobilensis*	Lonesome Gravedigger	G3	S2			
Cambaridae	3	*Lacunicambarus polychromatus*	Paintedhand Crayfish	G5	S3			
Cambaridae	3	*Procambarus ablusus*	Hatchie River Crayfish	G4	S3			
Cambaridae	2	*Procambarus barbiger*	Jackson Prairie Crayfish	G2?	S2	PT		2
Cambaridae	2	*Procambarus bivittatus*	Ribbon Crayfish	G5	S2			
Cambaridae	1	*Procambarus fitzpatricki*	Spinytail Crayfish	G2?	S2			2
Cambaridae	4	*Procambarus hagenianus hagenianus*	Southeastern Prairie Crayfish	G4G5T 4	SU			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Cambaridae	3	*Procambarus hagenianus vesticeps*	Egyptian Crayfish	G4G5T3	S3			
Cambaridae	1	*Procambarus lagniappe*	Lagniappe Crayfish	G2	S2			2
Cambaridae	3	*Procambarus lecontei*	Mobile Crayfish	G3G4	S3			3
Cambaridae	2	*Procambarus lylei*	Shutispear Crayfish	G2	S2			2
Cambaridae	2	*Procambarus mancus*	Lame Crayfish	G4	S2			
Cambaridae	3	*Procambarus penni*	Pearl Blackwater Crayfish	G3	S3			2
Cambaridae	3	*Procambarus planirostris*	Flatnose Crayfish	G4	S3			3
Cambaridae	2	*Procambarus shermani*	Gulf Crayfish	G4	S2			
Cambaridae	3	*Procambarus viaeviridis*	Vernal Crayfish	G5	S3			2
Arachnids								
Ixodidae	2	*Amblyomma tuberculatum*	Gopher Tortoise Tick	G3?	S1			
Lycosidae	4	*Arctosa sanctaerosae*	Santa Rosa Wolf Spider	G3	SU			
Insects								
Baetidae	4	*Acentrella alachua*	A Mayfly	G3G4	SU			
Baetiscidae	4	*Baetisca escambiensis*	A Mayfly	G2G3	SU			
Heptageniidae	2	*Raptoheptagenia cruenta*	Wallace's Deepwater Mayfly	G4	S2			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Heptageniidae	2	*Spinadis simplex*	Wallace's Deepwater Mayfly	G3	S2			
Isonychiidae	4	*Isonychia berneri*	A Mayfly	G2G3	SU			
Oligoneuriidae	3	*Homoeoneuria cahabensis*	Cahaba Sand-filtering Mayfly	G3	S1S3			
Pseudironidae	3	*Pseudiron centralis*	White Sand-river Mayfly	G5	S3			
Aeshnidae	3	*Aeshna umbrosa*	Shadow Darner	G5	S2			
Coenagrionidae	3	*Amphiagrion saucium*	Eastern Red Damsel	G5	S2			
Coenagrionidae	3	*Enallagma concisum*	Cherry Bluet	G4	S2			
Coenagrionidae	3	*Enallagma davisi*	Sandhill Bluet	G5	S1			
Coenagrionidae	3	*Enallagma pallidum*	Pale Bluet	G4	S2			
Coenagrionidae	3	*Enallagma pollutum*	Florida Bluet	G5	S2			
Coenagrionidae	3	*Ischnura prognata*	Furtive Forktail	G4	S2			
Coenagrionidae	3	*Nehalennia gracilis*	Sphagnum Sprite	G5	S2			
Cordulegastridae	3	*Cordulegaster bilineata*	Brown Spiketail	G5	S2			
Cordulegastridae	2	*Cordulegaster erronea*	Tiger Spiketail	G4	S1			
Corduliidae	2	*Epitheca spinosa*	Robust Baskettail	G4	S1			
Corduliidae	3	*Neurocordulia yamaskanensis*	Stygian Shadowdragon	G5	S1			

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Corduliidae	3	*Somatochlora georgiana*	Coppery Emerald	G3G4	S2			
Corduliidae	3	*Somatochlora provocans*	Treetop Emerald	G4	S2			
Gomphidae	3	*Arigomphus lentulus*	Stillwater Clubtail	G5	S1			
Gomphidae	3	*Arigomphus villosipes*	Unicorn Clubtail	G5	S2			
Gomphidae	2	*Gomphus australis*	Clearlake Clubtail	G4	S1			
Gomphidae	3	*Gomphus dilatatus*	Blackwater Clubtail	G5	S1			
Gomphidae	2	*Gomphus geminatus*	Twin-striped Clubtail	G3G4	S1			
Gomphidae	2	*Gomphus hodgesi*	Hodges' Clubtail	G3	S2			
Gomphidae	1	*Ophiogomphus australis*	Southern Snaketail	G1G2	S1			
Gomphidae	3	*Stylogomphus albistylus*	Eastern Least Clubtail	G5	S1			
Gomphidae	1	*Stylurus potulentus*	Yellow-sided Clubtail	G2	S1			
Gomphidae	2	*Stylurus townesi*	Townes' Clubtail	G3	S1			
Libellulidae	3	*Celithemis amanda*	Amanda's Pennant	G5	S2			
Libellulidae	3	*Erythrodiplax umbrata*	Band-winged Dragonlet	G5	S1			
Libellulidae	3	*Nannothemis bella*	Elfin Skimmer	G4G5	S1			
Macromiidae	3	*Macromia alleghaniensis*	Allegheny River Cruiser	G4	S2			

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Petaluridae	3	*Tachopteryx thoreyi*	Gray Petaltail	G4	S2			
Leuctridae	3	*Leuctra colemanorum*	Yalobusha Needlefly	GNR	S3			
Leuctridae	4	*Leuctra hicksi*	Cypress Needlefly	GNR	SU			
Nemouridae	4	*Amphinemura alabama*	Alabama Forestfly	G3	SU			
Nemouridae	4	*Shipsa rotunda*	Intrepid Forestfly	G5	SU			
Perlidae	4	*Attaneuria ruralis*	Giant Stone	G4	SU			
Perlidae	4	*Neoperla coxi*	A Stonefly	G3	SU			
Perlidae	4	*Perlesta lagoi*	A Stonefly	G3	SU			
Perlodidae	4	*Helopicus bogaloosa*	Masked Springfly	G3G4	SU			
Perlodidae	2	*Hydroperla fugitans*	Austin Springfly	G3	S2			
Perlodidae	4	*Isogenoides varians*	A Stonefly	G3G4	SU			
Acrididae	2	*Pseudopomala brachyptera*	Short-winged Toothpick Grasshopper	G5	S1			
Gryllotalpidae	4	*Gryllotalpa major*	Prairie Mole Cricket	G3	SH			
Carabidae	4	*Cicindela marginipennis*	Cobblestone Tiger Beetle	G3	SH			
Carabidae	3	*Cicindela nigrior*	Autumn Tiger Beetle	G2G3	S2S3			
Histeridae	2	*Chelyoxenus xerobatis*	Gopher Tortoise Hister Beetle	G2G3	S1S3			

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Hydraenidae	2	*Gymnocthebius maureenae*	Maureen's Gymnocthebius Minute Moss Beetle	G1G3	S1S3			
Hydrophilidae	2	*Paracymus seclusus*	Seclusive Water Scavenger Beetle	G1G3	S1S3			
Scarabaeidae	2	*Aphodius troglodytes*	Aphodius Tortoise Commensal Scarab Beetle	G2G3	S1			
Scarabaeidae	2	*Onthophagus polyphemi*	Onthophagus Tortoise Commensal Scarab Beetle	G2G3	S1S2			
Silphidae	4	*Nicrophorus americanus*	American Burying Beetle	G3	SX	LE	LE	
Staphylinidae	2	*Philonthus testudo*	Western Gopher Tortoise Rove Beetle	G2	S1			
Anthomyiidae	2	*Eutrichota gopheri*	Gopher Tortoise Burrow Fly	G2G3	S2			
Asilidae	2	*Machimus polyphemi*	Gopher Tortoise Robber Fly	G2	S1			
Apidae	2	*Bombus fraternus*	Southern Plains Bumble Bee	G2G4	S2			3
Apidae	3	*Bombus pensylvanicus*	American Bumblebee	G3G4	S3	PT		3
Apidae	1	*Bombus variabilis*	Variable Cuckoo Bumble Bee	G1G2	S1	PT		1
Apideae	4	*Tetraloniella albata*	A Long-horned Bee	GNR	SU			
Colletidae	4	*Caupolicana electa*	A Plasterer Bee	G2	SU			
Formicidae	2	*Pogonomyrmex badius*	Florida Harvester Ant	G5	S2			
Melittidae	4	*Hesperapis oraria*	Gulf Coast Solitary Bee	G1	SU			
Erebidae	4	*Catocala atocala*	Brou's Underwing	G3G4	SU			

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Erebidae	4	*Catocala delilah*	Delilah Underwing	G3G4	SU			
Erebidae	4	*Catocala miranda*	A Noctuid Moth	G3G4	SU			
Hesperiidae	4	*Amblyscirtes alternata*	Least Florida Skipper	G2G3	SU			
Hesperiidae	3	*Amblyscirtes reversa*	Reversed Roadside Skipper	G3G4	S1S3			
Hesperiidae	3	*Atrytone arogos arogos*	Arogos Skipper	G2G3T 1T2	S2S3			
Hesperiidae	4	*Atrytonopsis loammi*	Loammi Skipper	G2	SU			
Hesperiidae	4	*Erynnis martialis*	Mottled Dusky Wing	G3	SU			
Hesperiidae	4	*Euphyes arpa*	Palmetto Skipper	G3	SU			
Hesperiidae	2	*Euphyes bayensis*	Bay St. Louis Skipper	G2G3	S1			
Hesperiidae	4	*Euphyes dukesi dukesi*	Dukes' Skipper	G3G4T 3	SU			
Hesperiidae	3	*Euphyes pilatka*	Palatka Skipper	G3	S1S3			
Hesperiidae	4	*Hesperia attalus*	Dotted Skipper	G3G4	SU			
Noctuidae	4	*Bagisara brouana*	A Noctuid Moth	G3	SU			
Noctuidae	4	*Papaipema maritima*	Maritime Sunflower Borer	G3	SU			
Noctuidae	4	*Papaipema* sp. 5	Rare Cane Borer Moth	G1G2	SU			
Nymphalidae	4	*Neonympha helicta*	Helicta Satyr	G3G4	SU			

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Nymphalidae	1	*Neonympha mitchellii*	Mitchell's Satyr	G2	S1	LE	LE	
Nymphalidae	4	*Speyeria diana*	Diana	G2G3	SU			
Saturniidae	4	*Automeris louisiana*	Louisiana Eyed Silkmoth	G1G3	SU			
Sphingidae	4	*Eumorpha intermedia*	Intermediate Sphinx	G3G4	SU			
Sphingidae	4	*Lapara phaeobrachycerous*	Gulf Pine Sphinx	G3G4	SU			
Tineidae	4	*Ceratophaga vicinella*	Gopher Tortoise Shell Moth	G1G3	SU			
Capniidae	4	*Allocapnia aurora*	Aurora Snowfly	G5	SU			
Capniidae	4	*Allocapnia polemistis*	Black Warrior Snowfly	G3	SU			
Capniidae	4	*Nemocapnia carolina*	Southern Snowfly	G5	SU			
Chloroperlidae	4	*Alloperla natchez*	Natchez Stonefly	G2	S2			
Chloroperlidae	2	*Haploperla chukcho*	Chukcho Stonefly	G2	S2			
Hydropsychidae	4	*Cheumatopsyche petersi*	Peters' Cheumatopsyche Caddisfly	G3	SU			
Hydroptilidae	4	*Hydroptila cretosa*	A Caddisfly	G1G2	SU			
Hydroptilidae	4	*Hydroptila holzenthali*	A Caddisfly	G1	SU			
Hydroptilidae	4	*Hydroptila homochitta*	A Caddisfly	G1	SU			
Hydroptilidae	4	*Hydroptila molsonae*	Molson's Microcaddisfly	G2	SU			

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Hydroptilidae	4	*Hydroptila poirrieri*	A Caddisfly	G2	SU			
Hydroptilidae	4	*Hydroptila tusculum*	A Caddisfly	G3G4	SU			
Hydroptilidae	4	*Neotrichia alabamensis*	A Caddisfly	G3G4	SU			
Hydroptilidae	4	*Orthotrichia dentata*	Dentate Orthotrichian Microcaddisfly	G2G3	SU			
Lepidostomatidae	4	*Lepidostoma morsei*	Morse's Little Plain Brown Sedge	G2G3	SU			
Leptoceridae	4	*Ceraclea spongillovorax*	A Caddisfly	G3G4	SU			
Leptoceridae	4	*Oecetis daytona*	A Caddisfly	G3	SU			
Leptoceridae	4	*Setodes dixiensis*	A Caddisfly	G3G4	SU			
Philopotamidae	4	*Chimarra falculata*	A Caddisfly	G3G4	SU			
Sericostomatidae	4	*Agarodes libalis*	Spring-loving Psiloneuran Caddisfly	G3	SU			
Sericostomatidae	4	*Agarodes stannardi*	Stannard's Agarodes Caddisfly	G2	S1S2			
Fishes								
Petromyzontidae	3	*Ichthyomyzon castaneus*	Chestnut Lamprey	G4	S3			
Petromyzontidae	2	*Ichthyomyzon unicuspis*	Silver Lamprey	G5	S1			
Petromyzontidae	2	*Lethenteron appendix*	American Brook Lamprey	G4	S2			2
Lamnidae	4	*Isurus oxyrinchus*	Shortfin Mako Shark	GNR	SU			2

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Odontaspididae	4	*Carcharias taurus*	Sand Tiger Shark	G3	SP			
Carcharhinidae	3	*Carcharhinus acronotus*	Blacknose Shark	GNR	S3			
Carcharhinidae	2	*Carcharhinus plumbeus*	Sandbar Shark	G4	S2			2
Carcharhinidae	4	*Carcharhinus porosus*	Smalltail Shark	GNR	SU	PT		
Carcharhinidae	2	*Negaprion brevirostris*	Lemon Shark	G3	S2			
Sphyrnidae	2	*Sphyrna lewini*	Scalloped Hammerhead	G4	S2	LE	LE	
Sphyrnidae	2	*Sphyrna mokarran*	Great Hammerhead	G3	S2			
Narcinidae	2	*Narcine bancroftii*	Caribbean Electric Ray	GNR	S2			1
Pristidae	1	*Pristis pectinata*	Smalltooth Sawfish	G2	S1	LE		
Pristidae	4	*Pristis pristis*	Largetooth Sawfish	G2	SH	LE	LE	
Myliobatiade	2	*Aetobatus narinari*	Whitespotted Eagle Ray	G4	S2	PT		
Myliobatidae	4	*Manta birostris*	Giant Manta Ray	G3	SP	LT	LE	2
Rhinopteridae	3	*Rhinoptera brasiliensis*	Brazilian Cownose Ray	GNR	S3			
Mobulidae	4	*Mobula hypostoma*	Atlantic Pygmy Devil Ray	GNR	SP			
Mobulidae	4	*Mobula tarapacana*	Sicklefin Devil Ray	GNR	SP			
Acipenseridae	1	*Acipenser desotoi*	Gulf Sturgeon	G3T2	S1	LT	LE	2

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Acipenseridae	2	*Acipenser fulvescens*	Lake Sturgeon	G3G4	S2			2
Acipenseridae	1	*Scaphirhynchus albus*	Pallid Sturgeon	G2	S1	LE	LE	1
Acipenseridae	3	*Scaphirhynchus platorynchus*	Shovelnose Sturgeon	G4	S3	LT	LE	2
Acipenseridae	4	*Scaphirhynchus suttkusi*	Alabama Sturgeon	G1	SX	LE	LE	1
Polyodontidae	3	*Polyodon spathula*	Paddlefish	G4	S3			
Lepisosteidae	2	*Atractosteus spatula*	Alligator Gar	G3G4	S2			3
Megalopidae	4	*Megalops atlanticus*	Tarpon	G5	S3			2
Anguillidae	4	*Anguilla rostrata*	American Eel	G4	SU			1
Alosidae	1	*Alosa alabamae*	Alabama Shad	G2G3	S1	PT		1
Alosidae	4	*Alosa chrysochloris*	Skipjack Herring	SU	G5			
Catostomidae	4	*Catostomus commersonii*	White Sucker	G5	SX			
Catostomidae	3	*Cycleptus elongatus*	Blue Sucker	G3G4	S3			2
Catostomidae	3	*Cycleptus meridionalis*	Southeastern Blue Sucker	G3G4	S3			2
Catostomidae	3	*Ictiobus niger*	Black Buffalo	G5	S3			
Catostomidae	2	*Moxostoma anisurum*	Silver Redhorse	G5	S1			
Catostomidae	2	*Moxostoma breviceps*	Smallmouth Redhorse	G5	S1			

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Catostomidae	3	*Moxostoma carinatum*	River Redhorse	G4	S3			
Catostomidae	3	*Moxostoma duquesnei*	Black Redhorse	G5	S1			
Leuciscidae	2	*Alburnops candidus*	Silverside Shiner	G4	S2			2
Leuciscidae	2	*Alburnops chalybaeus*	Ironcolor Shiner	G4	S1		LE	2
Leuciscidae	1	*Alburnops edwardraneyi*	Fluvial Shiner	G4	S1			1
Leuciscidae	2	*Chrosomus erythrogaster*	Southern Redbelly Dace	G5	S2		LE	
Leuciscidae	3	*Clinostomus funduloides*	Rosyside Dace	G5	S3			
Leuciscidae	3	*Cyprinella callistia*	Alabama Shiner	G5	S3			
Leuciscidae	2	*Cyprinella galactura*	Whitetail Shiner	G5	S1			
Leuciscidae	3	*Cyprinella spiloptera*	Spotfin Shiner	G5	S3			
Leuciscidae	3	*Cyprinella whipplei*	Steelcolor Shiner	G5	S3			
Leuciscidae	3	*Hybopsis amnis*	Pallid Shiner	G4	S3			2
Leuciscidae	3	*Lythrurus fasciolaris*	Scarlet Shiner	G5	S3			
Leuciscidae	1	*Macrhybopsis meeki*	Sicklefin Chub	G3	S1			2
Leuciscidae	3	*Miniellus boops*	Bigeye Shiner	G5	S2		LE*	
Leuciscidae	1	*Miniellus melanostomus*	Blackmouth Shiner	G2	S1			1

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Leuciscidae	2	*Miniellus sabinae*	Sabine Shiner	G4	S2			3
Leuciscidae	3	*Notropis micropteryx*	Highland Shiner	G5	S3			
Leuciscidae	4	*Phenacobius mirabilis*	Suckermouth Minnow	G5	SH		LE	
Leuciscidae	4	*Platygobio gracilis*	Flathead Chub	G5	SH			3
Leuciscidae	2	*Pteronotropis welaka*	Bluenose Shiner	G3G4	S2			2
Leuciscidae	2	*Rhinichthys obtusus*	Blacknose Dace	G5	S1			
Ictaluridae	4	*Noturus exilis*	Slender Madtom	G5	S1		LE	
Ictaluridae	2	*Noturus flavus*	Stonecat	G5	S2			
Ictaluridae	1	*Noturus gladiator*	Piebald Madtom	G3	S1	PP	LE	1
Ictaluridae	3	*Noturus munitus*	Frecklebelly Madtom	G3	S3		LE*	2
Syngnathidae	4	*Hippocampus erectus*	Lined Seahorse	GNR	SU			2
Fundulidae	3	*Fundulus blairae*	Western Starhead Topminnow	G4	S3			
Fundulidae	3	*Fundulus dispar*	Northern Starhead Topminnow	G4	S3			3
Fundulidae	2	*Fundulus euryzonus*	Broadstripe Topminnow	G3	S2			3
Fundulidae	2	*Fundulus jenkinsi*	Saltmarsh Topminnow	G3	S3			2
Fundulidae	4	*Leptolucania ommata*	Pygmy Killifish	G5	SH			

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Poeciliidae	3	*Heterandria formosa*	Least Killifish	G5	S3			
Centrarchidae	2	*Ambloplites rupestris*	Rock Bass	G5	S1			
Centrarchidae	3	*Enneacanthus gloriosus*	Bluespotted Sunfish	G5	S3			
Cottidae	3	*Cottus carolinae*	Banded Sculpin	G5	S3			
Epinephelidae	4	*Epinephelus itajara*	Atlantic Goliath Grouper	G3	SU			1
Percidae	4	*Ammocrypta clara*	Western Sand Darter	G3	SH			2
Percidae	3	*Crystallaria asprella*	Crystal Darter	G3	S3		LE*	2
Percidae	3	*Etheostoma asprigene*	Mud Darter	G4	S3			
Percidae	3	*Etheostoma blennioides*	Greenside Darter	G5	S3		LE*	
Percidae	3	*Etheostoma duryi*	Black Darter	G4	S3			2
Percidae	1	*Etheostoma faulkneri*	Yoknapatawpha Darter	G2	S1			
Percidae	3	*Etheostoma flabellare*	Fantail Darter	G5	S2			
Percidae	3	*Etheostoma jessiae*	Blueside Darter	G4	S3			3
Percidae	3	*Etheostoma kennicotti*	Stripetail Darter	G4G5	S2			
Percidae	3	*Etheostoma lachneri*	Tombigbee Darter	G4	S3			
Percidae	2	*Etheostoma nigripinne*	Blackfin Darter	G4	S3			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Percidae	1	*Etheostoma raneyi*	Yazoo Darter	G2	S1			2
Percidae	3	*Etheostoma rupestre*	Rock Darter	G4	S3			3
Percidae	2	*Etheostoma simoterum*	Snubnose Darter	G3	S2			
Percidae	2	*Etheostoma zonifer*	Backwater Darter	G4	S1			2
Percidae	1	*Nothonotus rubrus*	Bayou Darter	G1	S1	LT	LE	3
Percidae	3	*Nothonotus rufilineatus*	Redline Darter	G5	S3			
Percidae	1	*Percina aurora*	Pearl Darter	G1	S1	LT	LE	1
Percidae	2	*Percina evides*	Gilt Darter	G4	S2			
Percidae	3	*Percina kathae*	Mobile Logperch	G4	S3			
Percidae	1	*Percina lenticula*	Freckled Darter	G2	S1			2
Percidae	2	*Percina phoxocephala*	Slenderhead Darter	G5	S1		LE	
Percidae	4	*Percina uranidea*	Stargazing Darter	G3	SU			2
Percidae	2	*Stizostedion canadense*	Sauger	G5	S2			
Percidae	4	*Stizostedion* sp. cf. *vitreum*	Southern Walleye	G3	S1			1
Sparidae	4	*Archosargus rhomboidalis*	Western Atlantic Seabream	GNR	SP			

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Amphibians								
Cryptobranchidae	1	*Cryptobranchus alleganiensis*	Hellbender	G3	S1	PP	LE	1
Amphiumidae	1	*Amphiuma pholeter*	One-toed Amphiuma	G3	S1		LE	2
Ambystomatidae	3	*Ambystoma texanum*	Smallmouth Salamander	G5	S3			
Ambystomatidae	4	*Ambystoma tigrinum*	Tiger Salamander	G5	S1			
Plethodontidae	2	*Aneides aeneus*	Green Salamander	G3G4	S1		LE	2
Plethodontidae	4	*Desmognathus pascagoula*	Pascagoula Dusky Salamander	?	SU			
Plethodontidae	4	*Desmognathus valentinei*	Valentine's Southern Dusky Salamander	GNR	S3			3
Plethodontidae	2	*Eurycea longicauda longicauda*	Longtail Salamander	G5T5	S2			
Plethodontidae	2	*Eurycea lucifuga*	Cave Salamander	G5	S1		LE	
Plethodontidae	4	*Eurycea sphagnicola*	Bog Dwarf Salamander	G1G2	SU			2
Plethodontidae	2	*Gyrinophilus porphyriticus*	Spring Salamander	G5	S1		LE	
Plethodontidae	2	*Hemidactylium scutatum*	Four-toed Salamander	G5	S2			
Plethodontidae	2	*Plethodon ventralis*	Southern Zigzag Salamander	G4	S2			3
Plethodontidae	2	*Plethodon websteri* clade A	Webster's Salamander Clade A	G3G4	S2			2
Plethodontidae	2	*Plethodon websteri* clade B	Webster's Salamander Clade B	G3G4	S2			2

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Plethodontidae	2	*Pseudotriton montanus*	Mud Salamander	G5	S2			3
Plethodontidae	3	*Pseudotriton ruber*	Red Salamander	G5	S3			
Proteidae	4	*Necturus maculosus*	Common Mudpuppy	G5	SU			
Hylidae	4	*Pseudacris collinsorum*	Collinses' Mountain Chorus Frog	GNR	S2			
Hylidae	1	*Pseudacris ornata*	Ornate Chorus Frog	G4	S1			2
Ranidae	2	*Lithobates areolatus*	Crawfish Frog	G4	S2			2
Ranidae	1	*Lithobates heckscheri*	River Frog	G5	S1			2
Ranidae	1	*Lithobates sevosus*	Dusky Gopher Frog	G1	S1	LE	LE	1
Reptiles								
Chelydridae	1	*Macrochelys temminckii*	Alligator Snapping Turtle	G3	S3	PP		2
Emydidae	1	*Deirochelys reticularia miaria*	Western Chicken Turtle	G5T5	S1	PT		2
Emydidae	4	*Deirochelys reticularia reticularia*	Eastern Chicken Turtle	G5T5	S3			
Emydidae	2	*Graptemys flavimaculata*	Yellow-blotched Map Turtle	G2G3	S2	LT	LE	1
Emydidae	2	*Graptemys geographica*	Northern Map Turtle	G5	S1			
Emydidae	2	*Graptemys gibbonsi*	Pascagoula Map Turtle	G2G3	S2	LT	LE	1
Emydidae	3	*Graptemys nigrinoda*	Black-knobbed Map Turtle	G3	S2		LE	2

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Emydidae	2	*Graptemys oculifera*	Ringed Map Turtle	G2	S2	LT	LE	2
Emydidae	1	*Graptemys pearlensis*	Pearl River Map Turtle	G2G3	S1	LT	LE	2
Emydidae	1	*Graptemys pulchra*	Alabama MapTurtle	G4	S2	LT	LE	3
Emydidae	1	*Malaclemys terrapin pileata*	Mississippi Diamondback Terrapin	G4T3	S2			2
Emydidae	1	*Pseudemys alabamensis*	Alabama Red-bellied Turtle	G1	S1	LE	LE	1
Testudinidae	1	*Gopherus polyphemus*	Gopher Tortoise	G3	S1	LT	LE	2
Cheloniidae	2	*Caretta caretta*	Loggerhead Sea Turtle	G3	S1B	LT	LE	2
Cheloniidae	3	*Chelonia mydas*	Green Sea Turtle	G3	SNA	LT	LE	2
Cheloniidae	4	*Eretmochelys imbricata*	Hawksbill Sea Turtle	G3	SNA	LE	LE	1
Cheloniidae	1	*Lepidochelys kempii*	Kemp's Ridley Sea Turtle	G1	S1N,S1B	LE	LE	1
Dermochelydae	3	*Dermochelys coriacea*	Atlantic Leatherback Sea Turtle	G2	SNA	LE	LE	1
Scincidae	2	*Plestiodon anthracinus*	Coal Skink	G5	S3S4			2
Anguidae	2	*Ophisaurus attenuatus*	Slender Glass Lizard	G5	S2			2
Anguidae	4	*Ophisaurus mimicus*	Mimic Glass Lizard	G3	SH			2
Colubridae	3	*Coluber flagellum flagellum*	Eastern Coachwhip	G5T5	S3			
Colubridae	4	*Drymarchon couperi*	Eastern Indigo Snake	G3	SX	LT	LE	1

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Colubridae	2	*Farancia erytrogramma*	Rainbow Snake	G4	S2		LE	2
Colubridae	4	*Heterodon simus*	Southern Hognose Snake	G2	SH		LE	2
Colubridae	2	*Lampropeltis calligaster calligaster*	Prairie Kingsnake	G5	S3			
Colubridae	2	*Lampropeltis calligaster rhombomaculata*	Mole Kingsnake	G5	S3			
Colubridae	2	*Lampropeltis triangulum*	Red Milk Snake	G5	S3			
Colubridae	2	*Liodytes rigida deltae*	Delta Crayfish Snake	G5T4Q	S2			
Colubridae	3	*Liodytes rigida sinicola*	Gulf Crayfish Snake	G5T5	S3			
Colubridae	2	*Nerodia clarkii clarkii*	Gulf Salt Marsh Snake	G4T3	S2			3
Colubridae	1	*Pituophis melanoleucus lodingi*	Black Pine Snake	G4T1?	S2	LT	LE	2
Colubridae	4	*Pituophis melanoleucus melanoleucus*	Northern Pine Snake	G4T4	SU			2
Colubridae	2	*Regina septemvittata*	Queen Snake	G5	S2			
Colubridae	2	*Rhadinaea flavilata*	Pine Woods Snake	G4	S2			2
Viperidae	2	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	G3	S3			2
Elapidae	2	*Micrurus fulvius*	Eastern Coral Snake	G5	S3			2

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Birds								
Anatidae	1	*Anas fulvigula*	Mottled Duck	G4	S2			2
Anatidae	3	*Anas acuta*	Northern Pintail	G5	S4N			
Anatidae	3	*Aythya affinis*	Lesser Scaup	G5	S4N			
Odontophoridae	2	*Colinus virginianus*	Northern Bobwhite	G4G5	S3			2
Columbidae	3	*Columbina passerina*	Common Ground Dove	G5	S2			
Cuculidae	3	*Coccyzus americanus*	Yellow-billed Cuckoo	G5	S5B			2
Caprimulgidae	3	*Chordeiles minor*	Common Nighthawk	G5	S4B			
Caprimulgidae	3	*Antrostomus carolinensis*	Chuck-will's-widow	G5	S4B			3
Caprimulgidae	1	*Antrostomus vociferus*	Eastern Whip-poor-will	G5	S2?B			2
Apodidae	2	*Chaetura pelagica*	Chimney Swift	G4G5	S5B			3
Rallidae	2	*Rallus elegans*	King Rail	G4	S2			2
Rallidae	3	*Porphyrio martinicus*	Purple Gallinule	G5	S2B			
Rallidae	2	*Coturnicops noveboracensis*	Yellow Rail	G4	S2N			2
Rallidae	1	*Laterallus jamaicensis*	Black Rail	G3	S1	LT	LE	1
Gruidae	1	*Antigone canadensis pulla*	Mississippi Sandhill Crane	G5T1	S1	LE	LE	2

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Haematopodidae	1	*Haematopus palliatus*	American Oystercatcher	G5	S2			2
Charadriidae	2	*Pluvialis dominica*	American Golden-Plover	G5	S3M			
Charadriidae	1	*Charadrius melodus*	Piping Plover	G3	S2N	LT	LE	2
Charadriidae	1	*Charadrius wilsonia*	Wilson's Plover	G5	S1			2
Charadriidae	1	*Charadrius nivosus*	Snowy Plover	G3	S2		LE	2
Scolopacidae	2	*Limosa fedoa*	Marbled Godwit	G5	S2N			
Scolopacidae	1	*Calidris canutus*	Red Knot	G4	S2N	LT	LE	2
Scolopacidae	2	*Calidris subruficollis*	Buff-breasted Sandpiper	G4	S2M			
Scolopacidae	2	*Calidris melanotos*	Pectoral Sandpiper	G5	S4M			
Scolopacidae	2	*Calidris pusilla*	Semipalmated Sandpiper	G5	S4M			
Scolopacidae	3	*Limnodromus griseus*	Short-billed Dowitcher	G5	S5N			
Scolopacidae	3	*Scolopax minor*	American Woodcock	G5	S3?B,S4N			3
Scolopacidae	2	*Tringa flavipes*	Lesser Yellowlegs	G5	S4N			
Scolopacidae	3	*Tringa semipalmata*	Willet	G5	S4B,S4N			2
Laridae	1	*Sternula antillarum antillarum*	Coastal Least Tern	G4	S3B			2
Laridae	2	*Sternula antillarum athalassos*	Interior Least Tern	G4T3	S3B		LE*	2

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Laridae	1	*Gelochelidon nilotica*	Gull-billed Tern	G5	S1B			2
Laridae	3	*Chlidonias niger*	Black Tern	G4G5	S3M			
Laridae	1	*Sterna hirundo*	Common Tern (breeding population)	G5	S1B			
Laridae	2	*Thalasseus maximus*	Royal Tern	G5	S1B,S4N			3
Laridae	1	*Thalasseus sandvicensis*	Sandwich Tern	G5	S2B			2
Laridae	1	*Rynchops niger*	Black Skimmer	G5	S2B,S3N			2
Ciconiidae	1	*Mycteria americana*	Wood Stork	G4	S2N	LT	LE	2
Ardeidae	2	*Botaurus lentiginosus*	American Bittern	G5	S1N			
Ardeidae	2	*Ixobrychus exilis*	Least Bittern	G4G5	S2B			3
Ardeidae	2	*Egretta caerulea*	Little Blue Heron	G5	S2B,S2N			3
Ardeidae	3	*Egretta tricolor*	Tricolored Heron	G5	S2			
Ardeidae	2	*Egretta rufescens*	Reddish Egret	G4	S2N			2
Ardeidae	3	*Nycticorax nycticorax*	Black-crowned Night-Heron	G5	S2B,S4N			
Ardeidae	3	*Nyctanassa violacea*	Yellow-crowned Night-Heron	G5	S4B,S2N			3
Threskiornithidae	1	*Platalea ajaja*	Roseate Spoonbill	G5	S1B,S2N			2
Accipitridae	1	*Elanoides forficatus*	Swallow-tailed Kite	G5	S2B		LE	1

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Accipitridae	2	*Aquila chrysaetos*	Golden Eagle	G5	S1N			
Accipitridae	2	*Accipiter striatus*	Sharp-shinned Hawk (breeding population)	G5	S1?B,S3N			
Strigidae	3	*Asio flammeus*	Short-eared Owl	G5	S2N			
Picidae	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker	G5	S4			
Picidae	1	*Dryobates borealis*	Red-cockaded Woodpecker	G3	S1	LT	LE	1
Picidae	1	*Campephilus principalis*	Ivory-billed Woodpecker	GX	SX	LE	LE	
Falconidae	1	*Falco sparverius paulus*	Southeastern American Kestrel	G5T4	S2			2
Vireonidae	2	*Vireo gilvus*	Warbling Vireo	G5	S1B			
Laniidae	2	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	G4T4	S2			2
Laniidae	3	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	G4T3	S3N			2
Hirundinidae	2	*Riparia riparia*	Bank Swallow (breeding population)	G5	S1?B			
Sittidae	3	*Sitta pusilla*	Brown-headed Nuthatch	G4	S3			3
Troglodytidae	1	*Thryomanes bewickii*	Bewick's Wren	G5T2	S1		LE	
Troglodytidae	2	*Cistothorus palustris marianae*	Marian's Marsh Wren	G5T3	S3			2
Turdidae	2	*Hylocichla mustelina*	Wood Thrush	G4	S5B			3
Passerellidae	2	*Peucaea aestivalis*	Bachman's Sparrow	G3	S3			1

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Passerellidae	2	*Ammodramus savannarum*	Grasshopper Sparrow	G5	S3B,S3N			2
Passerellidae	3	*Spizella pusilla*	Field Sparrow	G5	S4B,S5N			
Passerellidae	2	*Ammospiza leconteii*	LeConte's Sparrow	G5	S3N			2
Passerellidae	1	*Ammospiza maritima*	Seaside Sparrow	G4	S2			2
Passerellidae	1	*Ammospiza nelsoni*	Nelson's Sparrow	G5	S2N			2
Passerellidae	1	*Centronyx henslowii*	Henslow's Sparrow	G4	S2N			2
Icteridae	3	*Sturnella magna*	Eastern Meadowlark	G5	S4			2
Icteridae	2	*Euphagus carolinus*	Rusty Blackbird	G4	S2N			2
Icteridae	3	*Quiscalus quiscula*	Common Grackle	G5	S5B,S5N			
Parulidae	2	*Seiurus aurocapilla*	Ovenbird (breeding population)	G5	S1B			
Parulidae	2	*Helmitheros vermivorum*	Worm-eating Warbler	G5	S2B			3
Parulidae	2	*Parkesia motacilla*	Louisiana Waterthrush	G5	S2S3B			3
Parulidae	1	*Vermivora chrysoptera*	Golden-winged Warbler	G4	S2M			2
Parulidae	2	*Protonotaria citrea*	Prothonotary Warbler	G5	S5B			3
Parulidae	2	*Limnothlypis swainsonii*	Swainson's Warbler	G4	S3B			2
Parulidae	2	*Geothlypis formosa*	Kentucky Warbler	G5	S4B			3

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Parulidae	2	*Setophaga cerulea*	Cerulean Warbler	G4	S2M			2
Parulidae	2	*Setophaga discolor*	Prairie Warbler	G5	S4B			3
Cardinalidae	3	*Piranga olivacea*	Scarlet Tanager (breeding population)	G5	S2?B			
Cardinalidae	2	*Passerina ciris*	Painted Bunting	G5	S3B			2
Mammals								
Soricidae	2	*Sorex longirostris*	Southeastern Shrew	G5	S2			
Vespertilionidae	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	G3G4	S3			2
Vespertilionidae	3	*Lasionycteris noctivagans*	Silver-haired Bat	G3G4	S3			
Vespertilionidae	3	*Lasiurus cinereus*	Hoary Bat	G3G4	S3			2
Vespertilionidae	3	*Lasiurus intermedius*	Northern Yellow Bat	G5	S2			2
Vespertilionidae	3	*Myotis austroriparius*	Southeastern Myotis	G4	S3			3
Vespertilionidae	1	*Myotis grisescens*	Gray Bat	G3G4	S1B	LE	LE	3
Vespertilionidae	1	*Myotis septentrionalis*	Northern Long-eared Bat	G2G3	S1	LE	LE	1
Vespertilionidae	1	*Myotis sodalis*	Indiana Bat	G2	S1B	LE	LE	1
Vespertilionidae	2	*Perimyotis subflavus*	Tricolored Bat	G3G4	S3	PP		2
Dipodidae	2	*Zapus hudsonius*	Meadow Jumping Mouse	G5	S1	(PS)		

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Cricetidae	2	*Peromyscus polionotus*	Oldfield Mouse	G5	S2	(PS)		1
Canidae	4	*Canis rufus*	Red Wolf	G1Q	SX	LE	LE	1
Ursidae	2	*Ursus americanus*	Black Bear	G5	S2		LE	
Ursidae	1	*Ursus americanus luteolus*	Louisiana Black Bear	G5T2	S2		LE	3
Mustelidae	3	*Neogale frenata*	Long-tailed Weasel	G5	S3			
Mephitidae	1	*Spilogale putorius*	Eastern Spotted Skunk	G4	S1			2
Felidae	4	*Puma concolor coryi*	Florida Panther	G5T1	SX	LE	LE	1
Trichechidae	1	*Trichechus manatus latirostris*	Florida Manatee	G2G3	S1	LT	LE	2
Nonvascular Plants								
Cephaloziellaceae	2	*Cylindrocolea rhizantha*	a liverwort	G3?	S2			
Plagiochilaceae	2	*Plagiochila floridana*	Florida Leafy Liverwort	G2?	S2			
Plagiochilaceae	1	*Plagiochila invisa*	a liverwort	G1	S1			
Plagiochilaceae	1	*Plagiochila virginica* var. *virginica*	a liverwort	G4T3	S1			
Radulaceae	3	*Radula sullivantii*	a liverwort	G3	S3			
Jubulaceae	1	*Frullania donnellii*	a liverwort	G3?	S1			
Lejeuneaceae	1	*Drepanolejeunea mosenii*	a liverwort	G1	S1			

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Lejeuneaceae	1	*Lejeunea bermudiana*	a liverwort	G3G4	S1			
Lejeuneaceae	3	*Lejeunea cladogyna*	a liverwort	G3?	S3			
Lejeuneaceae	2	*Lejeunea floridana*	a liverwort	G2G3	S2			
Lejeuneaceae	2	*Lejeunea laetivirens*	a liverwort	G5	S2			
Lejeuneaceae	1	*Cololejeunea setiloba*	a liverwort	G2?	S1			
Metzgeriaceae	3	*Metzgeria uncigera*	a liverwort	G3	S3			
Sphaerocarpaceae	2	*Sphaerocarpos donnellii*	a liverwort	G2G3	S2			
Ricciaceae	1	*Riccia warnstorfii*	a liverwort	G1G3Q	S1			
Sphagnaceae	3	*Sphagnum carolinianum*	Carolina Peatmoss	G3	S3			
Sphagnaceae	3	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss	G3	S3			
Sphagnaceae	1	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss	G3	S1			
Archidiaceae	1	*Archidium hallii*	Hall's Archidium Moss	G3?	S1			
Fissidentaceae	2	*Fissidens amoenus*	Hall's Fissidens Moss	G2	S2			
Dicranaceae	1	*Campylopus angustiretis*	Campylopus Moss	G2?	S1			
Bruchiaceae	3	*Bruchia ravenelii*	Ravenel's Bruchia Moss	G3?	S3?			
Pottiaceae	1	*Tortula porteri*	Porter's Screw Moss	G3?	S1?			

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Bryaceae	1	*Rhodobryum roseum*	Rose Moss	G5	S1?			
Orthotrichaceae	1	*Macromitrium richardii*	Richard's Macromitrium Moss	G2G4	S1			
Orthotrichaceae	3	*Orthotrichum exiguum*	Small Wood-bark Moss	G3?	S3?			
Pilotrichaceae	1	*Trachyxiphium hypnaceum*	Trachyxiphium Moss	G2?	S1?			
Hypnaceae	1	*Callicladium haldanianum*	Beautiful Branch Moss	G5	S1			
Cryphaeaceae	1	*Cryphaea ravenelii*	Ravenel's Cryphaea Moss	G3?	S1			
Anthocerotaceae	2	*Anthoceros punctatus*	a hornwort	G2G3	S2			
Anthocerotaceae	1	*Sphaerosporoceros adscendens*	a hornwort	G3?	S1			
Vascular Plants								
Lycopodiaceae	2	*Diphasiastrum digitatum*	Fan Club-moss	G5	S2			4
Lycopodiaceae	3	*Palhinhaea cernua*	Nodding Clubmoss	G5	S2			4
Isoetaceae	2	*Isoetes appalachiana*	Appalachian Quillwort	G4	S1S2			4
Isoetaceae	2	*Isoetes louisianensis*	Louisiana Quillwort	G2G3	S2	LE		2
Isoetaceae	2	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort	G5TNR	S2			
Isoetaceae	2	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort	G5TNR	S2			
Isoetaceae	1	*Isoetes mississippiensis*	Mississippi Quillwort	G1	S1			1

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Isoetaceae	2	*Isoetes valida*	Strong Quillwort	G4?	S1			4
Selaginellaceae	3	*Lycopodioides ludovicianum*	Gulf Spike-moss	G3G4	S1S2			3
Equisetaceae	1	*Equisetum arvense*	Field Horsetail	G5	S1S2			4
Ophioglossaceae	2	*Sceptridium jenmanii*	Alabama Grapefern	G3G4	S1S2			3
Ophioglossaceae	3	*Sceptridium lunarioides*	Winter Grape-fern	G4?	S2			3
Hymenophyllaceae	4	*Didymoglossum membranaceum*	Scale-edge Bristle Fern	G5	SX			
Hymenophyllaceae	2	*Didymoglossum petersii*	Dwarf Filmy-fern	G4	S1			3
Hymenophyllaceae	1	*Vandenboschia boschiana*	Appalachian Bristle Fern	G4	S1			3
Marsileaceae	2	*Marsilea vestita*	Hairy Water-fern	G5	S1			4
Pteridaceae	3	*Adiantum capillus-veneris*	Southern Maidenhair-fern	G5	S2			4
Pteridaceae	1	*Ceratopteris pteridoides*	Floating Antler Fern	G5?	S1			4
Pteridaceae	1	*Myriopteris alabamensis*	Alabama Lipfern	G5	S1			4
Pteridaceae	2	*Myriopteris lanosa*	Hairy Lipfern	G5	S1S2			4
Pteridaceae	2	*Pellaea atropurpurea*	Purple-stem Cliff-brake	G5	S1			4
Vittariaceae	1	*Vittaria appalachiana*	Appalachian Vittaria	G4	S1			4
Aspleniaceae	1	*Asplenium pinnatifidum*	Lobed Spleenwort	G4	S1			4

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Aspleniaceae	1	*Asplenium resiliens*	Black-stem Spleenwort	G5	S1			4
Aspleniaceae	1	*Asplenium rhizophyllum*	Walking-fern Spleenwort	G5	S1			4
Aspleniaceae	1	*Asplenium trichomanes*	Maidenhair Spleenwort	G5	S1			4
Aspleniaceae	1	*Asplenium* x *kentuckiense*	Kentucky Spleenwort	GNA	S1			4
Dryopteridaceae	2	*Deparia acrostichoides*	Silvery Spleenwort	G5	S1S2			4
Dryopteridaceae	2	*Dryopteris australis*	Southern Woodfern	GNA	S1			4
Dryopteridaceae	1	*Dryopteris celsa*	Log Fern	G4	S1			3
Dryopteridaceae	2	*Dryopteris ludoviciana*	Southern Shield Wood-fern	G5	S1			4
Pinaceae	1	*Pinus clausa*	Sand Pine	G4	S1			4
Pinaceae	3	*Pinus virginiana*	Virginia Pine	G5	S2			4
Cupressaceae	2	*Chamaecyparis thyoides*	Atlantic White Cedar	G4	S2			4
Cupressaceae	2	*Juniperus silicicola*	Southern Red Cedar	G5T4T5	S2			4
Nymphaeaceae	2	*Nuphar lutea* ssp. *ulvacea*	West Florida Cow-Lily	G5T2T3	S1			2
Nymphaeaceae	4	*Nymphaea mexicana*	Banana Water Lily	G3G4	SH			3
Schisandraceae	3	*Schisandra glabra*	Bay Starvine	G3	S3			3
Aristolochiaceae	2	*Hexastylis harperi*	Large-flowered Heartleaf	G4T3	S1			2

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Magnoliaceae	1	*Magnolia tripetala*	Umbrella Magnolia	G5	S1			4
Lauraceae	1	*Lindera melissifolia*	Pondberry	G3	S2	LE		2
Lauraceae	2	*Lindera subcoriacea*	Bog Spicebush	G3	S2			3
Alismataceae	1	*Alisma subcordatum*	Broad-leaved Water-plantain	G5	S1			4
Alismataceae	3	*Helanthium tenellum*	Dwarf Burhead	G5?	S1S2			3
Alismataceae	1	*Echinodorus berteroi*	Upright Burhead	G5	S1			4
Alismataceae	2	*Sagittaria chapmanii*	Chapman's Arrowhead	G3?	S1			3
Alismataceae	1	*Sagittaria isoetiformis*	Slender Arrow-head	G3	S1			3
Hydrocharitaceae	2	*Halophila engelmannii*	Engelmann's Sea-grass	G3G5	S1			4
Hydrocharitaceae	2	*Thalassia testudina*	Turtle-grass	G4G5	S1			4
Juncaginaceae	2	*Triglochin striata*	Arrow-grass	G5	S1			4
Potamogetonaceae	2	*Potamogeton epihydrus*	Nuttall's Pondweed	G5	S1			4
Potamogetonaceae	2	*Potamogeton pusillus*	Slender Pondweed	G5T5	S1			4
Cymodoceaceae	2	*Halodule wrightii*	Shoal-grass	G5	S1			4
Cymodoceaceae	2	*Syringodium filiforme*	Manatee-grass	G4	S1			4
Burmanniaceae	2	*Burmannia biflora*	Northern Burmannia	G4G5	S1			3

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Trilliaceae	1	*Trillium flexipes*	Drooping Trillium	G5	S1			4
Trilliaceae	3	*Trillium foetidissimum*	Fetid Trillium	G3	S3			3
Trilliaceae	3	*Trillium ludovicianum*	Louisiana Trillium	G4	S1S2			4
Trilliaceae	1	*Trillium pusillum* var. *ozarkanum*	Ozark Least Trillium	G4T3	S1			3
Melanthiaceae	2	*Stenanthium gramineum*	Eastern Featherbells	G4G5	S1			4
Melanthiaceae	2	*Stenanthium texanum*	Pine Barren Deathcamas	G3	S1			3
Colchicaceae	2	*Uvularia floridana*	Florida Bellwort	G3	S1			3
Smilacaceae	4	*Smilax hugeri*	Huger's Carrion-flower	G4	SP			4
Smilacaceae	2	*Smilax pulverulenta*	Downy Carrion-flower	G4G5	S1			4
Liliaceae	2	*Erythronium albidum*	White Trout-lily	G5	S2			4
Liliaceae	3	*Erythronium americanum* ssp. *harperi*	Yellow Trout-lily	G5T4T5	S1S2			4
Liliaceae	2	*Lilium iridollae*	Panhandle Lily	G3	S1			3
Liliaceae	1	*Lilium michiganense*	Michigan Lily	G5	S1			4
Orchidaceae	1	*Aplectrum hyemale*	Puttyroot	G5	S1			4
Orchidaceae	1	*Aspidogyne querceticola*	Low Erythrodes	G3G5	S1			4
Orchidaceae	2	*Calopogon barbatus*	Bearded Grass-pink	G4?	S2			4

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Orchidaceae	1	*Calopogon multiflorus*	Many-flowered Grass-pink	G2G3	S1			2
Orchidaceae	1	*Calopogon oklahomensis*	Oklahoma Grass-pink	G2	S1			1
Orchidaceae	1	*Cleistesiopsis bifaria*	Appalachian Small Spreading Pogonia	G3G4	S1			3
Orchidaceae	3	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia	G3?	S3			3
Orchidaceae	4	*Cypripedium kentuckiense*	Kentucky Yellow Lady's-slipper	G3	SH			2
Orchidaceae	1	*Galearis spectabilis*	Showy Orchis	G5	S1			4
Orchidaceae	2	*Goodyera pubescens*	Downy Rattlesnake-plantain	G5	S1			4
Orchidaceae	4	*Habenaria quinqueseta*	Michaux's Orchid	G4G5	SP			4
Orchidaceae	3	*Hexalectris spicata*	Crested Coralroot	G5	S2			4
Orchidaceae	2	*Orthochilus ecristatus*	Giant Orchid	G2G3	S1			2
Orchidaceae	2	*Platanthera conspicua*	LargeWhite-fringe Orchid	G5T4	S2			3
Orchidaceae	3	*Platanthera integra*	Yellow Fringeless Orchid	G3G4	S3			
Orchidaceae	2	*Platanthera integrilabia*	White Fringeless Orchid	G2G3	S1	LT		2
Orchidaceae	2	*Platanthera lacera*	Green-fringed Orchid	G5	S1S2			4
Orchidaceae	3	*Platanthera nivea*	Snowy Orchid	G3G4	S3			
Orchidaceae	3	*Platanthera peramoena*	Purple Fringeless Orchid	G5	S2S3			

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Orchidaceae	3	*Ponthieva racemosa*	Shadow-witch Orchid	G5	S2			4
Orchidaceae	1	*Spiranthes brevilabris*	Texas Ladies'-tresses	G1G2	S1			1
Orchidaceae	1	*Spiranthes eatonii*	Eaton's Ladies'-tresses	G3Q	S1			3
Orchidaceae	1	*Spiranthes floridana*	Florida Ladies'-tresses	G1	S1			1
Orchidaceae	2	*Spiranthes lacera* var. *gracilis*	Southern Slender Ladies'-tresses	G5T4T5	S2			4
Orchidaceae	2	*Spiranthes longilabris*	Giant Spiral Ladies'-tresses	G3	S1S2			3
Hypoxidaceae	1	*Hypoxis curtissii*	Curtiss' Yellow Star-grass	G4?	S1			4
Orchidaceae	3	*Spiranthes magnicamporum*	Great Plains Ladies'-tresses	G3G4	S2			3
Orchidaceae	3	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	G5? T3T4?	S2S3			3
Orchidaceae	2	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia	G4?T4?	S2			4
Iridaceae	1	*Alophia drummondii*	Purple Pleat-leaf	G4	S1			4
Iridaceae	3	*Herbertia lahue*	Herbertia	G4G5	S2			4
Iridaceae	3	*Iris brevicaulis*	Lamance Iris	G4	S1			3
Iridaceae	1	*Iris giganticaerulea*	Giant Blue Iris	G3	S1			3
Iridaceae	2	*Nemastylis geminiflora*	Prairie Pleatleaf	G4	S2			4
Amaryllidaceae	3	*Hymenocallis choctawensis*	Florida Panhandle Spider-lily	G3G4	S1			3

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Amaryllidaceae	2	*Hymenocallis occidentalis* var. *eulae*	Woodland Spider-lily	G4?TNR	S1			
Amaryllidaceae	2	*Zephyranthes simpsonii*	Rainlily	G2G3	S1			2
Agavaceae	2	*Camassia scilloides*	Wild Hyacinth	G5	S2			4
Commelinaceae	2	*Tradescantia ernestiana*	Ernest's Spiderwort	G3G4Q	S1			3
Commelinaceae	2	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort	G5	S1			4
Pontederiaceae	2	*Heteranthera dubia*	Grassleaf Mud-plaintain	G5	S1			4
Pontederiaceae	3	*Heteranthera missouriensis*	Missouri Mud-plantain	G3G4	S1			3
Cannaceae	1	*Canna flaccida*	Bandana-of-the-Everglades	G4?	S1			4
Marantaceae	1	*Thalia dealbata*	Powdery Thalia	G4	S1			3
Xyridaceae	3	*Xyris chapmanii*	Chapman's Yellow-eyed-grass	G3	S2			3
Xyridaceae	3	*Xyris drummondii*	Drummond's Yellow-eyed-grass	G3G4	S2			
Xyridaceae	2	*Xyris flabelliformis*	SavannahYellow-eyed-grass	G4	S1			4
Xyridaceae	2	*Xyris louisianica*	Kral's Yellow-eyed Grass	G2G3	S1			2
Xyridaceae	3	*Xyris scabrifolia*	Harper's Yellow-eyed Grass	G3	S3			3
Xyridaceae	3	*Xyris serotina*	Acid-swamp Yellow-eyed-grass	G3G4	S1			3
Eriocaulaceae	3	*Eriocaulon decangulare* var. *latifolium*	Panhandle Pipewort	G5TNR	S1			4

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Eriocaulaceae	3	*Eriocaulon texense*	Texas Pipewort	G4	S2S3			3
Eriocaulaceae	2	*Syngonanthus flavidulus*	Yellow Pipewort	G5	S2			4
Juncaceae	2	*Juncus interior*	Inland Rush	G4	S1			4
Cyperaceae	2	*Bulbostylis ciliatifolia*	Capillary Hairsedge	G5	S1			4
Cyperaceae	2	*Carex alata*	Broadwing Sedge	G5	S1			4
Cyperaceae	1	*Carex albursina*	White Bear Sedge	G5	S1			4
Cyperaceae	1	*Carex baltzellii*	Baltzell's Sedge	G3	S1			3
Cyperaceae	1	*Carex bullata* var. *greenei*	Button Sedge	G5	S1			4
Cyperaceae	1	*Carex communis*	Fibrous-root Sedge	G5T5	S1			4
Cyperaceae	2	*Carex comosa*	Bristly Sedge	G5	S1			4
Cyperaceae	1	*Carex crawei*	Crawe's Sedge	G5	S1			4
Cyperaceae	1	*Carex dasycarpa*	Velvet Sedge	G4?	S1			4
Cyperaceae	4	*Carex elliottii*	Elliott's Sedge	G4?	SP			4
Cyperaceae	2	*Carex exilis*	Coast Sedge	G5	S2			4
Cyperaceae	1	*Carex fissa* var. *aristata*	Hammock Sedge	G4?T4?	S1			4
Cyperaceae	1	*Carex fissa* var. *fissa*	Hammock Sedge	G4?T3T4	S1			3

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Cyperaceae	1	*Carex frankii*	Frank's Sedge	G5	S1			4
Cyperaceae	3	*Carex gracilescens*	Slender Sedge	G5?	S1S2			4
Cyperaceae	3	*Carex gravida*	Heavy-fruited Sedge	G5	S1S2			4
Cyperaceae	3	*Carex grayi*	Asa Gray's Sedge	G4G5	S2			4
Cyperaceae	1	*Carex grisea*	Inflated Narrowleaf Sedge	G5	S1			4
Cyperaceae	3	*Carex hyalina*	Tissue Sedge	G4	S1S2			4
Cyperaceae	1	*Carex impressinervia*	Impressed-nerved Sedge	G2	S1			1
Cyperaceae	3	*Carex jamesii*	Nebraska Sedge	G5	S1S2			4
Cyperaceae	1	*Carex laxiflora*	Broad Loose-flower Sedge	G5T5	S1			4
Cyperaceae	2	*Carex mesochorea*	Midland Sedge	G4G5	S1			4
Cyperaceae	3	*Carex mitchelliana*	Mitchell's Sedge	G4	S2			4
Cyperaceae	3	*Carex molestiformis*	Ozark Plateau Sedge	G4	S1			3
Cyperaceae	1	*Carex normalis*	Greater Straw Sedge	G5	S1			4
Cyperaceae	1	*Carex oligocarpa*	Eastern Few-fruit Sedge	G4G5	S1			4
Cyperaceae	3	*Carex oxylepis* var. *pubescens*	Sharp-scale Sedge	G5?T3	S2S3			3
Cyperaceae	2	*Carex prasina*	Drooping Sedge	G4	S1			4

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Cyperaceae	3	*Carex radiata*	Stellate Sedge	G5	S2			4
Cyperaceae	3	*Carex reznicekii*	Reznicek's Sedge	G5	S2			4
Cyperaceae	2	*Carex scoparia*	Broom Sedge	G5	S2			4
Cyperaceae	2	*Carex seorsa*	Weak Stellate Sedge	G5	S1S2			4
Cyperaceae	3	*Carex stipata* var. *maxima*	Stalk-grain Sedge	G5T5?	S1			4
Cyperaceae	1	*Carex striata* var. *striata*	Southern Peatland Sedge	G5T5	S1			4
Cyperaceae	2	*Carex superata*	Limestone Forest Sedge	G4?	S1			4
Cyperaceae	2	*Carex torta*	Twisted Sedge	G5	S1			4
Cyperaceae	2	*Carex verrucosa*	Warty Sedge	G4	S1S2			4
Cyperaceae	1	*Carex virescens*	Ribbed Sedge	G5	S1			4
Cyperaceae	2	*Cladium mariscoides*	Twig Rush	G5	S1			4
Cyperaceae	2	*Cyperus articulatus*	Jointed Flatsedge	G4G5	S1			4
Cyperaceae	3	*Cyperus bipartitus*	Shining Flatsedge	G5	S1			4
Cyperaceae	3	*Cyperus drummondii*	Green Flatsedge	G5TNR	S1S2			4
Cyperaceae	2	*Cyperus elegans*	Sticky Flatsedge	G5	S1			4
Cyperaceae	1	*Cyperus engelmannii*	Slender Sand Flatsedge	G4Q	S1			4

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Cyperaceae	3	*Cyperus flavicomus*	White-edged Flatsedge	G5	S2			4
Cyperaceae	3	*Cyperus hystricinus*	Bristly Flatsedge	G4	S1S2			3
Cyperaceae	2	*Cyperus lecontei*	Le Conte's Flatsedge	G4?	S1			4
Cyperaceae	3	*Cyperus neotropicalis*	American Lipocarpha	G5	S1S2			4
Cyperaceae	1	*Cyperus ochraceus*	Pond Flatsedge	G5	S1			4
Cyperaceae	1	*Cyperus refractus*	Reflexed Flatsedge	G5	S1			4
Cyperaceae	2	*Cyperus thyrsiflorus*	Southcentral Flatsedge	G5	S1			4
Cyperaceae	1	*Eleocharis albida*	White Spikerush	G4G5	S1			4
Cyperaceae	1	*Eleocharis ambigens*	Obscure Spikerush	G4G5	S2			4
Cyperaceae	1	*Eleocharis atropurpurea*	Purple Spikerush	G4G5	S1			4
Cyperaceae	4	*Eleocharis bicolor*	Small Spikerush	GNR	S1			
Cyperaceae	3	*Eleocharis cellulosa*	Carolina Spikerush	G4G5	S2			4
Cyperaceae	1	*Eleocharis coloradoensis*	Dwarf Spikerush	G4	S1			4
Cyperaceae	2	*Eleocharis compressa*	Flat-stem Spikerush	G4	S1			4
Cyperaceae	2	*Eleocharis elliptica*	Slender Spikerush	G5	S1			4
Cyperaceae	2	*Eleocharis elongata*	Slim Spikerush	G5?	S1			4

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Cyperaceae	2	*Eleocharis erythropoda*	Bald Spikerush	G5	S1			4
Cyperaceae	2	*Eleocharis geniculata*	Capitate Spikerush	G5	S1			4
Cyperaceae	1	*Eleocharis intermedia*	Matted Spikerush	G5	S1			4
Cyperaceae	1	*Eleocharis lanceolata*	Lance-like Spikerush	G4G5	S1			4
Cyperaceae	3	*Eleocharis macrostachya*	Creeping Spikerush	G5	S2			4
Cyperaceae	1	*Eleocharis melanocarpa*	Black-fruitSpikerush	G4	S1			3
Cyperaceae	3	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	G5TNR	S2			4
Cyperaceae	2	*Eleocharis ovata*	Ovate Spikerush	G5	S1			4
Cyperaceae	4	*Eleocharis palustris*	Creeping Spikerush	G5	S1			4
Cyperaceae	1	*Eleocharis parvula*	Small Spikerush	G5	S1			4
Cyperaceae	1	*Eleocharis radicans*	Rooted Spikerush	G5	S1			4
Cyperaceae	3	*Eleocharis robbinsii*	Robbins Spikerush	G4G5	S2			3
Cyperaceae	3	*Eleocharis rostellata*	Beaked Spikerush	G5	S1			4
Cyperaceae	4	*Eleocharis tenuis* var. *pseudoptera*	Slender Spikerush	G5T5?	SP			4
Cyperaceae	2	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	G5T5	S2			4
Cyperaceae	1	*Eleocharis tricostata*	Three-angle Spikerush	G4	S1			4

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Cyperaceae	2	*Eleocharis wolfii*	Wolf's Spikerush	G3G5	S1			3
Cyperaceae	2	*Fuirena longa*	Coastal-plain Umbrella-sedge	G3G4	S1			3
Cyperaceae	3	*Rhynchospora baldwinii*	Baldwin's Beakrush	G4	S2			4
Cyperaceae	1	*Rhynchospora brachychaeta*	West Indies Beakrush	GNR	S1			4
Cyperaceae	2	*Rhynchospora careyana*	Broad-fruit Horned Beakrush	G4?Q	S1			4
Cyperaceae	1	*Rhynchospora cephalantha* var. *attenuata*	Small-bunched Beaksedge	G5T3?	S1			3
Cyperaceae	2	*Rhynchospora crinipes*	Hairy-peduncled Beakrush	G3	S1			3
Cyperaceae	2	*Rhynchospora curtissii*	Curtiss' Beakrush	G4	S1			4
Cyperaceae	1	*Rhynchospora decurrens*	Swamp-forest Beakrush	G3G4	S1			4
Cyperaceae	3	*Rhynchospora distans*	Fasciculate Beakrush	G5T4?	S2			4
Cyperaceae	1	*Rhynchospora divergens*	White-seeded Beakrush	G4	S1			3
Cyperaceae	1	*Rhynchospora fernaldii*	Fernald's Beakrush	G3G4	S1			3
Cyperaceae	2	*Rhynchospora galeana*	Short-bristle Baldrush	G3?	S1			3
Cyperaceae	1	*Rhynchospora harperi*	Harper's Beakrush	G4?	S1			3
Cyperaceae	2	*Rhynchospora harveyi*	Harvey's Beakrush	G4	S2			3
Cyperaceae	2	*Rhynchospora leptocarpa*	Slender-fruit Beaksedge	G3	S1			3

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Cyperaceae	1	*Rhynchospora marliniana*	Marlin's Beaksedge	GNR	S1			
Cyperaceae	2	*Rhynchospora perplexa*	Pineland Beakrush	G5	S1			4
Cyperaceae	3	*Rhynchospora pinetorum*	Small's Beakrush	G5?T3 T4	S2			3
Cyperaceae	1	*Rhynchospora pleiantha*	Brown Beakrush	G2G3	S1			2
Cyperaceae	1	*Rhynchospora torreyana*	Torrey's Beakrush	G4	S1			4
Cyperaceae	1	*Rhynchospora tracyi*	Tracy Beakrush	G4	S1			4
Cyperaceae	2	*Rhynchospora wrightiana*	Wright's Beakrush	G5	S2			4
Cyperaceae	2	*Schoenoplectiella purshiana*	Weakstalk Bulrush	G4G5	S2			4
Cyperaceae	2	*Schoenoplectus americanus*	Three-square Bulrush	G5	S1			4
Cyperaceae	3	*Schoenoplectus deltarum*	Delta Bulrush	G3G4	S1			
Cyperaceae	1	*Schoenoplectus subterminalis*	Swaying Rush	G5	S1			4
Cyperaceae	3	*Scirpus divaricatus*	Spreading Bulrush	G4	S2			3
Cyperaceae	3	*Scirpus lineatus*	Drooping Bulrush	G4	S1S2			4
Cyperaceae	3	*Scleria elliottii*	Broad-leaved Hairy Nutrush	G5TNR	S2			4
Cyperaceae	3	*Scleria georgiana*	Georgia Nutrush	G4	S2			4
Cyperaceae	3	*Scleria nitida*	Shining Nutrush	GNR	S1			

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Cyperaceae	3	*Scleria verticillata*	Low Nutrush	G5	S1			4
Poaceae	3	*Andropogon dealbatus*	Wetland White Bluestem	GNR	S1S2			4
Poaceae	3	*Andropogon perangustatus*	Narrow-leaved Bluestem	GNR	S1S2			4
Poaceae	2	*Andropogon tracyi*	Tracy's Bluestem	G4?	S2			4
Poaceae	3	*Aristida beyrichiana*	Southern Wiregrass	G5?	S2			4
Poaceae	1	*Aristida mohrii*	Mohr's Three-awn Grass	G3	S1			1
Poaceae	3	*Aristida simpliciflora*	Southern Three-awn Grass	G3G4	S2			3
Poaceae	3	*Aristida spiciformis*	Pine Barren Three-awn Grass	G4	S1			4
Poaceae	3	*Aristida tenuispica*	Southern Arrowfeather	G5T5	S2			4
Poaceae	3	*Chasmanthium nitidum*	Shiny Spikegrass	G3G4	S1			4
Poaceae	1	*Coelorachis cylindrica*	Pitted Jointgrass	G4G5	S1			
Poaceae	2	*Dichanthelium cryptanthum*	Hidden-flower Witchgrass	G3Q	S1			4
Poaceae	2	*Dichanthelium curtifolium*	Shortleaf Witchgrass	G4T3?	S2			2
Poaceae	3	*Dichanthelium erectifolium*	Erect-leaf Witchgrass	G4	S2			4
Poaceae	3	*Dichanthelium nudicaule*	Naked-stemmed Panic Grass	G3Q	S3			3
Poaceae	2	*Dichanthelium wrightianum*	Wright's Witchgrass	G4	S1S2			4

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Poaceae	4	*Elionurus tripsacoides*	Pan-american Balsamscale	G5?	SH			4
Poaceae	2	*Elymus villosus*	Hairy Wild Rye	G5	S2			4
Poaceae	2	*Eustachys glauca*	Saltmarsh Finger-grass	G4	S2			4
Poaceae	3	*Luziola bahiensis*	Brazilian Loziola	G4G5	S1			4
Poaceae	2	*Muhlenbergia glabrifloris*	Inland Muhly	G4?	S1			3
Poaceae	3	*Muhlenbergia sylvatica*	Woodland Muhly	G5	S2			4
Poaceae	3	*Muhlenbergia tenuiflora*	Slender Muhly	G5	S1S2			4
Poaceae	2	*Paspalum monostachyum*	Gulfdune Paspalum	G4?	S1			4
Poaceae	3	*Schizachyrium maritimum*	Gulf Bluestem	G3G4Q	S2			3
Poaceae	2	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	G5T5	S1			4
Poaceae	2	*Schizachyrium stoloniferum*	Creeping Bluestem	G3G4Q	S1			3
Poaceae	2	*Setaria corrugata*	Coast Bristle Grass	G5?	S1			4
Poaceae	2	*Sphenopholis pensylvanica*	Swamp Wedgescale	G4	S1			4
Poaceae	2	*Sporobolus ozarkanus*	Ozark Dropseed	G5T5?	S2			4
Poaceae	3	*Tridens carolinianus*	Carolina Fluff Grass	G3G4	S2S3			3
Poaceae	3	*Tridens chapmanii*	Chapman's Redtop	G5T3	S2			3

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Ceratophyllaceae	1	*Ceratophyllum echinatum*	Prickly Hornwort	G4	S1			3
Fumariaceae	2	*Dicentra cucullaria*	Dutchman's Breeches	G5	S1			4
Ranunculaceae	2	*Actaea racemosa*	Black Bugbane	G3G4	S1S2			3
Ranunculaceae	2	*Anemone caroliniana*	Carolina Anemone	G5	S2			4
Ranunculaceae	2	*Anemone quinquefolia*	Wood Anemone	G5	S1			4
Ranunculaceae	1	*Aquilegia canadensis*	Wild Columbine	G5	S1			4
Ranunculaceae	3	*Clematis glaucophylla*	White-leaved Leather-flower	G4?	S1S2			3
Ranunculaceae	3	*Clematis subreticulata*	Alabama Leatherflower	GNR	S2			
Ranunculaceae	3	*Delphinium tricorne*	Dwarf Larkspur	G5	S2			4
Ranunculaceae	1	*Enemion biternatum*	False Rue-anemone	G5	S1			4
Ranunculaceae	3	*Hepatica acutiloba*	Sharp-lobed Hepatica	G5T5	S1			4
Ranunculaceae	1	*Hydrastis canadensis*	Golden-seal	G3G4	S1			3
Ranunculaceae	2	*Ranunculus flabellaris*	Yellow Water-crowfoot	G5	S1			4
Ranunculaceae	2	*Ranunculus septentrionalis*	Carolina Buttercup	GNR	S2			
Ranunculaceae	2	*Thalictrum debile*	Southern Meadowrue	G2G3	S1S2			2
Ranunculaceae	1	*Thalictrum dioicum*	Early Meadowrue	G5	S1			4

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Ranunculaceae	2	*Thalictrum macrostylum*	Small-leaf Meadowrue	G3G4	S1			3
Ranunculaceae	1	*Trautvetteria applanata*	Ozark Tassel-rue	G5	S1			4
Hamamelidaceae	2	*Hamamelis ovalis*	Running Witch-hazel	G2G3	S1			2
Saxifragaceae	2	*Heuchera macrorhiza*	Giant Alumroot	G5T4Q	S1			
Saxifragaceae	1	*Heuchera parviflora*	Little-flower Alumroot	G4	S1			4
Saxifragaceae	3	*Tiarella cordifolia*	Heart-leaved Foam-flower	G5	S2			4
Crassulaceae	1	*Sedum pulchellum*	Rock Stonecrop	G5	S1			4
Crassulaceae	2	*Sedum ternatum*	Wood Stonecrop	G5	S1			4
Haloragaceae	2	*Myriophyllum laxum*	Loose Water-milfoil	G3	S1			3
Fabaceae	1	*Apios priceana*	Price's Potato-bean	G3	S1	LT		3
Fabaceae	2	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch	G5	S2			4
Fabaceae	1	*Astragalus distortus* var. *engelmannii*	Engelmann's Bent Milk-vetch	G5T4	S1			4
Fabaceae	1	*Astragalus obcordatus*	Florida Milkvetch	G3G4	S1			3
Fabaceae	1	*Baptisia nuttalliana*	Nuttall's Wild Indigo	G5	S1			4
Fabaceae	2	*Baptisia sphaerocarpa*	Green WildIndigo	G4G5	S2			4
Fabaceae	1	*Chamaecrista horizontalis*	Florida Senna	G2	S1			1

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Fabaceae	3	*Cladrastis kentukea*	Yellowwood	G4	S2			3
Fabaceae	3	*Dalea mountjoyae*	White-tassels	G5T3	S2S3			3
Fabaceae	1	*Desmodium ochroleucum*	Creamflower Tick-trefoil	G2G3	S1			2
Fabaceae	3	*Desmodium tenuifolium*	Slim-leaf Tick-trefoil	G4	S2			4
Fabaceae	3	*Galactia floridana*	Florida Milkpea	G3G4	S1			3
Fabaceae	3	*Gymnocladus dioicus*	Kentucky Coffeetree	G5	S1S2			4
Fabaceae	2	*Lupinus perennis* ssp. *gracilis*	Sundial Lupine	G5TNR	S1			4
Fabaceae	4	*Phaseolus sinuatus*	Sandhill Bean	G5T3?	SH			3
Fabaceae	2	*Rhynchosia latifolia*	Prairie Rhynchosia	G5	S2			4
Fabaceae	1	*Trifolium carolinianum*	Carolina Clover	GNR	S1			4
Fabaceae	4	*Trifolium reflexum*	Buffalo Clover	G3G4	SH			3
Polygalaceae	2	*Senega ambigua*	Whorled Milkwort	G5T5?	S1			4
Polygalaceae	2	*Senega appendiculata*	Swamp Milkwort	G4G5	S2			4
Polygalaceae	2	*Senega balduinii*	White Milkwort	G4	S1			4
Polygalaceae	2	*Senega curtissii*	Curtiss' Milkwort	G5	S1			4
Polygalaceae	2	*Senega hookeri*	Hooker'sMilkwort	G3	S2			3

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Polygalaceae	2	*Senega leptostachys*	Georgia Milkwort	G3G4	S1S2			3
Rosaceae	3	*Agrimonia incisa*	Incised Groovebur	G3	S2			3
Rosaceae	1	*Crataegus ashei*	Ashe's Hawthorn	G2	S1S2			1
Rosaceae	1	*Crataegus brachyacantha*	Blueberry Hawthorn	G4	S1?			4
Rosaceae	1	*Crataegus mendosa*	Albertville Hawthorn	G3Q	S1			3
Rosaceae	1	*Crataegus mohrii*	Mohr's Hawthorn	GNA	S1			
Rosaceae	1	*Crataegus mollis* var. *meridionalis*	Gallion Hawthorn	G3G5Q	S1			4
Rosaceae	2	*Crataegus triflora*	Three-flowered Hawthorn	G2G3	S2			2
Rosaceae	2	*Malus ioensis*	Iowa Crabapple	G4G5	S1			4
Rosaceae	1	*Neviusia alabamensis*	Alabama Snow-wreath	G3	S1			2
Rosaceae	4	*Prunus alabamensis*	Alabama Black Cherry	G4	SP			4
Rosaceae	4	*Spiraea tomentosa*	Steeplebush	G5	SH			4
Rhamnaceae	2	*Endotropis lanceolata*	Lance-leaved Buckthorn	G5	S2			4
Rhamnaceae	3	*Sageretia minutiflora*	Tiny-leaved Buckthorn	G3G4	S2			3
Ulmaceae	3	*Ulmus serotina*	September Elm	G4	S2			4
Fagaceae	1	*Castanea dentata* (nut-bearing only)	American Chestnut	G3	S1			3

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Fagaceae	4	*Quercus arkansana*	Arkansas Oak	G3	SP			3
Fagaceae	2	*Quercus austrina*	Bluff Oak	G4?	S2			
Fagaceae	2	*Quercus macrocarpa* var. *macrocarpa*	Bur Oak	G5	S2			4
Fagaceae	2	*Quercus minima*	Dwarf Live Oak	G5	S1			4
Fagaceae	2	*Quercus myrtifolia*	Myrtle-leaf Oak	G5	S2			4
Fagaceae	2	*Quercus oglethorpensis*	Oglethorpe's Oak	G3	S2			3
Fagaceae	2	*Quercus palustris*	Pin Oak	G5	S2?			4
Juglandaceae	2	*Carya laciniosa*	Big Shellbark Hickory	G5	S2			4
Juglandaceae	2	*Juglans cinerea*	Butternut	G3	S2			3
Parnassiaceae	2	*Parnassia grandifolia*	Largeleaf Grass-of-parnassus	G3	S2			3
Oxalidaceae	2	*Oxalis grandis*	Great Yellow Woodsorrel	G4G5	S1			4
Oxalidaceae	3	*Oxalis macrantha*	Tufted Yellow Woodsorrel	G2G4	S1			3
Hypericaceae	2	*Hypericum canadense*	Canadian St. John'swort	G5	S2			4
Hypericaceae	2	*Hypericum myrtifolium*	Myrtle-leaved St. Johnswort	G4G5	S2			4
Salicaceae	2	*Salix caroliniana*	Carolina Willow	G5	S1			4
Euphorbiaceae	1	*Euphorbia discoidalis*	Summer Spurge	G4	S1			4

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Euphorbiaceae	2	*Euphorbia inundata* var. *inundata*	Florida Pine Spurge	G4G5	S1S2			4
Linaceae	3	*Linum floridanum* var. *chrysocarpum*	Yellow-fruited Flax	G5?T3?	S2S3			3
Linaceae	1	*Linum macrocarpum*	Spring Hill Flax	G2	S2			1
Lythraceae	2	*Cuphea viscosissima*	Blue Waxweed	G5?	S1			4
Lythraceae	3	*Decodon verticillatus*	Hairy Swamp Loosestrife	G5	S2			4
Lythraceae	4	*Didiplis diandra*	Water-purslane	G3G4	SH			
Onagraceae	3	*Ludwigia alata*	Winged Seedbox	G3G5	S2			4
Onagraceae	3	*Oenothera capillifolia* ssp. *capillifolia*	Berlandier's Sundrops	G5T4T5	S1			4
Onagraceae	3	*Oenothera grandiflora*	Large-flowered Evening-primrose	G3G5	S1			4
Onagraceae	4	*Oenothera heterophylla* ssp. *orientalis*	Alabama Evening-primrose	G4TU	SH			4
Onagraceae	4	*Oenothera patriciae*	Plains Gaura	G4G5	SH			4
Onagraceae	3	*Oenothera triloba*	Stemless Evening-primrose	G4	S1			4
Aceraceae	2	*Acer leucoderme*	Chalk Maple	G5	S1			4
Hippocastanaceae	3	*Aesculus glabra* var. *glabra*	Ohio Buckeye	G5	S2			4
Sapindaceae	2	*Sapindus marginatus*	Florida Soapberry	G5	S1			4
Malvaceae	2	*Callirhoe triangulata*	Clustered Poppy-mallow	G3	S1			2

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Malvaceae	3	*Hibiscus coccineus*	Brilliant Hibiscus	G4?	S1S2			4
Thymelaeaceae	2	*Dirca palustris*	Eastern Leatherwood	G4	S2			3
Cistaceae	2	*Crocanthemum arenicola*	Coastal-sand Frostweed	G3	S1S2			3
Cleomaceae	2	*Polanisia tenuifolia*	Slenderleaf Clammy-weed	G5	S1			4
Brassicaceae	4	*Arabidopsis lyrata* ssp. *lyrata*	Lyreleaf Rockcress	G5	SH			4
Brassicaceae	1	*Arabis patens*	Spreading Rockcress	G3	S1			2
Brassicaceae	3	*Borodinia canadensis*	Sicklepod	G5	S2			4
Brassicaceae	3	*Cardamine angustata*	Slender Toothwort	G5	S2			4
Brassicaceae	3	*Cardamine diphylla*	Two-leaf Toothwort	G5	S1S2			4
Brassicaceae	1	*Physaria gracilis* ssp. *gracilis*	Spreading Bladder-pod	G5	S1			4
Brassicaceae	2	*Rorippa aquatica*	Lake-cress	G4?	S1			3
Brassicaceae	3	*Tomostima cuneifolia*	Wedgeleaf Whitlow-grass	G5	S1			4
Brassicaceae	3	*Tomostima reptans*	Carolina Whitlow-grass	G5	S1			4
Santalaceae	2	*Nestronia umbellula*	Nestronia	G4	S1			4
Polygonaceae	4	*Persicaria hirsuta*	Hairy Smartweed	G3G4	SH			3
Polygonaceae	2	*Polygonella americana*	Southern Jointweed	G5	S1			4

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Caryophyllaceae	2	*Paronychia baldwinii* ssp. *riparia*	Perennial Dune Whitlow-wort	G5T4	S1			4
Caryophyllaceae	3	*Paronychia erecta* var. *corymbosa*	Beach Sand-squares	G3G4T 2T4	S1S2			3
Caryophyllaceae	3	*Paronychia erecta* var. *erecta*	Beach Sand-squares	G3G4TNR	S1S2			4
Caryophyllaceae	2	*Paronychia patula*	Pineland Nailwort	G3G4	S1			3
Caryophyllaceae	2	*Sabulina patula*	Pitcher's Stitchwort	G4	S1			4
Caryophyllaceae	2	*Silene ovata*	Ovate Catchfly	G3	S1S2			3
Caryophyllaceae	4	*Silene regia*	Royal Catchfly	G3	SH			3
Caryophyllaceae	1	*Stellaria corei*	Tennessee Chickweed	G4	S1			4
Caryophyllaceae	3	*Stellaria pubera*	Giant Chickweed	G5	S2			4
Amaranthaceae	3	*Amaranthus australis*	Southern Amaranth	G5	S1			4
Amaranthaceae	1	*Iresine diffusa*	Felicidad	G4G5	S1			4
Nyctaginaceae	2	*Mirabilis albida*	Pale Umbrella-wort	G5	S2			4
Nyctaginaceae	2	*Mirabilis linearis*	Narrowleaf Four-o'clock	G5	S1			4
Cactaceae	2	*Opuntia macrorhiza*	Twisted-spine Prickly-pear	G5	S1			4
Hydrangeaceae	1	*Philadelphus hirsutus*	Streambank Mock-orange	G5?	S1			4
Hydrangeaceae	3	*Philadelphus inodorus*	Scentless Mock Orange	G4G5	S2			4

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Cornaceae	2	*Swida alternifolia*	Alternate-leaf Dogwood	G5	S2			4
Polemoniaceae	2	*Phlox amplifolia*	Largeleaf Phlox	G3G5	S2			4
Sapotaceae	2	*Sideroxylon reclinatum* ssp. *reclinatum*	Florida Bumelia	G4G5TNR	S1			4
Primulaceae	2	*Hottonia inflata*	Featherfoil	G4	S1			3
Primulaceae	2	*Primula meadia*	Shootingstar	G5	S2			4
Theaceae	1	*Stewartia ovata*	Mountain Camellia	G4	S1			4
Sarraceniaceae	1	*Sarracenia alabamensis* ssp. *wherryi*	Wherry's Sweet Pitcher-plant	G3T3	S1			3
Sarraceniaceae	2	*Sarracenia leucophylla*	Whitetop Pitcherplant	G3	S2			3
Sarraceniaceae	1	*Sarracenia rosea*	Purple Pitcherplant	G3	S1			3
Ericaceae	3	*Chimaphila maculata*	Spotted Wintergreen	G5	S2			4
Ericaceae	2	*Pieris phillyreifolia*	Climbing Fetter-bush	G4	S1			4
Ericaceae	2	*Rhododendron alabamense*	Alabama Rhododendron	G4	S1			4
Ericaceae	2	*Rhododendron arborescens*	Smooth Azalea	G4G5	S1S2			4
Ericaceae	3	*Rhododendron austrinum*	Orange Azalea	G3	S2			3
Ericaceae	2	*Rhododendron periclymenoides*	Pink Azalea	G5	S1			4
Ericaceae	3	*Vaccinium pallidum*	Early Lowbush Blueberry	G5	S2			4

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Ericaceae	3	*Vaccinium tenellum*	Small Black Blueberry	G5	S1			4
Rubiaceae	2	*Galium bermudense*	Coastal Bedstraw	G5	S2?			4
Gentianaceae	2	*Eustoma exaltatum*	TallPrairie-gentian	G5T4T 5	S1			4
Gentianaceae	1	*Gentiana catesbaei*	Elliott's Gentian	G5	S1			4
Gentianaceae	1	*Gentianella occidentalis*	Stiff Gentian	G5	S1			4
Gentianaceae	3	*Sabatia campestris*	Prairie Pink	G5?	S2			4
Gentianaceae	2	*Sabatia decandra*	Bartram's Rose-gentian	G4G5	S1			4
Loganiaceae	2	*Mitreola angustifolia*	Narrowleaf Miterwort	G4G5	S1			
Apocynaceae	4	*Amsonia ludoviciana*	Louisiana Bluestar	G3	SX			
Apocynaceae	2	*Asclepias hirtella*	Green Milkweed	G5	S2			4
Apocynaceae	2	*Asclepias incarnata*	Swamp Milkweed	G5	S1			4
Apocynaceae	4	*Asclepias purpurascens*	Purple Milkweed	G5?	SH			4
Apocynaceae	1	*Matelea baldwyniana*	Baldwin's Milkvine	G3	S1			3
Apocynaceae	3	*Matelea decipiens*	Old-field Milkvine	G5	S1			4
Apocynaceae	3	*Matelea obliqua*	Climbing Milkweed	G4?	S2			4
Boraginaceae	1	*Euploca convolvulacea*	Bindweed Heliotrope	G5	S1			4

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Boraginaceae	2	*Hackelia virginiana*	Virginia Stickseed	G5	S2			4
Boraginaceae	2	*Lithospermum caroliniense*	Golden Puccoon	G4G5	S1			4
Boraginaceae	2	*Lithospermum latifolium*	American Gromwell	G4	S1			4
Boraginaceae	1	*Mertensia virginica*	Virginia Bluebells	G5	S1			4
Hydrophyllaceae	1	*Hydrophyllum appendiculatum*	Appendage Waterleaf	G5	S1			4
Hydrophyllaceae	1	*Hydrophyllum macrophyllum*	Large-leaf Water-leaf	G5	S1			4
Hydrophyllaceae	2	*Phacelia bipinnatifida*	Fernleaf Phacelia	G5	S1			4
Hydrophyllaceae	1	*Phacelia hirsuta*	Hairy Scorpionweed	G5?	S1			4
Hydrophyllaceae	2	*Phacelia purshii*	Miami-mist	G5	S1			4
Hydrophyllaceae	1	*Phacelia ranunculacea*	Blue Scorpionweed	G4	S1			4
Hydrophyllaceae	3	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed	G5T4	S1			4
Convolvulaceae	2	*Convolvulus catesbyanus*	Catesby's Bindweed	G4	S1			4
Convolvulaceae	4	*Cuscuta glomerata*	Clustered Dodder	G5	SH			4
Convolvulaceae	2	*Ipomoea brasiliensis*	Railroad Morning-glory	G5	S1			4
Convolvulaceae	1	*Ipomoea macrorhiza*	Large-stem Morning-glory	G3	S1			3
Convolvulaceae	1	*Stylisma aquatica*	Water Southern Morning-glory	G4	S1			3

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Convolvulaceae	2	*Stylisma pickeringii* ssp. *pattersonii*	Pickering Morning-glory	G4T4	S1S2			4
Convolvulaceae	2	*Stylisma pickeringii* ssp. *pickeringii*	PickeringMorning-glory	G4T3	S1S2			3
Solanaceae	1	*Calliphysalis carpenteri*	Carpenter's Ground-cherry	G3	S1			3
Solanaceae	2	*Lycium carolinianum*	Carolina Wolf-berry	G4	S1			3
Solanaceae	4	*Physalis arenicola*	Cypress-head Ground-cherry	G3?	SH			3
Solanaceae	2	*Solanum pseudogracile*	Glowing Nightshade	G4	S2			4
Oleaceae	3	*Forestiera ligustrina*	Upland Swamp Privet	G4G5	S1S2			4
Oleaceae	2	*Fraxinus quadrangulata*	Blue Ash	G5	S1			4
Plantaginaceae	1	*Chelone lyonii*	Pink Turtlehead	G4	S1			3
Plantaginaceae	4	*Chelone obliqua* var. *obliqua*	Red Turtlehead	G4T3T4Q	SH			3
Plantaginaceae	1	*Gratiola floridana*	Florida Hedge-hyssop	G3G4	S1			4
Plantaginaceae	1	*Gratiola ramosa*	Branched Hedge-hyssop	G4G5	S1			4
Plantaginaceae	3	*Penstemon canescens*	Gray Beardtongue	G4	S1			4
Plantaginaceae	2	*Penstemon pallidus*	Pale Beardtongue	G5	S1			4
Plantaginaceae	3	*Penstemon tenuis*	Sharp-sepal Beardtongue	G4	S2			4
Plantaginaceae	2	*Plantago cordata*	Heartleaf Plantain	G4	S1			3

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Plantaginaceae	2	*Sophronanthe hispida*	Pineland Hedge-Hyssop	G3G5	S2			4
Plantaginaceae	3	*Veronicastrum virginicum*	Culver's-root	G4	S1S2			3
Acanthaceae	2	*Ruellia noctiflora*	Night-flowering Wild-petunia	G3?	S2			2
Acanthaceae	3	*Ruellia pinetorum*	Pine Barren Ruellia	G5T3T4	S2S3			3
Acanthaceae	2	*Yeatesia viridiflora*	Green-flower Yeatesia	G3G5	S1			4
Lentibulariaceae	3	*Pinguicula planifolia*	Chapman's Butterwort	G3?	S2S3			3
Lentibulariaceae	2	*Pinguicula pumila*	Dwarf Butterwort	G4	S1			3
Lentibulariaceae	2	*Utricularia olivacea*	Piedmont Bladderwort	G4	S1			3
Lentibulariaceae	3	*Utricularia purpurea*	Purple Bladderwort	G5	S2			4
Verbenaceae	1	*Avicennia germinans*	Black Mangrove	G5	S1			4
Verbenaceae	3	*Verbena xutha*	Gulf Vervain	G5	S2			4
Lamiaceae	1	*Agastache nepetoides*	Yellow Giant-hyssop	G5	S1			
Lamiaceae	1	*Clinopodium arkansanum*	Low Calamint	G5	S1			
Lamiaceae	2	*Collinsonia anisata*	Anise Horsebalm	GNR	S1			
Lamiaceae	2	*Collinsonia punctata*	Spotted-leaf Horse-balm	G3?	S1			3
Lamiaceae	1	*Conradina canescens*	Blue-sage	G5	S1			4

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Lamiaceae	2	*Cunila origanoides*	Common Dittany	G5	S1			4
Lamiaceae	2	*Hedeoma drummondii* var. *drummondii*	Drummond Pennyroyal	G5	S1			4
Lamiaceae	3	*Lycopus amplectens*	Sessile-leaved Bugleweed	G5	S1			4
Lamiaceae	2	*Pycnanthemum flexuosum*	Narrowleaf Mountainmint	G5	S1			4
Lamiaceae	2	*Pycnanthemum pilosum*	Whorled Mountainmint	G5T5	S1			4
Lamiaceae	1	*Salvia chapmanii*	Chapman's Sage	GNR	S1			
Lamiaceae	1	*Scutellaria glabriuscula*	Georgia Skullcap	G2	S1			1
Lamiaceae	1	*Scutellaria leonardii*	Shale-barren Skullcap	G4T4	S1			3
Orobanchaceae	1	*Agalinis auriculata*	Earleaf False Foxglove	G3	S2			3
Phrymaceae	2	*Mimulus ringens* var. *ringens*	Square-stem Monkeyflower	G5	S1			4
Orobanchaceae	3	*Agalinis filicaulis*	Thread-stem False Foxglove	G3	S2S3			3
Orobanchaceae	1	*Agalinis homalantha*	San AntonioF alse-foxglove	G5	S1			4
Orobanchaceae	2	*Agalinis linifolia*	Flaxleaf False Foxglove	G4?	S2			4
Orobanchaceae	3	*Agalinis oligophylla*	Ridge-stem False-foxglove	G4	S2			4
Orobanchaceae	1	*Agalinis skinneriana*	Pale False Foxglove	G3G4	S1			3
Orobanchaceae	1	*Aphyllon uniflorum*	One-flowered Broomrape	G5	S1?			4

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Orobanchaceae	2	*Castilleja coccinea*	Scarlet Indian-paintbrush	G5	S1			4
Orobanchaceae	1	*Conopholis americana*	American Cancer-root	G5	S1			4
Orobanchaceae	3	*Macranthera flammea*	Flame Flower	G3	S3			3
Orobanchaceae	4	*Schwalbea americana*	Chaffseed	G2	SH	LE		1
Aquifoliaceae	2	*Ilex cassine*	Dahoon Holly	G5	S2			4
Campanulaceae	1	*Lobelia boykinii*	Boykin's Lobelia	G2G3	S1			2
Menyanthaceae	3	*Nymphoides aquatica*	Big Floating-heart	G5	S2			4
Menyanthaceae	3	*Nymphoides cordata*	Floating-heart	G5	S1S2			4
Asteraceae	1	*Amphiachyris dracunculoides*	Broom-snakeroot	G4G5	S1			4
Asteraceae	2	*Arnoglossum reniforme*	GreatIndian-plantain	G4	S1			3
Asteraceae	2	*Balduina angustifolia*	Coastal Plain Honeycomb-head	G5	S2			4
Asteraceae	4	*Bidens trichosperma*	Tickseed Sunflower	G5	SU			4
Asteraceae	1	*Boltonia apalachicolensis*	Apalachicola Doll's-Daisy	G2Q	S1			1
Asteraceae	3	*Cirsium lecontei*	Leconte's Thistle	G3	S3			3
Asteraceae	4	*Cirsium muticum*	Swamp Thistle	G5	SP			4
Asteraceae	2	*Coreopsis nudata*	Georgia Tickseed	G3?	S1S2			3

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Asteraceae	3	*Diaperia prolifera* var. *prolifera*	Big-head Evax	G5	S1			4
Asteraceae	4	*Eupatorium lancifolium*	Lanceleaf Thoroughwort	G3?	SP			3
Asteraceae	2	*Gaillardia aestivalis* var. *flavovirens*	Lanceleaf Blanket Flower	G5T3T5	S1			4
Asteraceae	3	*Helenium brevifolium*	Shortleaf Sneezeweed	G4	S2S3			3
Asteraceae	4	*Helianthus debilis* ssp. *tardiflorus*	Gulf Coast Beach Sunflower	G5T3	SP			3
Asteraceae	2	*Helianthus decapetalus*	Thinleaf Sunflower	G5	S2			4
Asteraceae	1	*Helianthus verticillatus*	Whorled Sunflower	G1	S1	LE		1
Asteraceae	1	*Hieracium venosum*	Rattlesnake Hawkweed	G5	S1			4
Asteraceae	2	*Liatris elegantula*	Blazing-Star	GNR	S1			4
Asteraceae	3	*Marshallia angustifolia*	Slim-leaf Barbara's-buttons	G4T4Q	S2			4
Asteraceae	3	*Marshallia trinervia*	Broadleaf Barbara's-buttons	G3	S3			3
Asteraceae	2	*Nabalus asper*	Rough Rattlesnake-root	G4?	S2			3
Asteraceae	1	*Nabalus barbatus*	Barbed Rattlesnake-root	G3	S1			3
Asteraceae	2	*Packera aurea*	Golden Groundsel	G5	S2			4
Asteraceae	2	*Packera paupercula* var. *paupercula*	Balsam Ragwort	G5TNR	S1			4
Asteraceae	2	*Packera tomentosa*	Woolly Groundsel	G4G5	S1			4

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Asteraceae	2	*Palafoxia callosa*	Small Palafoxia	G4G5	S1			4
Asteraceae	4	*Pityopsis pinifolia*	Taylor County Silk-grass	G4	SP			4
Asteraceae	1	*Rudbeckia grandiflora* var. *alismifolia*	Rough Coneflower	G5	S1			4
Asteraceae	1	*Rudbeckia subtomentosa*	Sweet Coneflower	G5	S1			4
Asteraceae	1	*Sclerolepis uniflora*	Pink Bogbutton	G4	S1			4
Asteraceae	2	*Silphium confertifolium*	Black Belt Rosinweed	GNR	S1			4
Asteraceae	3	*Silphium integrifolium* var. *gattingeri*	Gattinger's Rosinweed	G5TNRQ	S2			4
Asteraceae	2	*Silphium pinnatifidum*	Tansy Rosinweed	G3Q	S1			3
Asteraceae	2	*Silphium simpsonii*	Simpson's Rosinweed	G3?Q	S1			3
Asteraceae	3	*Silphium terebinthinaceum* var. *luciae-brauniae*	Lucy Braun's Prairie Dock	G4G5T 3?Q	SU			3
Asteraceae	2	*Solidago auriculata*	Eared Goldenrod	G4	S1			3
Asteraceae	2	*Solidago brachyphylla*	Dixie Goldenrod	G3G4	S1			3
Asteraceae	2	*Solidago flaccidifolia*	Appalachian Goldenrod	G5	S1			4
Asteraceae	2	*Solidago juncea*	Early Goldenrod	G5	S1S2			4
Asteraceae	3	*Solidago rigidiuscula*	Showy Goldenrod	G5T4	S2			4
Asteraceae	2	*Solidago sphacelata*	Autumn Goldenrod	G4G5	S1			4

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Asteraceae	3	*Symphyotrichum ericoides* var. *ericoides*	White Heath Aster	G5T5	S2			4
Asteraceae	4	*Symphyotrichum oblongifolium*	Aromatic Aster	G5	SH			4
Asteraceae	2	*Symphyotrichum oolentangiense*	Sky Blue Aster	G5	S1			4
Asteraceae	2	*Symphyotrichum pratense*	Barrens Silky Aster	G4?	S1			3
Asteraceae	2	*Symphyotrichum puniceum* var. *puniceum*	Purple-stem Aster	G5T5	S2			4
Asteraceae	4	*Symphyotrichum puniceum* var. *scabricaule*	Rough-stem Aster	G5T2	SP			1
Asteraceae	2	*Thelesperma filifolium*	Stiff Greenthread	G4G5	S1			4
Viburnaceae	1	*Viburnum acerifolium*	Mapleleaf Viburnum	G5	S1			4
Araliaceae	2	*Aralia racemosa*	American Spikenard	G5	S1			4
Araliaceae	3	*Panax quinquefolius*	AmericanGinseng	G3G4	S3			3
Apiaceae	4	*Cicuta maculata* var. *bolanderi*	Bolander's Water-hemlock	G5T3T4	SNR			3
Apiaceae	2	*Erigenia bulbosa*	Harbinger-of-Spring	G5	S1			4
Apiaceae	3	*Eryngium aquaticum*	Marsh Rattlesnake-master	G4	S1			4
Apiaceae	1	*Eryngium hookeri*	Hooker's Coyote-thistle	G3G5	S1S2			4
Apiaceae	3	*Eryngium* species 1	Mocassin-master	GNR	S1			
Apiaceae	2	*Ligusticum canadense*	Nondo Lovage	G4	S1			4

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	R S G C N
Apiaceae	3	*Lilaeopsis carolinensis*	CarolinaLilaeopsis	G3G5	S2			3
Apiaceae	2	*Perideridia americana*	Eastern Eulophus	G4	S1S2			3
Apiaceae	2	*Polytaenia nuttallii*	Prairie Parsley	G5	S2			4
Apiaceae	2	*Ptilimnium costatum*	Eastern Bishopweed	G4	S1			3
Apiaceae	1	*Taenidia integerrima*	Yellow Pimpernel	G5	S1			4

CHAPTER 5

Ecoregions and Wildlife Habitats in Mississippi



Pascagoula River Forest *Credit: Heather Sullivan*

EPA Ecoregions and Habitats of Mississippi

Mississippi's ecoregional designations were adopted by the Mississippi SWAP Technical Committee from the ecoregions defined by the U.S. Environmental Protection Agency (US EPA 2023) because of its wide acceptance within the ecological community. The EPA Ecoregions project divides the continental United States into 12 broad, level I ecological regions, which provides a concept of the ecological mosaic of the continent and allows context at a global scale. EPA defines ecoregions as "areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources." These broad level 1 ecoregions were refined to 25 level 2 ecological regions and subdivided to 105 level III units. The level III ecoregions that encompass Mississippi are the Southeastern Plains, the Mississippi Alluvial Plain, the Mississippi Valley Loess Plains, and the Southern Coastal Plain. Each level III ecoregion is further divided into level IV ecoregions, of which there are 21 in Mississippi.

Within each level IV ecoregion, the SWAP Technical Committee paired the 38 primary terrestrial ecological systems in Mississippi described by NatureServe, which are based on the U.S. National Vegetation Classification (USNVC) and is the standard vegetation classification system for federal agencies (FGDC 2008). This approach was recommended by the Association of Fish and Wildlife Agencies (AFWA 2012) for regional and national consistency in the development of SWAPs and has been adopted for the development of Mississippi's 2025-2035 SWAP to align with surrounding state approaches.

The following is EPA's description of its Level III and Level IV ecoregions followed by a list of NatureServe's Terrestrial Ecological Systems (TES) that fall within each region and a list of Mississippi habitats. For a crosswalk of SWAP habitat types by TES, see Appendix 4.

Habitat descriptions, condition, status, maps and associated SGCN follow the presentation of EPA Ecoregions in this Chapter.

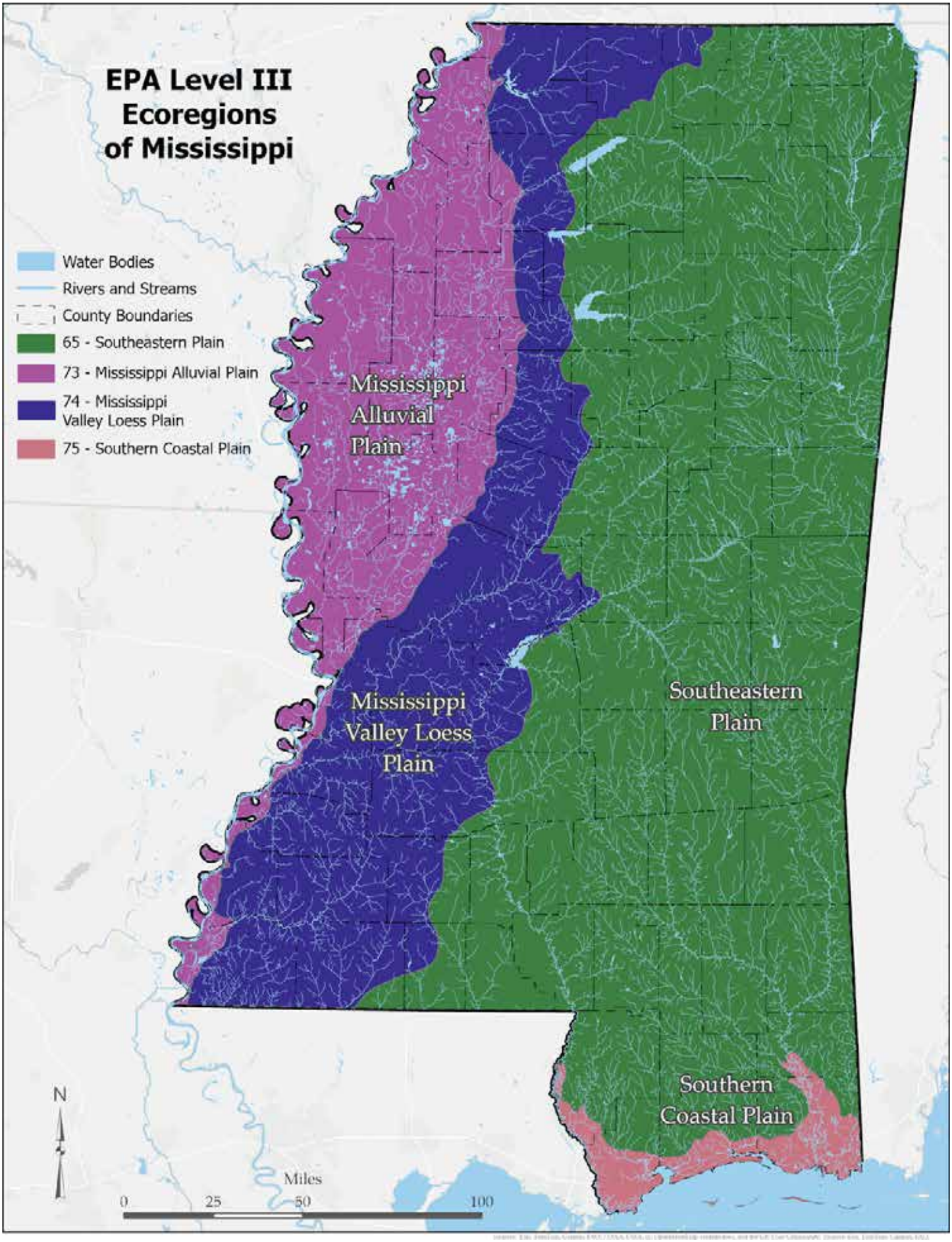


Figure 5.1. Map of EPA Level III ecoregions in Mississippi.

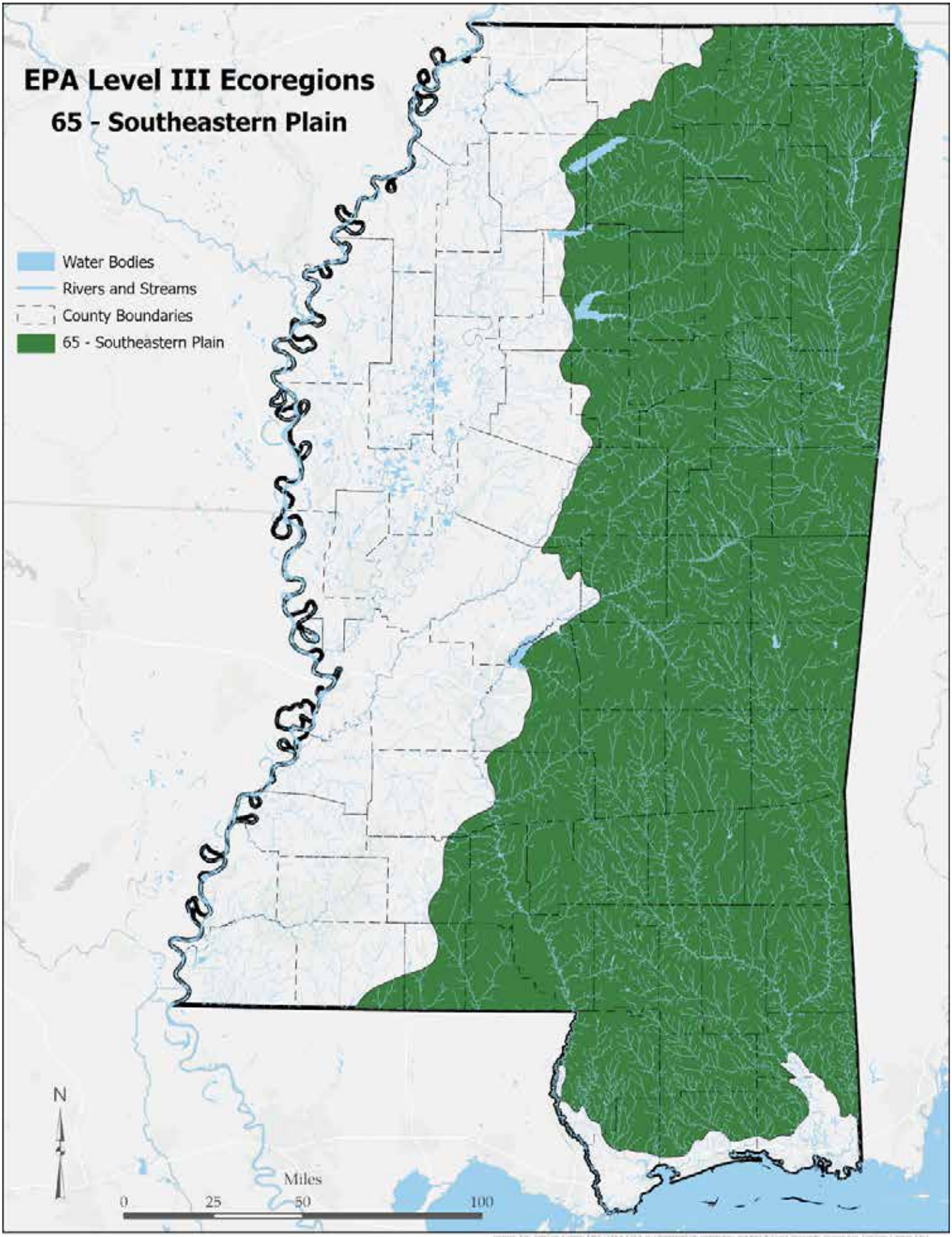


Figure 5.2. Map of Southeastern Plains Ecoregion (65) in Mississippi.

65. Southeastern Plains Ecoregion

Although mostly tree-covered, the Southeastern Plains are a mosaic of cropland, pasture, woodland, and forest land cover. Historically the southern region of this ecoregion was dominated by longleaf pine, with smaller areas of oak-hickory-pine and southern mixed forest. In central and northern Mississippi, oak-pine and some western mixed mesophytic forests were dominant. This region has higher elevations and relief than in the Southern Coastal Plain (75), but less than in much of the Piedmont. The streams of this region are relatively low-gradient and sandy-bottomed. Ten level 4 subdivisions occur in Mississippi in this ecoregion.

65a Blackland Prairie

The flat to undulating Blackland Prairie region is underlain by distinctive Cretaceous-age chalk, marl, and calcareous clays of the Selma group. The fine-textured, clayey soils tend to shrink and crack when dry and swell when wet. Streams are low gradient with chalk, clay, sand, and silt substrates, and have a high variability in flow which affects some fish species distributions. The natural vegetation had dominant trees of sweetgum, post oak, blackjack oak, and red cedar, along with patches of bluestem prairie. Today, the area is mostly cropland and pasture, with small patches of mixed hardwoods, red cedar, and pines. Pond-raised catfish aquaculture occurs in some parts of this region.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.492	East Gulf Coastal Plain Dry Chalk Bluff
CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
CES203.398	Southeastern Coastal Plain Cliff
CES203.478	Southern Coastal Plain Blackland Prairie and Woodland
CES203.502	Southern Coastal Plain Limestone Forest

HABITATS IN BLACKLAND PRAIRIE ECOREGION

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Prairies and Glades; Rock Outcrops and Caves; Shrublands; Seepages; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

65b Flatwoods/Blackland Prairie Margins

In Mississippi and Alabama, the Flatwoods/Blackland Prairie Margins ecoregion is a transitional region between the Blackland Prairie and the more forested plains and hills of the Southern Hilly Gulf Coastal Plain, Northern Hilly Gulf Coastal Plain and Fall Line Hills. This region combines two slightly different areas. The Flatwoods are mostly forested lowland areas of little relief, formed primarily on Late Cretaceous and Paleocene-age dark, massive, marine clay. Soils are very deep, clayey, somewhat poorly drained, and acidic. The Blackland Prairie Margin are undulating, irregular plains, with slightly more relief than the Flatwoods, but also tend to have clayey soils that are sticky when wet, hard and cracked when dry, with generally poor drainage. Land cover is mostly mixed forest, pasture, or hay land, and some cropland.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
CES203.557	East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods

HABITATS IN FLATWOODS/BLACKLAND PRAIRIE MARGINS

Agriculture/Aquaculture Fields; Artificial Impoundments; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Prairies and Glades; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

65d Southern Hilly Gulf Coastal Plain

The dissected irregular plains and gently rolling low hills of the Southern Hilly Gulf Coastal Plain developed over diverse bands of Eocene, Oligocene, and Miocene sand, clay, and marl formations. The region extends from Mississippi through Alabama and into the western edge of Georgia and has more rolling topography, higher elevations, and more relief than the Blackland Prairie, Flatwoods/Blackland Prairie Margin, and Southern Pine Plains and Hills. Some broad cuestas with gentle south slopes and steeper north-facing slopes occur, and the heterogeneous region has a mix of clayey, loam, and sandy soils. The region has a warmer climate and more pines than the Northern Hilly Gulf Coastal Plain to the north. The natural vegetation of mostly oak-hickory-pine forest intergrades into southern mixed forest and longleaf pine forest to the south. Land cover is mostly forest and woodland, with pasture and some cropland. Poultry production is common in the southern portion of the region.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.558	East Gulf Coastal Plain Depression Pond
CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
CES203.496	East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland
CES203.483	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest
CES203.554	East Gulf Coastal Plain Northern Seepage Swamp
CES203.557	East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods
CES203.560	Southern Coastal Plain Dry Upland Hardwood Forest
CES203.384	Southern Coastal Plain Nonriverine Basin Swamp
CES203.494	Southern Coastal Plain Oak Dome and Hammock
CES203.505	Southern Coastal Plain Seepage Swamp and Baygall

HABITATS IN SOUTHERN HILLY GULF COASTAL PLAIN

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forest; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Longleaf Pine Forests; Mesic Upland Forests; Oxbow Lakes; Prairies and Glades; Rock Outcrops and Caves; Seepages; Swamp Forests; Shrublands; Urban/Suburban Lands; Utility Right-of-Way.

65e Northern Hilly Gulf Coastal Plain

This ecoregion contains several north-south trending bands of sand and clay formations. Eocene and Paleocene-age sand, clay, and lignite underlie the western part of the region, and Cretaceous-age fine sands and clays lie to the east. In Mississippi, the region includes the prominent Pontotoc Ridge. The ridge is formed from outcroppings of marls and sands on the Ripley Formation cuesta. The marl and sand surface material have weathered into a reddish surface color, contrasting with the darker soils of adjacent Blackland Prairie and Flatwoods/Blackland Prairie Margins. The boundary to the south with the Southern Hilly Gulf Coastal Plain is broad and transitional. The climate is generally cooler to the north in 65e and there is a greater density of upland hardwood forests than in the Southern Hilly Gulf Coastal Plain.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
CES203.483	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest
CES203.554	East Gulf Coastal Plain Northern Seepage Swamp

HABITATS IN NORTHERN HILLY GULF COASTAL PLAIN

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

65f Southern Pine Plains and Hills

Often called the Pine Hills or Piney Woods in Mississippi, the Southern Pine Plains and Hills ecoregion extends across southern Mississippi and Alabama, covering what was once part of the longleaf pine belt. Today, almost all of the southern mixed forest and longleaf pine forests are gone, replaced mostly by slash and loblolly pine plantations. The longleaf pine forest provides habitat for now rare and endangered species such as the red-cockaded woodpecker, gopher tortoise, and black pine snake. Wet savannas and bogs contained an array of colorful wildflowers, including carnivorous plants. Subsurface materials of the region are composed mostly of the clays and sands of the Miocene-age Hattiesburg and Pascagoula Formations, with some Catahoula Sandstone in the north. Hill summits and higher elevations are composed of Pleistocene and Pliocene-age deposits such as the Citronelle Formation that are generally sandy, gravelly, and porous, and more resistant to erosion than the older underlying Miocene clays and sands. Streams of this region tend to be darker tea-colored and more acidic than those of the Southern Hilly Gulf Coastal Plain. Some hay and cattle ranches occur, and poultry production has increased in recent years, as it has in the southern parts of the Southern Hilly Gulf Coastal Plain.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.558	East Gulf Coastal Plain Depression Pond
CES203.496	East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland
CES203.375	East Gulf Coastal Plain Near-Coast Pine Flatwoods
CES203.192	East Gulf Coastal Plain Savanna and Wet Prairie
CES203.559	East Gulf Coastal Plain Small Stream and River Floodplain Forest
CES203.557	East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods
CES203.493	Southern Coastal Plain Blackwater River Floodplain Forest
CES203.560	Southern Coastal Plain Dry Upland Hardwood Forest
CES203.078	Southern Coastal Plain Herbaceous Seep and Bog
CES203.476	Southern Coastal Plain Mesic Slope Forest
CES203.384	Southern Coastal Plain Nonriverine Basin Swamp
CES203.251	Southern Coastal Plain Nonriverine Cypress Dome
CES203.494	Southern Coastal Plain Oak Dome and Hammock
CES203.505	Southern Coastal Plain Seepage Swamp and Baygall

HABITATS IN SOUTHERN PINE PLAINS AND HILLS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Longleaf Pine Forests; Oxbow Lakes; Pitcherplant Bogs; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way; Wet Pine Savanna and Flatwoods.

65i Fall Line Hills

The Fall Line Hills ecoregion is an area of rugged hills drained by tributaries of the Tombigbee and Tennessee rivers. It is composed of Cretaceous-age sands and clays overlain by mostly loamy soils. The steep, dissected hills have narrow ridgetops and narrow valleys. The land cover is predominantly oak-hickory-pine forests with only small areas used for pasture or crops. Ridgetops are often dominated by shortleaf pine, while dry-mesic hardwood forests are common on the slopes. Elevations are mostly 400 to 700 feet, and the region includes Mississippi's highest point, Woodall Mountain in Tishomingo County at 806 feet above sea level.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
CES203.554	East Gulf Coastal Plain Northern Seepage Swamp
CES203.398	Southeastern Coastal Plain Cliff
CES202.357	Southern Interior Sinkhole Wall

HABITATS IN FALL LINE HILLS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Prairies and Glades; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

65j Transition Hills

The Transition Hills have some of the higher elevations in Ecoregion 65, and contain characteristics of the Southeastern Plains. Many streams in this transition area have cut down into the Mississippian and Devonian-age rocks. Cretaceous-age deposits of silt, sand, clay, and gravel overlie the older limestone, shale, and chert. Although there are small areas of cropland and pasture in the valleys and on gently sloping ridges, the region is mostly forested with oak-hickory-pine forests. The presence of chestnut oak and Virginia pine help distinguish this region in Mississippi.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
CES203.554	East Gulf Coastal Plain Northern Seepage Swamp
CES203.398	Southeastern Coastal Plain Cliff
CES202.357	Southern Interior Sinkhole Wall

HABITATS IN TRANSITION HILLS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Prairies and Glades; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

65p Southeastern Floodplains and Low Terraces

This ecoregion comprises a riverine ecoregion of large rivers and backwaters with ponds, swamps, and oxbow lakes. Substrates of the low-relief region are a mix of sands, silts, and clays. River swamp forests of bald cypress and water tupelo and oak-dominated bottomland hardwood forests provide important wildlife corridors and habitat. The low terraces are mostly forested, although some cropland or pasture is found on the broader level terraces that are better drained. In Mississippi, the region includes only the larger, wider floodplains of Ecoregion 65, the lower Pearl, Leaf/Pascagoula, and Tombigbee rivers.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.489	East Gulf Coastal Plain Large River Floodplain Forest
CES203.493	Southern Coastal Plain Blackwater River Floodplain Forest
CES203.476	Southern Coastal Plain Mesic Slope Forest

HABITATS IN SOUTHEASTERN FLOODPLAINS AND LOW TERRACES

Agricultural/Aquacultural Fields; Artificial Impoundments; Beaver Ponds; Cultivated Forests; Dry Mixed Hardwood and Pine; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forest; Oxbow Lakes; Rock Outcrops and Caves; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Ways.

65q Buhrstone/Lime Hills

The terrain is hillier and irregular in the Buhrstone/Lime Hills ecoregion than in most parts of the surrounding ecoregion Southern Hilly Gulf Coastal Plain. Extending from Alabama where the region includes both the Buhrstone and Lime Hills, it narrows in Mississippi to include only the most rugged portion of the Buhrstone Hills in the area just south and west of Meridian. These hills are associated primarily with the resistant claystone and sandstone of the Eocene-age Tallahatta Formation, and are part of the rugged, north-facing escarpment or cuesta that extends into the middle of Alabama. Although the Tallahatta Formation extends to the northwest, the hills lose their topographic prominence and relief. Well-drained, loamy and sandy soils are typical of the narrow ridges and steep side slopes. Some streams have higher gradients and more rocky substrates than in neighboring regions, affecting water quality, macroinvertebrates, and fish populations.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.554	East Gulf Coastal Plain Northern Seepage Swamp
CES203.476	Southern Coastal Plain Mesic Slope Forest

HABITATS IN BUHRSTONE/LIME HILLS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

65r Jackson Prairie

The Jackson Prairie ecoregion is a narrow belt of irregular plains and low, broad hills underlain primarily by the Yazoo Clay of the Eocene-age Jackson Group. The calcareous clay, sand, and marl is commonly overlain by alkaline, clayey soils that expand when wet and shrink when dry. Fossilized bones of ancient whale-like mammals (*Basilosaurus cetoides and Zygorhiza kochii*) are found in this formation, along with fossil oyster shells and other calcareous sediments that contributed to the formation of the alkaline soils. The historic vegetation was mostly mixed hardwood and pine forests with a scattering of prairies. The soils and gentle topography of the region attracted early settlement and agricultural development, but logging, cultivation, and land abandonment also caused extensive soil erosion. Fire suppression also allowed encroachment of woody vegetation into the prairies. Today, much of the region is forested or in pine plantations, with some row crop agriculture and grazing and haying for livestock production. Some isolated calcareous prairie remnants occur, surrounded by more acidic mixed pine and hardwood forests. Efforts are being made to maintain the prairie species with controlled burning and other management programs on national forest lands.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.492	East Gulf Coastal Plain Dry Chalk Bluff
CES203.398	Southeastern Coastal Plain Cliff
CES203.478	Southern Coastal Plain Blackland Prairie and Woodland
CES203.502	Southern Coastal Plain Limestone Forest

HABITATS IN JACKSON PRAIRIE

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Prairies and Glades; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way;

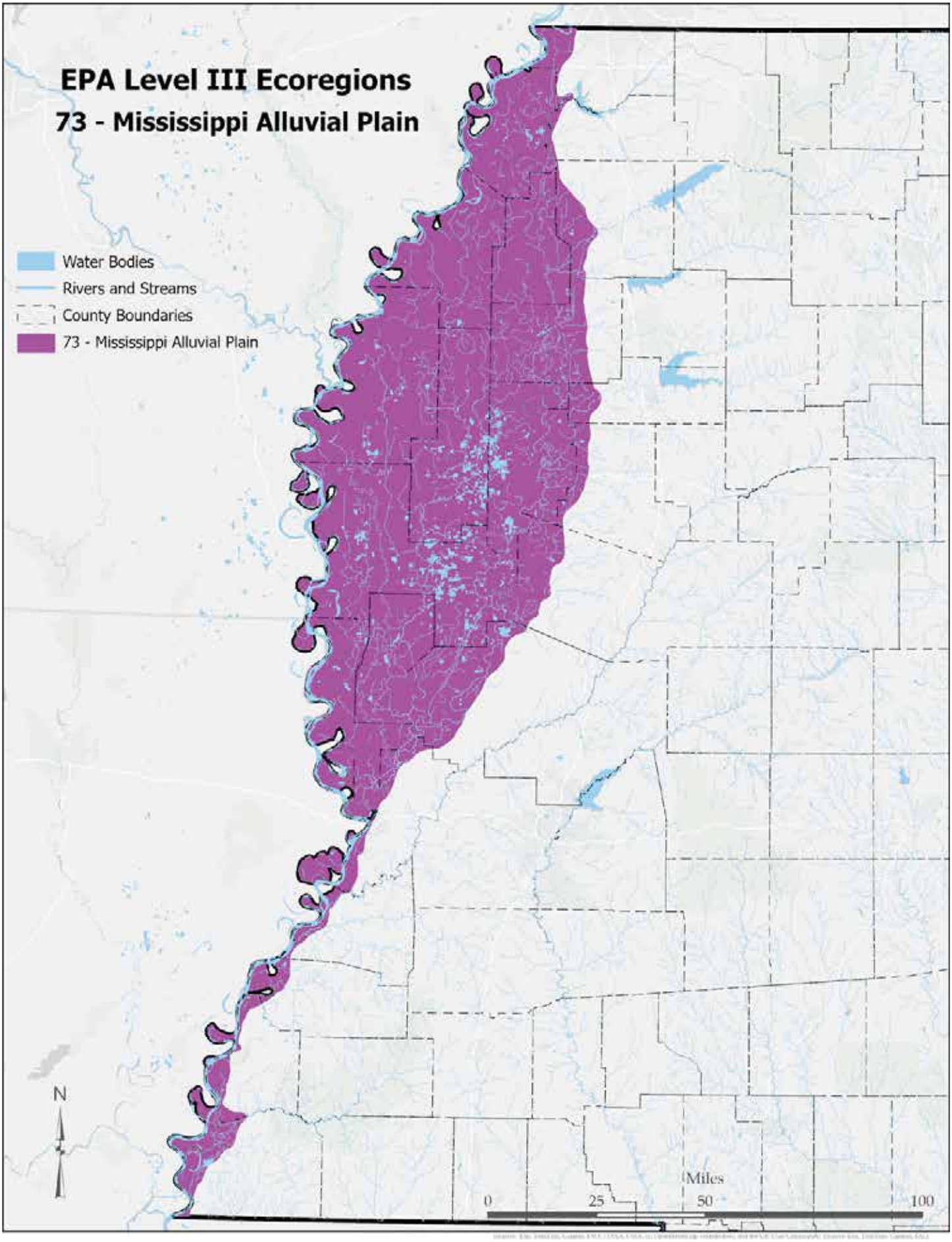


Figure 5.3. Map of Mississippi Alluvial Plain Ecoregion (73) in Mississippi.

73. Mississippi Alluvial Plain Ecoregion

The Mississippi Alluvial Plain extends from southern Illinois, at the confluence of the Ohio River with the Mississippi River, south to the Gulf of Mexico. The broad, flat alluvial plain has areas of river terraces, swales, and levees providing the main elements of relief. Historically, deciduous bottomland forests dominated the region; much of it was cleared for cultivation and continues in this state today. There are five level 4 subdivisions that occur in Mississippi in this ecoregion.

73a Northern Holocene Meander Belts

The Holocene floodplain of the Mississippi alluvial plain contains the meander belt of the present course of the Mississippi River and abandoned meander belts of its previous courses. Point bars, oxbows, natural levees, and abandoned channels are all characteristic of the Northern Holocene Meander Belts ecoregion. The meander belt is an alluvial ridge that is often at a higher elevation than the more distant floodplain or backswamp areas. The natural levees were the conspicuous landform of the meander belt, and their distribution influenced human settlements, transportation routes, and agricultural and industrial activities. Soils of this region tend to be silt loams and clay loams derived from alluvium and are not as sandy as neighboring Northern Pleistocene Valleys Trains. The soils are often well drained to somewhat poorly drained. Widespread draining of wetlands and removal of bottomland forest has occurred in this region and agriculture is extensive.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.490	Mississippi River Bottomland Depression
CES203.196	Mississippi River High Floodplain (Bottomland) Forest
CES203.195	Mississippi River Low Floodplain (Bottomland) Forest
CES203.190	Mississippi River Riparian Forest

HABITATS IN NORTHERN HOLOCENE MEANDER BELTS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Ways.

73b Northern Pleistocene Valley Trains

This ecoregion is made up of Pleistocene glacial outwash deposits from the Mississippi and Ohio Rivers, with surface features that reflect braided-stream depositional regimes. Although they make up about 54% of the entire Mississippi Alluvial Plain ecoregion, the Pleistocene Valley Trains are limited in area in the Yazoo Basin of Mississippi. They have been largely eroded away by lateral channel migration or buried by thick sediments during Holocene times. The remnant valley train landscapes that occur in the northeastern and west-central part of the basin are Late Wisconsin in age, about 10,000-20,000 years before present. Relief is extremely low, with surfaces at or slightly above the adjacent Holocene floodplains, and there is slight or no incision of local drainage. Most of the original bottomland hardwood forest has been removed, replaced with cropland or soybean and some cotton.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.195	Mississippi River Low Floodplain (Bottomland) Forest
CES203.490	Mississippi River Bottomland Depression

HABITATS IN NORTHERN PLEISTOCENE VALLEY TRAINS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Ways.

73d Northern Backswamps

The Northern Backswamps ecoregion consists of flat, poorly drained, floodplain depressions where water often collects into small, low-gradient stream channels, lakes, swamps, and low-lying areas. These were areas generally not affected by lateral river-channel migrations. They often developed in areas of fine-grained overbank or slack-water deposits where sedimentation rates were relatively low. The soils are mostly gray to black and are clayey textured. Organic matter is locally abundant in the form of woody fragments, small particles, and peaty surface layers varying in thickness. Water levels are seasonally variable, and the clayey soils have high shrink-swell potential with periodic wetting and drying. Although there are a few small areas of bottomland hardwood forests, with cypress and tupelo in the wettest areas, large parts of this region in Mississippi are in cropland, farmed wetlands, pastureland, or contain large catfish ponds. The backswamps can be important areas for capturing excess nutrients from local waters and storing water during heavy rain events.

NatureServe Classification Code	International Terrestrial Ecological System
CES203.195	Mississippi River Low Floodplain (Bottomland) Forest
CES203.490	Mississippi River Bottomland Depression

HABITATS IN NORTHERN BACKSWAMPS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Oxbow Lakes; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Ways.

73k Southern Holocene Meander Belts

This portion of the Mississippi Alluvial Plain stretches from just north of Natchez south to New Orleans. Similar to the more northerly meander belt regions, such as the Northern Holocene Meander Belt, point bars, oxbows, natural levees, and abandoned channels occur. This region, however, has a longer growing season, warmer temperatures, and more precipitation than its northern counterparts. The bottomland forests have been cleared and the region has been extensively modified for agriculture, flood control, and navigation. The levee system is extensive throughout the region.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.195	Mississippi River Low Floodplain (Bottomland) Forest
CES203.196	Mississippi River High Floodplain (Bottomland) Forest

HABITATS IN SOUTHERN HOLOCENE MEANDER BELTS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Ways.

73m Southern Backswamps

This ecoregion is generally warmer, has a longer frost-free period, and more precipitation than the Northern Backswamps. Similar to the Northern Backswamps, soils are clayey with areas rich in organic matter. Wetlands are common and flooding occurs frequently. Bottomland hardwood forests are more prevalent in this region than in the Southern Holocene Meander Belts, where cropland is common. Channelization and flood control systems have modified this region and impacted many of the wetland habitats.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.195	Mississippi River Low Floodplain (Bottomland) Forest
CES203.490	Mississippi River Bottomland Depression

HABITATS IN SOUTHERN BACKSWAMPS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Oxbow Lakes; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Ways.

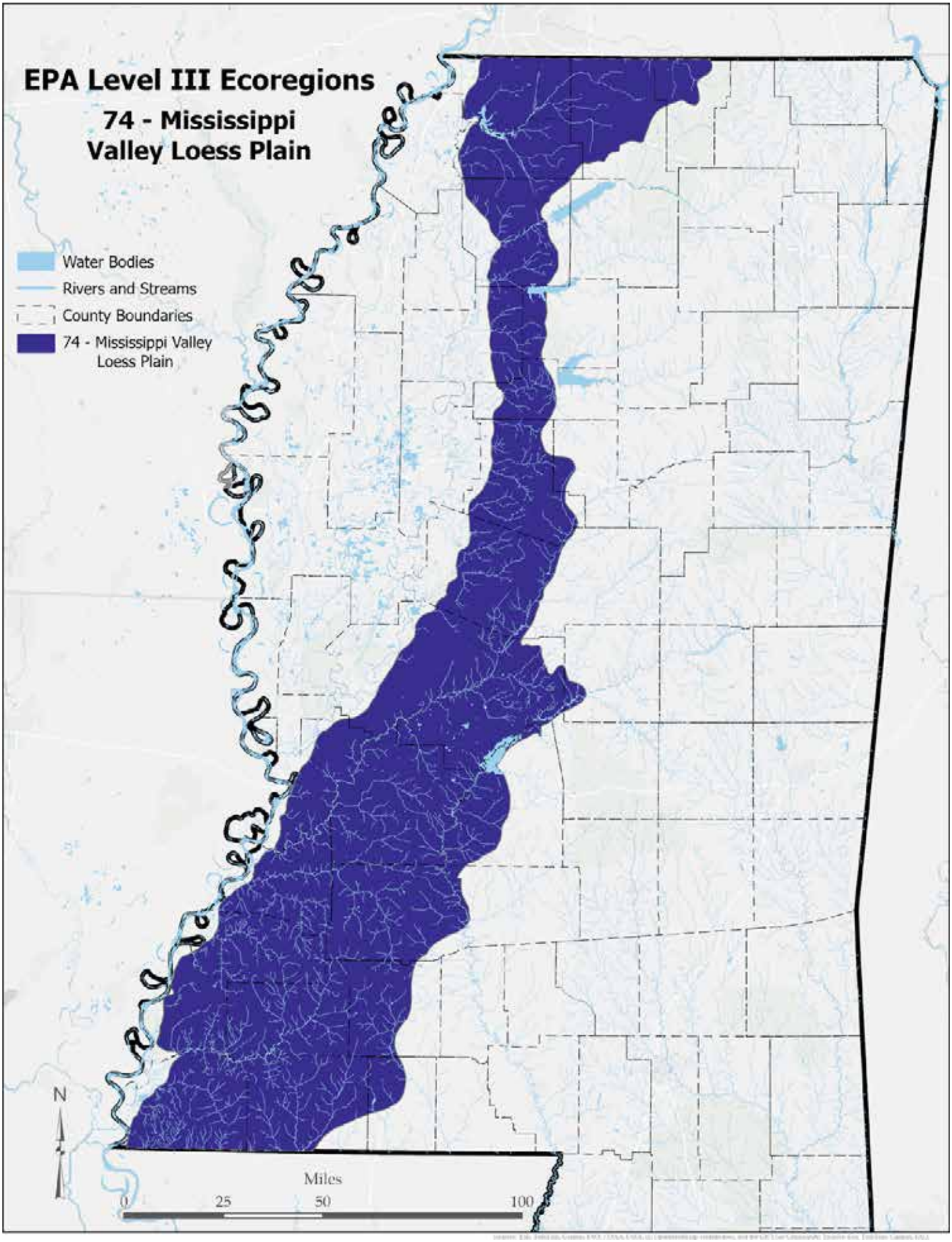


Figure 5.4. Map of Mississippi Valley Loess Plain Ecoregion (74) in Mississippi.

74. Mississippi Valley Loess Plain Ecoregion

The Loess Bluff stretches from near the Ohio River in western Kentucky to Louisiana. Near the Mississippi River, the bluffs are steep but continue to the east as irregular plains and gently rolling hills. Thick loess is one of the distinguishing characteristics. The eastern portion has upland forests of oak, hickory, and both loblolly and shortleaf pine; the western bluffs have mixed and southern mesophytic forests. Mississippi has a mosaic of forest and cropland in the region. There are three level 4 subdivisions that occur in Mississippi in this ecoregion.

74a Bluff Hills

These hills consist of sand, clay, silt, and lignite, and are capped by loess deposits often greater than 50 feet thick. This disjunct region tends to have deeper loess and is steeper, more dissected, and generally more forested than neighboring Loess Plains region. The carved loess has a mosaic of microenvironments, including dry slopes and ridges, moist slopes, ravines, bottomland areas and small cypress swamps. Species with more northern affinities occur far to the south in this region. This combination of northern and southern flora and fauna creates a diverse assemblage of species. While oak-hickory forest is the general natural vegetation type, some of the undisturbed bluff vegetation is rich in mesophytes, such as beech and maples. Forests in the southern part of the region contain more southern magnolia, water oak, and Spanish moss. The cool ravines contain some higher gradient streams and areas of gravel substrate, creating distinct aquatic habitats. Severe erosion has occurred in many parts of the Bluff Hills, particularly when the soils lack adequate vegetative cover.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.481	East Gulf Coastal Plain Northern Loess Bluff Forest
CES203.482	East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland
CES203.477	East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest
CES203.556	East Gulf Coastal Plain Southern Loess Bluff Forest
CES203.493	Southern Coastal Plain Blackwater River Floodplain Forest
CES203.560	Southern Coastal Plain Dry Upland Hardwood Forest

HABITATS IN BLUFF HILLS

Agricultural/Aquaculture Fields; Artificial Impoundments; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Mesic Upland Forests; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests, Urban/Suburban Lands; Utility Right-of-Ways.

74b Loess Plains

The Loess Plains ecoregion was once a highly productive agricultural area in Mississippi, although many areas are now in pine plantation or have reverted to a mixed forest landscape. The gently rolling to irregular plains are a contrast to the more dissected bluffs of the Bluff Hills. The loess layer tends to be thinner than the neighboring Bluff Hills and thins more to the east in the broad transition to Ecoregion 65. Streams and rivers tend to be low gradient and murky with silty and sandy substances; many have been channelized. Severe erosion in earlier years contributed heavy sediment loads to downstream reaches.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
CES203.482	East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland
CES203.477	East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest

HABITATS IN LOESS PLAINS

Agriculture/Aquaculture Lands; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Mesic Upland Forests; Oxbow Lakes; Prairies and Glades; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

74c Southern Rolling Plains

This ecoregion occurs on younger, Miocene and Pleistocene-age geologic formations compared to the Loess Plains to the north, and it has a warmer climate. The general climatic shift from the Loess Plains includes warmer average annual air temperatures, greater annual rainfall, a transition to slightly warmer soils, and a more irregular and dissected topography. Soils of this region are often more loamy or clayey and the loess layer is thinner than in the Bluff Hills and Loess Plains. Land cover is mostly loblolly and shortleaf pine forests or plantations, and forests have a higher concentration of pine than in the other regions of this ecoregion. Timber production occurs in the Homochitto National Forest. Oil and gas production and exploration have been widespread in the region during the past fifty years. The eastern boundary of this region is broad, with a gradual transition to Ecoregion 65.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
CES203.559	East Gulf Coastal Plain Small Stream and River Floodplain Forest
CES203.493	Southern Coastal Plain Blackwater River Floodplain Forest
CES203.476	Southern Coastal Plain Mesic Slope Forest
CES203.505	Southern Coastal Plain Seepage Swamp and Baygall

HABITATS IN SOUTHERN ROLLING PLAINS

Agriculture/Aquaculture Lands; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Floodplain Forests; Prairies and Glades; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Longleaf PineForests; Mesic Upland Forests; ; Oxbow Lakes; Rock Outcrops and Caves; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

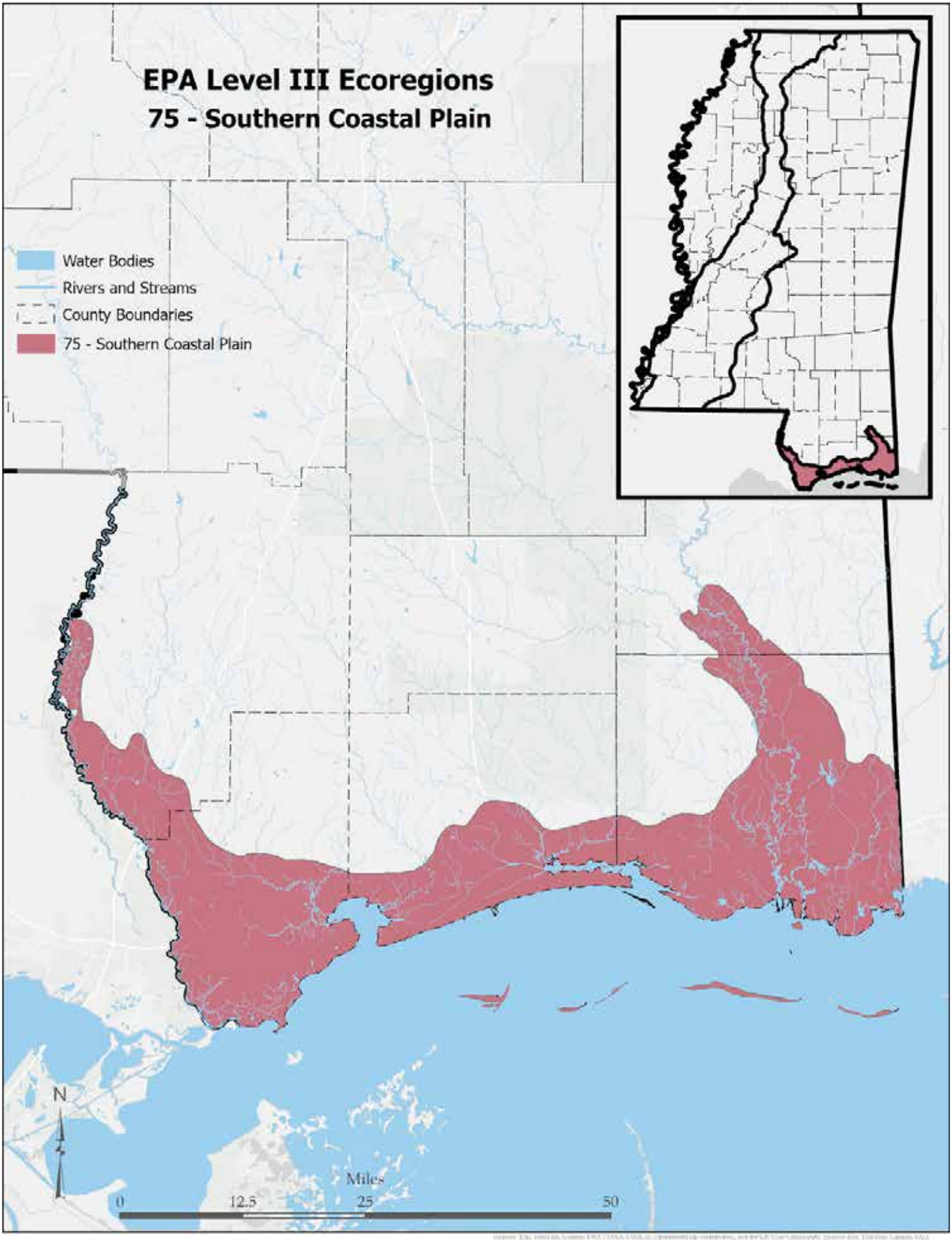


Figure 5.5. Map of Southern Coastal Plain Ecoregion (75) in Mississippi.

75. Southern Coastal Plain Ecoregion

The Southern Coastal Plain has a diversity of habitats including flat plains, barrier islands, coastal lagoons, marshes, and swampy lowlands along the Gulf and Atlantic coasts. This ecoregion is lower in elevation with less relief and wetter soils than the Southeastern Plains. Historically, the region had a variety of forest communities that included longleaf pine savannas, slash pine flatwoods, and southern mesic forests. Development has led to fragmentation of these communities. There are three level 4 subdivisions that occur in Mississippi in this ecoregion.

75a Gulf Coast Flatwoods

In Mississippi, the Gulf Coast Flatwoods is a narrow region of nearly level terraces and delta deposits composed of Quaternary-age sands and clays. Wet, sandy flats and broad depressions that are locally swampy are now usually forested or in pine plantations, while some of the better-drained land has been cleared for pasture or crops. Dominant land uses include woodland, wildlife habitat, and urban areas. Historically, pine savannas with slash and longleaf pine and a variety of grasses, sedges, rushes, pitcher plants and orchids were common. A high natural fire frequency was typical, often sparked by lightning and fueled by wiregrass that maintained the more open savannas.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.299	East Gulf Coastal Plain Freshwater Tidal Wooded Swamp
CES203.375	East Gulf Coastal Plain Near-Coast Pine Flatwoods
CES203.192	East Gulf Coastal Plain Savanna and Wet Prairie
CES203.557	East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods
CES203.251	Southern Coastal Plain Nonriverine Cypress Dome

HABITATS IN GULF COAST FLATWOODS

Agriculture/Aquaculture Fields; Artificial Impoundments; Beaver Ponds; Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Estuarine Bays, Lakes and Tidal Streams; Estuarine Marshes; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Longleaf Pine Forests; Maritime Woodlands; Mesic Upland Forests; Oxbow Lakes; Pitcherplant Bogs; Seepages; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way; Wet Pine Savanna and Flatwoods.

75i Floodplains and Low Terraces

This ecological unit is a continuation of the riverine 65p ecoregion across the Southern Coastal Plain. The broad floodplains and terraces of the Pascagoula and Pearl rivers comprise the region in Mississippi. Composed of stream alluvium and terrace deposits of sand, silty, clay, and gravel, along with some organic muck and swamp deposits, the region includes large sluggish rivers and backwaters with ponds, swamps, and oxbow lakes. River swamp forests of bald cypress and water tupelo and oak-dominated bottomland hardwood forests provide important wildlife habitat.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.299	East Gulf Coastal Plain Freshwater Tidal Wooded Swamp
CES203.067	Mississippi Sound Fresh and Oligohaline Tidal Marsh

HABITATS IN FLOODPLAINS AND LOW TERRACES

Buildings, Bridges, Overpasses, Etc.; Cultivated Forests; Dry Mixed Hardwood and Pine Forests; Ephemeral Ponds; Estuarine Bays, Lakes and Tidal Streams; Estuarine Marshes; Floodplain Forests; Hay and Pasture Lands; Herbaceous Freshwater Marshes; Maritime Woodlands; Mesic Upland Forests; Oxbow Lakes; Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way.

75k Gulf Barrier Islands and Coastal Marshes

This region contains salt and brackish marshes, dunes, beaches, and barrier islands that enclose the Mississippi Sound. Inland, some tidal freshwater marshes occur, such as those on the alluvial delta deposits of the Pearl and Pascagoula rivers. Cordgrass and saltgrass tend to be dominant in the saline intertidal zone. Some xeric coastal strand and pine scrub vegetation, with live oak, upland laurel oak, and slash pine, occurs on parts of the barrier islands. Sea oats are common on the dunes, spits, and beaches. In Mississippi, many of the mainland dunes and beaches have been heavily altered by urban and industrial uses. Some of the mainland beaches, such as along Gulfport and Long Beach, have been artificially created. The outer islands include Ship, Horn, and Petit Bois Islands which are public lands managed under the Gulf Islands National Seashore. These islands and parts of the coastal fringe are used by many trans-gulf migrant bird species that can be seen in spring and fall. The ecoregion provides important habitat for many waterfowl, shorebird, sea turtles, and fish species, as well as for muskrat, nutria, raccoon, otter, mink, and alligator. Nearby island and river delta erosion, land subsidence, and rising sea levels threaten the terrestrial future of parts of this region.

TERRESTRIAL ECOLOGICAL SYSTEMS INCLUDED IN THIS REGION:

NatureServe Classification Code	International Terrestrial Ecological System
CES203.500	East Gulf Coastal Plain Dune and Coastal Grassland
CES203.299	East Gulf Coastal Plain Freshwater Tidal Wooded Swamp
CES203.503	East Gulf Coastal Plain Maritime Forest
CES203.266	Florida Panhandle Beach Vegetation
CES203.067	Mississippi Sound Fresh and Oligohaline Tidal Marsh
CES203.303	North-Central Gulf of Mexico Salt and Brackish Tidal Marsh
CES203.258	Southeastern Coastal Plain Interdunal Wetland
CES203.494	Southern Coastal Plain Oak Dome and Hammock

HABITATS IN GULF BARRIER ISLANDS AND COASTAL MARSHES

Artificial Reefs; Beach and Dune; Coastal Wetlands; Buildings, Bridges, Overpasses, Etc.; Ephemeral Ponds; Estuarine Bays, Lakes and Tidal Streams; Estuarine Marshes; Longleaf Pine Forests; Man-made Beaches; Maritime Woodlands; Mollusk Reefs; Shrublands; Salt Flats and Pannes; Seagrass Beds; Shell Middens and Estuarine Shrublands; Swamp Forests; Urban/Suburban Lands; Utility Right-of-Way; Wet Pine Savanna and Flatwoods.

MARINE HABITATS (OUTSIDE THE BARRIER ISLANDS) - NO ECOREGION EQUIVALENT

Marine habitats of the Mississippi Gulf Coast occur in the region beyond the barrier islands within the western third of the Mississippi-Alabama continental shelf. Nearshore and offshore regions of the shelf are roughly two million acres in size. The shelf extends southward along a gradual sloping plain of unconsolidated sand, muddy sand and mud substrates for a distance of approximately 100 miles. It gradually deepens from the shallows off the barrier islands to a depth of 600 feet along the outer continental shelf.

There is no TES equivalent. The **two habitat types** included in the SWAP under Marine habitats are Hard Bottom and Smooth Bottom.

HABITATS IN GULF BARRIER ISLANDS AND COASTAL MARSHES

Artificial Reefs; Hard Bottoms and Oceanic Reefs; Mississippi Sound (Smooth Bottom).

Classifying Wildlife Habitats in Mississippi

Within the four Level III ecoregions that occur in the state, Mississippi has 19 overarching habitat types organized by four systems: **terrestrial, freshwater streams, estuarine and marine and artificial**. Each is further subdivided into subtypes and cross walked with NatureServe's[1] Terrestrial Ecological System (TES) classifications where there is an equivalent.

Element Two of the eight required elements to be addressed in SWAPs requires each state to produce "descriptions of locations and relative condition of key habitats and ecological community types essential to conservation of species identified as SGCN". To originally address this element, experts were enlisted through survey instruments and input to identify and note the relative significance of the habitats and ecological communities for potential SGCN. Associating SGCN with their habitats and communities guided the process of prioritizing conservation actions to be taken. Targeting key habitats for conservation actions is often an effective way to ensure long-term survival of many SGCN. Prioritizing and implementing actions that protect, conserve or enhance habitats or communities shared by multiple SGCN should increase return on investments.

In the past, the Mississippi Natural Heritage Program (MNHP) *Ecological Community List* was simplified and incorporated within the SWAP to expedite the process of associating SGCN with their habitats and communities. The MNHP list includes 159 natural, semi- natural, managed, weedy and probable subtypes which have been assigned conservation priority ranks indicating their relative endangerment or abundance.

For the purposes of this plan, the 159 ecological community types used in the MNHP were matched to the 38 International TES listed by NatureServe as occurring in Mississippi. The following table lists the habitats which are generally organized on the basis of land type, vegetation and the availability of moisture (by ecoregion). A few MNHP ecological community types have no equivalent in the NatureServe TES; these are noted in the chapters and the tables for each habitat type where applicable.

Each habitat type includes a map showing the general location of the habitat subtypes (where mapping is possible), and a brief description of the type, condition and an estimate of the extent and conservation status followed by a list of SGCN associated with each subtype. Note that the maps presented are not a visual representation of habitat to scale.

[1]NATURESERVE, INC. IS A NON-PROFIT ORGANIZATION THAT PROVIDES PROPRIETARY WILDLIFE CONSERVATION-RELATED DATA, TOOLS, AND SERVICES TO PRIVATE AND GOVERNMENT CLIENTS, PARTNER ORGANIZATIONS, AND THE PUBLIC. THEY MAINTAIN THE NATIONAL VEGETATION CLASSIFICATION STANDARD FOR THE UNITED STATES AS WELL AS THE INTERNATIONAL CLASSIFICATION OF ECOLOGICAL COMMUNITIES, CURRENTLY FOCUSED ON THE WESTERN HEMISPHERE.

Table 5.1. Wildlife Habitat Types and Subtypes in Each Ecoregion in Mississippi.

Habitat Type/Subtype Name		*Ecoregions				
		SP	MAP	MVLP	SCP	Marine
1.	**Dry-Mesic Upland Forests/Woodlands**	X			X	
1.1	Dry Mixed Hardwood and Pine Forests	X			X	
1.2	Longleaf Pine Forests	X			X	
2.	**Mesic Upland Forests**	X		X	X	
3.	**Rock Outcrops and Caves**	X		X	X	
3.1	Rock Outcrops	X		X	X	
3.2	Caves	X		X		
4.	**Floodplain Forests**	X	X		X	
5.	**Swamp Forests**	X			X	
5.1	Bald Cypress/Gum Swamp Forests	X			X	
5.2	Small Stream Swamp Forests	X			X	
6.	**Wet Pine Savannas and Flatwoods**	X			X	
6.1	Wet Pine Savannas	X			X	
6.2	Slash Pine Flatwoods	X			X	
7.	**Bogs and Seepages**	X			X	
7.1	Pitcherplant Bogs	X			X	
7.2	Seepages	X		X	X	
8.	**Prairies and Glades**	X		X	X	
9.	**Herbaceous Freshwater Marshes**	X	X	X	X	
10.	**Natural Lakes and Ponds**	X	X		X	
10.1	Oxbow Lakes	X	X	X	X	
10.2	Ephemeral (Temporary) Ponds	X	X	X	X	
10.3	Beaver Ponds	X	X	X	X	
11.	**Mississippi River and Associated Drainages**		X			
11.1	Mississippi River		X			
11.2	Mississippi Alluvial Plain (MAP)		X			
11.3	Upper Coastal Plain, Yazoo Drainage	X	X	X		
11.4	Big Black River Drainage	X	X	X		
12.	**Northeast Mississippi Drainages**	X				
12.1	Northeast Hills, Tennessee River Drainage	X				
12.2	Tombigbee Drainage	X				
12.3	Lower Mississippi River North Drainage	X				
13.	**Pearl River Drainage**	X				
13.1	Upper Coastal Plain, Pearl River Drainage	X				
13.2	Lower Coastal Plain, Pearl River Drainage	X		X	X	

* EPA Level III Ecoregions - **SP** Southeastern Plains / **MAP** Mississippi Alluvial Plain / **MVLP** Mississippi Valley Loess Plains / **SCP** Southern Coastal Plain

Habitat Type/Subtype Name		*Ecoregions				
		SP	MAP	MVLP	SCP	Marine
14.	**Southeast Mississippi Drainages**	X			X	
14.1	Pascagoula River Drainages	X			X	
14.2	Coastal Streams Drainages	X			X	
15.	**Southwest Mississippi Drainages**			X		
15.1	Lake Ponchartrain Drainages			X		
15.2	Lower Mississippi River South Drainages			X		
16.	**Maritime and Estuarine Fringe**				X	
16.1	Beach and Dune				X	
16.2	Maritime Woodlands				X	
16.3	Coastal Wetlands				X	
16.4	Estuarine Marshes				X	
16.5	Salt Flats and Pannes				X	
16.6	Shell Middens and Estuarine Shrublands				X	
17.	**Estuary and Mississippi Sound (Inside or Associated with Barrier Islands)**				X	
17.1	Estuarine Bays, Lakes, and Tidal Streams				X	
17.2	Seagrass Beds				X	
17.3	Mollusk Reefs				X	
17.4	Mississippi Sound (Smooth Bottoms)				X	
17.5	Barrier Island Passes				X	
18.	**Marine Habitats (Outside Barrier Islands)**					X
18.1	Marine Habitats (Smooth Bottoms)					X
18.2	Hard Bottoms and Oceanic Reefs					X
19.	**Artificial Habitats**	X	X	X	X	X
19.1	Urban and Suburban Lands	X	X	X	X	
19.2	Buildings, Bridges, and Overpasses, Etc.	X	X	X	X	
19.3	Utility Right-of-ways	X	X	X	X	
19.4	Hay and Pasture Lands	X	X	X	X	
19.5	Cultivated Forests	X	X	X	X	
19.6	Shrublands	X	X	X	X	
19.7	Agricultural/Aquacultural Fields	X	X	X	X	
19.8	Impoundments	X	X	X	X	
19.9	Man-made Beaches				X	
19.10	Artificial Reefs				X	X

* EPA Level III Ecoregions - **SP** Southeastern Plains / **MAP** Mississippi Alluvial Plain / **MVLP** Mississippi Valley Loess Plains / **SCP** Southern Coastal Plain

Table 5.2 - Terrestrial Habitat Types and Subtypes in Mississippi by Ecoregion crosswalked with NatureServe's Terrestrial Ecological Systems.

This table lists all terrestrial habitat types and subtypes and their equivalent within NatureServe's TES classification as the Level III EPA Ecoregion where they occur. Following the table is a summary description of each habitat type, and subtype and NatureServe TES (where there is an equivalent). The extent, condition and a list of SGCN for each habitat type are also included.

	1. Dry Mesic Upland Forest/Woodlands	Level III EPA Ecoregion				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
1.1 Dry-Mixed Hardwood and Pine Forest	*East Gulf Coastal Plain Northern Dry Upland Hardwood Forest*	X				
1.1 Dry-Mixed Hardwood and Pine Forest	*Southern Coastal Plain Dry Upland Hardwood Forest*	X			X	
1.1 Dry-Mixed Hardwood and Pine Forest	*Southern Coastal Plain Oak Dome and Hammock*	X			X	
1.1 Dry-Mixed Hardwood and Pine Forest	*East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest*	X				
1.2 Longleaf Pine Forest	*East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland*	X				
	2. Mesic Upland Forest	**Level III EPA Ecoregion**				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Northern Mesic Hardwood Slope*	X				
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland*			X		
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Northern Loess Bluff Forest*			X		
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Southern Loess Bluff Forest*			X		
2.1 Mesic Upland Forest	*Southern Coastal Plain Mesic Slope Forest*	X			X	
2.1 Mesic Upland Forest	*Southern Coastal Plain Limestone Forest*	X				
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods*	X				
	3. Rock Outcrops and Caves	**Level III EPA Ecoregion**				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
3.1 Rock Outcrops	*Rock Outcrops [no NS equivalent]*	X		X	X	
3.1 Rock Outcrops	*Southern Interior Sinkhole Wall*	X				
3.1 Rock Outcrops	*East Gulf Coastal Plain Dry Chalk Bluff*	X				
3.1 Rock Outcrops	*Southeastern Coastal Plain Cliff*	X				
3.2 Caves	*Cave [no NS equivalent]*	X		X		

	4. Floodplain Forests	Level III EPA Ecoregion				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
4.1 Floodplain Forest	*Mississippi River Low Floodplain (Bottomland) Forest*		X			
4.1 Floodplain Forest	*Mississippi River High Floodplain (Bottomland) Forest*		X			
4.1 Floodplain Forest	*Mississippi River Bottomland Depression*		X			
4.1 Floodplain Forest	*East Gulf Coastal Plain Large River Floodplain Forest*	X			X	
4.1 Floodplain Forest	*East Gulf Coastal Plain Small Stream and River Floodplain Forest*	X			X	
4.1 Floodplain Forest	*Southern Coastal Plain Blackwater River Floodplain Forest*	X			X	
4.1 Floodplain Forest	*Mississippi River Riparian Forest*		X			
4.1 Floodplain Forest	*Sandbars [no NS equivalent]*	X	X		X	
	5. Swamp Forest	**Level III EPA Ecoregion**				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
5.1 Bald Cypress/Gum Swamp Forest	*Southern Coastal Plain Nonriverine Cypress Dome*	X			X	
5.2 Small Stream Swamp Forest	*Southern Coastal Plain Nonriverine Basin Swamp*	X			X	
5.2 Small Stream Swamp Forest	*Southern Coastal Plain Seepage Swamp and Baygall*	X				
	6. Wet Pine Savannas and Flatwoods	**Level III EPA Ecoregion**				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
6.1 Slash Pine Flatwoods	*East Gulf Coastal Plain Near-Coast Pine Flatwoods*	X			X	
6.2 Wet Pine Savannas	*East Gulf Coastal Plain Savannas and Wet Prairies*	X			X	
	7. Bogs and Seepages	**Level III EPA Ecoregion**				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
7.1 Pitcherplant Bogs	*Southern Coastal Plain Herbaceous Seep and Bog*	X			X	
7.2 Seepages	*East Gulf Coastal Plain Northern Seepage Swamp*	X		X		
	8. Prairies and Glades	**Level III EPA Ecoregion**				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
8.1 Blackland Prairie and Woodlands	*Southern Coastal Plain Blackland Prairie and Woodland*	X				
	9. Herbaceous Freshwater Marsh	**Level III EPA Ecoregion**				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
9.1 Inland Freshwater Marsh	Inland Freshwater Marsh	X	X	X	X	
	10. Natural Lakes and Ponds	**Level III EPA Ecoregion**				
Habitat Subtypes	**Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
10.1 Oxbow Lake	*Oxbow Lake*	X	X	X	X	
10.2 Beaver Pond	*Beaver Pond [No NS equivalent]*	X	X	X	X	
10.3 Ephemeral (Temporary) Pond	*East Gulf Coastal Plain Depression Pond*	X			X	
10.3 Ephemeral (Temporary) Pond	*Ephemeral Pond [No NS equivalent]*	X	X	X	X	

1. Dry-Mesic Upland Forests/Woodlands

Table 5.3 - Dry Mesic Upland Forest/Woodlands Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	1. Dry Mesic Upland Forest/Woodlands	Level III EPA Ecoregion				
Habitat Subtype	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
1.1 Dry-Mixed Hardwood and Pine Forest	*East Gulf Coastal Plain Northern Dry Upland Hardwood Forest*	X				
1.1 Dry-Mixed Hardwood and Pine Forest	*Southern Coastal Plain Dry Upland Hardwood Forest*	X			X	
1.1 Dry-Mixed Hardwood and Pine Forest	*Southern Coastal Plain Oak Dome and Hammock*	X			X	
1.1 Dry-Mixed Hardwood and Pine Forest	*East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest*	X				
1.2 Longleaf Pine Forest	*East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland*	X				

Dry forests are often found on well-drained soils of upper slopes and flats and include mixed hardwood and pine forest associations. Fire played an important role in maintaining these habitats by reducing densities of young saplings, recycling nutrients and oxidizing ground litter. Several culturally significant species utilize this habitat including hickories, oaks, white-tailed deer, and squirrels.

General Condition

Although there are no estimates of the losses of Dry Mesic Upland Forests/Woodlands in Mississippi, it is possible to envisage their overall condition by understanding the extent of development pressure generated on these habitats. Historically, large areas of upland hardwood and pine forests were converted to agricultural croplands and pasture. The tracts were selected from the areas containing the most productive landforms and soils. Most landforms of the coastal plain are not excessively steep or isolated and are therefore accessible to either timber management or agricultural usage. Due to a history of pine monoculture and fire suppression, typical upland forests lack a diverse understory and exhibit very high stem densities. Upland forests of Mississippi benefit from prescribed burning, but timing of prescribed burning is an important issue: to most closely approximate the condition of the historic forests, burns should occur in late spring and early summer, when natural ignitions were most likely and when litter moisture was low enough to facilitate fire propagation. With an increased interest in conservation, through sustainable forestry practices such as the single tree select cut system of timber harvesting, and a renewed interest in forest restoration on private and public lands, conditions of these forests may improve.

Shortleaf pine historically dominated upper slopes and droughty ridge tops along watershed boundaries in the northern half of the state. Naturally occurring loblolly pine existed in pine and mixed hardwood-pine stands on moist upland flats, mid/lower slopes of drainageways and high stream terraces in areas merging with the longleaf pine region and extending through central and northern Mississippi. Post oak, blackjack oak, scarlet oak and hickory, along with other hardwoods, were commonly mixed with the pine on the drier sites with shortleaf pine often mixed with loblolly pine. Loblolly pine contributes more than 40 to 100 percent of the tree cover on lower slopes and flats. Hardwoods, including southern red oak, post oak, white oak, upland laurel oak, blackgum and sweetgum, are mixed with pine on better sites and make up about 80 percent of the subcanopy. Magnolia, shortleaf pine, tuliptree, hickories, oaks and other trees represent the remaining 20 percent. Typical features of this habitat type are upland hills and flats, which contain soils with moderate depth and acidity and low to moderate fertility and moisture. With the lack of fire management, a dense growth of hardwood trees, shrubs and vines pervade many pine stands and thick litter accumulates on the forest floor. Loblolly and shortleaf pine generally have a shorter life span than most hardwoods, and with time, pine trees age and hardwoods again become competitive. As gaps form in the canopy from aging pine trees, hardwood trees gain stature at a faster rate. After about 75 years or more, if undisturbed by human activities, hardwoods gain dominance, while pines are reduced to snags by insect damage or old age and subsequently are felled by windstorms.

Longleaf pine forest historically covered most of the southern portion of the state, extending from slightly above today's I-20 corridor south to I-10. The area typically featured a rolling topography of very well drained soils. Nested within the piney woods were hillside seepage slopes of pitcherplants. Fires maintained forests and savannas of massive, well-spaced longleaf pine trees. Combustible leaf litter and grassy understory carried natural wildfires through the longleaf region. Sampling of virgin forests over a century

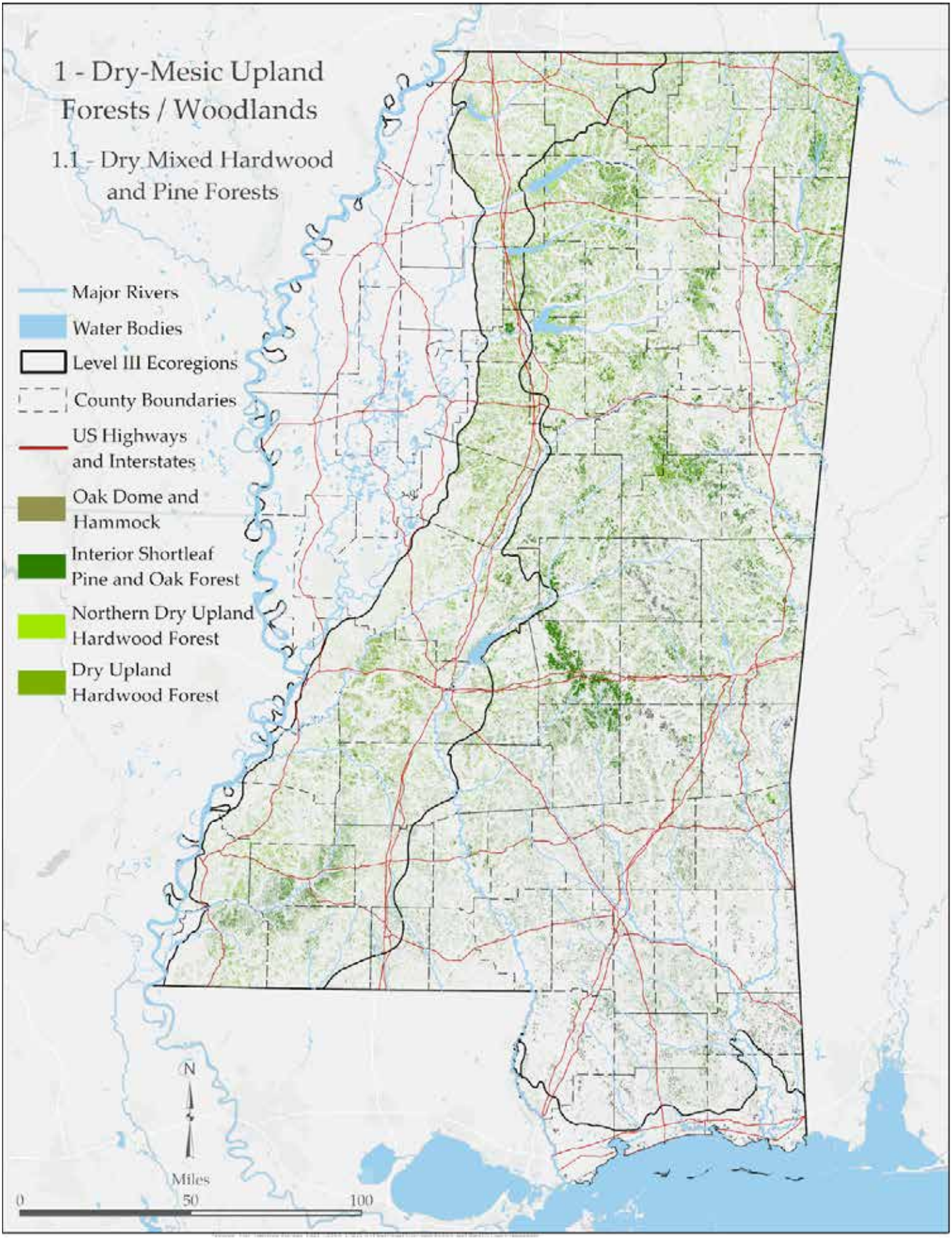


Figure 5.6. Map of Dry-Mesic Upland Forest/Woodlands: Dry-Mixed Hardwood and Pine Forests.

ago indicated that tree densities averaged about 100 per acre, or 400 square feet per tree. With the wider spacing of trees, ample sunlight was able to reach the forest floor and support a diverse cover of herbaceous plants.

Species richness is high in this community with 150 to 300 species per hectare found on the richest fire-maintained sites with shrubs, grasses and forbs, accounting for one-third of the ground cover. Mesic longleaf forests once formed an extensive blanket across the uplands of the piney woods region but were logged during the last two centuries. Second growth forests, many of which were converted to other pines, now occupy the undulating hills and plains of the region. Because of the current emphasis on timber production, many existing longleaf pine stands are even aged and have much higher stocking densities. Although significant land conversion has occurred, longleaf forests are common on national forest lands and some private holdings.

1.1 Dry Mixed Hardwood and Pine Forests



Dry upland hardwood forest, sandhill ridge.
Credit Heather Sullivan.

East Gulf Coastal Plain Northern Dry Upland Hardwood Forests occur in a limited portion of northern Mississippi and include the Northern Pontotoc Ridge. These dry hardwood forests occupy dry upland slopes and ridge tops with nutrient poor soils of various textures.Characteristic species of this community are oaks (post, southern red, blackjack and white) and hickories (mockernut and sand). Shortleaf and loblolly pines are commonly intermingled with the hardwoods. The rare chestnut oak slope and ridge forests are mainly found in the northeastern corner of the state, where the steep slopes are underlain by limestone, shale, and chert beds of the Carboniferous formation.



Northern dry upland hardwood forest.
Credit Heather Sullivan.

Southern Coastal Plain Dry Upland Hardwood Forests consist of deciduous or mixed evergreen oak-dominated forests, often with pines present. These occur within a landscape dominated historically by pines and occurred in fire-sheltered locations on dry to dry-mesic soils in naturally small to large patches. Sites are somewhat protected from most natural fires by steep topography and by limited flammability of the vegetation. Forests in the northern range in the state may have been more widespread. Darlington's oak is a typical species in many examples, with post oak, southern red oak, and white oak less frequently encountered, but dominant in some stands. Hickories, other hardwood tree species, and pines will be present. Stands may be found on slopes above rivers and adjacent to sinkholes, as well as other fire-infrequent habitats including narrow bands between mesic slopes below and pine-dominated flats above. The soils are generally well-drained but not excessively drained.

Southern Coastal Plain Oak Dome and Hammock is an isolated community in South Mississippi. The canopy is usually dominated by live oak. Fires rarely burn through this community due to the limited fuel source; winter burning regimes may have allowed this type to expand in what may have been longleaf pine dominated woods. The soil and moisture conditions vary from dry to more mesic. In addition to the live oaks, Darlington's Oak, sand live oak, bluejack oak, turkey oak, and sand post oak may be present.



Oak dome and hammock maritime woods.
Credit: Heather Sullivan

East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forests form one of the largest communities in the Southeastern Plain of Mississippi. These gently rolling uplands were found on well-drained clays or sandy soils with dry to dry-mesic moisture. Shortleaf pine dominated the region historically but have been replaced by loblolly pines through much of the former range. Hardwood trees are present in more mesic areas and include several oaks (white, southern red, blackjack, and post oaks) and mockernut hickory. Natural fires influenced the composition of the community, with shortleaf pines having difficulty regenerating in the absence of fire.

SIZE, CONDITION AND CONSERVATION STATUS

Dry Mixed Hardwood and Pine Forests: Many tracts containing this forest subtype have been converted to cultivated forests for pine production. Very few forests of this subtype are managed with prescribed burns. Where fire management is used, there is a significant reduction in the density of shrubs and small trees and an improvement in herbaceous ground cover. Ridgetops are used for transportation corridors and the secondary development that is associated with roads.

Dry hardwood forests are highly fragmented and considered to be in poor condition due to complete exclusion of fire, which allows off-site bottomland species to invade uplands, altering forest composition. Few stands are known to be in good condition, and few are protected from conversion to other uses. Continuation of these threats unabated will likely lead to additional declines.

Dry Pine Forests: Increased stocking densities and lack of fire has decreased the quality of this extensive and widespread subtype. Some mature stands are managed by thinning and controlled burns. These thinned stands have a more productive ground cover and prove more valuable for wildlife. Many of the better managed stands are found in state wildlife management areas.

Natural stands of dry-mesic shortleaf/loblolly pine forests are found in small and large patches throughout the central and northern part of Mississippi. Shortleaf pine forests are usually found in smaller patches on narrow ridgetops. The pine stands are interspersed with plantations, cutover areas and hardwood stands.

Size: Estimated 4.52 million acres of Dry-Mesic Upland Forests

East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland is the dominant community in south Mississippi. Longleaf pine would have been the most characteristic canopy tree, but many stands have been altered by a long history of exploitation, harvest, and stand conversion, primarily to agriculture or cultivated forests of slash pine or loblolly pine. Soil and moisture conditions range widely in this community, from excessively well-drained to mesic soils. Natural fires suppressed most hardwood tree species. Dry longleaf pine communities are found on upper slopes and ridge tops, and may have turkey oak, sand post oak and bluejack oak mixed in the canopy. Saw palmettos are also usually present. In areas with high clay content soils, blackjack oak may become more abundant. Turkey oak-sand post oak woodlands are a highly altered longleaf pine community, from which the longleaf pines were harvested sometime in the past.



Interior upland longleaf pine. *Credit: Heather Sullivan*

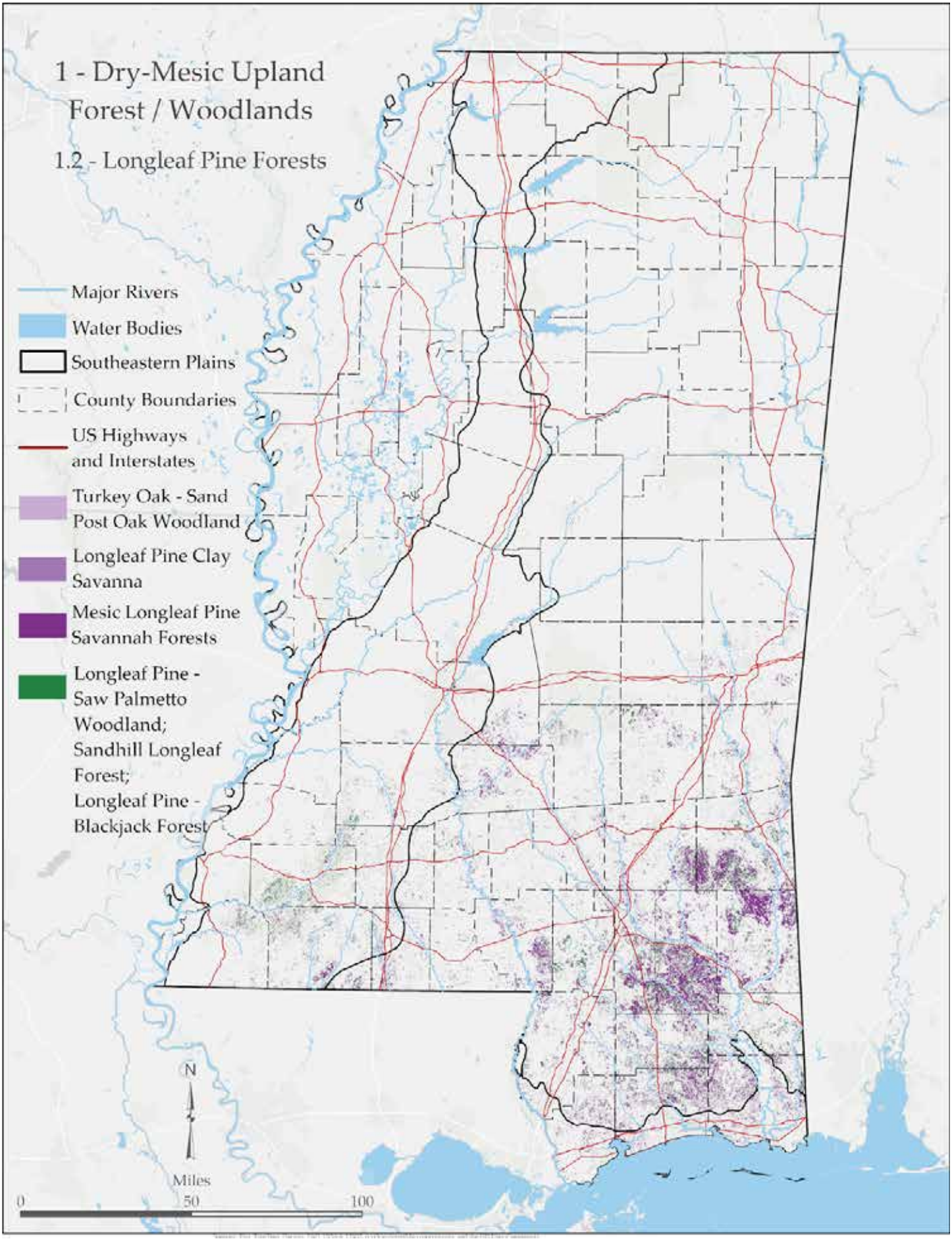


Figure 5.7. Map of Dry-Mesic Upland Forest/Woodlands: Longleaf Pine Forests

This community occurs on sandy caps of hill crests or on thick deposits of sand in floodplain terraces. Small regenerating longleaf pines may be found at the edges. Attempts to establish loblolly pine plantations were common in the past, but usually these failed and the remaining trees are stunted. Mesic longleaf pine communities are more widespread than dry longleaf pine forests in Mississippi. Dry longleaf pine forests are found in upland areas that have loamy soils over clay or clay loam soils on a relatively level to gently sloping plain. The soils are moist, periodically wet, but droughty also. Towards the south part of the region, slash pine is more common with increases in other species going north through the region. Common associates are post oak, blackjack oak, southern red oak, mockernut hickory, white oak, red maple, sweetgum, water oak and upland laurel oak. In these forests, little bluestem and slender bluestem grasses are the most obvious components of the herbaceous layer. Several culturally significant species utilize this habitat including hickories, yaupon holly, white-tailed deer, and squirrels.

SIZE, CONDITION AND CONSERVATION STATUS

Size: Estimated 1.23 million acres of Longleaf Pine Forest

Conservation Status: Critically Imperiled to Imperiled

The upland sites that support longleaf pine forests have been used for road corridors, sand sources and homesites. Fire suppression and conversion to other land uses, including pine plantations, have caused serious qualitative and quantitative declines of this community. While many stands are pure longleaf pine, loblolly and slash pine are common in others. In some stands not managed with fire, dense shrub and vine thickets, reaching six to fifteen feet in height, will shade out the normally rich assemblage of herbs. If left unaltered, this community succeeds to an oak-hickory-pine community on drier sites and to beech-magnolia in mesic areas. Only a fraction of the original forest remains (about three percent). Some large tracts of this subtype are found in the De Soto National Forest and a few private holdings. Many sites in the piney woods have been converted to commercial timber production and are typically planted in off-site species such as loblolly or slash pine. Tracts supporting this subtype range up to 10,000 acres in size (such as the area surrounding White Plains), but many tracts are much smaller.

THREATS AND ACTIONS FOR DRY-MESIC UPLAND FORESTS/ WOODLANDS

Threats: Modification of these habitats to cultivated forests are the primary threat to these communities. Other significant threats are fire suppression, poorly timed prescribed burns, and invasive species.

Actions: Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present.

Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats. Provide public education about the conservation of SGCN and/or their habitats.

Table 5.4 - SGCN for Dry-Mesic Upland Forest/Woodlands.

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Arachnids	2	*Amblyomma tuberculatum*	Gopher Tortoise Tick	X				X	X
Insects	4	*Amblyscirtes alternata*	Least Florida Skipper					X	X
Insects	2	*Aphodius troglodytes*	Aphodius Tortoise Commensal Scarab Beetle	X				X	X
Insects	3	*Atrytone arogos arogos*	Arogos Skipper					X	
Insects	4	*Atrytonopsis loammi*	Loammi Skipper					X	
Insects	2	*Bombus fraternus*	Southern Plains Bumble Bee					X	
Insects	3	*Bombus pensylvanicus*	American Bumblebee					X	
Insects	4	*Catocala delilah*	Delilah Underwing	X	X				
Insects	4	*Catocala miranda*	A Noctuid Moth	X	X				
Insects	4	*Caupolicana electa*	A Plasterer Bee	X				X	
Insects	4	*Ceratophaga vicinella*	Gopher Tortoise Shell Moth	X				X	X
Insects	2	*Chelyoxenus xerobatis*	Gopher Tortoise Hister Beetle	X				X	X
Insects	3	*Cicindela nigrior*	Autumn Tiger Beetle					X	
Insects	4	*Erynnis martialis*	Mottled Dusky Wing	X	X				X
Insects	2	*Eutrichota gopheri*	Gopher Tortoise Burrow Fly	X				X	X
Insects	4	*Lapara phaeobrachycerous*	Gulf Pine Sphinx					X	
Insects	2	*Machimus polyphemi*	Gopher Tortoise Robber Fly	X				X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Insects	2	*Onthophagus polyphemi*	Onthophagus Tortoise Commensal Scarab Beetle	X				X	X
Insects	2	*Philonthus testudo*	Western Gopher Tortoise Rove Beetle	X				X	X
Insects	2	*Pogonomyrmex badius*	Florida Harvester Ant	X	X			X	X
Insects	2	*Pseudopomala brachyptera*	Short-winged Toothpick Grasshopper					X	
Amphibians	1	*Lithobates sevosus*	Dusky Gopher Frog	X				X	X
Amphibians	2	*Plethodon ventralis*	Southern Zigzag Salamander				X		
Amphibians	2	*Plethodon websteri* clade A	Webster's Salamander Clade A				X		X
Amphibians	2	*Plethodon websteri* clade B	Webster's Salamander Clade B				X		X
Amphibians	4	*Pseudacris collinsorum*	Collinses' Mountain Chorus Frog				X		
Amphibians	1	*Pseudacris ornata*	Ornate Chorus Frog					X	
Birds	2	*Accipiter striatus*	Sharp-shinned Hawk (breeding population)						X
Birds	2	*Ammospiza leconteii*	LeConte's Sparrow					X	
Birds	3	*Antrostomus carolinensis*	Chuck-will's-widow	X	X		X	X	X
Birds	1	*Antrostomus vociferus*	Eastern Whip-poor-will		X		X		X
Birds	2	*Aquila chrysaetos*	Golden Eagle	X	X		X	X	X
Birds	1	*Centronyx henslowii*	Henslow's Sparrow					X	
Birds	3	*Coccyzus americanus*	Yellow-billed Cuckoo	X	X		X	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Birds	2	*Colinus virginianus*	Northern Bobwhite	X				X	X
Birds	3	*Columbina passerina*	Common Ground Dove					X	
Birds	2	*Coturnicops noveboracensis*	Yellow Rail					X	
Birds	1	*Dryobates borealis*	Red-cockaded Woodpecker					X	X
Birds	1	*Falco sparverius paulus*	Southeastern American Kestrel				X	X	X
Birds	2	*Geothlypis formosa*	Kentucky Warbler				X		X
Birds	2	*Helmitheros vermivorum*	Worm-eating Warbler	X	X		X		X
Birds	2	*Hylocichla mustelina*	Wood Thrush	X	X		X		X
Birds	2	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike					X	
Birds	3	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike					X	
Birds	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker	X	X		X	X	X
Birds	2	*Peucaea aestivalis*	Bachman's Sparrow					X	X
Birds	3	*Piranga olivacea*	Scarlet Tanager (breeding population)	X	X		X		X
Birds	3	*Scolopax minor*	American Woodcock				X		X
Birds	2	*Setophaga cerulea*	Cerulean Warbler	X	X		X		X
Birds	2	*Setophaga discolor*	Prairie Warbler	X	X		X	X	X
Birds	3	*Sitta pusilla*	Brown-headed Nuthatch					X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Birds	1	*Thryomanes bewickii*	Bewick's Wren	X	X		X		X
Mammals	3	*Aeorestes cinereus*	Hoary Bat	X	X		X	X	X
Mammals	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	X	X		X	X	X
Mammals	3	*Dasypterus intermedius*	Northern Yellow Bat	X				X	X
Mammals	3	*Lasionycteris noctivagans*	Silver-haired Bat	X	X		X	X	X
Mammals	3	*Myotis austroriparius*	Southeastern Myotis	X	X		X	X	X
Mammals	1	*Myotis grisescens*	Gray Bat		X		X		X
Mammals	1	*Myotis septentrionalis*	Northern Long-eared Bat	X	X		X	X	X
Mammals	1	*Myotis sodalis*	Indiana Bat		X		X		X
Mammals	3	*Neogale frenata*	Long-tailed Weasel	X	X		X	X	X
Mammals	2	*Perimyotis subflavus*	Tricolored Bat	X	X		X	X	X
Mammals	2	*Peromyscus polionotus*	Oldfield Mouse	X	X			X	X
Mammals	2	*Sorex longirostris*	Southeastern Shrew	X	X		X	X	X
Mammals	1	*Spilogale putorius*	Eastern Spotted Skunk	X	X		X	X	X
Mammals	2	*Ursus americanus*	Black Bear		X		X		X
Mammals	1	*Ursus americanus luteolus*	Louisiana Black Bear	X	X		X	X	X
Mammals	2	*Zapus hudsonius*	Meadow Jumping Mouse		X				X
Reptiles	3	*Coluber flagellum flagellum*	Eastern Coachwhip	X	X		X	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Reptiles	2	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	X				X	X
Reptiles	1	*Gopherus polyphemus*	Gopher Tortoise	X				X	X
Reptiles	4	*Heterodon simus*	Southern Hognose Snake					X	
Reptiles	2	*Lampropeltis calligaster calligaster*	Prairie Kingsnake		X		X		
Reptiles	2	*Lampropeltis calligaster rhombomaculata*	Mole Kingsnake	X	X		X	X	X
Reptiles	2	*Lampropeltis triangulum*	Red Milk Snake				X		
Reptiles	2	*Micrurus fulvius*	Eastern Coral Snake	X				X	X
Reptiles	2	*Ophisaurus attenuatus*	Slender Glass Lizard	X	X		X	X	X
Reptiles	4	*Ophisaurus mimicus*	Mimic Glass Lizard	X				X	X
Reptiles	1	*Pituophis melanoleucus lodingi*	Black Pine Snake	X				X	X
Reptiles	4	*Pituophis melanoleucus melanoleucus*	Northern Pine Snake		X				X
Reptiles	2	*Plestiodon anthracinus*	Coal Skink				X		X
Nonvascular Plants	3	*Bruchia ravenelii*	Ravenel's Bruchia Moss	X				X	
Nonvascular Plants	1	*Cryphaea ravenelii*	Ravenel's Cryphaea Moss						X
Nonvascular Plants	2	*Cylindrocolea rhizantha*	a liverwort						X
Nonvascular Plants	2	*Lejeunea floridana*	a liverwort					X	
Nonvascular Plants	1	*Macromitrium richardii*	Richard's Macromitrium Moss				X		X

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Nonvascular Plants	2	*Plagiochila floridana*	Florida Leafy Liverwort	X					
Nonvascular Plants	1	*Plagiochila virginica* var. *virginica*	a liverwort				X		X
Nonvascular Plants	1	*Rhodobryum roseum*	Rose Moss		X				
Vascular Plants	3	*Aesculus glabra* var. *glabra*	Ohio Buckeye		X		X		
Vascular Plants	1	*Agalinis auriculata*	Earleaf False Foxglove		X				
Vascular Plants	3	*Agalinis oligophylla*	Ridge-stem False-foxglove					X	
Vascular Plants	1	*Agalinis skinneriana*	Pale False Foxglove		X				
Vascular Plants	3	*Agrimonia incisa*	Incised Groovebur					X	
Vascular Plants	1	*Alophia drummondii*	Purple Pleat-leaf					X	
Vascular Plants	3	*Andropogon perangustatus*	Narrow-leaved Bluestem					X	
Vascular Plants	2	*Andropogon tracyi*	Tracy's Bluestem		X			X	X
Vascular Plants	2	*Anemone caroliniana*	Carolina Anemone		X				
Vascular Plants	2	*Anemone quinquefolia*	Wood Anemone				X		
Vascular Plants	1	*Aphyllon uniflorum*	One-flowered Broomrape				X		
Vascular Plants	1	*Apios priceana*	Price's Potato-bean		X				
Vascular Plants	1	*Aplectrum hyemale*	Puttyroot				X		
Vascular Plants	1	*Aquilegia canadensis*	Wild Columbine		X				
Vascular Plants	4	*Arabidopsis lyrata* ssp. *lyrata*	Lyreleaf Rockcress		X				

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Vascular Plants	1	*Arabis patens*	Spreading Rockcress		X		X		
Vascular Plants	2	*Aralia racemosa*	American Spikenard				X		
Vascular Plants	3	*Aristida beyrichiana*	Southern Wiregrass					X	
Vascular Plants	1	*Aristida mohrii*	Mohr's Three-awn Grass	X				X	
Vascular Plants	3	*Aristida simpliciflora*	Southern Three-awn Grass					X	
Vascular Plants	3	*Aristida tenuispica*	Southern Arrowfeather					X	
Vascular Plants	2	*Arnoglossum reniforme*	Great Indian-plantain						X
Vascular Plants	2	*Asclepias hirtella*	Green Milkweed				X		X
Vascular Plants	1	*Asplenium pinnatifidum*	Lobed Spleenwort				X		
Vascular Plants	1	*Asplenium resiliens*	Black-stem Spleenwort				X		
Vascular Plants	1	*Asplenium rhizophyllum*	Walking-fern Spleenwort				X		
Vascular Plants	1	*Asplenium trichomanes*	Maidenhair Spleenwort				X		
Vascular Plants	1	*Asplenium x kentuckiense*	Kentucky Spleenwort				X		
Vascular Plants	2	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch		X		X		
Vascular Plants	1	*Astragalus distortus* var. *engelmannii*	Engelmann's Bent Milkvetch						X
Vascular Plants	1	*Astragalus obcordatus*	Florida Milkvetch	X				X	
Vascular Plants	2	*Balduina angustifolia*	Coastal Plain Honeycomb-head					X	

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Vascular Plants	1	*Baptisia nuttalliana*	Nuttall's Wild Indigo				X		X
Vascular Plants	2	*Baptisia sphaerocarpa*	Green Wild Indigo					X	
Vascular Plants	3	*Borodinia canadensis*	Sicklepod	X	X		X		
Vascular Plants	2	*Bulbostylis ciliatifolia*	Capillary Hairsedge	X	X			X	
Vascular Plants	2	*Burmannia biflora*	Northern Burmannia					X	
Vascular Plants	2	*Callirhoe triangulata*	Clustered Poppy-mallow	X	X			X	
Vascular Plants	1	*Calopogon multiflorus*	Many-flowered Grass-pink					X	
Vascular Plants	1	*Calopogon oklahomensis*	Oklahoma Grass-pink					X	
Vascular Plants	2	*Camassia scilloides*	Wild Hyacinth				X		
Vascular Plants	3	*Cardamine angustata*	Slender Toothwort				X		
Vascular Plants	3	*Cardamine diphylla*	Two-leaf Toothwort				X		
Vascular Plants	1	*Carex albursina*	White Bear Sedge				X		
Vascular Plants	1	*Carex communis*	Fibrous-root Sedge				X		
Vascular Plants	1	*Carex crawei*	Crawe's Sedge		X				
Vascular Plants	1	*Carex dasycarpa*	Velvet Sedge	X	X			X	
Vascular Plants	2	*Carex exilis*	Coast Sedge					X	
Vascular Plants	3	*Carex gracilescens*	Slender Sedge				X		
Vascular Plants	3	*Carex gravida*	Heavy-fruited Sedge		X				

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Vascular Plants	1	*Carex grisea*	Inflated Narrowleaf Sedge				X		
Vascular Plants	3	*Carex jamesii*	Nebraska Sedge				X		
Vascular Plants	1	*Carex laxiflora*	Broad Loose-flower Sedge				X		
Vascular Plants	2	*Carex mesochorea*	Midland Sedge				X		
Vascular Plants	3	*Carex molestiformis*	Ozark Plateau Sedge				X		
Vascular Plants	1	*Carex normalis*	Greater Straw Sedge				X		
Vascular Plants	1	*Carex oligocarpa*	Eastern Few-fruit Sedge				X		
Vascular Plants	3	*Carex oxylepis* var. *pubescens*	Sharp-scale Sedge				X		
Vascular Plants	3	*Carex radiata*	Stellate Sedge				X		X
Vascular Plants	3	*Carex reznicekii*	Reznicek's Sedge				X		
Vascular Plants	2	*Carex superata*	Limestone Forest Sedge				X		
Vascular Plants	1	*Carex virescens*	Ribbed Sedge				X		
Vascular Plants	2	*Carya laciniosa*	Big Shellbark Hickory		X		X		
Vascular Plants	1	*Castanea dentata* (nut-bearing only)	American Chestnut	X	X		X		X
Vascular Plants	2	*Castilleja coccinea*	Scarlet Indian-paintbrush		X				
Vascular Plants	3	*Chimaphila maculata*	Spotted Wintergreen		X		X		X
Vascular Plants	4	*Cirsium muticum*	Swamp Thistle					X	
Vascular Plants	3	*Cladrastis kentukea*	Yellowwood		X		X		

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Vascular Plants	3	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia					X	
Vascular Plants	3	*Clematis subreticulata*	Alabama Leatherflower				X		X
Vascular Plants	1	*Clinopodium arkansanum*	Low Calamint		X				
Vascular Plants	1	*Coelorachis cylindrica*	Pitted Jointgrass				X		
Vascular Plants	1	*Conopholis americana*	American Cancer-root				X		
Vascular Plants	2	*Convolvulus catesbyanus*	Catesby's Bindweed		X				
Vascular Plants	1	*Crataegus ashei*	Ashe's Hawthorn		X				
Vascular Plants	1	*Crataegus brachyacantha*	Blueberry Hawthorn				X		
Vascular Plants	1	*Crataegus mendosa*	Albertville Hawthorn				X		
Vascular Plants	1	*Crataegus mohrii*	Mohr's Hawthorn						X
Vascular Plants	1	*Crataegus mollis* var. *meridionalis*	Gallion Hawthorn		X				
Vascular Plants	2	*Crataegus triflora*	Three-flowered Hawthorn		X				
Vascular Plants	2	*Crocanthemum arenicola*	Coastal-sand Frostweed	X				X	
Vascular Plants	2	*Cunila origanoides*	Common Dittany		X		X		
Vascular Plants	2	*Cuphea viscosissima*	Blue Waxweed		X				
Vascular Plants	3	*Cyperus drummondii*	Green Flatsedge					X	
Vascular Plants	3	*Cyperus hystricinus*	Bristly Flatsedge	X	X	X			

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Vascular Plants	2	*Cyperus lecontei*	Le Conte's Flatsedge			X			
Vascular Plants	1	*Cyperus refractus*	Reflexed Flatsedge				X		
Vascular Plants	4	*Cypripedium kentuckiense*	Kentucky Yellow Lady's-slipper				X		
Vascular Plants	3	*Dalea mountjoyae*	White-tassels	X		X		X	X
Vascular Plants	3	*Delphinium tricorne*	Dwarf Larkspur		X				
Vascular Plants	1	*Desmodium ochroleucum*	Creamflower Tick-trefoil		X				
Vascular Plants	3	*Diaperia prolifera* var. *prolifera*	Big-head Evax		X				
Vascular Plants	2	*Dicentra cucullaria*	Dutchman's Breeches		X		X		
Vascular Plants	3	*Dichanthelium erectifolium*	Erect-leaf Witchgrass					X	
Vascular Plants	2	*Dichanthelium wrightianum*	Wright's Witchgrass					X	
Vascular Plants	2	*Diphasiastrum digitatum*	Fan Club-moss		X		X		X
Vascular Plants	2	*Dirca palustris*	Eastern Leatherwood		X				
Vascular Plants	4	*Eleocharis bicolor*	Small Spikerush					X	
Vascular Plants	2	*Eleocharis elliptica*	Slender Spikerush		X				
Vascular Plants	2	*Eleocharis elongata*	Slim Spikerush					X	
Vascular Plants	2	*Eleocharis erythropoda*	Bald Spikerush		X				
Vascular Plants	1	*Eleocharis lanceolata*	Lance-like Spikerush				X		
Vascular Plants	1	*Eleocharis melanocarpa*	Black-fruit Spikerush	X					

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Vascular Plants	3	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush					X	
Vascular Plants	2	*Eleocharis wolfii*	Wolf's Spikerush				X		
Vascular Plants	4	*Elionurus tripsacoides*	Pan-american Balsamscale					X	
Vascular Plants	2	*Elymus villosus*	Hairy Wild Rye		X				
Vascular Plants	2	*Endotropis lanceolata*	Lance-leaved Buckthorn		X				
Vascular Plants	1	*Enemion biternatum*	False Rue-anemone				X		
Vascular Plants	2	*Erigenia bulbosa*	Harbinger-of-Spring						X
Vascular Plants	3	*Eriocaulon texense*	Texas Pipewort					X	
Vascular Plants	3	*Eryngium* species 1	Mocassin-master					X	
Vascular Plants	2	*Erythronium albidum*	White Trout-lily		X		X		
Vascular Plants	3	*Erythronium americanum* ssp. *harperi*	Yellow Trout-lily				X		
Vascular Plants	4	*Eupatorium lancifolium*	Lanceleaf Thoroughwort		X				
Vascular Plants	1	*Euphorbia discoidalis*	Summer Spurge		X			X	
Vascular Plants	3	*Forestiera ligustrina*	Upland Swamp Privet		X				
Vascular Plants	2	*Fraxinus quadrangulata*	Blue Ash		X				
Vascular Plants	2	*Gaillardia aestivalis* var. *flavovirens*	Lanceleaf Blanket Flower					X	
Vascular Plants	1	*Galearis spectabilis*	Showy Orchis				X		

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Vascular Plants	2	*Galium bermudense*	Coastal Bedstraw	X				X	
Vascular Plants	1	*Gentiana catesbaei*	Elliott's Gentian					X	
Vascular Plants	1	*Gentianella occidentalis*	Stiff Gentian		X				
Vascular Plants	2	*Goodyera pubescens*	Downy Rattlesnake-plantain				X		
Vascular Plants	2	*Hackelia virginiana*	Virginia Stickseed				X		
Vascular Plants	2	*Hamamelis ovalis*	Running Witch-hazel						X
Vascular Plants	3	*Helenium brevifolium*	Shortleaf Sneezeweed					X	
Vascular Plants	4	*Helianthus debilis* ssp. *tardiflorus*	Gulf Coast Beach Sunflower					X	
Vascular Plants	2	*Helianthus decapetalus*	Thinleaf Sunflower				X		X
Vascular Plants	3	*Hepatica acutiloba*	Sharp-lobed Hepatica				X		
Vascular Plants	2	*Heuchera macrorhiza*	Giant Alumroot		X				
Vascular Plants	1	*Heuchera parviflora*	Little-flower Alumroot		X				
Vascular Plants	3	*Hexalectris spicata*	Crested Coralroot		X		X		X
Vascular Plants	1	*Hieracium venosum*	Rattlesnake Hawkweed		X		X		
Vascular Plants	1	*Hydrastis canadensis*	Golden-seal				X		
Vascular Plants	2	*Hypericum canadense*	Canadian St. John's-wort					X	
Vascular Plants	1	*Ipomoea macrorhiza*	Large-stem Morning-glory					X	

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Vascular Plants	2	*Liatris elegantula*	Blazing-Star	X				X	
Vascular Plants	2	*Ligusticum canadense*	Nondo Lovage				X		
Vascular Plants	2	*Lilium iridollae*	Panhandle Lily						X
Vascular Plants	1	*Lilium michiganense*	Michigan Lily				X		
Vascular Plants	2	*Lindera subcoriacea*	Bog Spicebush					X	
Vascular Plants	3	*Linum floridanum* var. *chrysocarpum*	Yellow-fruited Flax					X	
Vascular Plants	2	*Lithospermum caroliniense*	Golden Puccoon	X				X	
Vascular Plants	2	*Lithospermum latifolium*	American Gromwell		X		X		
Vascular Plants	2	*Lupinus perennis* ssp. *gracilis*	Sundail Lupine	X				X	
Vascular Plants	2	*Malus ioensis*	Iowa Crabapple	X				X	X
Vascular Plants	3	*Marshallia trinervia*	Broadleaf Barbara's-buttons				X	X	X
Vascular Plants	1	*Matelea baldwyniana*	Baldwin's Milkvine		X				
Vascular Plants	3	*Matelea decipiens*	Old-field Milkvine				X		X
Vascular Plants	3	*Matelea obliqua*	Climbing Milkweed				X		X
Vascular Plants	1	*Mertensia virginica*	Virginia Bluebells						X
Vascular Plants	2	*Mirabilis albida*	Pale Umbrella-wort		X				
Vascular Plants	2	*Mirabilis linearis*	Narrowleaf Four-o'clock		X				

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Vascular Plants	2	*Muhlenbergia glabrifloris*	Inland Muhly				X		
Vascular Plants	2	*Myriopteris lanosa*	Hairy Lipfern		X		X		X
Vascular Plants	2	*Nabalus asper*	Rough Rattlesnake-root		X		X		
Vascular Plants	1	*Nabalus barbatus*	Barbed Rattlesnake-root		X		X		
Vascular Plants	2	*Nestronia umbellula*	Nestronia		X		X		X
Vascular Plants	1	*Neviusia alabamensis*	Alabama Snow-wreath		X				
Vascular Plants	3	*Oenothera capillifolia* ssp. *capillifolia*	Berlandier's Sundrops		X				
Vascular Plants	3	*Oenothera grandiflora*	Large-flowered Evening-primrose		X				
Vascular Plants	4	*Oenothera heterophylla* ssp. *orientalis*	Alabama Evening-primrose		X				
Vascular Plants	4	*Oenothera patriciae*	Plains Gaura					X	
Vascular Plants	3	*Oenothera triloba*	Stemless Evening-primrose		X				
Vascular Plants	2	*Orthochilus ecristatus*	Giant Orchid		X		X	X	X
Vascular Plants	2	*Oxalis grandis*	Great Yellow Woodsorrel				X		
Vascular Plants	3	*Oxalis macrantha*	Tufted Yellow Woodsorrel		X		X		
Vascular Plants	2	*Packera aurea*	Golden Groundsel				X		
Vascular Plants	2	*Packera paupercula* var. *paupercula*	Balsam Ragwort		X				
Vascular Plants	2	*Packera tomentosa*	Woolly Groundsel		X		X		

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Vascular Plants	3	*Palhinhaea cernua*	Nodding Clubmoss					X	
Vascular Plants	2	*Parnassia grandifolia*	Largeleaf Grass-of-parnass us					X	
Vascular Plants	2	*Paronychia baldwinii* ssp. *riparia*	Perennial Dune Whitlow-wort					X	
Vascular Plants	2	*Paronychia patula*	Pineland Nailwort					X	
Vascular Plants	2	*Pellaea atropurpurea*	Purple-stem Cliff-brake		X		X		
Vascular Plants	3	*Penstemon canescens*	Gray Beardtongue		X				
Vascular Plants	2	*Penstemon pallidus*	Pale Beardtongue		X				
Vascular Plants	2	*Perideridia americana*	Eastern Eulophus				X		
Vascular Plants	2	*Phacelia bipinnatifida*	Fernleaf Phacelia		X		X		
Vascular Plants	2	*Phacelia purshii*	Miami-mist				X		
Vascular Plants	3	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed		X			X	
Vascular Plants	4	*Phaseolus sinuatus*	Sandhill Bean					X	
Vascular Plants	1	*Philadelphus hirsutus*	Streambank Mock-orange		X		X		X
Vascular Plants	3	*Philadelphus inodorus*	Scentless Mock Orange	X	X		X		X
Vascular Plants	2	*Phlox amplifolia*	Largeleaf Phlox				X		
Vascular Plants	1	*Pinus clausa*	Sand Pine	X		X		X	
Vascular Plants	3	*Pinus virginiana*	Virginia Pine		X		X		X

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Vascular Plants	4	*Pityopsis pinifolia*	Taylor County Silk-grass	X				X	
Vascular Plants	2	*Platanthera conspicua*	Large White-fringe Orchid				X	X	
Vascular Plants	2	*Platanthera lacera*	Green-fringed Orchid						X
Vascular Plants	2	*Polygonella americana*	Southern Jointweed		X				
Vascular Plants	2	*Polytaenia nuttallii*	Prairie Parsley		X				X
Vascular Plants	3	*Ponthieva racemosa*	Shadow-witch Orchid		X		X		
Vascular Plants	2	*Primula meadia*	Shootingstar		X				
Vascular Plants	2	*Pycnanthemum pilosum*	Whorled Mountainmint		X		X		
Vascular Plants	4	*Quercus arkansana*	Arkansas Oak	X					X
Vascular Plants	2	*Quercus macrocarpa* var. *macrocarpa*	Bur Oak		X				
Vascular Plants	2	*Quercus minima*	Dwarf Live Oak	X				X	
Vascular Plants	2	*Quercus myrtifolia*	Myrtle-leaf Oak			X		X	
Vascular Plants	2	*Quercus oglethorpensis*	Oglethorpe's Oak				X		
Vascular Plants	2	*Quercus palustris*	Pin Oak				X		
Vascular Plants	2	*Rhododendron alabamense*	Alabama Rhododendron				X		
Vascular Plants	2	*Rhododendron arborescens*	Smooth Azalea				X		
Vascular Plants	3	*Rhododendron austrinum*	Orange Azalea					X	

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Vascular Plants	2	*Rhododendron periclymenoides*	Pink Azalea				X		X
Vascular Plants	2	*Rhynchosia latifolia*	Prairie Rhynchosia		X		X		
Vascular Plants	3	*Rhynchospora baldwinii*	Baldwin's Beakrush					X	
Vascular Plants	1	*Rhynchospora cephalantha* var. *attenuata*	Small-bunched Beaksedge					X	
Vascular Plants	2	*Rhynchospora galeana*	Short-bristle Baldrush					X	
Vascular Plants	2	*Rhynchospora harveyi*	Harvey's Beakrush					X	
Vascular Plants	2	*Rhynchospora perplexa*	Pineland Beakrush					X	
Vascular Plants	1	*Rhynchospora pleiantha*	Brown Beakrush			X			
Vascular Plants	2	*Rhynchospora wrightiana*	Wright's Beakrush					X	
Vascular Plants	1	*Rudbeckia grandiflora* var. *alismifolia*	Rough Coneflower				X		
Vascular Plants	1	*Rudbeckia subtomentosa*	Sweet Coneflower				X		
Vascular Plants	2	*Ruellia noctiflora*	Night-flowering Wild-petunia					X	
Vascular Plants	3	*Ruellia pinetorum*	Pine Barren Ruellia					X	
Vascular Plants	3	*Sabatia campestris*	Prairie Pink				X	X	X
Vascular Plants	2	*Sabulina patula*	Pitcher's Stitchwort		X				
Vascular Plants	1	*Salvia chapmanii*	Chapman's Sage		X		X		
Vascular Plants	2	*Sceptridium jenmanii*	Alabama Grapefern				X	X	X

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Vascular Plants	3	*Sceptridium lunarioides*	Winter Grape-fern				X	X	X
Vascular Plants	3	*Schizachyrium maritimum*	Gulf Bluestem			X			
Vascular Plants	2	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	X	X			X	X
Vascular Plants	2	*Schizachyrium stoloniferum*	Creeping Bluestem					X	
Vascular Plants	4	*Schwalbea americana*	Chaffseed					X	
Vascular Plants	3	*Scleria elliottii*	Broad-leaved Hairy Nutrush				X		X
Vascular Plants	3	*Scleria nitida*	Shining Nutrush	X				X	
Vascular Plants	1	*Scutellaria glabriuscula*	Georgia Skullcap					X	
Vascular Plants	1	*Scutellaria leonardii*	Shale-barren Skullcap		X				
Vascular Plants	1	*Sedum pulchellum*	Rock Stonecrop		X				
Vascular Plants	2	*Sedum ternatum*	Wood Stonecrop		X				X
Vascular Plants	2	*Senega ambigua*	Whorled Milkwort		X		X		
Vascular Plants	2	*Senega appendiculata*	Swamp Milkwort			X			
Vascular Plants	2	*Senega curtissii*	Curtiss' Milkwort		X		X		
Vascular Plants	2	*Senega hookeri*	Hooker's Milkwort					X	
Vascular Plants	2	*Senega leptostachys*	Georgia Milkwort					X	
Vascular Plants	2	*Setaria corrugata*	Coast Bristle Grass					X	
Vascular Plants	2	*Silene ovata*	Ovate Catchfly				X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Vascular Plants	2	*Silphium confertifolium*	Black Belt Rosinweed		X				
Vascular Plants	3	*Silphium integrifolium* var. *gattingeri*	Gattinger's Rosinweed		X				
Vascular Plants	2	*Silphium pinnatifidum*	Tansy Rosinweed		X				
Vascular Plants	2	*Silphium simpsonii*	Simpson's Rosinweed	X	X			X	
Vascular Plants	3	*Silphium terebinthinace um* var *luciae-brauniae*	Lucy Braun's Prairie Dock		X				
Vascular Plants	2	*Smilax pulverulenta*	Downy Carrion-flower		X				
Vascular Plants	2	*Solidago auriculata*	Eared Goldenrod		X				
Vascular Plants	2	*Solidago brachyphylla*	Dixie Goldenrod						X
Vascular Plants	2	*Solidago flaccidifolia*	Appalachian Goldenrod		X		X		X
Vascular Plants	2	*Solidago juncea*	Early Goldenrod				X		
Vascular Plants	3	*Solidago rigidiuscula*	Showy Goldenrod		X				
Vascular Plants	2	*Solidago sphacelata*	Autumn Goldenrod		X		X		
Vascular Plants	2	*Sophronanthe hispida*	Pineland Hedge-Hyssop					X	
Vascular Plants	2	*Sphenopholis pensylvanica*	Swamp Wedgescale				X		X
Vascular Plants	1	*Spiranthes brevilabris*	Texas Ladies'-tresses					X	
Vascular Plants	1	*Spiranthes eatonii*	Eaton's Ladies'-tresses					X	
Vascular Plants	1	*Spiranthes floridana*	Florida Ladies'-tresses					X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Vascular Plants	3	*Spiranthes magnicampor um*	Great Plains Ladies'-tresses		X				
Vascular Plants	3	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses				X		X
Vascular Plants	2	*Sporobolus ozarkanus*	Ozark Dropseed		X				
Vascular Plants	1	*Stellaria corei*	Tennessee Chickweed				X		X
Vascular Plants	3	*Stellaria pubera*	Giant Chickweed				X		X
Vascular Plants	2	*Stenanthium gramineum*	Eastern Featherbells				X		
Vascular Plants	2	*Stenanthium texanum*	Pine Barren Deathcamas					X	
Vascular Plants	2	*Stylisma pickeringii* spp. *pickeringii*	Pickering Morning-glory	X	X	X		X	
Vascular Plants	2	*Stylisma pickeringii* ssp. *pattersonii*	Pickering Morning-glory	X	X	X		X	
Vascular Plants	3	*Symphyotrichum ericoides* var. *ericoides*	White Heath Aster		X				
Vascular Plants	4	*Symphyotrichum oblongifolium*	Aromatic Aster		X				
Vascular Plants	2	*Symphyotrichum oolentangiense*	Sky Blue Aster		X				
Vascular Plants	2	*Symphyotrichum pratense*	Barrens Silky Aster		X				
Vascular Plants	2	*Symphyotrichum puniceum* var. *puniceum*	Purple-stem Aster						X
Vascular Plants	4	*Symphyotrichum puniceum* var. *scabricaule*	Rough-stem Aster						X
Vascular Plants	2	*Syngonanthus flavidulus*	Yellow Pipewort					X	
Vascular Plants	1	*Taenidia integerrima*	Yellow Pimpernel		X		X		

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Vascular Plants	2	*Thalictrum debile*	Southern Meadowrue		X		X		
Vascular Plants	2	*Thalictrum macrostylum*	Small-leaf Meadowrue					X	
Vascular Plants	2	*Thelesperma filifolium*	Stiff Greenthread		X				
Vascular Plants	3	*Tiarella cordifolia*	Heart-leaved Foam-flower		X				
Vascular Plants	3	*Tomostima cuneifolia*	Wedgeleaf Whitlow-grass		X				
Vascular Plants	3	*Tomostima reptans*	Carolina Whitlow-grass		X				
Vascular Plants	2	*Tradescantia ernestiana*	Ernest's Spider-wort		X		X		
Vascular Plants	2	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort				X		X
Vascular Plants	3	*Tridens carolinianus*	Carolina Fluff Grass					X	
Vascular Plants	3	*Tridens chapmanii*	Chapman's Redtop					X	X
Vascular Plants	1	*Trifolium carolinianum*	Carolina Clover		X			X	
Vascular Plants	4	*Trifolium reflexum*	Buffalo Clover		X		X		
Vascular Plants	1	*Trillium flexipes*	Drooping Trillium				X		
Vascular Plants	3	*Trillium foetidissimum*	Fetid Trillium				X		X
Vascular Plants	3	*Trillium ludovicianum*	Louisiana Trillium				X		
Vascular Plants	1	*Trillium pusillum* var. *ozarkanum*	Ozark Least Trillium						X
Vascular Plants	3	*Ulmus serotina*	September Elm		X		X		
Vascular Plants	3	*Vaccinium pallidum*	Early Lowbush Blueberry		X		X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	SCP Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SPC Oak Dome and Hammock	EGCP Southern Loblolly-Hardwood Flatwoods	EGCP Interior Upland Longleaf Pine Woodland	EGCP Interior Shortleaf Pine-Oak Forest
Vascular Plants	3	*Vaccinium tenellum*	Small Black Blueberry	X				X	
Vascular Plants	1	*Vandenboschia boschiana*	Appalachian Bristle Fern		X				
Vascular Plants	1	*Viburnum acerifolium*	Mapleleaf Viburnum				X		
Vascular Plants	1	*Vittaria appalachiana*	Appalachian Vittaria				X		
Vascular Plants	3	*Xyris chapmanii*	Chapman's Yellow-eyed-grass					X	
Vascular Plants	2	*Xyris louisianica*	Kral's Yellow-eyed Grass					X	
Vascular Plants	3	*Xyris scabrifolia*	Harper's Yellow-eyed Grass					X	
Vascular Plants	2	*Zephyranthes simpsonii*	Rainlily					X	X

2. Mesic Upland Forests

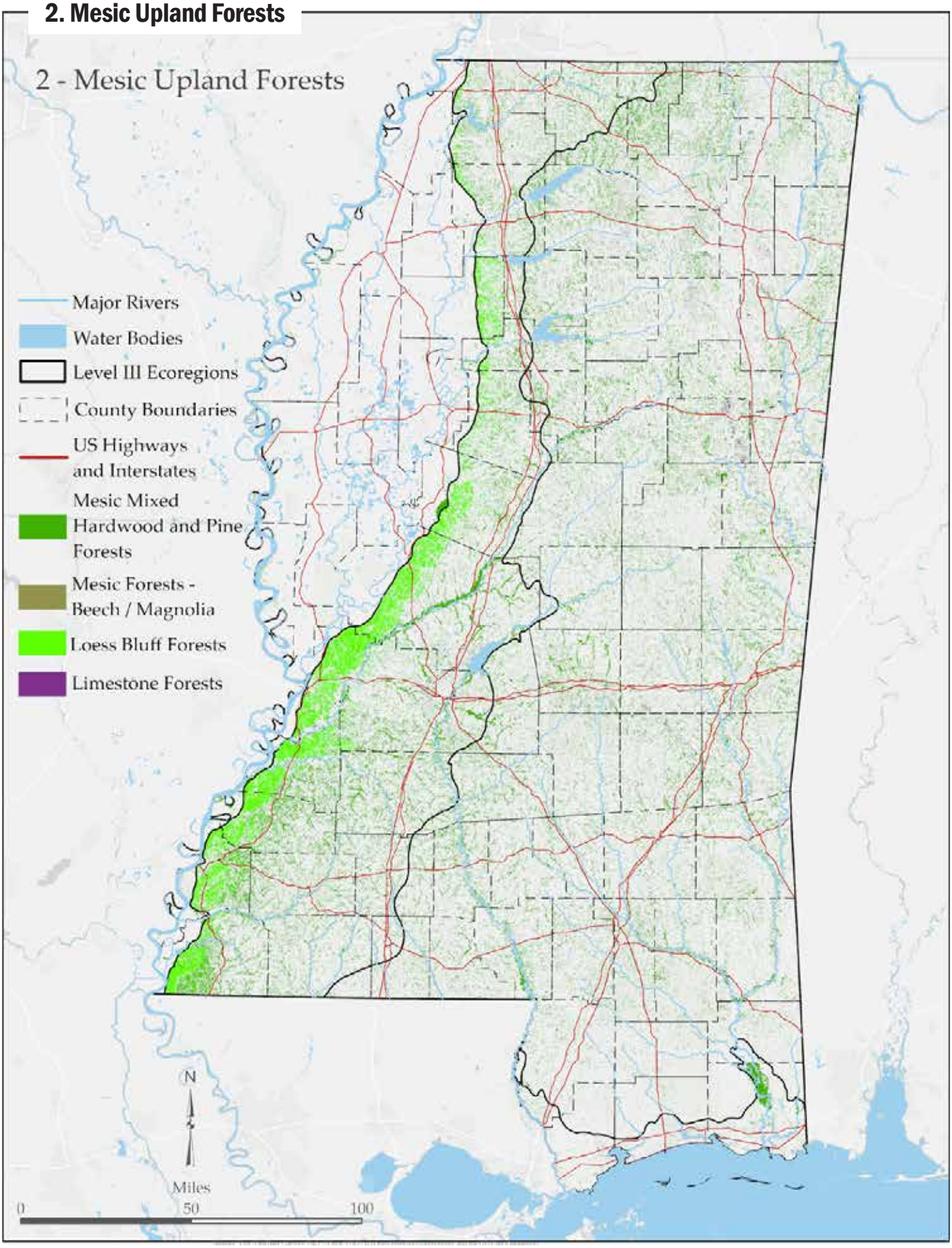


Figure 5.8. Map of Mesic Upland Forests.

Table 5.5 - Mesic Upland Forest Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	2. Mesic Upland Forests	Level III EPA Ecoregion				
Habitat Subtype	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Northern Mesic Hardwood Slope*	X				
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland*			X		
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Northern Loess Bluff Forest*			X		
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Southern Loess Bluff Forest*			X		
2.1 Mesic Upland Forest	*Southern Coastal Plain Mesic Slope Forest*	X			X	
2.1 Mesic Upland Forest	*Southern Coastal Plain Limestone Forest*	X				
2.1 Mesic Upland Forest	*East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods*	X				

2.1 Mesic Upland Forest

Mesic upland forests are supported by soils that have higher moisture holding capacities than those of dry upland forest categories. Hardwood forests of this type are often found on moist portions of upland habitats protected from fire and high terraces or ridges of floodplains. Several culturally significant species utilize these habitats including hickories, oaks, white-tailed deer, switchcane, black gum, eastern cottontail, and squirrels.

GENERAL CONDITION

The diversity of the hardwood and pine forest communities has decreased due to land clearing, overcutting, introduction of invasive species, erosion, and the suppression of fire over long periods. Being situated on gently sloping landscapes with relatively deep and fertile soil, the mesic forest types were more likely to be converted to agriculture. Forest management practices that prevent logging in streamside zones, are designed to help improve water quality of streams, and help conserve lower slope/high terrace hardwood forests. Conditions described for dry hardwood forests also apply to these forest communities.

East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest occurs on slopes and ravines between dry uplands and stream bottoms. American beech is the dominant canopy tree, but a variety of other hardwood trees may also be found, including white oak, cherrybark oak, white ash, tuliptree, and sweetgum. Loblolly pines may be in some areas and can be locally abundant. The midstory and shrub layer will be diverse and moderate in cover. Christmas fern, partridge berry, and wild ginger will be common in the herbaceous layer. Substrates generally remain moist throughout the growing season. This community represents the climax community of the Southeastern Plains ecoregion, if fire is removed from the landscape. Natural fire events are rare for this community, as the steep slope forms an effective fire break from fires that may start at the ridge tops.

East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland system is an area of generally flat to rolling uplands, most of which have been cleared for agriculture due to the productive soils from the relatively thick loess deposits. Canopy trees include oaks (southern red, white, post, blackjack, and black) and other hardwoods. Frequent, low-intensity fires would have occurred, keeping the midstory open.

East Gulf Coastal Plain Northern Loess Bluff Forest is found on the steep bluffs bordering the northern portion of the Mississippi River Alluvial Plain. The underlying geology is from Pleistocene and Tertiary eolian deposits, which are often deeply eroded and very steep. The topsoil is very fertile and has abundant moisture. These areas were cleared in the past for agriculture, which led to erosional events. The canopy is dominated by American beech and white oak. Other oaks, tuliptree, sweetgum, red maple, black gum, white ash, and loblolly will also be present. Midstory components include American hornbeam, common persimmon, sourwood, flowering dogwood, southern sugar maple, hophornbeam, and American holly. Christmas ferns are common in the herbaceous layer. Fire rarely occurred in this community.



Northern loess bluff forest at Morgan Brake National Wildlife Refuge. *Credit: Heather Sullivan*

East Gulf Coastal Plain Southern Loess Bluff Forest is found south of the previous system and is distinguished by the presence of southern magnolia and spruce pine in the canopy.

Southern Coastal Plain Mesic Slope Forest occurs on steep slopes, bluffs, or sheltered ravines where fire is naturally rare. The canopy is diverse and includes American beech, southern magnolia, spruce pine, oaks (white, cherrybark, basket, southern red, Shumard, black, laurel, water, and Darlington's), white ash and hickories. Midcanopy will include southern sugar maple, red maple, sourwood, American hornbeam, Carolina laurelcherry, basswood, bigleaf magnolia, and pyramid magnolia. The shrub layer will be diverse, but the groundcover will be sparse.

East Gulf Coastal Plain Southern Loess Bluff Forest is found south of the previous system and is distinguished by the presence of southern magnolia and spruce pine in the canopy.

Southern Coastal Plain Mesic Slope Forest occurs on steep slopes, bluffs, or sheltered ravines where fire is naturally rare. The canopy is diverse and includes American beech, southern magnolia, spruce pine, oaks (white, cherrybark, basket, southern red, Shumard, black, laurel, water, and Darlington's), white ash and hickories. Midcanopy will include southern sugar maple, red maple, sourwood, American hornbeam, Carolina laurelcherry, basswood, bigleaf magnolia, and pyramid magnolia. The shrub layer will be diverse, but the groundcover will be sparse.

Southern Coastal Plain Limestone Forest occurs where limestone, marl, or other calcareous substrates occur close to the soil surface. Typical stands are dominated by oaks (chinquapin, cherrybark, post) and hickories. Additionally, white ash, sweetgum, basswood, and southern sugar maple may be present. Usually, southern sugar maple is present as an understory tree. Oak-cedar forests (Black Belt hills and bluffs) are associated with the Black Belt Prairies and the Pontotoc Ridge forests. Medium sized oaks and eastern red cedar form a low forest along hill slopes and draws. The soils are shallow over Shelma Chalk. Common trees in this forest are chinkapin oak, eastern red cedar, Durand oak, blackjack oak, nutmeg hickory, and white ash. Scattered prairie wildflowers may also be found in areas of sunspots.

East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods occur on broad upland flats and are dominated by loblolly pine interspersed with hardwood tree species. Interior flatwoods forests are associated with a region that extends as a belt or zone from three to fifteen miles wide north and south along the west edge of the Pontotoc Ridge and Black Belt Prairie Region. Oaks (post and black oaks), pines (shortleaf and loblolly pines), swamp tupelo and sweetgum are the usual trees composing this forest. This region, as the name implies, presents usually a low-lying flat topography. The soils of the region are heavy, dark gray clay.



Beech magnolia forest is a mesic slope forest type. *Credit: Heather Sullivan*



Southern loblolly-hardwood forest.
Credit: Heather Sullivan

SIZE, CONDITION AND CONSERVATION STATUS MESIC UPLAND

Forests Size: Estimated 4.61 million acres of Mesic Upland Forests

Conservation Status: Critically Imperiled

Condition: These forests occur in isolated small to medium sized patches (100 to 1,000 acres). The community occurs on isolated steep hilly areas or blufflands, protected coves and along mid and lower slopes of ravines, draws and river valleys. Due to extensive logging, this community has been lost at many sites and may only support successional vegetation at others. Mesic upland forests require over 70 to 100 years to recover from disturbances.

THREATS AND ACTIONS FOR MESIC UPLAND FORESTS

Threats: Logging and harvesting of hardwoods or modification of these habitats to cultivated forests are the primary threat to these communities. Other significant threats are invasive species, lack of prescribed fire, and climate change (severe drought).

Actions: Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats. Provide public education about the conservation of SGCN and/or their habitats.

Table 5.6 - SGCN list for Mesic Upland Forests.

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Insects	4	*Erynnis martialis*	Mottled Dusky Wing	X				X	
Insects	4	*Speyeria diana*	Diana	X					
Amphibians	2	*Hemidactylium scutatum*	Four-toed Salamander			X			X
Amphibians	2	*Lithobates areolatus*	Crawfish Frog						X
Amphibians	2	*Plethodon ventralis*	Southern Zigzag Salamander	X					X
Amphibians	2	*Plethodon websteri* clade A	Webster's Salamander Clade A	X		X		X	
Amphibians	2	*Plethodon websteri* clade B	Webster's Salamander Clade B	X		X		X	
Birds	3	*Antrostomus carolinensis*	Chuck-will's-wi dow		X				
Birds	1	*Antrostomus vociferus*	Eastern Whip-poor-will	X	X				
Birds	2	*Aquila chrysaetos*	Golden Eagle	X	X	X	X	X	
Birds	3	*Coccyzus americanus*	Yellow-billed Cuckoo	X	X	X	X	X	
Birds	2	*Euphagus carolinus*	Rusty Blackbird						X
Birds	2	*Geothlypis formosa*	Kentucky Warbler	X		X	X	X	
Birds	2	*Helmitheros vermivorum*	Worm-eating Warbler	X	X	X	X	X	
Birds	2	*Hylocichla mustelina*	Wood Thrush	X	X	X	X	X	
Birds	2	*Limnothlypis swainsonii*	Swainson's Warbler			X	X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Birds	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker	X	X	X	X	X	
Birds	2	*Parkesia motacilla*	Louisiana Waterthrush	X		X	X	X	X
Birds	3	*Piranga olivacea*	Scarlet Tanager (breeding population)	X	X	X	X	X	
Birds	2	*Protonotaria citrea*	Prothonotary Warbler						X
Birds	3	*Quiscalus quiscula*	Common Grackle						X
Birds	2	*Seiurus aurocapilla*	Ovenbird (breeding population)	X					X
Birds	2	*Setophaga cerulea*	Cerulean Warbler	X	X	X	X	X	
Birds	2	*Setophaga discolor*	Prairie Warbler		X	X	X		
Birds	1	*Thryomanes bewickii*	Bewick's Wren		X				
Birds	1	*Vermivora chrysoptera*	Golden-winged Warbler	X		X	X	X	X
Birds	2	*Vireo gilvus*	Warbling Vireo	X		X	X	X	X
Fishes	2	*Chrosomus erythrogaster*	Southern Redbelly Dace			X			
Mammals	3	*Aeorestes cinereus*	Hoary Bat	X	X	X	X	X	
Mammals	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	X		X	X	X	
Mammals	3	*Dasypterus intermedius*	Northern Yellow Bat					X	
Mammals	3	*Lasionycteris noctivagans*	Silver-haired Bat	X		X	X	X	
Mammals	3	*Myotis austroriparius*	Southeastern Myotis	X	X	X	X	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Mammals	1	*Myotis grisescens*	Gray Bat	X					
Mammals	1	*Myotis septentrionalis*	Northern Long-eared Bat	X	X	X	X	X	
Mammals	1	*Myotis sodalis*	Indiana Bat	X	X				
Mammals	3	*Neogale frenata*	Long-tailed Weasel	X	X	X	X	X	
Mammals	2	*Perimyotis subflavus*	Tricolored Bat	X	X	X	X	X	
Mammals	2	*Sorex longirostris*	Southeastern Shrew	X	X	X	X	X	
Mammals	1	*Spilogale putorius*	Eastern Spotted Skunk	X	X	X	X	X	
Mammals	2	*Ursus americanus*	Black Bear	X	X	X	X		
Mammals	1	*Ursus americanus lutelous*	Louisiana Black Bear	X		X		X	
Mammals	2	*Zapus hudsonius*	Meadow Jumping Mouse	X	X				
Reptiles	2	*Lampropeltis calligaster calligaster*	Prairie Kingsnake	X		X			X
Reptiles	2	*Lampropeltis calligaster rhombomaculata*	Mole Kingsnake	X				X	
Reptiles	2	*Lampropeltis triangulum*	Red Milk Snake	X					X
Reptiles	2	*Ophisaurus attenuatus*	Slender Glass Lizard	X				X	
Reptiles	2	*Plestiodon anthracinus*	Coal Skink	X		X		X	
Nonvascular Plants	1	*Cololejeunea setiloba*	a liverwort	X				X	
Nonvascular Plants	1	*Drepanolejeunea mosenii*	a liverwort						X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Nonvascular Plants	1	*Frullania donnellii*	a liverwort					X	X
Nonvascular Plants	1	*Lejeunea bermudiana*	a liverwort					X	X
Nonvascular Plants	3	*Lejeunea cladogyna*	a liverwort	X		X	X	X	
Nonvascular Plants	2	*Lejeunea floridana*	a liverwort	X				X	X
Nonvascular Plants	2	*Lejeunea laetivirens*	a liverwort						X
Nonvascular Plants	1	*Macromitrium richardii*	Richard's Macromitrium Moss	X				X	
Nonvascular Plants	3	*Metzgeria uncigera*	a liverwort						X
Nonvascular Plants	2	*Plagiochila floridana*	Florida Leafy Liverwort			X	X	X	X
Nonvascular Plants	1	*Plagiochila invisa*	a liverwort						X
Nonvascular Plants	3	*Radula sullivantii*	a liverwort					X	
Nonvascular Plants	1	*Tortula porteri*	Porter's Screw Moss						X
Nonvascular Plants	1	*Trachyxiphium hypnaceum*	Trachyxiphium Moss					X	X
Vascular Plants	2	*Acer leucoderme*	Chalk Maple						X
Vascular Plants	2	*Actaea racemosa*	Black Bugbane						X
Vascular Plants	3	*Adiantum capillus-veneris*	Southern Maidenhair-fern	X		X			X
Vascular Plants	3	*Aesculus glabra* var. *glabra*	Ohio Buckeye						X
Vascular Plants	1	*Agastache nepetoides*	Yellow Giant-hyssop		X	X			X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	2	*Anemone quinquefolia*	Wood Anemone						X
Vascular Plants	1	*Aphyllon uniflorum*	One-flowered Broomrape						X
Vascular Plants	1	*Apios priceana*	Price's Potato-bean						X
Vascular Plants	1	*Aplectrum hyemale*	Puttyroot	X					
Vascular Plants	1	*Arabis patens*	Spreading Rockcress						X
Vascular Plants	2	*Aralia racemosa*	American Spikenard	X		X			X
Vascular Plants	1	*Aspidogyne querceticola*	Low Erythrodes			X	X		
Vascular Plants	1	*Asplenium resiliens*	Black-stem Spleenwort	X					X
Vascular Plants	1	*Asplenium rhizophyllum*	Walking-fern Spleenwort						X
Vascular Plants	1	*Asplenium trichomanes*	Maidenhair Spleenwort						X
Vascular Plants	1	*Asplenium x kentuckiense*	Kentucky Spleenwort						X
Vascular Plants	2	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch						X
Vascular Plants	1	*Baptisia nuttalliana*	Nuttall's Wild Indigo		X		X		
Vascular Plants	3	*Borodinia canadensis*	Sicklepod			X	X		X
Vascular Plants	1	*Calliphysalis carpenteri*	Carpenter's Ground-cherry	X		X	X	X	
Vascular Plants	2	*Camassia scilloides*	Wild Hyacinth						X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	3	*Cardamine angustata*	Slender Toothwort	X					X
Vascular Plants	3	*Cardamine diphylla*	Two-leaf Toothwort						X
Vascular Plants	2	*Carex alata*	Broadwing Sedge				X		
Vascular Plants	1	*Carex baltzellii*	Baltzell's Sedge					X	
Vascular Plants	1	*Carex communis*	Fibrous-root Sedge	X					X
Vascular Plants	1	*Carex dasycarpa*	Velvet Sedge						X
Vascular Plants	3	*Carex gracilescens*	Slender Sedge	X		X			X
Vascular Plants	1	*Carex grisea*	Inflated Narrowleaf Sedge						X
Vascular Plants	1	*Carex impressinervia*	Impressed-nerve d Sedge	X			X	X	
Vascular Plants	3	*Carex jamesii*	Nebraska Sedge			X			X
Vascular Plants	1	*Carex laxiflora*	Broad Loose-flower Sedge						X
Vascular Plants	3	*Carex mitchelliana*	Mitchell's Sedge						X
Vascular Plants	3	*Carex molestiformis*	Ozark Plateau Sedge						X
Vascular Plants	1	*Carex normalis*	Greater Straw Sedge						X
Vascular Plants	1	*Carex oligocarpa*	Eastern Few-fruit Sedge						X
Vascular Plants	3	*Carex oxylepis* var. *pubescens*	Sharp-scale Sedge			X			X
Vascular Plants	2	*Carex prasina*	Drooping Sedge	X					X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	3	*Carex radiata*	Stellate Sedge				X		
Vascular Plants	2	*Carex superata*	Limestone Forest Sedge						X
Vascular Plants	2	*Carex torta*	Twisted Sedge						X
Vascular Plants	1	*Carex virescens*	Ribbed Sedge						X
Vascular Plants	2	*Carya laciniosa*	Big Shellbark Hickory			X	X		X
Vascular Plants	1	*Chelone lyonii*	Pink Turtlehead						X
Vascular Plants	3	*Cladrastis kentukea*	Yellowwood			X			X
Vascular Plants	3	*Clematis glaucophylla*	White-leaved Leather-flower						X
Vascular Plants	2	*Collinsonia anisata*	Anise Horsebalm					X	X
Vascular Plants	2	*Collinsonia punctata*	Spotted-leaf Horse-balm					X	X
Vascular Plants	1	*Conopholis americana*	American Cancer-root						X
Vascular Plants	2	*Convolvulus catesbyanus*	Catesby's Bindweed						X
Vascular Plants	1	*Crataegus brachyacantha*	Blueberry Hawthorn			X			
Vascular Plants	1	*Crataegus mendosa*	Albertville Hawthorn					X	X
Vascular Plants	1	*Crataegus mollis* var. *meridionalis*	Gallion Hawthorn						X
Vascular Plants	2	*Cuphea viscosissima*	Blue Waxweed						X
Vascular Plants	2	*Cyperus thyrsiflorus*	Southcentral Flatsedge			X		X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	4	*Cypripedium kentuckiense*	Kentucky Yellow Lady's-slipper						X
Vascular Plants	3	*Delphinium tricorne*	Dwarf Larkspur						X
Vascular Plants	2	*Deparia acrostichoides*	Silvery Spleenwort	X		X			X
Vascular Plants	1	*Desmodium ochroleucum*	Creamflower Tick-trefoil	X					X
Vascular Plants	2	*Dicentra cucullaria*	Dutchman's Breeches	X					X
Vascular Plants	2	*Didymoglossum petersii*	Dwarf Filmy-fern				X		
Vascular Plants	2	*Dirca palustris*	Eastern Leatherwood	X				X	X
Vascular Plants	2	*Dryopteris australis*	Southern Woodfern			X	X		
Vascular Plants	1	*Dryopteris celsa*	Log Fern						X
Vascular Plants	2	*Dryopteris ludoviciana*	Southern Shield Wood-fern				X		
Vascular Plants	2	*Eleocharis erythropoda*	Bald Spikerush			X			
Vascular Plants	1	*Eleocharis tricostata*	Three-angle Spikerush						X
Vascular Plants	2	*Elymus villosus*	Hairy Wild Rye						X
Vascular Plants	1	*Enemion biternatum*	False Rue-anemone						X
Vascular Plants	1	*Equisetum arvense*	Field Horsetail			X			X
Vascular Plants	2	*Erythronium albidum*	White Trout-lily						X
Vascular Plants	3	*Erythronium americanum* ssp. *harperi*	Yellow Trout-lily						X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	3	*Forestiera ligustrina*	Upland Swamp Privet						X
Vascular Plants	2	*Fraxinus quadrangulata*	Blue Ash						X
Vascular Plants	2	*Gaillardia aestivalis* var. *flavovirens*	Lanceleaf Blanket Flower						X
Vascular Plants	1	*Galearis spectabilis*	Showy Orchis	X					X
Vascular Plants	1	*Gentiana catesbaei*	Elliott's Gentian						X
Vascular Plants	2	*Goodyera pubescens*	Downy Rattlesnake-plan tain						X
Vascular Plants	1	*Gratiola floridana*	Florida Hedge-hyssop				X		
Vascular Plants	3	*Gymnocladus dioicus*	Kentucky Coffeetree						X
Vascular Plants	2	*Hackelia virginiana*	Virginia Stickseed			X			X
Vascular Plants	2	*Helianthus decapetalus*	Thinleaf Sunflower	X		X			
Vascular Plants	1	*Helianthus verticillatus*	Whorled Sunflower			X			
Vascular Plants	3	*Hepatica acutiloba*	Sharp-lobed Hepatica						X
Vascular Plants	3	*Herbertia lahue*	Herbertia				X		
Vascular Plants	3	*Hexalectris spicata*	Crested Coralroot	X	X	X	X		
Vascular Plants	2	*Hexastylis harperi*	Large-flowered Heartleaf						X
Vascular Plants	1	*Hydrastis canadensis*	Golden-seal			X			X
Vascular Plants	1	*Hydrophyllum appendiculatum*	Appendage Waterleaf						X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	1	*Hydrophyllum macrophyllum*	Large-leaf Water-leaf						X
Vascular Plants	3	*Iris brevicaulis*	Lamance Iris				X		
Vascular Plants	2	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort						X
Vascular Plants	2	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort						X
Vascular Plants	2	*Juglans cinerea*	Butternut			X			X
Vascular Plants	2	*Ligusticum canadense*	Nondo Lovage						X
Vascular Plants	1	*Lilium michiganense*	Michigan Lily						X
Vascular Plants	2	*Lindera subcoriacea*	Bog Spicebush						X
Vascular Plants	2	*Lithospermum latifolium*	American Gromwell						X
Vascular Plants	3	*Lycopodioides ludovicianum*	Gulf Spike-moss			X		X	X
Vascular Plants	1	*Magnolia tripetala*	Umbrella Magnolia	X		X		X	
Vascular Plants	2	*Malus ioensis*	Iowa Crabapple				X		
Vascular Plants	1	*Matelea baldwyniana*	Baldwin's Milkvine						X
Vascular Plants	3	*Muhlenbergia sylvatica*	Woodland Muhly						X
Vascular Plants	1	*Myriopteris alabamensis*	Alabama Lipfern			X			
Vascular Plants	1	*Nabalus barbatus*	Barbed Rattlesnake-root						X
Vascular Plants	2	*Opuntia macrorhiza*	Twisted-spine Prickly-pear		X				

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	2	*Oxalis grandis*	Great Yellow Woodsorrel						X
Vascular Plants	3	*Oxalis macrantha*	Tufted Yellow Woodsorrel	X					
Vascular Plants	2	*Packera aurea*	Golden Groundsel						X
Vascular Plants	2	*Packera tomentosa*	Woolly Groundsel		X				
Vascular Plants	3	*Panax quinquefolius*	American Ginseng	X		X	X	X	X
Vascular Plants	2	*Perideridia americana*	Eastern Eulophus						X
Vascular Plants	2	*Phacelia bipinnatifida*	Fernleaf Phacelia						X
Vascular Plants	1	*Phacelia hirsuta*	Hairy Scorpionweed			X			
Vascular Plants	2	*Phacelia purshii*	Miami-mist						X
Vascular Plants	1	*Phacelia ranunculacea*	Blue Scorpionweed			X			
Vascular Plants	2	*Phlox amplifolia*	Largeleaf Phlox						X
Vascular Plants	2	*Plantago cordata*	Heartleaf Plantain						X
Vascular Plants	3	*Platanthera peramoena*	Purple Fringeless Orchid	X	X	X			X
Vascular Plants	3	*Ponthieva racemosa*	Shadow-witch Orchid			X		X	X
Vascular Plants	2	*Primula meadia*	Shootingstar						X
Vascular Plants	2	*Pycnanthemum pilosum*	Whorled Mountainmint		X	X			
Vascular Plants	3	*Quercus austrina*	Bluff Oak		X				

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	2	*Quercus macrocarpa* var. *macrocarpa*	Bur Oak						X
Vascular Plants	2	*Quercus oglethorpensis*	Oglethorpe's Oak		X				X
Vascular Plants	2	*Quercus palustris*	Pin Oak		X				X
Vascular Plants	2	*Ranunculus septentrionalis*	Carolina Buttercup						X
Vascular Plants	2	*Rhododendron alabamense*	Alabama Rhododendron						X
Vascular Plants	2	*Rhododendron arborescens*	Smooth Azalea						X
Vascular Plants	3	*Rhododendron austrinum*	Orange Azalea						X
Vascular Plants	2	*Rhynchosia latifolia*	Prairie Rhynchosia		X				
Vascular Plants	2	*Rorippa aquatica*	Lake-cress						X
Vascular Plants	1	*Rudbeckia grandiflora* var. *alismifolia*	Rough Coneflower		X				
Vascular Plants	1	*Salvia chapmanii*	Chapman's Sage						X
Vascular Plants	2	*Sceptridium jenmanii*	Alabama Grapefern	X					
Vascular Plants	3	*Sceptridium lunarioides*	Winter Grape-fern	X					
Vascular Plants	3	*Schisandra glabra*	Bay Starvine	X		X	X	X	X
Vascular Plants	2	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem				X		
Vascular Plants	3	*Scirpus divaricatus*	Spreading Bulrush						X
Vascular Plants	3	*Scirpus lineatus*	Drooping Bulrush	X		X	X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	2	*Silene ovata*	Ovate Catchfly	X				X	
Vascular Plants	4	*Silene regia*	Royal Catchfly						X
Vascular Plants	2	*Silphium simpsonii*	Simpson's Rosinweed					X	X
Vascular Plants	4	*Smilax hugeri*	Huger's Carrion-flower						X
Vascular Plants	2	*Smilax pulverulenta*	Downy Carrion-flower			X			X
Vascular Plants	2	*Solidago auriculata*	Eared Goldenrod				X	X	
Vascular Plants	2	*Solidago brachyphylla*	Dixie Goldenrod					X	
Vascular Plants	2	*Solidago flaccidifolia*	Appalachian Goldenrod				X		
Vascular Plants	3	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	X		X	X	X	
Vascular Plants	2	*Stenanthium gramineum*	Eastern Featherbells	X					X
Vascular Plants	1	*Stewartia ovata*	Mountain Camellia						X
Vascular Plants	2	*Swida alternifolia*	Alternate-leaf Dogwood	X				X	X
Vascular Plants	2	*Symphyotrichum oolentangiense*	Sky Blue Aster		X				
Vascular Plants	1	*Taenidia integerrima*	Yellow Pimpernel						X
Vascular Plants	2	*Thalictrum debile*	Southern Meadowrue						X
Vascular Plants	1	*Thalictrum dioicum*	Early Meadowrue						X
Vascular Plants	3	*Tiarella cordifolia*	Heart-leaved Foam-flower	X					X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Northern Mesic Hardwood Slope Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	SCP Mesic Slope Forest	SCP Limestone Forest
Vascular Plants	2	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort	X					
Vascular Plants	1	*Trautvetteria applanata*	Ozark Tassel-rue						X
Vascular Plants	3	*Tridens chapmanii*	Chapman's Redtop					X	
Vascular Plants	1	*Trifolium carolinianum*	Carolina Clover		X		X		X
Vascular Plants	4	*Trifolium reflexum*	Buffalo Clover		X				X
Vascular Plants	1	*Trillium flexipes*	Drooping Trillium	X					
Vascular Plants	3	*Trillium foetidissimum*	Fetid Trillium	X		X	X	X	
Vascular Plants	3	*Trillium ludovicianum*	Louisiana Trillium	X		X	X		X
Vascular Plants	1	*Trillium pusillum* var. *ozarkanum*	Ozark Least Trillium					X	
Vascular Plants	2	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia	X				X	X
Vascular Plants	3	*Ulmus serotina*	September Elm	X		X	X		
Vascular Plants	2	*Uvularia floridana*	Florida Bellwort					X	X
Vascular Plants	3	*Vaccinium tenellum*	Small Black Blueberry					X	
Vascular Plants	1	*Vandenboschia boschiana*	Appalachian Bristle Fern						X
Vascular Plants	3	*Verbena xutha*	Gulf Vervain			X			
Vascular Plants	3	*Veronicastrum virginicum*	Culver's-root			X			X
Vascular Plants	1	*Viburnum acerifolium*	Mapleleaf Viburnum	X					
Vascular Plants	2	*Yeatesia viridiflora*	Green-flower Yeatesia						X

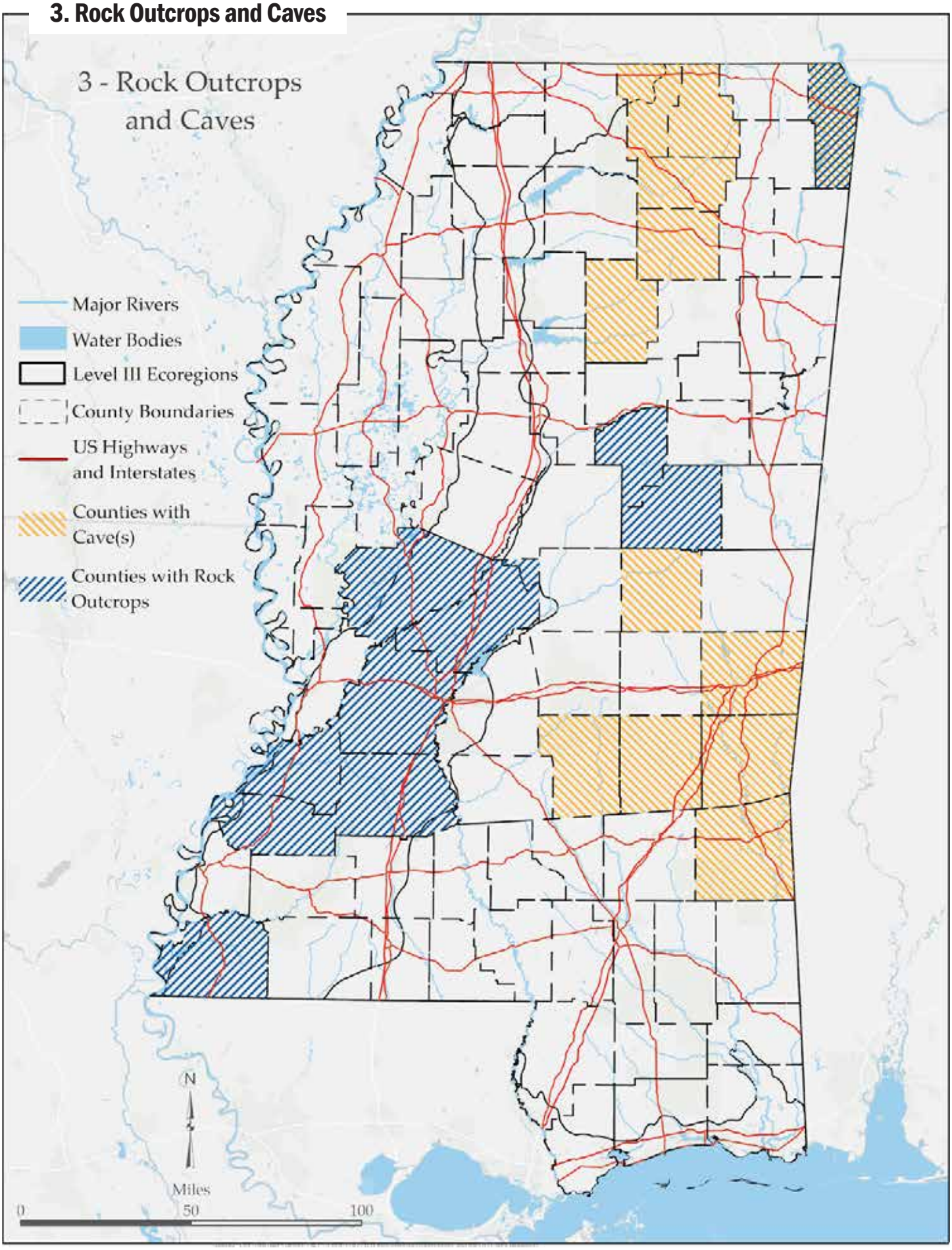


Figure 5.9. . Map of Rock Outcrops and Caves

Rock outcrops, caves, cliffs and rockhouses are localized features of the landscape, which do not fit within other habitat categories, but need to be included in the classification to ensure representation. These unique landscape features provide habitat for certain animals.

General Condition

There is currently no conservation protection for rock outcrops or caves in Mississippi. Many of these are on private lands and funding for protection (e.g. gating of caves, security from public intrusion) is limited. As a result, human disturbances such as noise, vandalism, and fires in caves are commonplace and detrimental to the species residing there. Natural disturbances, such as cave-ins can be damaging to species reliant on this habitat type. Knowledge regarding the condition of caves and rock outcrops is hindered due to a lack of monitoring and communication with private landholders.

3.1 Rock Outcrops



Siltstone ledge, a rock outcrop in a Clark Creek tributary. *Credit: Tom Mann*

Most of lower Mississippi is covered with deep soils originating from alluvial reworking of deposits of marine or older alluvial deposition, and upper Mississippi is covered with deep soils originating from weathering of non-rocky, sedimentary deposits of marine, alluvial, or aeolian origin. Except for gravel deposits (many of which originate from areas far beyond the boundaries of Mississippi), outcrops of rock at the surface are generally uncommon in most portions of the lower Southeastern Plains ecoregion. Rock outcrops provide essential habitat for a few species of rare salamanders, and may be important to other species, probably by providing access to cool, moist, subterranean habitat, via cracks, fissures and solution channels to species which cannot dig deeply unaided, and which could not otherwise survive hot, dry summers.

The eastern border of Tishomingo County is unique in Mississippi in having outcrops of Paleozoic rock, exposed by weathering of overlying Cretaceous deposits. Rock outcrops known to support rare salamander species include limestone (Fort Payne Formation, Pride Mountain Formation) and sandstone (Hartselle Formation), but rock associated with other formations may also support these species. In addition, interdigitated within these outcrop belts are vast gravel deposits, alluvial in origin, some of which include well-cemented chert pebble conglomerate zones (Tuscaloosa Formation-lower Cretaceous). Structurally similar conglomerate zones of Quaternary origin may also provide habitat for rare salamanders in this and other areas within the Southeastern Plains ecoregion.

Outcropping intermittently through the Jackson Prairie unit of the Southeastern Plains ecoregion are exposures of the Glendon and Marianna limestones of the Vicksburg Group (Oligocene), mainly where streams have cut down through younger overlying deposits. More generally distributed south of this zone are very disjunct sandstone/siltstone outcrops associated with the Catahoula Group (Miocene) in the more northerly portion of the ecoregion, and with the Hattiesburg and Pascagoula Formations (Miocene) farther south. They mainly occur along steep hill slopes,

Table 5.7 - Rock Outcrops and Caves Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion

	3. Rock Outcrops and Caves	Level III EPA Ecoregion				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
3.1 Rock Outcrops	*Rock Outcrops [no NS equivalent]*	X		X	X	
3.1 Rock Outcrops	*Southern Interior Sinkhole Wall*	X				
3.1 Rock Outcrops	*East Gulf Coastal Plain Dry Chalk Bluff*	X				
3.1 Rock Outcrops	*Southeastern Coastal Plain Cliff*	X				
3.2 Caves	*Cave [no NS equivalent]*	X		X		

ravines or river channels where soils have eroded away, and in fact may be relatively soft when deeply buried, becoming hardened upon exposure after erosion. Outcrops of ironstone and ferruginous conglomerates are often associated with sandstone outcrops, and may also be of importance to certain species, such as plants and salamanders.

Other rock outcrops (Tallahala quartzite-Kosciusko Formation, Eocene; Ripley limestone-Ripley Formation, Upper Cretaceous; Ironstone-Wilcox Group) occur intermittently in belts elsewhere within the Southeastern Plains ecoregion, and could potentially support rare species, but their presence has not been documented.

Examples of sandstone outcrops can be found in Tishomingo State Park in Tishomingo County (Hartselle Sandstone), and MDWFP's Calling Panther Lake property in Copiah County (Catahoula Sandstone). Limestone outcrops can be found on the Natchez Trace Parkway at Cave Springs in Tishomingo County (Pride Mountain Formation), The Nature Conservancy's Cat's Den Cave site in Smith County (Vicksburg Group Glendon limestone), and the Swaggert's Bluff area on U.S. Forest Service property in Smith County (Vicksburg Group Glendon limestone).



Dry chalk bluff. *Credit: Heather Sullivan*

Southern Interior Sinkhole Wall are vertical shaft sinkholes and the characteristic vegetation associated with the steep walls. Walking fern, hairy alumroot, northern maidenhair fern, lowland glade fern, sharp-lobe hepatica, woodland stonecrop, purple cliffbrake, roundleaf ragwort, and zigzag goldenrod are frequently found on moist areas of the walls. Wet calcareous cliffs are very rare, only occurring in the Tennessee River Hills Region (far northeastern part of the state) and are inclusions in the Chestnut oak slope and ridge forests. This community is dominated by American alumroot, hairy alumroot and jewelweed, rooted on bare rock slopes.

East Gulf Coastal Plain Dry Chalk Bluff is endemic to the Black Belt region of Alabama and Mississippi. These are floristically unique in Mississippi with many species of vascular plants restricted to or closely associated with them. Eastern red cedar is the most common tree species present and tends to occur in open stands. The herbaceous vegetation is in thin soil over the exposed chalk, and will be composed of grasses, sedges, and rare herbaceous species, like shootingstar, prairie pleat-leaf, and whiteflower beardtongue.



Cliff on the Chickasawhay River. *Credit: Heather Sullivan*

Southeastern Coastal Plain Cliff system consists of steep to vertical or overhanging outcrops of unconsolidated sediment or rock that are found on lower bluffs adjacent to rivers or streams.Typically, the vegetation will be sparse, with plants growing on small ledges, cracks, or on the bare substrate. Bryophytes can dominate the community, but a mix of herbs, shrubs, vines, tree seedlings, and some larger trees may also be found. Most of the cliffs will be dry, but seepage areas are often present.

SIZE, CONDITION AND CONSERVATION STATUS - ROCK

Outcrops Size: Unknown. 49 rock outcrops are mapped.

Conservation Status: Imperiled

Outcrop belts of formations which may include limestone, sandstone, siltstone, ironstone, and well-cemented conglomeratic gravel are mapped by the Office of Geology, Mississippi Department of Environmental Quality. But most of the actual outcrops remain unmapped, and as noted above there are comparatively few outcrops of surface rock in Mississippi, as the surface of the state is predominantly composed of unconsolidated sediments.

3.2 Caves



Waddell cave. *Credit: Katelin Cross.*

Mississippi has several dozen solution caves, which were created either when the area was submerged under the sea or by water flowing along cracks through the sedimentary strata. In such situations, the limestone goes into solution upon contact with acidic water. Approximately 65 caves can be found in Mississippi, the majority of which are found along the Vicksburg Group. This physiographic feature is a belt of lime-bearing, Oligocene strata that roughly bisects the state east to west and includes portions of Wayne, Clark, Jones, Jasper, Smith and Rankin Counties. Caves can provide habitat for several species of bats and amphibians. However, human disturbances such as vandalism and fires in caves have made many of these unsuitable roosts for bat species. In addition, Mississippi has many man-made caves and abandoned mines that function similarly to natural caves and are used by SGCN.

SIZE, CONDITION AND CONSERVATION STATUS

Cave Size: Unknown. 29 cave points are mapped.

Conservation Status: Imperiled

Condition: Caves within the Southeastern Plains ecoregion are found very rarely in some sandstone and limestone formations, including the Forest Hills Formation and the Tennessee River Hills. It is thought that many caves in Tishomingo County were inundated with the formation of Pickwick Lake. The caves are usually associated with upland hardwood forests. Few have escaped damage from humans. In 1933, the Pitts Cave formations near Waynesboro were mentioned in an article in the Memphis, TN Commercial Appeal newspaper. When the exact location of the cave was published in local newspaper articles, the cave was heavily vandalized and filled with litter. Other caves, such as the West Quarry #1 cave, have been destroyed by mining, farming or forestry operations. For caves to function as suitable habitats for wildlife species, provisions to prevent human disturbances such as noise, vandalism and campfires are warranted. Additional monitoring of caves would help assess the quality of this habitat and its popularity with bat species. In Mississippi, caves are usually associated with upland hardwood forests but can be found in other habitats. For caves to function as suitable habitats for wildlife species, provisions to prevent human disturbances such as noise, vandalism and campfires are warranted. With the discovery of White-nose Syndrome, a disease decimating bat populations, the protection of caves is even more important. The fungus known to cause White-nose Syndrome can be transmitted through human activities. Additional monitoring of caves would help assess the quality of this habitat and its popularity with bat species. Mississippi has developed a White-nose Syndrome Response Plan in the event the disease moves into the state.



Human disturbances and vandalism are a threat to cave habitat. *Credit: Katelin Cross.*

Threats and Actions for Rocks Outcrops and Caves

Threats: Logging and harvesting of hardwoods or modification of these habitats to cultivated forests are the primary threat to these communities. Other significant threats are invasive species and climate change (severe drought).

Actions: Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats. Discourage incompatible recreational uses (vandalism in caves). Provide public education about the conservation of SGCN and/or their habitats.

Table 5.8 - SGCN for Rock Outcrops and Caves.

Texa Group (Class)	Tier	Scientific Name	Common Name	Rock Outcrops	Southern Interior Sinkhole Wall	SCP Clif f	EGCP Dry Chalk Bluff	Caves
Amphibians	2	*Aneides aeneus*	Green Salamander	X				
Amphibians	2	*Eurycea lucifuga*	Cave Salamander	X				X
Amphibians	2	*Gyrinophilus porphyriticus*	Spring Salamander	X				X
Amphibians	2	*Hemidactylium scutatum*	Four-toed Salamander	X				
Amphibians	2	*Plethodon ventralis*	Southern Zigzag Salamander	X				X
Amphibians	2	*Plethodon websteri* clade A	Webster's Salamander Clade A	X				
Amphibians	2	*Plethodon websteri* clade B	Webster's Salamander Clade B	X				
Mammals	3	*Myotis austroriparius*	Southeastern Myotis	X				X
Amphibians	2	*Aneides aeneus*	Green Salamander	X				
Amphibians	2	*Eurycea lucifuga*	Cave Salamander	X				X
Amphibians	2	*Gyrinophilus porphyriticus*	Spring Salamander	X				X
Amphibians	2	*Hemidactylium scutatum*	Four-toed Salamander	X				
Amphibians	2	*Plethodon ventralis*	Southern Zigzag Salamander	X				X
Amphibians	2	*Plethodon websteri* clade A	Webster's Salamander Clade A	X				
Amphibians	2	*Plethodon websteri* clade B	Webster's Salamander Clade B	X				
Mammals	3	*Myotis austroriparius*	Southeastern Myotis	X				X

Texa Group (Class)	Tier	Scientific Name	Common Name	Rock Outcrops	Southern Interior Sinkhole Wall	SCP Clif f	EGCP Dry Chalk Bluff	Caves
Mammals	1	*Myotis grisescens*	Gray Bat					X
Mammals	1	*Myotis septentrionalis*	Northern Long-eared Bat					X
Mammals	1	*Myotis sodalis*	Indiana Bat					X
Mammals	3	*Neogale frenata*	Long-tailed Weasel	X				
Mammals	2	*Perimyotis subflavus*	Tricolored Bat	X		X		X
Mammals	1	*Spilogale putorius*	Eastern Spotted Skunk	X				
Reptiles	2	*Plestiodon anthracinus*	Coal Skink	X				
Nonvascular Plants	1	*Cryphaea ravenelii*	Ravenel's Cryphaea Moss	X				
Nonvascular Plants	1	*Plagiochila virginica* var. *virginica*	a liverwort	X				
Nonvascular Plants	3	*Radula sullivantii*	a liverwort	X	X			
Nonvascular Plants	1	*Rhodobryum roseum*	Rose Moss		X			
Nonvascular Plants	1	*Tortula porteri*	Porter's Screw Moss	X				
Vascular Plants	2	*Acer leucoderme*	Chalk Maple	X				
Vascular Plants	3	*Adiantum capillus-veneris*	Southern Maidenhair-fern	X		X		X
Vascular Plants	1	*Aquilegia canadensis*	Wild Columbine		X			
Vascular Plants	4	*Arabidopsis lyrata* ssp. *lyrata*	Lyreleaf Rockcress	X	X			
Vascular Plants	1	*Arabis patens*	Spreading Rockcress	X	X			

Texa Group (Class)	Tier	Scientific Name	Common Name	Rock Outcrops	Southern Interior Sinkhole Wall	SCP Clif f	EGCP Dry Chalk Bluff	Caves
Vascular Plants	1	*Asplenium pinnatifidum*	Lobed Spleenwort		X			
Vascular Plants	1	*Asplenium resiliens*	Black-stem Spleenwort	X	X			
Vascular Plants	1	*Asplenium rhizophyllum*	Walking-fern Spleenwort	X	X			
Vascular Plants	1	*Asplenium trichomanes*	Maidenhair Spleenwort	X	X			
Vascular Plants	1	*Asplenium x kentuckiense*	Kentucky Spleenwort	X	X			
Vascular Plants	3	*Borodinia canadensis*	Sicklepod	X	X			
Vascular Plants	1	*Carex virescens*	Ribbed Sedge					X
Vascular Plants	3	*Clematis subreticulata*	Alabama Leatherflower	X				
Vascular Plants	3	*Delphinium tricorne*	Dwarf Larkspur	X				
Vascular Plants	2	*Didymoglossum petersii*	Dwarf Filmy-fern	X				
Vascular Plants	2	*Erythronium albidum*	White Trout-lily	X				
Vascular Plants	2	*Goodyera pubescens*	Downy Rattlesnake-plantain	X				
Vascular Plants	2	*Heuchera macrorhiza*	Giant Alumroot	X	X			
Vascular Plants	1	*Heuchera parviflora*	Little-flower Alumroot	X	X			
Vascular Plants	2	*Mirabilis albida*	Pale Umbrella-wort				X	
Vascular Plants	2	*Mirabilis linearis*	Narrowleaf Four-o'clock				X	
Vascular Plants	2	*Myriopteris lanosa*	Hairy Lipfern	X	X			

Texa Group (Class)	Tier	Scientific Name	Common Name	Rock Outcrops	Southern Interior Sinkhole Wall	SCP Clif f	EGCP Dry Chalk Bluff	Caves
Vascular Plants	1	*Neviusia alabamensis*	Alabama Snow-wreath	X	X			
Vascular Plants	3	*Panax quinquefolius*	American Ginseng	X	X			
Vascular Plants	2	*Pellaea atropurpurea*	Purple-stem Cliff-brake	X	X			
Vascular Plants	2	*Phacelia bipinnatifida*	Fernleaf Phacelia	X	X			
Vascular Plants	2	*Phacelia purshii*	Miami-mist	X	X			
Vascular Plants	1	*Philadelphus hirsutus*	Streambank Mock-orange	X	X			
Vascular Plants	3	*Philadelphus inodorus*	Scentless Mock Orange	X	X			
Vascular Plants	3	*Pinus virginiana*	Virginia Pine	X				
Vascular Plants	1	*Sedum pulchellum*	Rock Stonecrop				X	
Vascular Plants	2	*Sedum ternatum*	Wood Stonecrop	X	X			
Vascular Plants	2	*Silene ovata*	Ovate Catchfly	X				
Vascular Plants	4	*Silene regia*	Royal Catchfly	X				
Vascular Plants	2	*Solidago sphacelata*	Autumn Goldenrod	X	X			
Vascular Plants	4	*Symphyotrichum oblongifolium*	Aromatic Aster	X				
Vascular Plants	3	*Tiarella cordifolia*	Heart-leaved Foam-flower	X	X			
Vascular Plants	1	*Vandenboschia boschiana*	Appalachian Bristle Fern	X	X			
Vascular Plants	1	*Vittaria appalachiana*	Appalachian Vittaria	X	X			X
Vascular Plants	2	*Yeatesia viridiflora*	Green-flower Yeatesia	X				

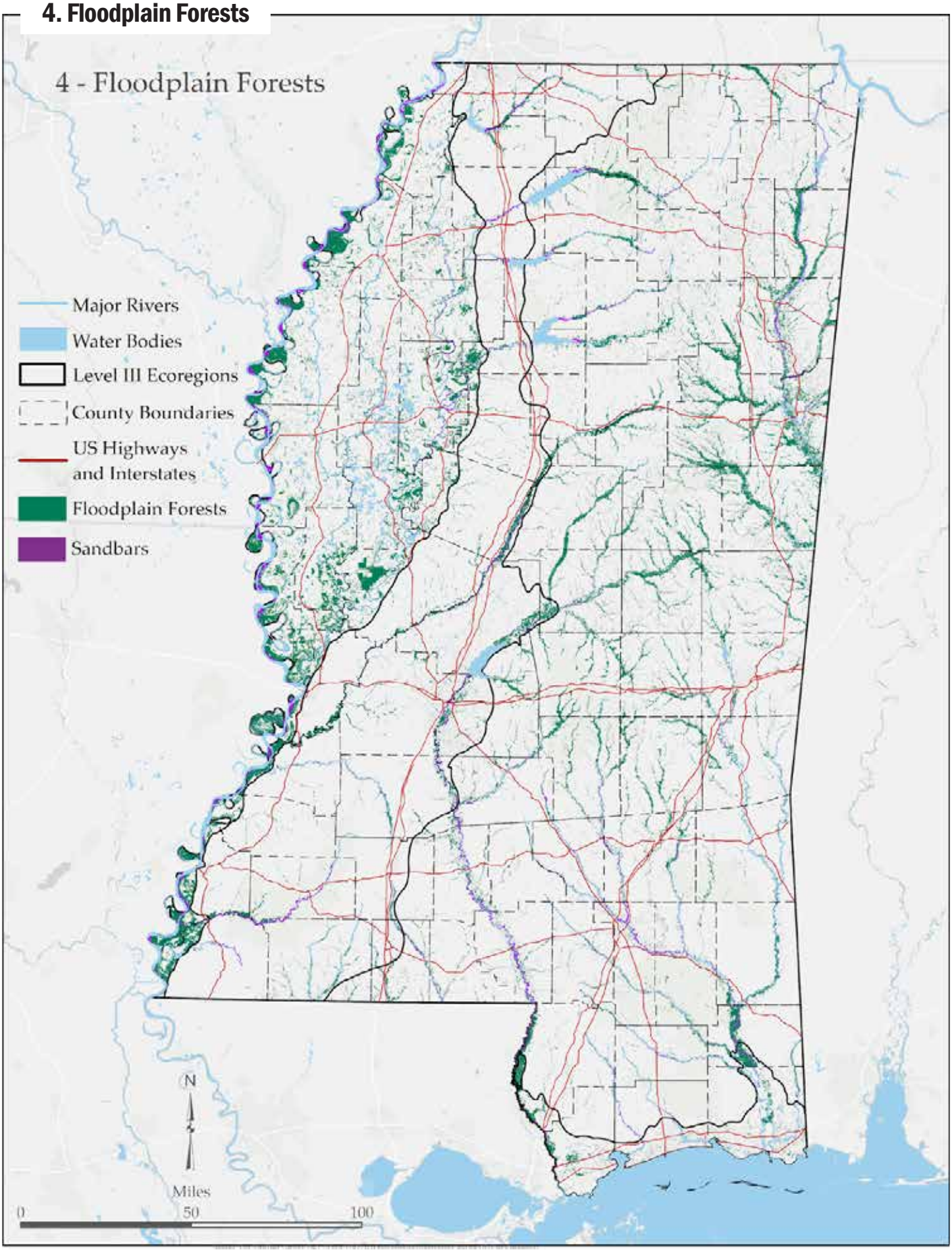


Figure 5.10. Map of Floodplain Forests

4.1 Floodplain Forest

Floodplain forests occur in river bottomlands that receive periodic inundation from rivers during heavy rainfall events. Bottomland terraces are irregularly flooded for durations of several days to a month or more. On these lowland sites, the water table remains elevated during the winter and spring seasons and soils remain moist through much of the growing season. The soil is enriched by the influx of nutrients and sediments during floods. The moderately moist and occasionally wet (palustrine) hardwood forest habitats of this type are found on lower slopes and high terraces of streams and rivers of Mississippi. Small drainageways, floodplains, stream terraces, levees, low moist plains, and some lower slopes are landforms that support this vegetation type. Although these landforms sometimes flood, they often have deeper soils and receive lateral subsurface seepage and surface runoff from adjacent uplands. Their low position on the landscape ensures that the habitat remains moist during the growing season. This habitat type often has an elevated water table during the late winter and early spring. However, the water table will drop precipitously during early spring growth.

Riverfront soils are lower in organic matter and have higher pH than soils of other bottomland hardwoods. New soils in accretion zones range from fine clay to coarse sand, depending on flow velocities at the time of sediment deposition. Backwater areas contain finer textured substrates and point bars are sandier. The moisture level of riverfront substrates depends on the river stage, which is usually high in the spring, causing saturation or flooding, and low in the fall, bringing dryer conditions. Flooding along the riverfront areas reworks sediments from riverbanks, sandbars and point bars to form new channels, submerging some areas and building new lands elsewhere. Wet exposed mineral soils provide open habitats for cottonwood and willow to germinate. The dominant trees of these areas germinate best in exposed mineral soil, grow rapidly once river levels fall and must tolerate submersion and sediment accumulation.



Mississippi River bottomland depression - baldcypress slough. *Credit: Heather Sullivan*

Sedimentation degrades aquatic habitats and kills aquatic organisms, including fish. Riverfront forests, which control shoreline erosion and intercept eroded soil from upland areas, effectively reduce the amount of sediment reaching rivers and streams. The riverfront forests may last for over 50 years before the canopy trees begin to age and decline. In time these forests gradually become more diverse in shrubs, vines and herbs.

Several culturally significant species utilize these habitats including swampcane, switchcane, cypress, willow, dwarf palmetto, swamp rabbits, white-tailed deer, and squirrels.

Table 5.9 - Floodplain Forest Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	3. Rock Outcrops and Caves	Level III EPA Ecoregion				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
4.1 Floodplain Forest	*Mississippi River Low Floodplain (Bottomland) Forest*		X			
4.1 Floodplain Forest	*Mississippi River High Floodplain (Bottomland) Forest*		X			
4.1 Floodplain Forest	*Mississippi River Riparian Forest*		X			
4.1 Floodplain Forest	*East Gulf Coastal Plain Large River Floodplain Forest*	X			X	
4.1 Floodplain Forest	*East Gulf Coastal Plain Small Stream and River Floodplain Forest*	X			X	
4.1 Floodplain Forest	*Sandbars [no NS equivalent]*	X	X		X	

GENERAL CONDITION

The state was once covered with mostly unbroken forest, but centuries of land clearing and development have seriously impacted southern swamplands and floodplain forests. Of an estimated 24 million acres of the original bottomland hardwood forests in the Lower Mississippi River Valley, only 5.2 million acres (22 percent) remained in 1978. Fifty-six percent of southern bottomland hardwood and bald cypress forests were lost between 1900 and 1978. The primary cause of bottomland hardwood losses has been conversion of these lands to agricultural production. Additional losses have been caused by construction and operation of flood control structures and reservoirs, surface mining, and urban development. The moderately wet forest types are increasingly fragmented due to improved road access, increased agriculture usage (i.e., pastures and fencing) and closer proximity to development. The wetter tracts are less fragmented but also have lost many of their original functions. They are somewhat less vulnerable to disturbances because moisture conditions prevent access to these lands. Human activities along streams have had, and continue to have, a negative impact on this habitat.

Dams, channelization, man-made levees and other modifications have restricted the extent of riverfront forests. Bank erosion-accretion process has been slowed or eliminated along leveed and stabilized portions of the Mississippi River. The modified river environment has inhibited riverfront cottonwood and willow community regeneration. Although much diminished after river diking, dredging, revetment and channelization projects, the lands between the Mississippi River and its levees still contain the long swaths of riverfront forests. Sandbars are dynamic lotic features that generally persist in the presence of many human activities. However, some activities reduce or increase the amounts of these habitats and significantly alter their stability. Native plants and exotic weeds such as cogongrass can invade and vegetate sandbars, making them unsuitable for nesting turtles.

Mississippi River Low Floodplain (Bottomland) Forests are seasonally flooded backswamps impounded by natural levees and tend to stay on the landscape for long durations. The canopy is dominated by overcup oak, but water hickory may also be present. Other canopy trees that occur infrequently are sweetgum, water oak, willow oak and sugarberry. This forest type is found on the wettest sites and at the edges of swamp depressions and oxbow lakes. The canopy is dense, forming from 60 to 100 percent cover. Planertree is usually present as a thick midstory. The shrub layer is also usually thick and typically dominated by swamp privet, American snowbell, and common buttonbush. Moderately wet bottomland hardwood forests are found on fertile, fine textured clay or loam soils of floodplains, stream terraces and wet lowland flats. Wet palustrine forests contain some of the best remaining habitats for bats. Studies have shown that old-growth bottomland hardwood forests are critical habitat for 11 of 18 bat species found in the Southeast.

Mississippi River High Floodplain (Bottomland) Forests are often temporarily flooded on older Holocene point bars and natural levees, but the inundation is shorter than that of the MR Low Floodplain (Bottomland) Forest type. The dominant canopy trees include sweetgum, oaks (laurel, basket, water, cherrybark, Shumard, willow, and Nuttall's), and hickories. The midstory layer includes possumhaw holly, American holly, arrowwood, dwarf palmetto and American hornbeam. Wetter areas may have overcup oak. Sugarberry-American elm-green ash bottomland are found along the batture lands of the Mississippi River.

Of historical significance are the forested canebrakes of riverine areas of the state. Extensive, impenetrable giant cane thickets formed along the levees of stream corridors. Historical documents noted fires of canebrakes sounded like "a barrage of musket fire" as the cane-stems exploded when heated. The intense fires apparently killed larger trees and subsequently prevented their reestablishment. A few localities in the Delta still contain canebrakes, but they have become dense with trees creating a sparser, less vigorous growth of giant cane. Of note is the apparent extirpation of Bachman's warbler, which was last heard in canebrakes, its required habitat. Most remaining canebrake habitats are located on private property and are not publicly accessible. With fertile soil and lack of trees, canebrakes were among the first lands selected for farming by early settlers. Furthermore, cane regrowth after burns provided quality forage for livestock. Because of their rapid conversion to agriculture, little is known about the ecology of these areas.

Mississippi River Riparian Forest is riverfront vegetation, which may be periodically flooded, on point bars and natural levees adjacent to the river that formed them. Soils are typically sandier than those of low bottomlands. Giant cane is a common understory component and can become dominant after thinning or removal of the canopy. Dominant canopy trees include box elder, silver maple, sycamore, cottonwood, and black willow. Sugarberry, pecan, green ash, honeylocust, sweetgum, water oak, cherrybark oak, Nuttall's oak, American elm and cedar elm may also be in this habitat. Native vinelands develop following disturbances to riverfront forests. The habitat is dominated by greenbrier, peppervine, American buckwheat vine and trumpet creeper. Smartweed, spikerushes, muscadine, poison ivy, and bayberry may also be present.

Mississippi river sandfield mixed herblands are characterized by a diverse herbaceous groundcover dominated by brome grass, sixweeks fescue and prickly pear cactus. These are dry sand plains on terraces created in special flooding circumstances of the Mississippi River, such as sand bars left high and dry after flood waters recede. The community generally remains treeless due to the great depth of the sand, which prevents trees from invading the sand zones. Trees are uncommon but include Chickasaw plum, eastern cottonwood, black willow, Hercules' club, honeylocust, red maple, eastern swampprivet, buckthorn bully, green ash, American elm, false indigo bush, chinaberry tree, silktree, swamp dogwood, and possumhaw holly.

East Gulf Coastal Plain Large River Floodplain Forests are found along the Tombigbee, Pascagoula, and Pearl Rivers. The diversity of geomorphologic features (natural levees, point bars, meander scrolls, oxbow, and sloughs) present within the floodplain leads to several distinct plant communities. Common canopy trees include river birch, pecan, hackberry, green ash, sweetgum, water gum, swamp gum, sycamore, cottonwood, oaks (laurel, overcup, water, cherrybark, willow, and Nuttall's), American elm, black willow, and bald cypress. The midstory often is composed of box-elder, American hornbeam, honeylocust, water elm, cedar elm, buttonbush, mayhaw, two-winged silverbell, possumhaw holly, and coastal fetterbush.



Large river floodplain forest. *Credit: Heather Sullivan*

East Gulf Coastal Plain Small Stream and River Floodplain Forest is confined to floodplains and terraces associated with brownwater rivers and creeks in Mississippi. Fire, beaver activity, and flooding create a mosaic of plant communities. The system is dependent on a natural hydrologic regime, especially annual to episodic flooding, and has resulting meander scars, sloughs, gravel bars, and oxbows present. Canopy tree composition is variable, but includes pignut hickory, water hickory, water locust, southern magnolia, oaks (live, laurel, Nuttall's, overcup, willow, and water), sweetgum, southern sugar maple, white ash, Carolina ash, red maple, green ash, hackberry, and pines. The understory will usually have dwarf palmetto, Sebastian-bush, and Virginia sweetspire in wetter areas. This community seldom has long durations of inundation by high water events. The canopy trees are often elevated above the floodplain, usually about one foot higher than the surrounding landscape. There is often a thick groundcover of leaf material, which prohibits the growth of herbaceous species. In areas that are scoured by seasonal high-water events, a sparse herbaceous layer of grasses, sedges, and wildflowers can be found. Silver maple-mixed floodplain forests are representative of early successional forests on alluvial wetlands and along oxbows. Silver maple and box elder are the most common trees present, although sycamore and water oak are often scattered through the forest. These areas are seasonally flooded, particularly in the early growing season.



Small stream floodplain forest. *Credit: Heather Sullivan*

Sandbars are formed along rivers and creeks by high spring stream flows that churn and distribute coarse sediments along bends and points of the stream channel. They serve as important habitats for several birds and reptiles. During spring and summer, the interior least tern utilizes open sandbars of the Mississippi River as nesting habitat. Sandbars are open, non-vegetated and warm during the summer. The exposed sands are loose and less prone to crusting or hardening. This is the preferred habitat for many species of turtles for depositing and incubating their eggs. High soil temperature is critically important for normal egg development to occur.



Sandbar. *Credit: Calvin Rezac*

SIZE, CONDITION AND CONSERVATION STATUS

Size: 595,204 acres of Floodplain Forests and 35,087 acres of Sandbars

Conservation Status: Vulnerable

Condition: Bottomland hardwood forest losses have been primarily attributed to the conversion of land to agricultural production; however, construction and operation of flood control structures, reservoir creation, surface mining, urban development and exotic weeds and insects are also neg-



Losses of bottomland hardwoods due to historic conversion to agriculture, flood control structures and development.
Credit: Elizabeth Barber

atively affecting these forests. Additionally, many existing forests have been negatively affected by improper timber management, including diameter-limit harvests and large (greater than 40 acre) clear cuts, resulting in altered species composition and poor forest structure with homogeneous canopy characteristics and a reduced diversity of understory and herbaceous vegetation.

Due to drainage projects, levee construction, improved road access, increased agricultural usage and closer proximity to development, the remaining bottomland hardwood forests are fragmented and many no longer provide flood water storage, nutrient trapping, groundwater recharge and wildlife habitat. However, due to flooding frequency this habitat is difficult to convert into other uses, and many patches of bottomland forest have been conserved because of their increasing value for nature-based recreation such as fishing, hunting, wildlife viewing and hiking.

Riverfront forests have declined in some areas because of flood control projects which have altered the natural flow regimen of southern river systems. Loss of the scouring action of streams after impoundment reduces the hydrologic forces that rework the channel, and which expose the mineral soils necessary for the germination and establishment of cottonwood and black willow trees. However, myriad channelization projects have destabilized other drainage systems, resulting in loss of bare mineral soil available for colonization by these species. Instream erosion caused by headcutting, which can result from a variety of channel modifications, greatly destabilizes the streambed and reduces or degrades the amount of this habit type.

Sandbars occur along most free-flowing streams in Mississippi and in most watersheds where flow rates are sufficient to rework coarse sediments. Several thousand acres of sandbars are expected to exist in the state, but because of their small and variable size, which changes with water levels, it is difficult to get an accurate figure. Inundation consequent to impoundment has destroyed many sandbar reaches, but headcutting triggered by sand and gravel mining and dredging has increased the acreage of sandbars in other drainages. Cogongrass, Chinese tallow and other exotic weeds have invaded sandbar habitat, and this is a particularly severe problem in south Mississippi. Sandbars are often created because of streambed destabilization and are larger and more common than in the past. While there are no accurate figures of the extent of sandbars, it is apparent that they have value to SGCN and should be considered when development projects are proposed.

THREATS AND ACTIONS FOR FLOODPLAIN FORESTS

Threats: Dams, water management use, and ecosystem modifications of channels are the primary threats to these communities causing habitat shifts and alterations. Other significant threats are mining and quarrying of sand and gravel and invasive species, particularly to sandbars.

Actions: Maintain/improve/restore hydrologic and geomorphic integrity. Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats. Monitor/limit commercial/residential/industrial point source erosion and sedimentation or pollution into streams/atmosphere. Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats. Provide public education about the conservation of SGCN and/or their habitats.

Table 5.10 - SSGCN for Floodplain Forests

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Crayfishes	2	*Cambarellus diminutus*	Least Crayfish				X	X	
Crayfishes	2	*Cambarellus lesliei*	Angular Dwarf Crayfish				X		
Crayfishes	3	*Lacunicam barus dalyae*	Jewel Mudbug					X	
Crayfishes	2	*Lacunicam barus mobilensis*	Lonesome Gravedigger				X	X	
Crayfishes	2	*Procambarus mancus*	Lame Crayfish					X	
Crayfishes	3	*Procambarus planirostris*	Flatnose Crayfish					X	
Crayfishes	3	*Procambarus viaeviridis*	Vernal Crayfish		X			X	
Insects	3	*Amblyscirtes reversa*	Reversed Roadside Skipper				X		
Insects	4	*Catocala atocala*	Brou's Underwing	X			X		
Insects	2	*Cordulegaster erronea*	Tiger Spiketail				X		
Insects	4	*Eumorpha intermedia*	Intermediate Sphinx	X					
Insects	4	*Papaipema* sp. 5	Rare Cane Borer Moth				X		
Insects	3	*Tachopteryx thoreyi*	Gray Petaltail				X		
Amphibians	3	*Ambystoma texanum*	Smallmouth Salamander	X			X		
Amphibians	1	*Lithobates heckscheri*	River Frog				X		
Birds	3	*Calidris melanotos*	Pectoral Sandpiper			X			

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Birds	2	*Calidris subruficollis*	Buff-breasted Sandpiper			X			
Birds	3	*Coccyzus americanus*	Yellow-billed Cuckoo	X		X	X		
Birds	2	*Egretta caerulea*	Little Blue Heron	X		X	X		
Birds	3	*Egretta tricolor*	Tricolored Heron	X		X	X		
Birds	1	*Elanoides forficatus*	Swallow-tailed Kite	X			X		
Birds	2	*Euphagus carolinus*	Rusty Blackbird	X		X	X		
Birds	2	*Geothlypis formosa*	Kentucky Warbler	X			X		
Birds	2	*Hylocichla mustelina*	Wood Thrush	X			X		
Birds	2	*Limnothlyp is swainsonii*	Swainson's Warbler	X			X		
Birds	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker	X			X		
Birds	1	*Mycteria americana*	Wood Stork	X		X	X		
Birds	3	*Nyctanassa violacea*	Yellow-crowned Night-Heron	X		X	X		
Birds	3	*Nycticorax nycticorax*	Black-crowned Night-Heron	X		X	X		
Birds	2	*Parkesia motacilla*	Louisiana Waterthrush	X		X	X		
Birds	2	*Passerina ciris*	Painted Bunting	X					
Birds	1	*Platalea ajaja*	Roseate Spoonbill	X		X	X		
Birds	2	*Protonotaria citrea*	Prothonotary Warbler	X		X	X		

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Birds	3	*Quiscalus quiscula*	Common Grackle	X		X	X		
Birds	3	*Scolopax minor*	American Woodcock	X			X		
Birds	2	*Setophaga cerulea*	Cerulean Warbler	X		X	X		
Birds	2	*Sternula antillarum athalassos*	Interior Least Tern						X
Birds	3	*Tringa flavipes*	Lesser Yellowlegs			X			
Birds	1	*Vermivora chrysoptera*	Golden-winged Warbler	X		X	X		
Birds	2	*Vireo gilvus*	Warbling Vireo	X		X	X		
Fishes	3	*Fundulus dispar*	Northern Starhead Topminnow						
Mammals	3	*Aeorestes cinereus*	Hoary Bat	X		X	X	X	
Mammals	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	X	X	X	X	X	
Mammals	3	*Dasypterus intermedius*	Northern Yellow Bat				X	X	
Mammals	3	*Lasionycteris noctivagans*	Silver-haired Bat	X		X	X		
Mammals	3	*Myotis austroriparius*	Southeastern Myotis	X	X	X	X	X	
Mammals	1	*Myotis grisescens*	Gray Bat	X		X	X	X	
Mammals	1	*Myotis septentrionalis*	Northern Long-eared Bat	X		X	X		
Mammals	1	*Myotis sodalis*	Indiana Bat	X		X	X	X	
Mammals	2	*Perimyotis subflavus*	Tricolored Bat	X		X	X	X	

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Mammals	2	*Sorex longirostris*	Southeastern Shrew	X		X	X	X	
Mammals	1	*Spilogale putorius*	Eastern Spotted Skunk	X		X	X		
Mammals	2	*Ursus americanus*	Black Bear	X	X	X	X	X	
Mammals	1	*Ursus americanus lutelous*	Louisiana Black Bear	X	X	X	X	X	
Mammals	2	*Zapus hudsonius*	Meadow Jumping Mouse				X		
Reptiles	2	*Graptemys flavimaculata*	Yellow-blotch ed Map Turtle				X		X
Reptiles	2	*Graptemys geographica*	Northern Map Turtle				X		
Reptiles	2	*Graptemys gibbonsi*	Pascagoula Map Turtle				X		X
Reptiles	3	*Graptemys nigrinoda*	Black-knobbed Map Turtle				X		
Reptiles	2	*Graptemys oculifera*	Ringed Map Turtle				X		X
Reptiles	1	*Graptemys pearlensis*	Pearl River Map Turtle				X		X
Reptiles	1	*Graptemys pulchra*	Alabama Map Turtle				X		X
Reptiles	1	*Macrochelys temminckii*	Alligator Snapping Turtle			X	X		
Nonvascular Plants	1	*Archidium hallii*	Hall's Archidium Moss				X		
Nonvascular Plants	3	*Bruchia ravenelii*	Ravenel's Bruchia Moss				X		
Nonvascular Plants	1	*Cololejeunea setiloba*	a liverwort					X	
Nonvascular Plants	1	*Drepanolej eunea mosenii*	a liverwort				X	X	

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Nonvascular Plants	1	*Frullania donnellii*	a liverwort					X	
Nonvascular Plants	3	*Lejeunea cladogyna*	a liverwort				X	X	
Nonvascular Plants	2	*Lejeunea floridana*	a liverwort					X	
Nonvascular Plants	2	*Lejeunea laetivirens*	a liverwort				X		
Nonvascular Plants	1	*Macromitrium richardii*	Richard's Macromitrium Moss				X	X	
Nonvascular Plants	3	*Metzgeria uncigera*	a liverwort				X	X	
Nonvascular Plants	2	*Plagiochila floridana*	Florida Leafy Liverwort				X	X	
Nonvascular Plants	1	*Plagiochila invisa*	a liverwort				X	X	
Nonvascular Plants	3	*Radula sullivantii*	a liverwort				X		
Nonvascular Plants	1	*Riccia warnstorfii*	a liverwort				X		
Nonvascular Plants	3	*Sphagnum carolinianum*	Carolina Peatmoss					X	
Nonvascular Plants	3	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss					X	
Nonvascular Plants	1	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss					X	
Vascular Plants	3	*Aesculus glabra* var. *glabra*	Ohio Buckeye				X		
Vascular Plants	1	*Agalinis homalantha*	San Antonio False-foxglove			X			
Vascular Plants	1	*Agastache nepetoides*	Yellow Giant-hyssop					X	
Vascular Plants	1	*Apios priceana*	Price's Potato-bean				X		

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Vascular Plants	2	*Arnoglossum reniforme*	Great Indian-plantain				X		
Vascular Plants	2	*Asclepias incarnata*	Swamp Milkweed	X	X				
Vascular Plants	4	*Asclepias purpurascens*	Purple Milkweed	X	X		X		
Vascular Plants	2	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch		X				
Vascular Plants	4	*Bidens trichosperma*	Tickseed Sunflower				X		
Vascular Plants	1	*Boltonia apalachicol ensis*	Apalachicola Doll's-Daisy				X		
Vascular Plants	2	*Callirhoe triangulata*	Clustered Poppy-mallow				X		
Vascular Plants	3	*Cardamine angustata*	Slender Toothwort				X		
Vascular Plants	2	*Carex alata*	Broadwing Sedge				X		
Vascular Plants	1	*Carex dasycarpa*	Velvet Sedge				X		
Vascular Plants	1	*Carex frankii*	Frank's Sedge				X		
Vascular Plants	3	*Carex grayi*	Asa Gray's Sedge	X			X		
Vascular Plants	1	*Carex grisea*	Inflated Narrowleaf Sedge				X		
Vascular Plants	3	*Carex hyalina*	Tissue Sedge	X					
Vascular Plants	3	*Carex jamesii*	Nebraska Sedge				X		
Vascular Plants	3	*Carex mitchelliana*	Mitchell's Sedge					X	
Vascular Plants	3	*Carex molestiformis*	Ozark Plateau Sedge				X		

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Vascular Plants	1	*Carex normalis*	Greater Straw Sedge				X		
Vascular Plants	3	*Carex oxylepis* var. *pubescens*	Sharp-scale Sedge	X	X		X		
Vascular Plants	2	*Carex prasina*	Drooping Sedge					X	
Vascular Plants	3	*Carex radiata*	Stellate Sedge				X		
Vascular Plants	2	*Carex seorsa*	Weak Stellate Sedge				X		
Vascular Plants	3	*Carex stipata* var. *maxima*	Stalk-grain Sedge				X		
Vascular Plants	2	*Carex torta*	Twisted Sedge				X		
Vascular Plants	2	*Carya laciniosa*	Big Shellbark Hickory	X	X		X		
Vascular Plants	2	*Chamaecyparis thyoides*	Atlantic White Cedar					X	
Vascular Plants	3	*Chasmanthium nitidum*	Shiny Spikegrass					X	
Vascular Plants	3	*Clematis glaucophylla*	White-leaved Leather-flower				X		
Vascular Plants	3	*Clematis subreticulata*	Alabama Leatherflower				X		
Vascular Plants	1	*Crataegus brachyacantha*	Blueberry Hawthorn	X			X		
Vascular Plants	1	*Crataegus mendosa*	Albertville Hawthorn				X		
Vascular Plants	2	*Crocanthe mum arenicola*	Coastal-sand Frostweed				X		
Vascular Plants	4	*Cuscuta glomerata*	Clustered Dodder				X		
Vascular Plants	3	*Cyperus bipartitus*	Shining Flatsedge				X		

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Vascular Plants	1	*Cyperus engelmannii*	Slender Sand Flatsedge				X		
Vascular Plants	3	*Cyperus neotropicalis*	American Lipocarpha				X		
Vascular Plants	1	*Cyperus refractus*	Reflexed Flatsedge			X	X		
Vascular Plants	3	*Decodon verticillatus*	Hairy Swamp Loosestrife				X		
Vascular Plants	3	*Dichantheli um erectifolium*	Erect-leaf Witchgrass				X		
Vascular Plants	4	*Didiplis diandra*	Water-purslane	X					
Vascular Plants	2	*Didymoglos sum petersii*	Dwarf Filmy-fern					X	
Vascular Plants	2	*Dryopteris australis*	Southern Woodfern				X		
Vascular Plants	2	*Dryopteris ludoviciana*	Southern Shield Wood-fern					X	
Vascular Plants	1	*Echinodorus berteroi*	Upright Burhead	X					
Vascular Plants	2	*Eleocharis erythropoda*	Bald Spikerush	X					
Vascular Plants	3	*Eleocharis macrostachya*	Creeping Spikerush	X			X		
Vascular Plants	3	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush				X		
Vascular Plants	1	*Eleocharis tricostata*	Three-angle Spikerush				X		
Vascular Plants	2	*Eleocharis wolfii*	Wolf's Spikerush				X		
Vascular Plants	1	*Equisetum arvense*	Field Horsetail				X		
Vascular Plants	1	*Eryngium hookeri*	Hooker's Coyote-thistle	X					

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Vascular Plants	3	*Erythronium americanum* ssp. *harperi*	Yellow Trout-lily				X		
Vascular Plants	1	*Euploca convolvulacea*	Bindweed Heliotrope	X		X			
Vascular Plants	3	*Forestiera ligustrina*	Upland Swamp Privet				X		
Vascular Plants	1	*Gratiola floridana*	Florida Hedge-hyssop					X	
Vascular Plants	1	*Gratiola ramosa*	Branched Hedge-hyssop					X	
Vascular Plants	3	*Gymnoclad us dioicus*	Kentucky Coffeetree	X	X		X		
Vascular Plants	2	*Hackelia virginiana*	Virginia Stickseed	X	X				
Vascular Plants	3	*Helanthium tenellum*	Dwarf Burhead				X		
Vascular Plants	2	*Hottonia inflata*	Featherfoil						
Vascular Plants	3	*Hymenocallis choctawensis*	Florida Panhandle Spider-lily				X		
Vascular Plants	2	*Hymenocallis occidentalis* var. *eulae*	Woodland Spider-lily				X		
Vascular Plants	1	*Hypoxis curtissii*	Curtiss' Yellow Star-grass				X		
Vascular Plants	1	*Iresine diffusa*	Felicidad				X		
Vascular Plants	3	*Iris brevicaulis*	Lamance Iris				X		
Vascular Plants	2	*Isoetes louisianensis*	Louisiana Quillwort				X		
Vascular Plants	2	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort				X		

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Vascular Plants	2	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort				X		
Vascular Plants	1	*Isoetes mississippi ensis*	Mississippi Quillwort				X		
Vascular Plants	3	*Isoetes valida*	Strong Quillwort				X		
Vascular Plants	2	*Juglans cinerea*	Butternut				X		
Vascular Plants	2	*Juncus interior*	Inland Rush						
Vascular Plants	1	*Lindera melissifolia*	Pondberry	X					
Vascular Plants	2	*Lindera subcoriacea*	Bog Spicebush					X	
Vascular Plants	2	*Lithosperm um caroliniense*	Golden Puccoon				X		
Vascular Plants	3	*Lycopus amplectens*	Sessile-leaved Bugleweed					X	
Vascular Plants	3	*Macranthera flammea*	Flame Flower					X	
Vascular Plants	2	*Marsilea vestita*	Marsilea vestita	X					
Vascular Plants	1	*Mertensia virginica*	Virginia Bluebells				X		
Vascular Plants	2	*Muhlenbergia glabrifloris*	Inland Muhly				X		
Vascular Plants	3	*Muhlenbergia sylvatica*	Woodland Muhly				X		
Vascular Plants	3	*Muhlenbergia tenuiflora*	Slender Muhly				X		
Vascular Plants	3	*Oenothera grandiflora*	Large-flowered Evening-prim rose				X		
Vascular Plants	2	*Opuntia macrorhiza*	Twisted-spine Prickly-pear			X			

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Vascular Plants	2	*Packera aurea*	Golden Groundsel				X		
Vascular Plants	2	*Paronychia baldwinii* ssp. *riparia*	Perennial Dune Whitlow-wort				X		
Vascular Plants	3	*Penstemon tenuis*	Sharp-sepal Beardtongue	X	X				
Vascular Plants	1	*Phacelia hirsuta*	Hairy Scorpionweed			X			
Vascular Plants	2	*Phacelia purshii*	Miami-mist				X		
Vascular Plants	1	*Phacelia ranunculac ea*	Blue Scorpionweed	X	X		X		
Vascular Plants	3	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed				X		
Vascular Plants	3	*Platanthera peramoena*	Purple Fringeless Orchid					X	
Vascular Plants	2	*Plantago cordata*	Heartleaf Plantain				X		
Vascular Plants	2	*Polygonella americana*	Southern Jointweed				X		
Vascular Plants	3	*Ponthieva racemosa*	Shadow-witch Orchid				X		
Vascular Plants	2	*Ptilimnium costatum*	Eastern Bishopweed	X			X		
Vascular Plants	2	*Quercus oglethorpensis*	Oglethorpe's Oak				X		
Vascular Plants	2	*Quercus palustris*	Pin Oak				X		
Vascular Plants	2	*Ranunculus flabellaris*	Yellow Water-crowfoot	X					
Vascular Plants	2	*Rhododendron alabamense*	Alabama Rhododendron				X		
Vascular Plants	3	*Rhododendron austrinum*	Orange Azalea				X		

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Vascular Plants	2	*Rhododendron periclymenoides*	Pink Azalea				X		
Vascular Plants	2	*Rhynchospora crinipes*	Hairy-peduncled Beakrush				X		
Vascular Plants	1	*Rhynchospora decurrens*	Swamp-forest Beakrush					X	
Vascular Plants	3	*Rhynchospora pinetorum*	Small's Beakrush				X		
Vascular Plants	2	*Rorippa aquatica*	Lake-cress						
Vascular Plants	2	*Sagittaria chapmanii*	Chapman's Arrowhead				X		
Vascular Plants	2	*Salix caroliniana*	Carolina Willow				X		
Vascular Plants	2	*Schizachyri um scoparium* ssp. *divergens*	Eastern Little Bluestem				X		
Vascular Plants	3	*Scirpus divaricatus*	Spreading Bulrush				X		
Vascular Plants	3	*Scleria elliottii*	Broad-leaved Hairy Nutrush				X		
Vascular Plants	2	*Sedum ternatum*	Wood Stonecrop				X		
Vascular Plants	2	*Sideroxylon reclinatum* ssp. *reclinatum*	Florida Bumelia	X					
Vascular Plants	4	*Smilax hugeri*	Huger's Carrion-flower				X		
Vascular Plants	3	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	X	X		X		
Vascular Plants	3	*Stellaria pubera*	Giant Chickweed				X		
Vascular Plants	2	*Symphyotri chum puniceum* var. *puniceum*	Purple-stem Aster				X		

Texa Group (Class)	Tier	Scientific Name	Common Name	MS River Low Flood plain (Bottomland) Forest	MS River High Floodplain (Bottomland) Forest	MS River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain Forest	Sandbars
Vascular Plants	4	*Symphyotri chum puniceum* var. *scabricaule*	Rough-stem Aster				X		
Vascular Plants	1	*Thalia dealbata*	Powdery Thalia						
Vascular Plants	2	*Thalictrum debile*	Southern Meadowrue				X		
Vascular Plants	3	*Tridens carolinianus*	Carolina Fluff Grass				X		
Vascular Plants	4	*Trifolium reflexum*	Buffalo Clover				X		
Vascular Plants	3	*Trillium ludovicianum*	Louisiana Trillium				X		
Vascular Plants	2	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia				X		
Vascular Plants	3	*Ulmus serotina*	September Elm				X		
Vascular Plants	2	*Uvularia floridana*	Florida Bellwort				X		
Vascular Plants	3	*Verbena xutha*	Gulf Vervain			X	X		
Vascular Plants	3	*Xyris chapmanii*	Chapman's Yellow-eyed-grass				X		
Vascular Plants	2	*Xyris louisianica*	Kral's Yellow-eyed Grass				X		
Vascular Plants	3	*Xyris scabrifolia*	Harper's Yellow-eyed Grass				X		
Vascular Plants	2	*Yeatesia viridiflora*	Green-flower Yeatesia				X		

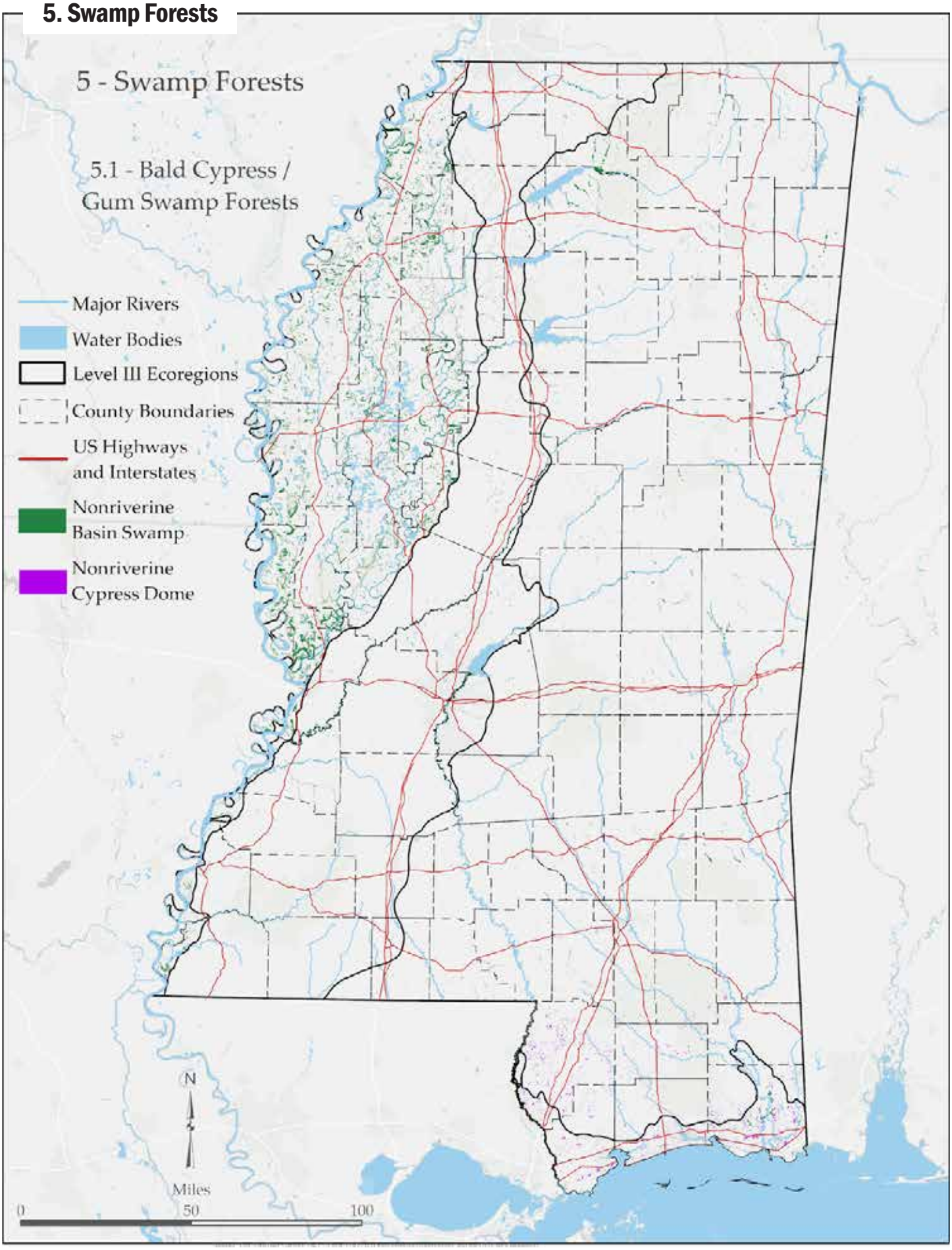


Figure 5.11. Map of Swamp Forests: Bald Cypress / Gum Swamp Forests.

Low floodplain terraces, bottomland flats, backwater areas or springheads are common areas to find swamp forest vegetation, but swamp forests may also occur in upland depressions. The soils of swales or depressions are seasonally to semi-permanently flooded and remain saturated for long periods throughout the year. Several culturally significant species utilize these habitats including swamp cane, black gum, cypress, dwarf palmetto, eastern cottontail, squirrels, and swamp rabbits.

General Condition

Despite dramatic losses, the southeast region currently accounts for about 36 percent of all wetlands and 60 percent to 65 percent of all forested wetlands. Although loss rates have declined recently, most wetland acreage lost every year in the United States is still from southern forested wetlands. U.S. Forest Service inventories completed by the early 1990s indicate continued annual loss rates of 0.7 percent and 1.0 percent for the oak-gum-cypress forest type in the Louisiana and Mississippi portions of the Lower Mississippi River Alluvial Plain. Estimates of one million acres of cypress-tupelo swamp remain in the Lower Mississippi River Valley, within the states of Louisiana, Arkansas and Mississippi.

In the past, wetlands were regarded as a menace and a hindrance to land development and considered wastelands, made valuable only if drained. During the mid-19th century, Congress passed the Swamp Lands Acts of 1849, 1850, and 1860, granting swamp and periodically flooded bottomlands to the states. Five southern states received 40 million acres for draining. Most wetlands were drained for conversion to agriculture. Large-scale federal navigation, flood-control, and drainage projects have played a large role in these conversions by making previously flood-prone lands dry enough for planting crops. The increase in the population of the South also has accelerated the rate of wetland losses.

Conditions of non-riverine swamp forests are good and occur in more natural parts of the Pascagoula River and Pearl River watersheds. The Pascagoula is the largest unimpeded main stem river in the lower 48 states surrounded largely by bottomland hardwoods and coastal marsh.

5.1 Bald Cypress/Gum Swamp Forests

Mississippi River Bottomland Depressions form in semi-permanently flooded to saturated depressional areas of the Mississippi River Alluvial Valley. The canopy is often composed of Drummond's red maple, water hickory, pumpkin ash, water-locust, water gum, swamp gum, overcup oak, black willow, and bald cypress. The midstory contains buttonbush, swamp dogwood, swamp loosestrife, swamppprivet, Virginia sweetspire, and water elm. The herbaceous layer will be thin, but may have floating primrose-willow, arrowweed, and pondweed.



Mississippi River bottomland depression
Credit: Heather Sullivan

Table 5.11 - Swamp Forest Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	5. Swamp Forest	Level III EPA Ecoregion				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
5.1 Bald Cypress/ Gum Swamp Forest	*Southern Coastal Plain Nonriverine Cypress Dome*	X			X	
5.1 Bald Cypress/ Gum Swamp Forest	*Mississippi River Bottomland Depression*		X			
5.1 Bald Cypress/ Gum Swamp Forest	*Southern Coastal Plain Blackwater River Floodplain Forest*	X			X	
5.1 Bald Cypress/ Gum Swamp Forest	*Buttonbush - swamp privet shrub wetlands*	X	X	X	X	
5.2 Small Stream Swamp Forest	*Southern Coastal Plain Nonriverine Basin Swamp*	X			X	
5.2 Small Stream Swamp Forest	*Southern Coastal Plain Seepage Swamp and Baygall [no NS equivalent]*	X				

Southern Coastal Plain Blackwater River Floodplain Forests are found along river and stream drainages that are characterized by dark waters high in tannins, particulate and dissolved organic materials and generally lack floodplain development. The canopy is dominated by bald cypress, water gum, slash pine, and Atlantic white cedar, but may be replaced by loblolly pine, sweetgum and red maple after logging.



Blackwater river floodplain forest.
Credit: Heather Sullivan

Southern Coastal Plain Nonriverine Cypress Dome is dominated by pond cypress, often with a dome-shaped appearance where the trees in the center of the stand are taller than those of the exterior. These poorly drained depressions are embedded in a matrix of pine flatwoods or mesic to dry pine woodlands. The habitat may have thick organic layers, depending on the fire regime and hydroperiod. Myrtleleaf St. Johnswort and myrtleleaf holly can become dominant in the shrub layer. Where fires are more frequent, open herbaceous vegetation is favored. Wet pond cypress depressions are common habitat inclusions in the slash pine flatwoods of Southeastern Plains and Southern Coastal Plains ecoregions. These are freshwater forested wetlands that have standing water for most if not all the growing season. Nearly pure stands of pond cypress dominate a sparse canopy over a dense herbaceous layer. Lizard's tail and smooth sawgrass are the main components of this layer

Southern Coastal Plain Nonriverine Basin Swamp occupies large, seasonally inundated basins with peaty substrates in the southern parts of the state. The canopy is dominated by bald cypress, swamp gum, and may have slash pines as emergent. The shrub layer will include buckwheat tree, titi, dog-hobble, and bamboo-vine. Some may have open herbaceous areas with maidencane, arrowroot, threeway sedge, Walter's sedge, and other wetland herbaceous plants forming patches. These basins are prone to long periods of inundation. Without fire, bay shrubs and hardwoods increase in density and peat accumulates more rapidly. Fires during times of drought will burn into the peat, killing trees, lowering the ground surface, and transforming the swamp into a pond, lake, marsh, or shrub bog. White cedar swamp forests are the rarest plant community of this ecological system. It occurs along small blackwater streams. Atlantic white cedar is a prominent component of the canopy, which also includes sweetbay, swamp tupelo, slash pine and red maple. Usually, buckwheat tree is the most conspicuous shrub present, but coastal sweetpepperbush, swamp titi, large gallberry and coastal fetterbush are also present. Goldenclub is usually



Nonriverine cypress dome at Red Creek.
Credit: Heather Sullivan

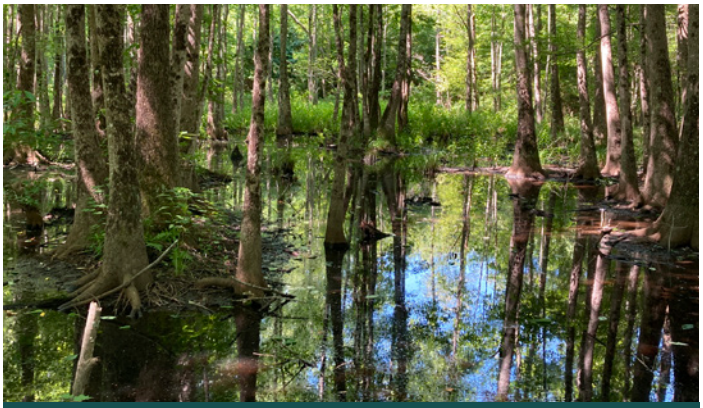
present in the stream corridor; other herbaceous plants present include cinnamon fern and royal fern. Without natural disturbances, this habitat succeeds to bay forest.

Buttonbush - swamp privet shrub wetlands occupy intermittently exposed to semipermanently flooded lowland areas within and along the edges of creeks, rivers, sloughs, and oxbow lakes, often in zones surrounding deeper water. The lands remain flooded or generally saturated throughout the year. Though the conditions of this wetland habitat resemble those of swamps, the scarcity of swamp trees distinguishes this type. Fluctuating water levels cause herb density to vary widely in this ecological community. Common buttonbush is the indicator species for this habitat, while Virginia sweetspire and eastern swamp privet are less common.

Size: 133,722 acres of Bald Cypress/Gum Swamp Forests

Conservation Status: Vulnerable

The bald cypress/gum swamp forests subtype is found in a wide range of sizes, generally conforming to the size of the depression in which they occur. They may be situated in smaller backwater areas of creeks, where they occur adjacent to other bottomland hardwood forest types. The annual losses of forested wetlands in Mississippi during the 1960s and 1970s were estimated to be about 0.5 percent per year. Fragmentation, developments near swamp lands and logging of mature stands has reduced the quality of this subtype.



Nonriverine basin swamp forest.
Credit: Heather Sullivan

5.2 Small Stream Swamp Forests

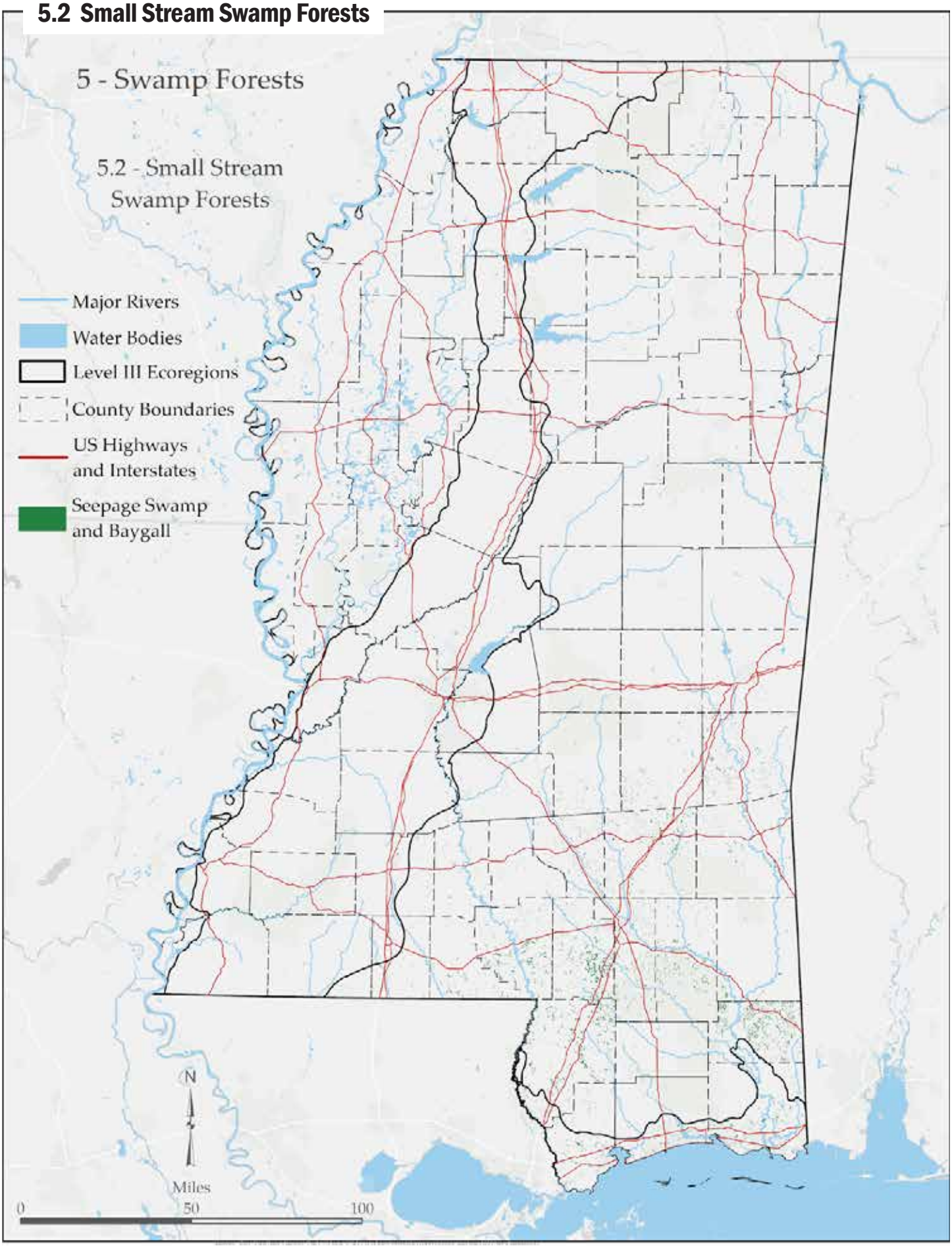


Figure 5.12. Map of Swamp Forests: Small Stream Swamp Forests.

Southern Coastal Plain Seepage Swamp and Baygalls consist of forested wetlands in acidic, seepage-influenced areas at the base of slopes or other habitats where seepage flow is concentrated. These habitats are normally protected from fire due to the inundation of the site. The canopy is dominated by sweetbay magnolia and swamp gum, and mixed with laurel oak, sweetgum and tuliptree. Titi, buckwheat-tree, and Florida anise are present and will form thickets in openings. Bay forest swamps usually have a scant cover of herbs due to the heavy shading of the tree and shrub layers and contain patches of sphagnum moss and liverworts. White cedar swamp forests are the rarest plant community of this ecological system. It occurs along small blackwater streams, with Atlantic white cedar as a prominent component of the canopy, which also includes sweetbay, swamp tupelo, slash pine and red maple. Usually, buckwheat tree is the most conspicuous shrub present, but coastal sweetpepperbush, swamp titi, large gallberry and coastal fetterbush are also present. Without natural disturbances, this habitat succeeds to bay forest. Titi thickets can be created by logging small stream swamp forests and wet savannas.

Exposing the lower shrub layer to sunlight allows the shrubs to flourish and increase in density that can limit the regeneration of swamp trees. Unless the thickets are burned or mechanically chopped, they persist for long periods. The uplands serve as infiltration zones that produce seepage beds along lower slopes and intervening drainages. Many of the smaller creeks are not deeply incised because of low coastland relief and the lack of stream headcutting. Their floodplains are often protected by a dense mat of interwoven roots, especially those of sweetbay and swamp tupelo. The poorly drained sandy and loamy soils hold moisture through dry seasons and most droughts. The wettest zones of the seepage areas and creek channels support the growth of sphagnum moss. The anoxic, acidic conditions prevent decomposition of leaf litter and help in the formation of organic muck soils. This community is rarer in the northern portion of the state than in the southern region.



Seepage swamp and baygall small stream swamp forest.
Credit: Heather Sullivan

Size: 10,777 acres of Small Stream Swamp Forests

Conservation Status: Vulnerable [Very Rare and Critically Imperiled included]

They are often transected by transportation and power line corridors. They are situated between the stream channel and pine forests on the adjacent uplands.

Wetlands are afforded greater protection from logging on national forest lands and less frequently on private lands where streamside management zones are established. Establishment of pine plantations on adjacent uplands can also reduce the quality of these swamp forest habitats because they occur in narrow patches.

Excessive intrusion and fragmentation that is occurring in urban and suburban lands has caused additional deterioration of small stream swamp forests. Headcutting, a process in which downcutting of the streambed accelerates the drainage of swampy lowlands, is a detriment to small stream swamps. With a lack of periodic fires to reduce shrub densities, these forests become inaccessible thickets of evergreen shrubs. White cedar swamp forests, one of the rarest communities of this subtype, have been severely degraded in southern Mississippi by road building and logging.

THREATS AND ACTIONS FOR SWAMP FOREST

Threats: Dams, water management use, and ecosystem modifications of channels are the primary threats to these communities causing habitat shifts and alterations. Other significant threats are timber logging and harvest, and invasive species.

Actions: Maintain/improve/restore hydrologic and geomorphic integrity. Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats. Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats. Provide public education about the conservation of SGCN and/or their habitats. Develop/implement/continue recovery plans for individual SGCNs. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.

Table 5.12 - SGCN for Swamp Forests

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Crayfishes	2	*Cambarellus diminutus*	Least Crayfish		X	X		X
Crayfishes	2	*Cambarellus lesliei*	Angular Dwarf Crayfish			X		X
Crayfishes	2	*Lacunicambarus mobilensis*	Lonesome Gravedigger		X			
Crayfishes	3	*Procambarus lecontei*	Mobile Crayfish			X		X
Crayfishes	2	*Procambarus mancus*	Lame Crayfish			X		X
Crayfishes	3	*Procambarus penni*	Pearl Blackwater Crayfish			X		X
Crayfishes	3	*Procambarus planirostris*	Flatnose Crayfish			X		X
Crayfishes	2	*Procambarus shermani*	Gulf Crayfish			X		X
Insects	4	*Agarodes libalis*	Spring-loving Psiloneuran Caddisfly					X
Insects	3	*Amblyscirtes reversa*	Reversed Roadside Skipper			X		X
Insects	3	*Amphiagrion saucium*	Eastern Red Damsel					X
Insects	3	*Celithemis amanda*	Amanda's Pennant					X
Insects	2	*Cordulegaster erronea*	Tiger Spiketail					X
Insects	3	*Erythrodiplax umbrata*	Band-winged Dragonlet					X
Insects	4	*Euphyes dukesi dukesi*	Dukes' Skipper			X		X
Insects	3	*Ischnura prognata*	Furtive Forktail			X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Insects	3	*Nannothemis bella*	Elfin Skimmer					X
Insects	3	*Nehalennia gracilis*	Sphagnum Sprite					X
Insects	1	*Neonympha mitchellii*	Mitchell's Satyr					X
Insects	3	*Somatochlora provocans*	Treetop Emerald					X
Insects	2	*Stylurus townesi*	Townes' Clubtail					X
Insects	3	*Tachopteryx thoreyi*	Gray Petaltail					X
Amphibians	3	*Ambystoma texanum*	Smallmouth Salamander	X				
Amphibians	1	*Amphiuma pholeter*	One-toed Amphiuma					X
Amphibians	4	*Desmognathus pascagoula*	Pascagoula Dusky Salamander					X
Amphibians	4	*Desmognathus valentinei*	Valentine's Southern Dusky Salamander					X
Amphibians	4	*Eurycea sphagnicola*	Bog Dwarf Salamander					X
Amphibians	2	*Hemidactylium scutatum*	Four-toed Salamander					X
Amphibians	1	*Lithobates heckscheri*	River Frog			X		X
Amphibians	2	*Pseudotriton montanus*	Mud Salamander					X
Birds	3	*Coccyzus americanus*	Yellow-billed Cuckoo	X		X	X	X
Birds	2	*Egretta caerulea*	Little Blue Heron	X		X	X	
Birds	3	*Egretta tricolor*	Tricolored Heron	X		X	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Birds	1	*Elanoides forficatus*	Swallow-tailed Kite	X		X	X	
Birds	2	*Euphagus carolinus*	Rusty Blackbird	X		X	X	X
Birds	2	*Geothlypis formosa*	Kentucky Warbler					X
Birds	2	*Hylocichla mustelina*	Wood Thrush					X
Birds	2	*Limnothlypis swainsonii*	Swainson's Warbler					X
Birds	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker	X		X	X	X
Birds	1	*Mycteria americana*	Wood Stork	X		X	X	
Birds	3	*Nyctanassa violacea*	Yellow-crowned Night-Heron	X		X	X	
Birds	3	*Nycticorax nycticorax*	Black-crowned Night-Heron	X		X	X	
Birds	2	*Parkesia motacilla*	Louisiana Waterthrush	X		X	X	X
Birds	1	*Platalea ajaja*	Roseate Spoonbill	X		X	X	X
Birds	2	*Protonotaria citrea*	Prothonotary Warbler	X		X	X	X
Birds	3	*Quiscalus quiscula*	Common Grackle	X		X	X	X
Birds	3	*Scolopax minor*	American Woodcock					X
Birds	1	*Vermivora chrysoptera*	Golden-winged Warbler	X		X	X	X
Birds	2	*Vireo gilvus*	Warbling Vireo	X		X	X	X
Fishes	2	*Etheostoma zonifer*	Backwater Darter					X

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Fishes	3	*Fundulus dispar*	Northern Starhead Topminnow	X				
Fishes	3	*Heterandria formosa*	Least Killifish					X
Fishes	4	*Leptolucania ommata*	Pygmy Killifish					X
Fishes	1	*Miniellus melanostomus*	Blackmouth Shiner			X		X
Mammals	3	*Aeorestes cinereus*	Hoary Bat	X	X	X	X	X
Mammals	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	X	X	X	X	X
Mammals	3	*Dasypterus intermedius*	Northern Yellow Bat		X	X	X	X
Mammals	3	*Lasionycteris noctivagans*	Silver-haired Bat	X		X		X
Mammals	3	*Myotis austroriparius*	Southeastern Myotis	X	X	X	X	X
Mammals	1	*Myotis grisescens*	Gray Bat	X	X	X		X
Mammals	1	*Myotis septentrionalis*	Northern Long-eared Bat	X	X	X		X
Mammals	1	*Myotis sodalis*	Indiana Bat	X	X	X		X
Mammals	2	*Perimyotis subflavus*	Tricolored Bat	X	X	X	X	X
Mammals	2	*Sorex longirostris*	Southeastern Shrew	X	X	X	X	X
Mammals	1	*Spilogale putorius*	Eastern Spotted Skunk					X
Mammals	2	*Ursus americanus*	Black Bear	X	X	X		X
Mammals	1	*Ursus americanus lutelous*	Louisiana Black Bear	X	X	X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Mammals	2	*Zapus hudsonius*	Meadow Jumping Mouse					X
Reptiles	1	*Macrochelys temminckii*	Alligator Snapping Turtle	X		X		
Nonvascular Plants	2	*Anthoceros punctatus*	a hornwort			X		
Nonvascular Plants	1	*Callicladium haldanianum*	Beautiful Branch Moss			X		
Nonvascular Plants	1	*Campylopus angustiretis*	Campylopus Moss			X		
Nonvascular Plants	1	*Cololejeunea setiloba*	a liverwort		X	X		X
Nonvascular Plants	1	*Drepanolejeunea mosenii*	a liverwort		X			
Nonvascular Plants	2	*Fissidens amoenus*	Hall's Fissidens Moss			X		X
Nonvascular Plants	1	*Frullania donnellii*	a liverwort		X			X
Nonvascular Plants	1	*Lejeunea bermudiana*	a liverwort			X		X
Nonvascular Plants	3	*Lejeunea cladogyna*	a liverwort		X	X		X
Nonvascular Plants	2	*Lejeunea floridana*	a liverwort		X	X		X
Nonvascular Plants	2	*Lejeunea laetivirens*	a liverwort					X
Nonvascular Plants	1	*Macromitrium richardii*	Richard's Macromitrium Moss		X			
Nonvascular Plants	3	*Metzgeria uncigera*	a liverwort		X	X		X
Nonvascular Plants	2	*Plagiochila floridana*	Florida Leafy Liverwort		X	X		X
Nonvascular Plants	1	*Plagiochila invisa*	a liverwort		X	X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Nonvascular Plants	3	*Radula sullivantii*	a liverwort			X		X
Nonvascular Plants	1	*Sphaerosporoceros adscendens*	a hornwort			X		X
Nonvascular Plants	3	*Sphagnum carolinianum*	Carolina Peatmoss		X	X		X
Nonvascular Plants	3	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss		X			X
Nonvascular Plants	1	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss		X			X
Vascular Plants	2	*Agalinis linifolia*	Flaxleaf False Foxglove			X		X
Vascular Plants	3	*Andropogon dealbatus*	Wetland White Bluestem					X
Vascular Plants	4	*Asclepias purpurascens*	Purple Milkweed	X		X		
Vascular Plants	2	*Burmannia biflora*	Northern Burmannia			X		
Vascular Plants	1	*Calopogon multiflorus*	Many-flowered Grass-pink				X	
Vascular Plants	2	*Carex alata*	Broadwing Sedge			X		
Vascular Plants	1	*Carex bullata* var. *greenei*	Button Sedge			X		X
Vascular Plants	4	*Carex elliottii*	Elliott's Sedge					X
Vascular Plants	1	*Carex fissa* var. *aristata*	Hammock Sedge			X		
Vascular Plants	3	*Carex grayi*	Asa Gray's Sedge	X		X		
Vascular Plants	3	*Carex mitchelliana*	Mitchell's Sedge		X	X		X
Vascular Plants	1	*Carex normalis*	Greater Straw Sedge					X

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Vascular Plants	2	*Carex prasina*	Drooping Sedge		X			X
Vascular Plants	2	*Carex scoparia*	Broom Sedge			X		X
Vascular Plants	2	*Carex seorsa*	Weak Stellate Sedge			X		X
Vascular Plants	3	*Carex stipata* var. *maxima*	Stalk-grain Sedge			X	X	
Vascular Plants	1	*Carex striata* var. *striata*	Southern Peatland Sedge				X	X
Vascular Plants	2	*Carex verrucosa*	Warty Sedge			X	X	
Vascular Plants	2	*Chamaecyparis thyoides*	Atlantic White Cedar		X	X		X
Vascular Plants	3	*Chasmanthium nitidum*	Shiny Spikegrass		X			X
Vascular Plants	4	*Chelone obliqua* var. *obliqua*	Red Turtlehead			X		X
Vascular Plants	2	*Cladium mariscoides*	Twig Rush			X		
Vascular Plants	1	*Cleistesiopsis bifaria*	Appalachian Small Spreading Pogonia			X		X
Vascular Plants	3	*Clematis subreticulata*	Alabama Leatherflower			X		
Vascular Plants	2	*Coreopsis nudata*	Georgia Tickseed			X	X	X
Vascular Plants	3	*Decodon verticillatus*	Hairy Swamp Loosestrife			X		
Vascular Plants	2	*Dichanthelium curtifolium*	Shortleaf Witchgrass					X
Vascular Plants	3	*Dichanthelium erectifolium*	Erect-leaf Witchgrass			X	X	
Vascular Plants	2	*Dichanthelium wrightianum*	Wright's Witchgrass			X	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Vascular Plants	4	*Didiplis diandra*	Water-purslane			X		X
Vascular Plants	2	*Didymoglossum petersii*	Dwarf Filmy-fern					X
Vascular Plants	2	*Dryopteris australis*	Southern Woodfern			X		X
Vascular Plants	1	*Dryopteris celsa*	Log Fern					X
Vascular Plants	2	*Dryopteris ludoviciana*	Southern Shield Wood-fern		X	X		X
Vascular Plants	3	*Eleocharis cellulosa*	Carolina Spikerush				X	
Vascular Plants	2	*Eleocharis elongata*	Slim Spikerush			X		X
Vascular Plants	2	*Eleocharis erythropoda*	Bald Spikerush	X				
Vascular Plants	1	*Eleocharis melanocarpa*	Black-fruit Spikerush				X	
Vascular Plants	1	*Eleocharis radicans*	Rooted Spikerush					X
Vascular Plants	4	*Eleocharis tenuis* var. *pseudoptera*	Slender Spikerush					X
Vascular Plants	2	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush					X
Vascular Plants	1	*Eleocharis tricostata*	Three-angle Spikerush			X	X	
Vascular Plants	2	*Eustachys glauca*	Saltmarsh Finger-grass			X	X	X
Vascular Plants	2	*Fuirena longa*	Coastal-plain Umbrella-sedge				X	X
Vascular Plants	1	*Gentiana catesbaei*	Elliott's Gentian					X
Vascular Plants	1	*Gratiola floridana*	Florida Hedge-hyssop		X			X

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Vascular Plants	1	*Gratiola ramosa*	Branched Hedge-hyssop		X			
Vascular Plants	3	*Gymnocladus dioicus*	Kentucky Coffeetree			X		
Vascular Plants	3	*Helenium brevifolium*	Shortleaf Sneezeweed			X		X
Vascular Plants	2	*Hexastylis harperi*	Large-flowered Heartleaf					X
Vascular Plants	3	*Hibiscus coccineus*	Brilliant Hibiscus					X
Vascular Plants	2	*Hottonia inflata*	Featherfoil	X		X		
Vascular Plants	3	*Hymenocallis choctawensis*	Florida Panhandle Spider-lily			X		
Vascular Plants	2	*Hymenocallis occidentalis* var. *eulae*	Woodland Spider-lily			X		
Vascular Plants	2	*Hypericum myrtifolium*	Myrtle-leaved St. Johnswort			X	X	
Vascular Plants	1	*Hypoxis curtissii*	Curtiss' Yellow Star-grass			X		X
Vascular Plants	2	*Ilex cassine*	Dahoon Holly					X
Vascular Plants	3	*Iris brevicaulis*	Lamance Iris			X		
Vascular Plants	1	*Iris giganticaerulea*	Giant Blue Iris			X		
Vascular Plants	2	*Isoetes louisianensis*	Louisiana Quillwort					X
Vascular Plants	2	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort					X
Vascular Plants	2	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort					X
Vascular Plants	1	*Isoetes mississippiensis*	Mississippi Quillwort					X

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Vascular Plants	3	*Isoetes valida*	Strong Quillwort					X
Vascular Plants	2	*Juncus interior*	Inland Rush	X				
Vascular Plants	2	*Lilium iridollae*	Panhandle Lily					X
Vascular Plants	2	*Lindera subcoriacea*	Bog Spicebush		X	X	X	X
Vascular Plants	1	*Lobelia boykinii*	Boykin's Lobelia			X	X	
Vascular Plants	3	*Ludwigia alata*	Winged Seedbox			X		
Vascular Plants	3	*Luziola bahiensis*	Brazilian Loziola					X
Vascular Plants	3	*Lycopus amplectens*	Sessile-leaved Bugleweed		X			X
Vascular Plants	3	*Macranthera flammea*	Flame Flower		X			X
Vascular Plants	3	*Marshallia trinervia*	Broadleaf Barbara's-buttons					X
Vascular Plants	2	*Mimulus ringens* var. *ringens*	Square-stem Monkeyflower					X
Vascular Plants	2	*Nuphar lutea* ssp. *ulvacea*	West Florida Cow-Lily			X		X
Vascular Plants	2	*Packera aurea*	Golden Groundsel					X
Vascular Plants	2	*Parnassia grandifolia*	Largeleaf Grass-of-parnassus					X
Vascular Plants	2	*Pieris phillyreifolia*	Climbing Fetter-bush			X	X	
Vascular Plants	3	*Pinguicula planifolia*	Chapman's Butterwort				X	X
Vascular Plants	2	*Platanthera conspicua*	Large White-fringe Orchid					X

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Vascular Plants	2	*Platanthera integrilabia*	White Fringeless Orchid					X
Vascular Plants	2	*Senega hookeri*	Hooker's Milkwort					X
Vascular Plants	2	*Potamogeton pusillus*	Slender Pondweed			X		
Vascular Plants	2	*Pycnanthemum flexuosum*	Narrowleaf Mountainmint					X
Vascular Plants	2	*Ranunculus septentrionalis*	Carolina Buttercup					X
Vascular Plants	2	*Rhododendron alabamense*	Alabama Rhododendron					X
Vascular Plants	2	*Rhododendron arborescens*	Smooth Azalea					X
Vascular Plants	3	*Rhododendron austrinum*	Orange Azalea			X		
Vascular Plants	1	*Rhynchospora brachychaeta*	West Indies Beakrush			X	X	
Vascular Plants	2	*Rhynchospora careyana*	Broad-fruit Horned Beakrush			X	X	
Vascular Plants	1	*Rhynchospora decurrens*	Swamp-forest Beakrush		X			X
Vascular Plants	1	*Rhynchospora harperi*	Harper's Beakrush			X		
Vascular Plants	2	*Rhynchospora leptocarpa*	Slender-fruit Beaksedge					X
Vascular Plants	1	*Rhynchospora pleiantha*	Brown Beakrush			X		X
Vascular Plants	1	*Rhynchospora tracyi*	Tracy Beakrush			X	X	
Vascular Plants	2	*Rorippa aquatica*	Lake-cress	X		X		
Vascular Plants	2	*Ruellia noctiflora*	Night-flowering Wild-petunia				X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	MS River Bottomland Depression	SCP Blackwater River Floodplain Forest	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall
Vascular Plants	3	*Ruellia pinetorum*	Pine Barren Ruellia					X
Vascular Plants	2	*Sabatia decandra*	Bartram's Rose-gentian			X	X	X
Vascular Plants	2	*Schoenoplectiella purshiana*	Weakstalk Bulrush			X		X
Vascular Plants	3	*Scirpus divaricatus*	Spreading Bulrush			X		X
Vascular Plants	3	*Scirpus lineatus*	Drooping Bulrush			X		X
Vascular Plants	1	*Sclerolepis uniflora*	Pink Bogbutton					X
Vascular Plants	4	*Spiraea tomentosa*	Steeplebush					X
Vascular Plants	3	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses			X		X
Vascular Plants	2	*Stenanthium texanum*	Pine Barren Deathcamas					X
Vascular Plants	1	*Stylisma aquatica*	Water Southern Morning-glory			X		
Vascular Plants	2	*Symphyotrichum puniceum* var. *puniceum*	Purple-stem Aster					X
Vascular Plants	4	*Symphyotrichum puniceum* var. *scabricaule*	Rough-stem Aster					X
Vascular Plants	2	*Syngonanthus flavidulus*	Yellow Pipewort				X	
Vascular Plants	1	*Thalia dealbata*	Powdery Thalia	X				
Vascular Plants	2	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia			X		
Vascular Plants	2	*Utricularia olivacea*	Piedmont Bladderwort			X		
Vascular Plants	3	*Utricularia purpurea*	Purple Bladderwort			X	X	X

6. Wet Pine Savannas and Flatwoods

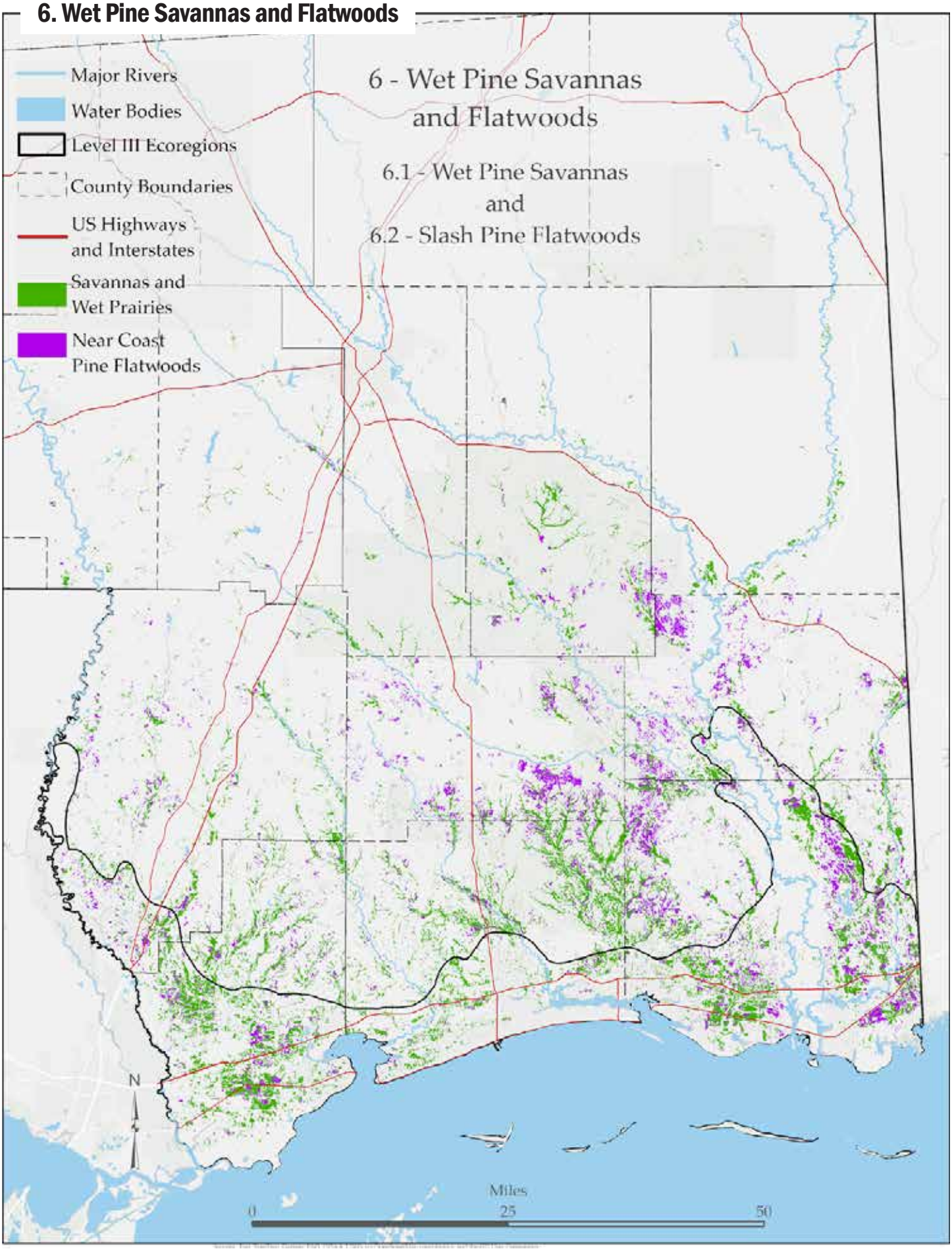


Figure 5.13. Map of Wet Pine Savannas and Flatwoods

Coastal areas with very poor internal drainage form wet pine savannas and flatwoods. Wet pine savannas receive moisture through precipitation and are not subject to riverine flooding. Soils are composed of highly weathered, acidic, infertile substrates. The high precipitation and low evapotranspiration rates during the winter and spring season along the coast create a surplus of moisture that gradually percolates through the soil profile. Nutrient-deficient soils develop on these wet flats because nutrients released by weathering are insufficient to replace those removed by leaching. Savannas are areas dominated by graminoids with scattered trees. The term 'flatwoods' has been used to describe many different communities in the coastal plain. For this classification, flatwoods are coastal terrace forests of slash and longleaf pine with very little local topographic relief. This community is successional and can go in many directions depending on fire, moisture conditions and human activities. The canopy of these communities tends to be more closed than that of the wet pine savanna.

Several culturally significant species utilize these habitats including pines, switchcane, black gum, dahoon holly, yaupon holly, eastern cottontail, and squirrels.

General Condition

It is estimated that less than five percent of the original acreage of wet pine savanna habitat remains in the Atlantic/Gulf Coastal Plain making it one of the most endangered ecosystems in the country. The lack of prescribed burns has had a dramatic negative impact on the size and distribution of wet pine savannas. Fire suppression allowed pines and shrubs to invade and out-compete the native savanna plants. In the 1960s and 1970s, much of the remaining open savanna was converted to pine plantation by planting and ditching (bedding); the latter disrupted the natural water regime. Additional urbanization of the three coastal counties of Mississippi caused significant losses of this habitat. The savannas of Sandhill Crane National Wildlife Refuge in Jackson County are considered the last remaining large patches of this diverse community.

Slash pine flatwoods have also been adversely impacted by timber harvest, clear-cutting and plantation monoculture. If fire is excluded, the open, herbaceous character of pine flatwoods ground cover is lost, while evergreen shrubs increase in dominance. Contributing to these factors is the dry mat of acidic pine needles which inhibit the growth of most herbaceous species.

Table 5.13 - Wet Pine Savannas and Flatwoods Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion

	6. Wet Pine Savannas and Flatwoods	Level III EPA Ecoregion				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
6.1 Slash Pine Flatwoods	*East Gulf Coastal Plain Near-Coast Pine Flatwoods*	X			X	
6.2 Wet Pine Savannas	*East Gulf Coastal Plain Savannas and Wet Prairies*	X			X	



Near-coast pine flatwoods at the Mississippi Sandhill Crane National Wildlife Refuge. *Credit: Heather Sullivan*

6.1 Slash Pine Flatwoods

East Gulf Coastal Plain Near-Coast Pine Flatwoods are found on broad, sandy flatlands, which are subject to seasonal inundation. The overstory is dominated by either longleaf or slash pine. Moisture determines the dominant pine species with slash replacing longleaf on wetter sites. Shrubs include sand live oak, dwarf live oak, running oak, saw palmetto, titi, yaupon, inkberry, and leatherleaf holly. Grasses dominate the herbaceous layer and include southern wiregrass, toothache grass, savanna hairgrass, little bluestem. Herbs include lavender lady, pitcherplants, false foxgloves, milkworts, and asters. If fire is not frequently prescribed, the shrub layer can become dense and impenetrable, with swamp titi, buckwheat tree, gallberries and bayberries.

Pitcherplants, St. John's-wort and numerous grasses often occur on exposed, open patches where water pools or recent burns have killed shrubs. Frequency and season of fire determines the height and density of the shrub layer while soil type appears to influence the presence of buckwheat tree. If fire is excluded, the open, herbaceous character of the pitcherplant flat is lost and titi thickets, consisting of evergreen shrubs, become dominant. The maritime slash pine flatwood/savanna community marks a scenic backdrop to the intertidal marshes along Mississippi's coastline. This community occupies ancient low shoreline beach ridges and low flats situated immediately inland from the tidal marshes. It is also found on the terrace levees of many tidal creeks, occasionally extending into the midst of sprawling black needlerush marshes. These forests are often situated on broad lowland flats and along drainages which dissect low hilly uplands that support mesic longleaf pine forests. They occur in moderate sized patches, from 50 to 1,000 acres in size. The forests adjoin swamp forests near larger creeks. This community is often in poor condition because of the lack of prescribed fire to control shrub encroachment. The stands become impenetrable thickets if fire is not allowed. There are significant acreages of this community still intact, albeit in poor to fair condition. Commercial timberlands of this subtype are often bedded and planted to pine to increase timber production.

Size: 95,117 acres of Slash Pine Flatwoods



Pine savanna and wet prairie. *Credit: Heather Sullivan*

6.2 Wet Pine Savannas

East Gulf Coastal Plain Savannas and Wet Prairies are dominated by grasses and sedges and found on low, flat plains on poorly drained soils. Frequent fires are essential to the maintenance of this community. Sparse slash or longleaf pines will be present. Wet pine savannas are not associated with riverine floodplains but are found on broad coastal flats and sloping plains that annually receive over 60 inches of rainfall and remain saturated for long periods during the growing season. Seepage zones are commonly observed along lower slopes. Longleaf pine and slash pine are sparsely scattered over an exceptionally diverse herbaceous ground cover in stands that are in good condition. Ample sunlight and rainfall create ideal growing conditions, but alack of soil nutrients prevents any one species or suite of species from dominating. Of more than 200 understory plant species, two-thirds are graminoids and one-third consist of forbs and ferns. Prominent groups of herbs include grasses, asters and sunflowers, sedges, pipeworts, pitcherplants, lilies, meadowbeauties, sundews and orchids. Common grasses include beaksedge, toothache grass, switchgrass and three-awn. Forbaceous species include rayless goldenrod and one flowered honeycombhead.

SIZE, CONDITION AND CONSERVATION STATUS - WET PINE SAVANNAS

Size: 222,145 acres of Wet Pine Savannas

Conservation Status: Imperiled

Several large patches of the wet pine savannas subtype have been protected and others are being restored within the 19,000 acre Sandhill Crane National Wildlife Refuge in Jackson County.

These occur on wetland flats where soils become waterlogged from heavy winter/spring rainfall and frequent thunderstorms during the summer. Adjoining lowlands support swamp vegetation and some uplands support mesic longleaf pine forests. Development on surrounding private lands is rapidly enveloping the public lands. Pine plantations are commonly encountered in the vicinity of the refuge.

It is estimated that less than five percent of the original acreage of wet pine savannas exists currently. The Mississippi Sandhill Crane National Wildlife Refuge in Jackson County contains some of the largest remaining tracts of this unique ecosystem. The disappearance of the other areas is due to urban development and their conversion to pine plantations.

THREATS AND ACTIONS FOR WET PINE SAVANNAS AND FLATWOODS

Threats: Commercial and home development, and fire suppression are the primary threats to these communities. Other threats include timber harvest activities, hydrological alterations, invasive species, and problematic native species.

Actions: Maintain/improve/restore hydrologic and geomorphic integrity. Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats. Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats. Provide public education about the conservation of SGCN and/or their habitats. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.

Table 5.14 - SGCN for Wet Pine Savannas and Flatwoods.

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Crayfishes	2	*Creaserinus burrisi*	Burris' Burrowing Crayfish	X	
Crayfishes	1	*Creaserinus danielae*	Speckled Burrowing Crayfish	X	
Crayfishes	1	*Creaserinus gordoni*	Camp Shelby Burrowing Crayfish	X	
Crayfishes	1	*Lacunicambarus freudensteini*	Banded Mudbug	X	X
Crayfishes	1	*Procambarus fitzpatricki*	Spinytail Crayfish	X	X
Crayfishes	3	*Procambarus hagenianus hagenianus*	Southeastern Prairie Crayfish	X	
Crayfishes	3	*Procambarus planirostris*	Flatnose Crayfish	X	
Crayfishes	2	*Procambarus shermani*	Gulf Crayfish	X	X
Insects	4	*Amblyscirtes alternata*	Least Florida Skipper	X	X
Insects	4	*Atrytonopsis loammi*	Loammi Skipper	X	X
Insects	4	*Automeris louisiana*	Louisiana Eyed Silkmoth	X	
Insects	4	*Bagisara brouana*	A Noctuid Moth	X	
Insects	4	*Euphyes arpa*	Palmetto Skipper	X	
Insects	4	*Lapara phaeobrachycerous*	Gulf Pine Sphinx	X	
Insects	4	*Neonympha helicta*	Helicta Satyr	X	
Amphibians	1	*Lithobates sevosus*	Dusky Gopher Frog	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Amphibians	1	*Pseudacris ornata*	Ornate Chorus Frog	X	
Amphibians	2	*Pseudotriton montanus*	Mud Salamander		X
Birds	2	*Ammospiza leconteii*	LeConte's Sparrow	X	
Birds	1	*Antigone canadensis pulla*	Mississippi Sandhill Crane	X	X
Birds	3	*Antrostomus carolinensis*	Chuck-will's-widow		X
Birds	2	*Aquila chrysaetos*	Golden Eagle		X
Birds	1	*Centronyx henslowii*	Henslow's Sparrow	X	X
Birds	3	*Coccyzus americanus*	Yellow-billed Cuckoo		X
Birds	2	*Coturnicops noveboracensis*	Yellow Rail	X	X
Birds	1	*Dryobates borealis*	Red-cockaded Woodpecker		X
Birds	1	*Falco sparverius paulus*	Southeastern American Kestrel	X	X
Birds	2	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	X	
Birds	3	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	X	
Birds	1	*Laterallus jamaicensis*	Black Rail	X	
Birds	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker	X	X
Birds	2	*Peucaea aestivalis*	Bachman's Sparrow		X
Birds	3	*Scolopax minor*	American Woodcock	X	X
Birds	2	*Setophaga discolor*	Prairie Warbler		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Birds	3	*Sitta pusilla*	Brown-headed Nuthatch	X	X
Mammals	3	*Aeorestes cinereus*	Hoary Bat	X	X
Mammals	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	X	
Mammals	3	*Dasypterus intermedius*	Northern Yellow Bat	X	X
Mammals	3	*Lasionycteris noctivagans*	Silver-haired Bat	X	
Mammals	3	*Myotis austroriparius*	Southeastern Myotis	X	
Mammals	2	*Perimyotis subflavus*	Tricolored Bat	X	
Mammals	2	*Sorex longirostris*	Southeastern Shrew	X	X
Mammals	1	*Spilogale putorius*	Eastern Spotted Skunk	X	X
Mammals	1	*Ursus americanus lutelous*	Louisiana Black Bear	X	X
Reptiles	2	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake		X
Reptiles	4	*Heterodon simus*	Southern Hognose Snake		X
Reptiles	2	*Liodytes rigida deltae*	Delta Crayfish Snake	X	X
Reptiles	3	*Liodytes rigida sinicola*	Gulf Crayfish Snake	X	X
Reptiles	2	*Ophisaurus attenuatus*	Slender Glass Lizard	X	X
Reptiles	4	*Ophisaurus mimicus*	Mimic Glass Lizard	X	X
Reptiles	2	*Plestiodon anthracinus*	Coal Skink	X	X
Nonvascular Plants	3	*Sphagnum carolinianum*	Carolina Peatmoss	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Nonvascular Plants	3	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss	X	
Nonvascular Plants	1	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss	X	
Vascular Plants	3	*Agalinis filicaulis*	Thread-stem False Foxglove	X	X
Vascular Plants	2	*Agalinis linifolia*	Flaxleaf False Foxglove	X	X
Vascular Plants	3	*Agalinis oligophylla*	Ridge-stem False-foxglove	X	
Vascular Plants	3	*Andropogon dealbatus*	Wetland White Bluestem	X	
Vascular Plants	3	*Andropogon perangustatus*	Narrow-leaved Bluestem	X	X
Vascular Plants	3	*Aristida beyrichiana*	Southern Wiregrass	X	
Vascular Plants	3	*Aristida simpliciflora*	Southern Three-awn Grass	X	
Vascular Plants	3	*Aristida spiciformis*	Pine Barren Three-awn Grass	X	X
Vascular Plants	3	*Aristida tenuispica*	Southern Arrowfeather	X	
Vascular Plants	2	*Baptisia sphaerocarpa*	Green Wild Indigo	X	
Vascular Plants	2	*Burmannia biflora*	Northern Burmannia	X	
Vascular Plants	2	*Calopogon barbatus*	Bearded Grass-pink	X	
Vascular Plants	1	*Calopogon multiflorus*	Many-flowered Grass-pink	X	
Vascular Plants	1	*Canna flaccida*	Bandana-of-the-Everg lades	X	
Vascular Plants	1	*Carex fissa* var. *aristata*	Hammock Sedge	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Vascular Plants	1	*Carex striata* var. *striata*	Southern Peatland Sedge	X	X
Vascular Plants	2	*Carex verrucosa*	Warty Sedge	X	X
Vascular Plants	3	*Cirsium lecontei*	Leconte's Thistle	X	X
Vascular Plants	4	*Cirsium muticum*	Swamp Thistle	X	X
Vascular Plants	2	*Cladium mariscoides*	Twig Rush	X	X
Vascular Plants	3	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia	X	X
Vascular Plants	2	*Coreopsis nudata*	Georgia Tickseed	X	X
Vascular Plants	3	*Cyperus drummondii*	Green Flatsedge	X	X
Vascular Plants	3	*Dalea mountjoyae*	White-tassels	X	
Vascular Plants	3	*Desmodium tenuifolium*	Slim-leaf Tick-trefoil	X	X
Vascular Plants	3	*Dichanthelium erectifolium*	Erect-leaf Witchgrass	X	X
Vascular Plants	3	*Dichanthelium nudicaule*	Naked-stemmed Panic Grass	X	
Vascular Plants	2	*Dichanthelium wrightianum*	Wright's Witchgrass	X	X
Vascular Plants	4	*Didiplis diandra*	Water-purslane	X	
Vascular Plants	1	*Eleocharis albida*	White Spikerush	X	X
Vascular Plants	1	*Eleocharis atropurpurea*	Purple Spikerush		X
Vascular Plants	4	*Eleocharis bicolor*	Small Spikerush	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Vascular Plants	3	*Eleocharis cellulosa*	Carolina Spikerush		X
Vascular Plants	2	*Eleocharis elongata*	Slim Spikerush	X	X
Vascular Plants	2	*Eleocharis geniculata*	Capitate Spikerush		X
Vascular Plants	1	*Eleocharis intermedia*	Matted Spikerush		X
Vascular Plants	1	*Eleocharis melanocarpa*	Black-fruit Spikerush	X	X
Vascular Plants	3	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	X	
Vascular Plants	1	*Eleocharis tricostata*	Three-angle Spikerush	X	
Vascular Plants	4	*Elionurus tripsacoides*	Pan-american Balsamscale	X	
Vascular Plants	3	*Eriocaulon decangulare* var. *latifolium*	Panhandle Pipewort	X	
Vascular Plants	3	*Eriocaulon texense*	Texas Pipewort	X	
Vascular Plants	2	*Euphorbia inundata* var. *inundata*	Florida Pine Spurge	X	X
Vascular Plants	2	*Fuirena longa*	Coastal-plain Umbrella-sedge	X	
Vascular Plants	1	*Gentiana catesbaei*	Elliott's Gentian	X	
Vascular Plants	1	*Gratiola ramosa*	Branched Hedge-hyssop	X	X
Vascular Plants	4	*Habenaria quinqueseta*	Michaux's Orchid	X	X
Vascular Plants	3	*Helenium brevifolium*	Shortleaf Sneezeweed	X	
Vascular Plants	2	*Hypericum canadense*	Canadian St. John's-wort	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Vascular Plants	2	*Hypericum myrtifolium*	Myrtle-leaved St. Johnswort		X
Vascular Plants	2	*Ilex cassine*	Dahoon Holly	X	X
Vascular Plants	2	*Lindera subcoriacea*	Bog Spicebush	X	
Vascular Plants	3	*Linum floridanum* var. *chrysocarpum*	Yellow-fruited Flax	X	
Vascular Plants	1	*Linum macrocarpum*	Spring Hill Flax	X	
Vascular Plants	1	*Lobelia boykinii*	Boykin's Lobelia	X	X
Vascular Plants	3	*Marshallia angustifolia*	Slim-leaf Barbara's-buttons	X	X
Vascular Plants	2	*Mitreola angustifolia*	Narrowleaf Miterwort	X	X
Vascular Plants	2	*Orthochilus ecristatus*	Giant Orchid	X	
Vascular Plants	3	*Palhinhaea cernua*	Nodding Clubmoss	X	
Vascular Plants	4	*Persicaria hirsuta*	Hairy Smartweed	X	X
Vascular Plants	2	*Pieris phillyreifolia*	Climbing Fetter-bush	X	
Vascular Plants	3	*Pinguicula planifolia*	Chapman's Butterwort	X	X
Vascular Plants	2	*Pinguicula pumila*	Dwarf Butterwort	X	X
Vascular Plants	2	*Platanthera conspicua*	Large White-fringe Orchid	X	X
Vascular Plants	3	*Platanthera integra*	Yellow Fringeless Orchid	X	X
Vascular Plants	3	*Platanthera nivea*	Snowy Orchid	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Vascular Plants	2	*Pycnanthemum flexuosum*	Narrowleaf Mountainmint	X	X
Vascular Plants	2	*Quercus minima*	Dwarf Live Oak		X
Vascular Plants	3	*Rhynchospora baldwinii*	Baldwin's Beakrush	X	
Vascular Plants	1	*Rhynchospora brachychaeta*	West Indies Beakrush		X
Vascular Plants	2	*Rhynchospora careyana*	Broad-fruit Horned Beakrush		X
Vascular Plants	1	*Rhynchospora cephalantha* var. *attenuata*	Small-bunched Beaksedge	X	
Vascular Plants	2	*Rhynchospora curtissii*	Curtiss' Beakrush	X	X
Vascular Plants	3	*Rhynchospora distans*	Fasciculate Beakrush	X	
Vascular Plants	1	*Rhynchospora divergens*	White-seeded Beakrush	X	
Vascular Plants	1	*Rhynchospora fernaldii*	Fernald's Beakrush	X	
Vascular Plants	2	*Rhynchospora galeana*	Short-bristle Baldrush	X	
Vascular Plants	1	*Rhynchospora harperi*	Harper's Beakrush	X	X
Vascular Plants	2	*Rhynchospora harveyi*	Harvey's Beakrush	X	X
Vascular Plants	2	*Rhynchospora leptocarpa*	Slender-fruit Beaksedge	X	
Vascular Plants	1	*Rhynchospora marliniana*	Marlin's Beaksedge	X	
Vascular Plants	2	*Rhynchospora perplexa*	Pineland Beakrush	X	X
Vascular Plants	3	*Rhynchospora pinetorum*	Small's Beakrush	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Vascular Plants	1	*Rhynchospora pleiantha*	Brown Beakrush	X	X
Vascular Plants	1	*Rhynchospora torreyana*	Torrey's Beakrush	X	
Vascular Plants	1	*Rhynchospora tracyi*	Tracy Beakrush	X	X
Vascular Plants	2	*Rhynchospora wrightiana*	Wright's Beakrush	X	
Vascular Plants	2	*Ruellia noctiflora*	Night-flowering Wild-petunia	X	X
Vascular Plants	3	*Ruellia pinetorum*	Pine Barren Ruellia	X	
Vascular Plants	2	*Sabatia decandra*	Bartram's Rose-gentian	X	X
Vascular Plants	2	*Sagittaria chapmanii*	Chapman's Arrowhead		X
Vascular Plants	1	*Sarracenia alabamensis* ssp. *wherryi*	Wherry's Sweet Pitcher-plant	X	
Vascular Plants	2	*Sarracenia leucophylla*	Whitetop Pitcherplant	X	
Vascular Plants	1	*Sarracenia rosea*	Purple Pitcherplant	X	
Vascular Plants	4	*Schwalbea americana*	Chaffseed	X	
Vascular Plants	3	*Scleria elliottii*	Broad-leaved Hairy Nutrush	X	
Vascular Plants	3	*Scleria georgiana*	Georgia Nutrush	X	X
Vascular Plants	3	*Scleria verticillata*	Low Nutrush	X	X
Vascular Plants	1	*Sclerolepis uniflora*	Pink Bogbutton	X	
Vascular Plants	2	*Senega appendiculata*	Swamp Milkwort	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	EGCP Savannas and Wet Prairies	EGCP Near-Coast Pine Flatwoods
Vascular Plants	2	*Senega balduinii*	White Milkwort	X	
Vascular Plants	2	*Senega hookeri*	Hooker's Milkwort	X	X
Vascular Plants	2	*Senega leptostachys*	Georgia Milkwort	X	
Vascular Plants	2	*Setaria corrugata*	Coast Bristle Grass	X	
Vascular Plants	1	*Spiranthes brevilabris*	Texas Ladies'-tresses	X	X
Vascular Plants	1	*Spiranthes eatonii*	Eaton's Ladies'-tresses	X	
Vascular Plants	1	*Spiranthes floridana*	Florida Ladies'-tresses	X	X
Vascular Plants	2	*Spiranthes longilabris*	Giant Spiral Ladies'-tresses	X	X
Vascular Plants	2	*Stenanthium texanum*	Pine Barren Deathcamas	X	X
Vascular Plants	1	*Stylisma aquatica*	Water Southern Morning-glory	X	X
Vascular Plants	2	*Syngonanthus flavidulus*	Yellow Pipewort	X	X
Vascular Plants	3	*Vaccinium tenellum*	Small Black Blueberry	X	X
Vascular Plants	3	*Xyris chapmanii*	Chapman's Yellow-eyed-grass	X	
Vascular Plants	2	*Xyris flabelliformis*	Savannah Yellow-eyed-grass	X	
Vascular Plants	2	*Xyris louisianica*	Kral's Yellow-eyed Grass	X	
Vascular Plants	3	*Xyris scabrifolia*	Harper's Yellow-eyed Grass	X	
Vascular Plants	3	*Xyris serotina*	Acid-swamp Yellow-eyed-grass	X	X

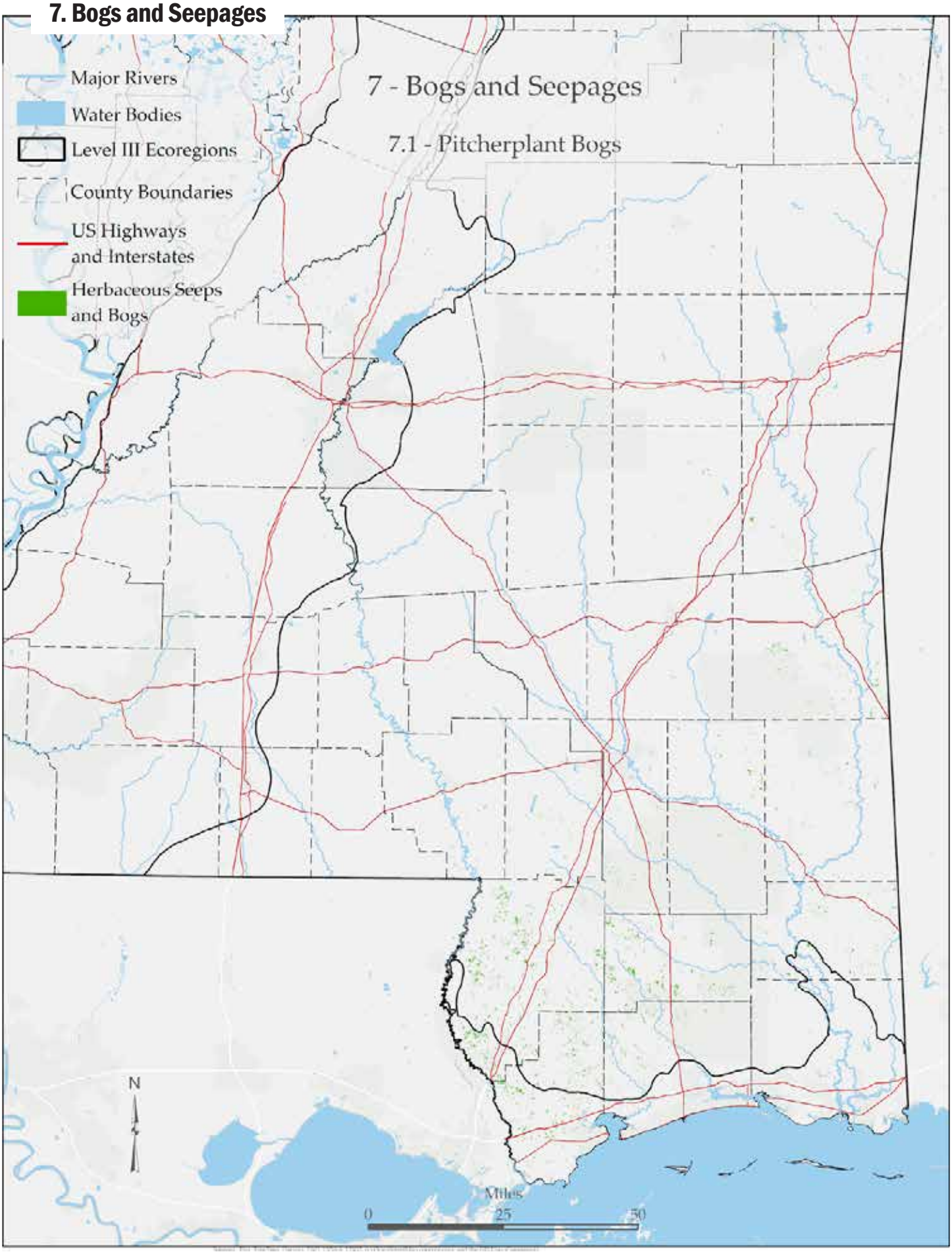


Figure 5.14. Map of Bogs and Seepages: Pitcherplant Bogs

Bogs require sublateral seepage flow from adjacent uplands. Rainfall will perch and seep laterally downslope where moisture resurfaces on gentle slopes and flats. Bogs are found on flats, swales, toe slopes and on terraces of rivulets and creeks. Bogs usually occur as small patches but can extend across extensive flats or continue along hill slopes for miles if sufficiently supported by a series of seepage zones. Paradoxically, they can occur in elevated positions on some landscapes. The flora of large bogs is like wet pine savannas. However, bogs tend to be situated in swales and depressions where soils are wetter and contain a higher amount of organic matter. They are also seepage-fed and small in size. Exposure to fire and prolonged soil saturation influence the amount of shrub cover in bogs.

Often included in mesic forests are small seepage slopes or springs. Springs form when groundwater resurfaces after flowing laterally over less permeable substrates, which place the water table above the spring. Cracks or sloping impermeable strata tend to direct the flow towards the spring head. Springs were important watering points for early settlers but also have ecological importance, especially by providing a moist environment for amphibians. Spring seeps often contain rare plants and may be the only wetlands available to local animal populations during droughts. Larger spring-fed wetlands are considered in swamp, bog or other wetland categories within this document. Spring seeps occur throughout the state.

The primary conditions adversely impacting these habitats are logging activities and the lack of burning. Without fire, bogs become inaccessible due to the thick lattice produced by a network of vines and shrubs. Other forestry practices are harmful to bogs. Bedding is a practice that creates deep furrows in series across the boggy wetlands. The practice drains soggy lowlands and provides an elevated berm for trees to root. It severely alters the quality of the wetland and dramatically changes the composition of the bog vegetation. Bedding is often accompanied by dense plantings of pine and the elimination of fire (both natural and prescribed), which subsequently leads to dramatic increases in shrub growth. There has been a 97 percent loss of Gulf Coast pitcherplant bogs.

Culturally significant species utilizing these habitats include switchcane, black gum, yaupon holly, pine, swamp rabbits, and squirrels.

Table 5.15 - Bogs and Seepages Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	7. Bogs and Seepages	Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
7.1 Pitcherplant Bogs	*Southern Coastal Plain Herbaceous Seep and Bog*	X			X	
7.2 Seepages	*East Gulf Coastal Plain Northern Seepage Swamp*	X				



Pitcher plant bog. *Credit: Heather Sullivan*

7.1 Pitcherplant Bogs

Southern Coastal Plain Herbaceous Seeps and Bogs are wet, fire-maintained, seepage communities found on gentle slopes. These are grass and sedge dominated plant communities, but pitcherplants are notable indicators of this type. Shrubs will encroach in the absence of fire. In this community, the soil is composed of a layer of sandy loam overlain by an accumulation of partially decomposed organic muck. Fire is an important factor in controlling the community composition. Exclusion of fire for three years or more allows the intrusion of grasses, woody species and clubmosses, with an accompanying decrease of sedges and pitcherplants. Some of the more consistently represented species include plants from the aster, orchid, yellow-eyed grass, pitcherplant, sundew, pipewort and butterwort families. Yellow trumpet pitcherplant, ten-angle pipewort, goldencrest, water cowbane, one flowered honeycombhead, rayless goldenrod, chaffhead, deathcamus, pink sundew, false asphodel, yellow meadowbeauty, milkwort and many others are sprinkled among a diverse mixture of grasses and sedges. The large variety of graminoids include many beaksedges, longleaf threeawn, toothachegrass, purple silky scale, nutrushes and muhly, bluestem and panic grasses, among many others add to the diversity of bogs. Pitcherplant flats are open areas with an abundance of pitcherplants. In this community, the sandy loam soils have little or no accumulation of organic matter. The wet, acidic, anoxic conditions of the substrates prevent trees from encroaching, and the ones that do are often stunted. Quaking bogs have deep organic, mucky soils occasionally reaching depths greater than six feet. They are called quaking because they "tremble" under foot traffic. These bogs often have a thick layer of slowly decomposing peat (sphagnum). Pine seeps may be destroyed if they are in the way of some developments, such as highway construction, and alternatives to conserve the spring are not apparent. Hill top sand and gravel mining and surface and gully erosion will affect the subsurface flows that feed springheads. Pine seeps are highly regarded as wildlife habitat. Pine seeps have a similar composition to bog habitats and a somewhat similar complement of ferns as found in hardwood seeps. The overstory typically includes slash pine but there may be a large presence of other swamp species such as sweetbay and swamp tupelo. The most obvious species present in the herbaceous layer is yellow trumpets (pitcherplant). Virginia chainfern and poison sumac are particularly common.

Size: 25,098 acres of Pitcherplant Bogs

Conservation Status: Imperiled

Condition: Pitcherplant flats/bogs are embedded within the longleaf pine ecosystem where soils become periodically saturated and there is an influx of moisture from uplands. They occur in a variety of sizes (one to one hundred acres), landscapes, and slope positions.

There has been a 97 percent loss of pitcherplant bogs along the Gulf Coast. The U.S. Forest Service has a management policy of controlled burns to maintain a significant number of the remaining bogs found on the De Soto National Forest. The condition of many bogs is declining due to shrub encroachment, drainage, pond development, bedding and urban development in surrounding uplands.

The extent of pine seeps in Mississippi is unknown. The diversity and quality of the mesic pinelands deteriorates if fire is not regularly applied. Brush encroachment is especially troublesome for managers of this community. Spring season burns tend to favor grasses over forbaceous species and causes a reduction in forbaceous species abundance and seed production. Dormant season burning will not effectively control stem proliferation of shrubs and sapling hardwoods and may in fact encourage an increase in stem density over time.



Wooded seep. *Credit: Heather Sullivan*

7.2 Seepages

East Gulf Coastal Plain Northern Seepage Swamp is a system embedded in other upland forest types in northern and central Mississippi. Narrow wooded seeps or spring seeps can be found on the steep slopes of this community. Usually, the soils of hardwood seeps are saturated throughout the year. They occur as small wetland patches (1 to 10 acres in size) in draws and along lower hillslopes. They are surrounded by upland hardwoods or open fields and pastures. The flow rate of springs and the size of accompanying wetlands can vary dramatically. Vegetation composition at spring heads depends on the duration of soil saturation and the slope of landforms supporting it. The effect of spring water temperature and water chemistry on the flora and fauna of springs warrants additional study. The habitat supports wetland grasses, sedges, herbs and an abundance of ferns. Ferns frequently encountered are netted chainfern, royal fern, cinnamon fern and common lady fern. Other herbs that may be found in these seepage areas include giant cane, bristly stalked sedge, climbing hydrangea and roundleaf goldenrod. Wetland shrubs found clustered around seeps include Virginia sweetspire, poison sumac and possumhaw viburnum. Common trees are sweetbay, swamp tupelo, red maple and tuliptree.

Some hardwood seeps contained within upland habitats have been damaged by development in the surrounding uplands which has altered subsurface water flow. Others may have been drained by ditching to reduce the size of wetlands. Many survive as disturbed communities while others persist undisturbed and in stable communities. Although widespread, their sporadic occurrence makes survey difficult, and little is known about their overall condition. The more widespread hardwood seeps are considered **vulnerable** due to a lack of high-quality spring sites that have been documented. No accurate figure exists for the extent of hardwood seeps in the state.

THREATS AND ACTIONS FOR BOGS AND SEEPAGES

Threats: Pitcherplant bogs are threatened by commercial and home development in coastal counties, and fire suppression. Other threats include timber harvest activities, hydrological alterations, and invasive species. Northern Seepage Swamps are impacted by timber harvest, changes to hydrology, and invasive species.

Actions: Maintain/improve/restore hydrologic and geomorphic integrity. Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats. Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats. Provide public education about the conservation of SGCN and/or their habitats. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.

Table 5.16 - SGCN for Bogs and Seepages.

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Herbaceous Seeps and Bogs	EGCP Northern Seepage Swamp
Crayfishes	2	*Creaserinus burrisi*	Burris' Burrowing Crayfish	X	
Crayfishes	1	*Creaserinus danielae*	Speckled Burrowing Crayfish	X	
Crayfishes	1	*Creaserinus gordoni*	Camp Shelby Burrowing Crayfish	X	
Insects	4	*Automeris louisiana*	Louisiana Eyed Silkmoth	X	
Insects	4	*Bagisara brouana*	A Noctuid Moth	X	
Insects	4	*Neonympha helicta*	Helicta Satyr	X	
Birds	2	*Ammospiza leconteii*	LeConte's Sparrow	X	
Birds	1	*Antigone canadensis pulla*	Mississippi Sandhill Crane	X	
Birds	1	*Centronyx henslowii*	Henslow's Sparrow	X	
Birds	3	*Coccyzus americanus*	Yellow-billed Cuckoo		X
Birds	2	*Coturnicops noveboracensis*	Yellow Rail	X	
Birds	2	*Euphagus carolinus*	Rusty Blackbird		X
Birds	1	*Falco sparverius paulus*	Southeastern American Kestrel	X	
Birds	2	*Geothlypis formosa*	Kentucky Warbler		X
Birds	2	*Hylocichla mustelina*	Wood Thrush		X
Birds	2	*Limnothlypis swainsonii*	Swainson's Warbler		X
Birds	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker		X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Herbaceous Seeps and Bogs	EGCP Northern Seepage Swamp
Birds	2	*Parkesia motacilla*	Louisiana Waterthrush		X
Birds	2	*Protonotaria citrea*	Prothonotary Warbler		X
Birds	3	*Quiscalus quiscula*	Common Grackle		X
Birds	3	*Scolopax minor*	American Woodcock	X	X
Birds	3	*Sitta pusilla*	Brown-headed Nuthatch	X	
Birds	1	*Vermivora chrysoptera*	Golden-winged Warbler		X
Birds	2	*Vireo gilvus*	Warbling Vireo		X
Mammals	3	*Aeorestes cinereus*	Hoary Bat		X
Mammals	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat		X
Mammals	2	*Perimyotis subflavus*	Tricolored Bat		X
Mammals	2	*Sorex longirostris*	Southeastern Shrew	X	X
Mammals	1	*Ursus americanus lutelous*	Louisiana Black Bear		X
Reptiles	2	*Liodytes rigida deltae*	Delta Crayfish Snake	X	
Reptiles	3	*Liodytes rigida sinicola*	Gulf Crayfish Snake	X	
Reptiles	4	*Ophisaurus mimicus*	Mimic Glass Lizard	X	
Nonvascular Plants	1	*Campylopus angustiretis*	Campylopus Moss	X	
Nonvascular Plants	1	*Cololejeunea setiloba*	a liverwort		X
Nonvascular Plants	1	*Frullania donnellii*	a liverwort		X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Herbaceous Seeps and Bogs	EGCP Northern Seepage Swamp
Nonvascular Plants	1	*Lejeunea bermudiana*	a liverwort		X
Nonvascular Plants	3	*Lejeunea cladogyna*	a liverwort		X
Nonvascular Plants	2	*Lejeunea floridana*	a liverwort		X
Nonvascular Plants	2	*Lejeunea laetivirens*	a liverwort		X
Nonvascular Plants	3	*Metzgeria uncigera*	a liverwort		X
Nonvascular Plants	2	*Plagiochila floridana*	Florida Leafy Liverwort		X
Nonvascular Plants	1	*Plagiochila invisa*	a liverwort		X
Nonvascular Plants	3	*Radula sullivantii*	a liverwort		X
Nonvascular Plants	3	*Sphagnum carolinianum*	Carolina Peatmoss	X	
Nonvascular Plants	3	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss	X	
Nonvascular Plants	1	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss	X	
Vascular Plants	3	*Agalinis filicaulis*	Thread-stem False Foxglove	X	
Vascular Plants	2	*Agalinis linifolia*	Flaxleaf False Foxglove	X	
Vascular Plants	3	*Andropogon dealbatus*	Wetland White Bluestem	X	
Vascular Plants	3	*Andropogon perangustatus*	Narrow-leaved Bluestem	X	
Vascular Plants	3	*Aristida simpliciflora*	Southern Three-awn Grass	X	
Vascular Plants	2	*Balduina angustifolia*	Coastal Plain Honeycomb-head	X	
Vascular Plants	2	*Burmannia biflora*	Northern Burmannia	X	

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Herbaceous Seeps and Bogs	EGCP Northern Seepage Swamp
Vascular Plants	2	*Calopogon barbatus*	Bearded Grass-pink	X	
Vascular Plants	4	*Carex elliottii*	Elliott's Sedge	X	
Vascular Plants	2	*Carex exilis*	Coast Sedge	X	
Vascular Plants	3	*Carex mitchelliana*	Mitchell's Sedge		X
Vascular Plants	2	*Carex scoparia*	Broom Sedge		X
Vascular Plants	2	*Carex seorsa*	Weak Stellate Sedge		X
Vascular Plants	3	*Cirsium lecontei*	Leconte's Thistle	X	
Vascular Plants	1	*Cleistesiopsis bifaria*	Appalachian Small Spreading Pogonia		X
Vascular Plants	3	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia	X	
Vascular Plants	2	*Dichanthelium curtifolium*	Shortleaf Witchgrass	X	
Vascular Plants	3	*Dichanthelium nudicaule*	Naked-stemmed Panic Grass	X	
Vascular Plants	2	*Dichanthelium wrightianum*	Wright's Witchgrass	X	
Vascular Plants	4	*Didiplis diandra*	Water-purslane	X	
Vascular Plants	3	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	X	
Vascular Plants	1	*Eleocharis tricostata*	Three-angle Spikerush	X	
Vascular Plants	3	*Eriocaulon decangulare* var. *latifolium*	Panhandle Pipewort	X	
Vascular Plants	3	*Eriocaulon texense*	Texas Pipewort	X	
Vascular Plants	3	*Helenium brevifolium*	Shortleaf Sneezeweed	X	

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Herbaceous Seeps and Bogs	EGCP Northern Seepage Swamp
Vascular Plants	2	*Hypericum canadense*	Canadian St. John's-wort	X	
Vascular Plants	2	*Ilex cassine*	Dahoon Holly	X	
Vascular Plants	2	*Isoetes appalachiana*	Appalachian Quillwort		X
Vascular Plants	2	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort		X
Vascular Plants	2	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort		X
Vascular Plants	3	*Isoetes valida*	Strong Quillwort		X
Vascular Plants	2	*Lindera subcoriacea*	Bog Spicebush	X	
Vascular Plants	1	*Linum macrocarpum*	Spring Hill Flax	X	
Vascular Plants	3	*Macranthera flammea*	Flame Flower	X	
Vascular Plants	2	*Mitreola angustifolia*	Narrowleaf Miterwort	X	
Vascular Plants	2	*Parnassia grandifolia*	Largeleaf Grass-of-parnassus	X	
Vascular Plants	3	*Pinguicula planifolia*	Chapman's Butterwort	X	
Vascular Plants	2	*Pinguicula pumila*	Dwarf Butterwort	X	
Vascular Plants	2	*Platanthera conspicua*	Large White-fringe Orchid	X	
Vascular Plants	3	*Platanthera integra*	Yellow Fringeless Orchid	X	X
Vascular Plants	2	*Platanthera integrilabia*	White Fringeless Orchid		X
Vascular Plants	3	*Platanthera nivea*	Snowy Orchid	X	X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Herbaceous Seeps and Bogs	EGCP Northern Seepage Swamp
Vascular Plants	3	*Platanthera peramoena*	Purple Fringeless Orchid		X
Vascular Plants	2	*Pycnanthemum flexuosum*	Narrowleaf Mountainmint	X	
Vascular Plants	2	*Rhynchospora careyana*	Broad-fruit Horned Beakrush	X	
Vascular Plants	1	*Rhynchospora cephalantha* var. *attenuata*	Small-bunched Beaksedge	X	
Vascular Plants	2	*Rhynchospora curtissii*	Curtiss' Beakrush	X	
Vascular Plants	1	*Rhynchospora torreyana*	Torrey's Beakrush	X	
Vascular Plants	3	*Sabatia campestris*	Prairie Pink	X	
Vascular Plants	1	*Sarracenia alabamensis* ssp. *wherryi*	Wherry's Sweet Pitcher-plant	X	
Vascular Plants	2	*Sarracenia leucophylla*	Whitetop Pitcherplant	X	
Vascular Plants	1	*Sarracenia rosea*	Purple Pitcherplant	X	
Vascular Plants	3	*Scleria elliottii*	Broad-leaved Hairy Nutrush	X	
Vascular Plants	1	*Sclerolepis uniflora*	Pink Bogbutton	X	
Vascular Plants	2	*Senega appendiculata*	Swamp Milkwort	X	
Vascular Plants	1	*Spiranthes floridana*	Florida Ladies'-tresses	X	
Vascular Plants	2	*Syngonanthus flavidulus*	Yellow Pipewort	X	
Vascular Plants	3	*Xyris chapmanii*	Chapman's Yellow-eyed-grass	X	
Vascular Plants	2	*Xyris flabelliformis*	Savannah Yellow-eyed-grass	X	
Vascular Plants	2	*Xyris louisianica*	Kral's Yellow-eyed Grass	X	
Vascular Plants	3	*Xyris scabrifolia*	Harper's Yellow-eyed Grass	X	
Vascular Plants	3	*Xyris serotina*	Acid-swamp Yellow-eyed-grass	X	

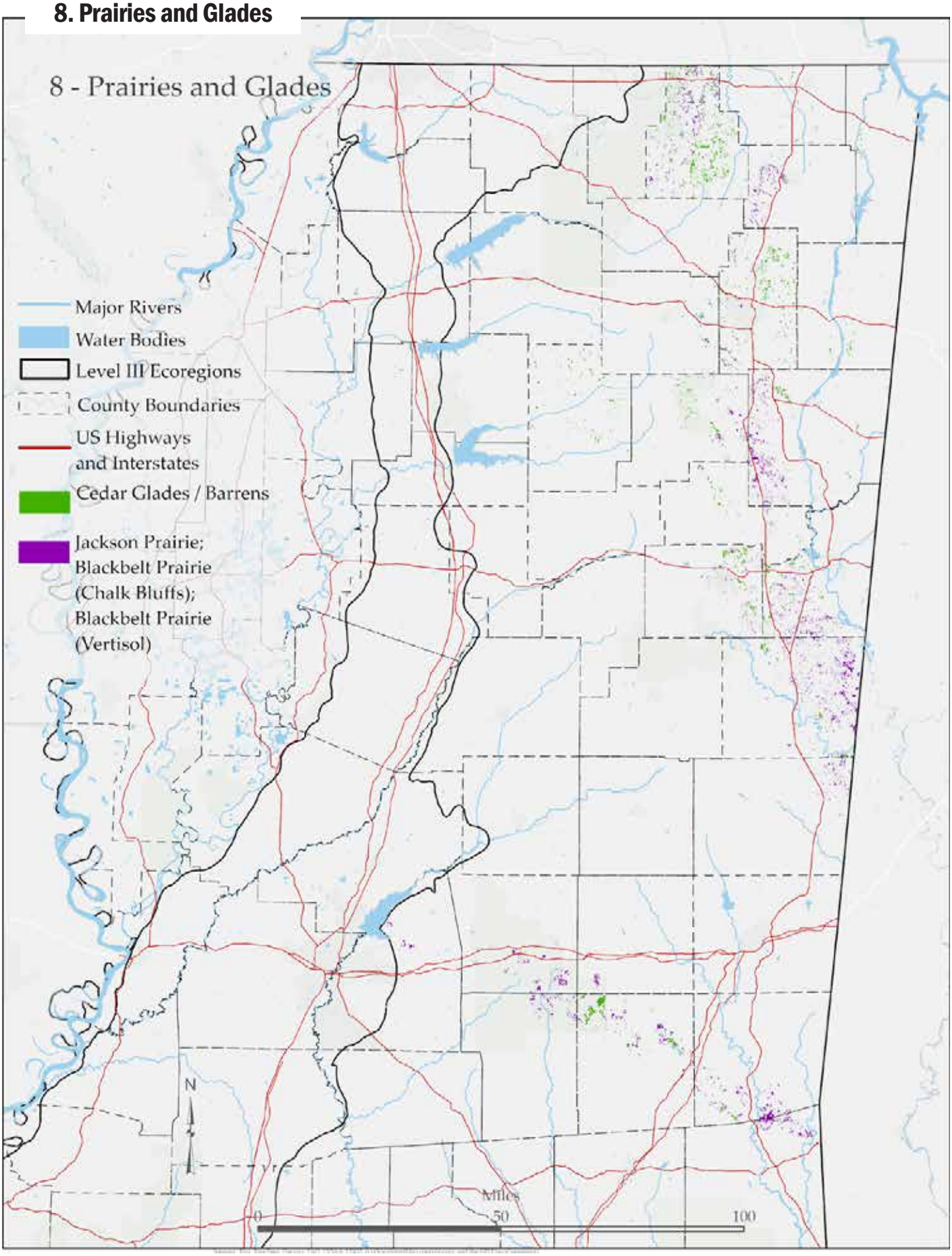


Figure 5.15. Map of Prairies and Glades

8.1 Blackland Prairie and Woodlands

There are no accurate records of historical acreage for the Black Belt Prairie of Mississippi; however, estimates suggest that approximately 100,000 acres once existed in northeast Mississippi, some of which included old fields, which were maintained by Native Americans. The Jackson Prairie is disjunct, and small in size and extent, currently covering less than 1,000 acres, possibly five to ten percent of the prairie that once existed in the region. These remnant prairies range from a few acres to over 100 acres in size.

Several culturally significant species utilize these habitats including cedars, hickories, oaks, white-tailed deer, white-tailed deer, eastern cottontail, and squirrels.

General Condition

Historically, prairies were converted to agricultural uses by the early settlers. Most of the Black Belt and Jackson prairies remain under cultivation for cropland and pasturage or have degraded into cedar glades or closed- canopy woodlands. Many areas exhibit erosion scars, chalk outcrops and weedy succession. Some gullied lands are being re-graded and converted to non-native pasture. Prairie vegetation is still found on many of the eroded sites, although much is in poor condition. The prairies that exist today occur on forest edges, in pastures, utility corridor right-of-ways and road ditches that are maintained in an early successional condition by mowing.

Southern Coastal Plain Blackland Prairie and Woodlands are natural grasslands found in two regions of Mississippi: Black Belt Prairie and Jackson Prairie. These have inclusions of oak-cedar forests. The grasslands are dominated by little bluestem and yellow Indiangrass, but sideoats, switchgrass, and broomsedge can be found as well. Members of the aster and pea families will also be common, and particularly include white and purple prairie clovers, Illinois bunchflower, blazingstars, gray coneflower, prairie dock, compassplant, prairie rosinweed, and eastern gray goldenrod.

A portion of the land historically supported native prairie vegetation in the Black Belt Prairie region, which in Mississippi extends from the Tennessee-Mississippi border in Alcorn County south through Lowndes County, then southeast through the northeastern corner of Noxubee County. Some prairies occurred on nearly level, deep, somewhat poorly drained clay soils. The soils are derived from the



Blackland prairie.
Credit: Heather Sullivan

underlying Selma chalk, a calcareous stratum of the Cretaceous Period deposited over 65 million years ago. In these areas, underlying grayish-white chalk was later exposed in gullies, occasionally in wide patches. These marginal agricultural lands were subsequently abandoned or converted to pastures. In addition, many subsistence farms were later discontinued for economic reasons. Other lands associated with these operations were left fallow, pastured or planted with trees. Prairie herbs and eastern red cedar shrubs were able to reestablish the old fields. Eastern red cedar shrublands or cedar-oak woodlands often surround patches of prairies. The prairies of the shallow, eroded soils support a moderate to low density of grasses.

Little bluestem, the dominant grass and other graminoids (grasses and sedges), including Cherokee sedge, yellow Indiangrass, Florida paspalum and dropseed, produce most of the vegetative cover. However, many forbs including many rare species, add to their diversity.

Prairie forbs include the prairie goldenrod, downy pagoda plant, diamondflower, white and purple prairie clovers, purple and yellow prairie coneflowers, rosin weeds, gayfeathers, false foxgloves, green antelopehorn, butterfly milkweed and a variety of asters. Chalk bluff Black Belt prairies are dominated by little bluestem and yellow Indiangrass. Prairie goldenrod, rosinweed, and prairie coneflower are also usually present. In Vertisol Black Belt prairies, big bluestem replaces little bluestem as the dominant grass. Yellow

Table 5.17 - Prairies and Glades Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	8. Prairies and Glades	Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
8.1 Blackland Prairie and Woodlands	*Southern Coastal Plain Blackland Prairie and Woodland*	**X**				

Indiangrass is also present; rosinweed increases in abundance in this community. Cedar glades/barrens are areas dominated by Eastern redcedar. Switchgrass and yellow Indiangrass dominate the groundcover. This community replaces Black Belt prairies when fires are excluded from the environment.

The Jackson Prairie, located in central Mississippi, extends along a band of Eocene-aged strata (deposited approximately 35 million years ago) from Yazoo City to the Wayne County-Alabama border. Remnant prairie openings are nested within extensively forested uplands, mostly restricted to the Bienville National Forest. The soil is mainly eroded Maytag soils that are derived from deposits of marls of the Yazoo clay. The soil series is situated on gentle to moderately sloping uplands of well-drained, alkaline soil, which are composed largely of clays that exhibit high shrink and swell characteristics. Much of the original prairie habitat was historically cultivated by early Indian tribes and later by settlers. Of the scattered prairies that remain, a diverse complement of grasses and forbs like the composition of prairies of the Northeast prairie is found. In areas not managed with prescribed fire, eastern red cedar, white ash and sweetgum readily invade the prairie openings, eventually shading out many of the diagnostic prairie herbs. For this reason, prairies require the use of prescribed fire to prevent shrub and tree encroachment and to invigorate the native perennial herbs and grasses.

Prairies occur outside of the Prairie ecoregions in the Transition Hills level 4 ecoregion and the Mississippi Valley Loess Plain level 3 ecoregion. These prairies are undescribed communities that have been lumped into the blackland prairies in the past, but will be resolved in the future with more surveys. The Transition Hills prairies align with the Blackbelt prairies of the northeast, and the Loess prairies have tendencies toward the Jackson Prairies.

Size: 17,453 acres of Blackbelt Prairie and Jackson Prairie and 9,066 acres of Cedar Glades

Conservation Status: Critically Imperiled

Condition: Very small patches of Blackbelt Prairie (1 to 100 acres) remain in the northeastern part of the state. Many are situated along road and power line corridors or on eroded old fields.

Parcels of this subtype are scattered through the northeastern Black Belt region and occasionally in the Pontotoc Hills region. The subtype is commonly situated on areas with shallow soils over chalk. Very small patches of Jackson Prairie (1 to 100 acres) remain in the central part of the state. Many are situated on small openings in a matrix of hardwood and pine forestlands of the Bienville National Forest. Cedar glades are less frequently encountered in this region.

Black Belt prairies are in poor condition because of habitat conversion, extensive subsequent erosion, and a lack of ecosystem management on the remaining parcels. Prescribed fire is necessary to maintain the presence of prairie species. An exotic grass, pitted beardgrass, is becoming established on some prairie sites and cogongrass is also becoming more prevalent in the region.

Although **Jackson Prairies** are considered to have been rare even prior to European settlement of the region, this subtype is significantly reduced in total acreage. Many of the known prairie openings are in the Bienville National Forest and are being managed as wildlife areas maintained by periodic controlled burns. Larger prairie sites near Forest and Lake, Mississippi, were converted to agriculture many years ago. The spring season burns have improved the vigor and productivity of the warm season grasses but also may have reduced overall abundance of forbs, many of which are set back in their growth cycle by spring burning.



Jackson Prairie *Credit: Heather Sullivan*

THREATS AND ACTIONS FOR PRAIRIE AND GLADES

Threats: Blackbelt Prairies are threatened by commercial and home development around the urban areas in the region. Large areas of blackbelt prairie are in agriculture or aquaculture production. Other threats include fire suppression, invasive species, and problematic native species.

Actions: Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

Provide public education about the conservation of SGCN and/or their habitats. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.

Table 5.18 - SGCN for Prairies and Glades.

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Blackland Prairie and Woodlands
Crayfishes	1	*Hobbseus attenuatus*	Pearl Rivulet Crayfish	X
Crayfishes	1	*Hobbseus cristatus*	Crested Rivulet Crayfish	X
Crayfishes	1	*Hobbseus orconectoides*	Oktibbeha Rivulet Crayfish	X
Crayfishes	3	*Hobbseus petilus*	Tombigbee Rivulet Crayfish	X
Crayfishes	3	*Hobbseus prominens*	Prominence Rivulet Crayfish	X
Crayfishes	2	*Procambarus barbiger*	Jackson Prairie Crayfish	X
Crayfishes	3	*Procambarus hagenianus vesticeps*	Egyptian Crayfish	X
Insects	2	*Bombus fraternus*	Southern Plains Bumble Bee	X
Insects	3	*Bombus pensylvanicus*	American Bumblebee	X
Insects	1	*Bombus variabilis*	Variable Cuckoo Bumble Bee	X
Insects	4	*Gryllotalpa major*	Prairie Mole Cricket	X
Insects	4	*Hesperia attalus*	Dotted Skipper	X
Insects	4	*Hydroptila cretosa*	A Caddisfly	X
Insects	4	*Papaipema maritima*	Maritime Sunflower Borer	X
Insects	2	*Pseudopomala brachyptera*	Short-winged Toothpick Grasshopper	X
Insects	4	*Tetraloniella albata*	White-clothed Longhorn	X
Amphibians	4	*Ambystoma tigrinum*	Tiger Salamander	X
Amphibians	2	*Lithobates areolatus*	Crawfish Frog	X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Blackland Prairie and Woodlands
Birds	2	*Ammodramus savannarum*	Grasshopper Sparrow	X
Birds	2	*Ammospiza leconteii*	LeConte's Sparrow	X
Birds	3	*Antrostomus carolinensis*	Chuck-will's-widow	X
Birds	2	*Aquila chrysaetos*	Golden Eagle	X
Birds	3	*Asio flammeus*	Short-eared Owl	X
Birds	2	*Calidris subruficollis*	Buff-breasted Sandpiper	X
Birds	3	*Chordeiles minor*	Common Nighthawk	X
Birds	2	*Colinus virginianus*	Northern Bobwhite	X
Birds	3	*Columbina passerina*	Common Ground Dove	X
Birds	2	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	X
Birds	3	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	X
Birds	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker	X
Birds	2	*Peucaea aestivalis*	Bachman's Sparrow	X
Birds	3	*Pluvialis dominica*	American Golden-Plover	X
Birds	3	*Scolopax minor*	American Woodcock	X
Birds	2	*Setophaga discolor*	Prairie Warbler	X
Birds	3	*Spizella pusilla*	Field Sparrow	X
Birds	1	*Thryomanes bewickii*	Bewick's Wren	X
Mammals	3	*Neogale frenata*	Long-tailed Weasel	X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Blackland Prairie and Woodlands
Mammals	2	*Sorex longirostris*	Southeastern Shrew	X
Mammals	1	*Spilogale putorius*	Eastern Spotted Skunk	X
Mammals	2	*Zapus hudsonius*	Meadow Jumping Mouse	X
Reptiles	3	*Coluber flagellum flagellum*	Eastern Coachwhip	X
Reptiles	2	*Ophisaurus attenuatus*	Slender Glass Lizard	X
Vascular Plants	1	*Agalinis auriculata*	Earleaf False Foxglove	X
Vascular Plants	3	*Agalinis oligophylla*	Ridge-stem False-foxglove	X
Vascular Plants	1	*Agalinis skinneriana*	Pale False Foxglove	X
Vascular Plants	1	*Amphiachyris dracunculoides*	Broom-snakeroot	X
Vascular Plants	2	*Anemone caroliniana*	Carolina Anemone	X
Vascular Plants	2	*Asclepias hirtella*	Green Milkweed	X
Vascular Plants	2	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch	X
Vascular Plants	1	*Baptisia nuttalliana*	Nuttall's Wild Indigo	X
Vascular Plants	2	*Camassia scilloides*	Wild Hyacinth	X
Vascular Plants	1	*Carex crawei*	Crawe's Sedge	X
Vascular Plants	1	*Carex fissa* var. *fissa*	Hammock Sedge	X
Vascular Plants	3	*Carex gravida*	Heavy-fruited Sedge	X
Vascular Plants	3	*Carex jamesii*	Nebraska Sedge	X
Vascular Plants	1	*Carex normalis*	Greater Straw Sedge	X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Blackland Prairie and Woodlands
Vascular Plants	2	*Castilleja coccinea*	Scarlet Indian-paintbrush	X
Vascular Plants	1	*Clinopodium arkansanum*	Low Calamint	X
Vascular Plants	2	*Convolvulus catesbyanus*	Catesby's Bindweed	X
Vascular Plants	1	*Crataegus ashei*	Ashe's Hawthorn	X
Vascular Plants	1	*Crataegus mollis* var. *meridionalis*	Gallion Hawthorn	X
Vascular Plants	2	*Crataegus triflora*	Three-flowered Hawthorn	X
Vascular Plants	2	*Cuphea viscosissima*	Blue Waxweed	X
Vascular Plants	3	*Delphinium tricorne*	Dwarf Larkspur	X
Vascular Plants	3	*Diaperia prolifera* var. *prolifera*	Big-head Evax	X
Vascular Plants	2	*Eleocharis compressa*	Flat-stem Spikerush	X
Vascular Plants	2	*Eleocharis elliptica*	Slender Spikerush	X
Vascular Plants	2	*Eleocharis erythropoda*	Bald Spikerush	X
Vascular Plants	2	*Endotropis lanceolata*	Lance-leaved Buckthorn	X
Vascular Plants	4	*Eupatorium lancifolium*	Lanceleaf Thoroughwort	X
Vascular Plants	1	*Gentianella occidentalis*	Stiff Gentian	X
Vascular Plants	2	*Hedeoma drummondii* var. *drummondii*	Drummond Pennyroyal	X
Vascular Plants	2	*Juncus interior*	Inland Rush	X
Vascular Plants	2	*Lithospermum latifolium*	American Gromwell	X
Vascular Plants	3	*Marshallia trinervia*	Broadleaf Barbara's-buttons	X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Blackland Prairie and Woodlands
Vascular Plants	1	*Matelea baldwyniana*	Baldwin's Milkvine	X
Vascular Plants	2	*Mirabilis albida*	Pale Umbrella-wort	X
Vascular Plants	2	*Mirabilis linearis*	Narrowleaf Four-o'clock	X
Vascular Plants	2	*Nabalus asper*	Rough Rattlesnake-root	X
Vascular Plants	1	*Nabalus barbatus*	Barbed Rattlesnake-root	X
Vascular Plants	2	*Nemastylis geminiflora*	Prairie Pleatleaf	X
Vascular Plants	3	*Oenothera capillifolia* ssp. *capillifolia*	Berlandier's Sundrops	X
Vascular Plants	3	*Oenothera triloba*	Stemless Evening-primrose	X
Vascular Plants	2	*Packera aurea*	Golden Groundsel	X
Vascular Plants	2	*Packera paupercula* var. *paupercula*	Balsam Ragwort	X
Vascular Plants	2	*Palafoxia callosa*	Small Palafoxia	X
Vascular Plants	2	*Penstemon pallidus*	Pale Beardtongue	X
Vascular Plants	2	*Perideridia americana*	Eastern Eulophus	X
Vascular Plants	1	*Physaria gracilis* ssp. *gracilis*	Spreading Bladder-pod	X
Vascular Plants	3	*Platanthera peramoena*	Purple Fringeless Orchid	X
Vascular Plants	2	*Polytaenia nuttallii*	Prairie Parsley	X
Vascular Plants	3	*Ponthieva racemosa*	Shadow-witch Orchid	X
Vascular Plants	2	*Primula meadia*	Shootingstar	X
Vascular Plants	2	*Quercus macrocarpa* var. *macrocarpa*	Bur Oak	X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Blackland Prairie and Woodlands
Vascular Plants	2	*Quercus oglethorpensis*	Oglethorpe's Oak	X
Vascular Plants	3	*Sabatia campestris*	Prairie Pink	X
Vascular Plants	2	*Sabulina patula*	Pitcher's Stitchwort	X
Vascular Plants	1	*Salvia chapmanii*	Chapman's Sage	X
Vascular Plants	3	*Scirpus lineatus*	Drooping Bulrush	X
Vascular Plants	1	*Scutellaria leonardii*	Shale-barren Skullcap	X
Vascular Plants	1	*Sedum pulchellum*	Rock Stonecrop	X
Vascular Plants	4	*Silene regia*	Royal Catchfly	X
Vascular Plants	2	*Silphium confertifolium*	Black Belt Rosinweed	X
Vascular Plants	3	*Silphium integrifolium* var. *gattingeri*	Gattinger's Rosinweed	X
Vascular Plants	2	*Silphium pinnatifidum*	Tansy Rosinweed	X
Vascular Plants	2	*Silphium simpsonii*	Simpson's Rosinweed	X
Vascular Plants	3	*Silphium terebinthinaceum* var. *luciae-brauniae*	Lucy Braun's Prairie Dock	X
Vascular Plants	3	*Solidago rigidiuscula*	Showy Goldenrod	X
Vascular Plants	3	*Spiranthes magnicamporum*	Great Plains Ladies'-tresses	X
Vascular Plants	2	*Sporobolus ozarkanus*	Ozark Dropseed	X
Vascular Plants	3	*Symphyotrichum ericoides* var. *ericoides*	White Heath Aster	X
Vascular Plants	4	*Symphyotrichum oblongifolium*	Aromatic Aster	X
Vascular Plants	2	*Symphyotrichum oolentangiense*	Sky Blue Aster	X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	SCP Blackland Prairie and Woodlands
Vascular Plants	2	*Symphyotrichum pratense*	Barrens Silky Aster	X
Vascular Plants	2	*Symphyotrichum puniceum* var. *puniceum*	Purple-stem Aster	X
Vascular Plants	4	*Symphyotrichum puniceum* var. *scabricaule*	Rough-stem Aster	X
Vascular Plants	1	*Taenidia integerrima*	Yellow Pimpernel	X
Vascular Plants	2	*Thelesperma filifolium*	Stiff Greenthread	X
Vascular Plants	3	*Tomostima cuneifolia*	Wedgeleaf Whitlow-grass	X
Vascular Plants	3	*Tomostima reptans*	Carolina Whitlow-grass	X
Vascular Plants	1	*Trifolium carolinianum*	Carolina Clover	X
Vascular Plants	4	*Trifolium reflexum*	Buffalo Clover	X
Vascular Plants	3	*Ulmus serotina*	September Elm	X
Vascular Plants	3	*Veronicastrum virginicum*	Culver's-root	X

9. Herbaceous Freshwater Marshes

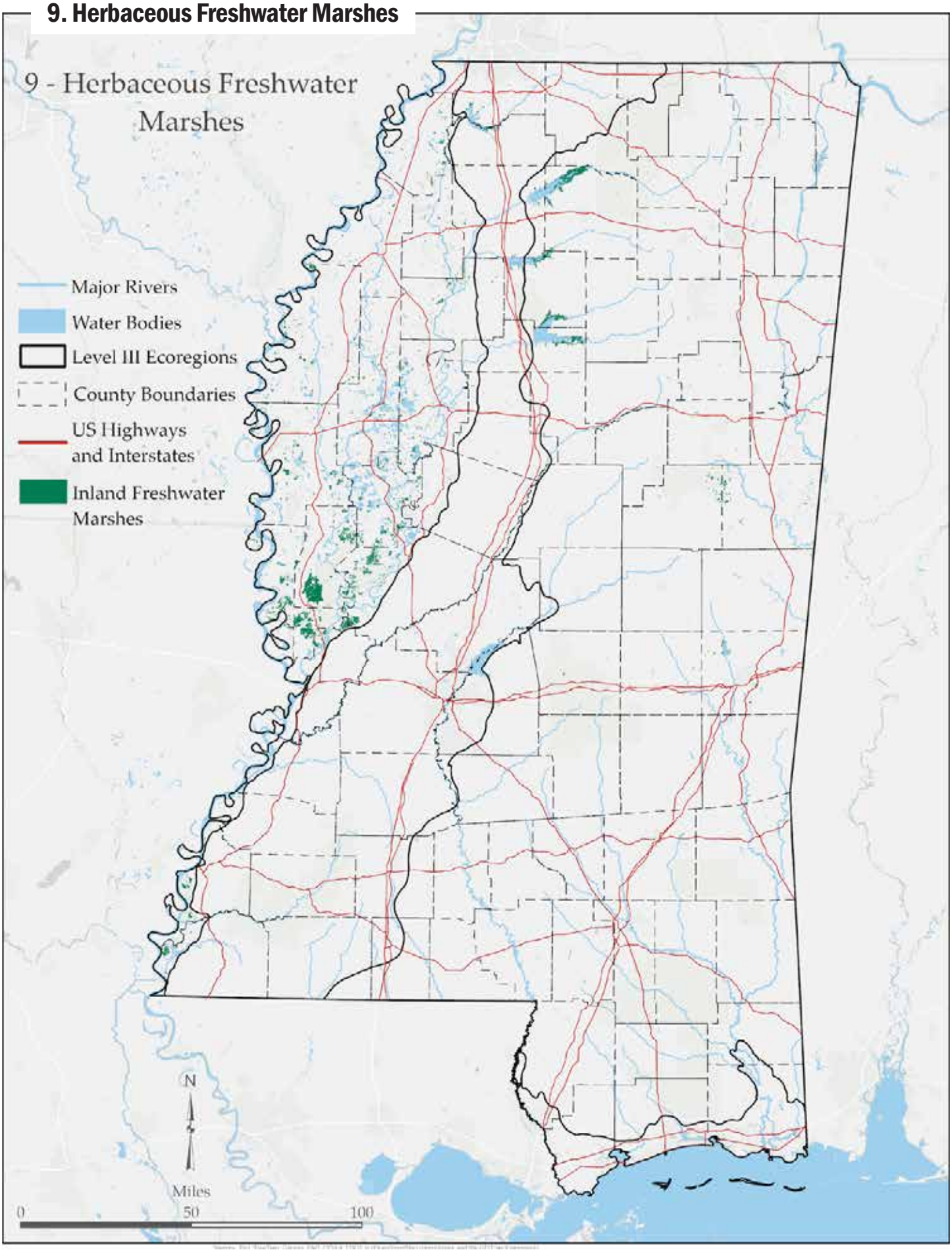


Figure 5.16. Map of Herbaceous Freshwater Marshes

9.1 Inland Freshwater Marsh



Inland freshwater marsh *Credit: Heather Sullivan*

It is estimated that there are approximately 175,750 acres of inland freshwater marshes in Mississippi. Freshwater marsh communities are found along the shores of natural and artificial ponds, beaver dams, lakes and reservoirs; in cleared floodplains, roadside ditches, swales and depressions; within openings in swamp forests; and in wetlands of pastures and old fields. The substrates are composed of fine textured clays, silts or loams that have slow permeability.

Marsh vegetation around lakes and ponds extends from the edge of saturated soils to a water depth of around six feet. It exhibits a pattern of species zonation corresponding to water depth. The vegetated zone normally does not extend beyond a six-foot depth unless certain exotics, such as hydrilla, are present. Throughout Mississippi, marshes have been created by water control structures (anthropogenic and natural, e.g. beavers), which manage stream discharges. Mudflats may also form along unimpounded streams during the late summer when water recedes from seasonally flooded riverine habitats. Mudflats have been identified as important stopover points for migrating shorebirds, which are regularly monitored at several locations throughout Mississippi. Marshes are also created when wet bottomland or swamp forests are logged or opened by natural disturbances. Unless artificially maintained, bottomland marshes represent a successional phase lasting until trees and shrubs regain dominance. The longer a marsh persists, the more likely its diversity will increase. Culturally significant species utilizing these habitats include switchcane and swamp rabbits.

General Condition

Mississippi experienced a 59 percent loss in wetlands from the 1780s (9,872,000 acres) to the 1980s (4,067,000 acres) due to land use changes. In the 1780s, wetlands comprised 32 percent of the area of Mississippi. By the 1980s wetlands comprised only 13 percent of the area. Fewer marshes are available today to filter impurities, reduce runoff and recharge ground water supplies. Mississippi wetlands have been and continue to be a source of timber and the cleared, fertile lands have become productive farmland. Programs stemming from federal Farm Bill legisla-

Table 5.19 Herbaceous Freshwater Marsh Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion

	9. Herbaceous Freshwater Marsh	Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
9.1 Inland Freshwater Marsh	*Inland Freshwater Marsh [no NS equivalent]*	X	X	X	X	

tion such as the USDA's Conservation Reserve Program and Wetland Reserve Program (now called Agricultural Conservation Easements Program) have reduced the rate of marsh loss. The quality of freshwater marshes has also declined due to the cumulative effects of hydrologic changes, pollutants and exotic species. Land clearing around marshes has led to an increase in runoff, erosion, sedimentation and water temperatures in marshes. Stream channel alterations and levees have reduced the frequency and duration of flood interaction with marshes. Exotic plants that alter marsh habitats and reduce species diversity, such as water hyacinth, are increasingly encountered in marshes.

The ecological community called "freshwater marsh" is an area of shallow water and mucky, saturated soils along the shoreline. It contains a variety of herbaceous plants, but reeds, bulrushes, flatsedges, ditch stonecrop, and lizard's tail are characteristic species. Giant cutgrass, pickerel weed, cattail, rosemallow and primrose willow along with numerous other graminoids and herbs may also be present. Other typical species include valley redstem, cardinal flower, aquatic milkweed, jewelweed, common rush, climbing hempvine, redtop panicgrass, camphor pluchea, swamp smartweed, and waterpod.

As its name implies, semi-permanently flooded marshes are seasonally inundated by high water events. This community is usually in the zone above the freshwater marsh, on broad flat areas of the alluvial plain. Oneflower false fiddleleaf, alligatorweed, and denseflower knotweed can form dense patches of vegetation. Many of the plants found in freshwater marshes may also be found in this zone.

White waterlily-jointed spikesedge herbaceous vegetation is found in the wettest portion of freshwater marshes. In this zone of inundation, white waterlily, jointed spikesedge, and bulltongue arrowhead form dense colonies. The deeper zones also contain a variety of emergent aquatic plants such as pondweed, watershield, and American lotus; and floating plants like duckweed, watermeal and bladderwort. Coastal freshwater marshes contain a different mix of species than the northern types of this community; these species include white waterlily, irisleaf yelloweyed grass and jointed spikesedge. Introduced exotic weeds such as alligatorweed, giant salvinia, hydrilla, water lettuce, Eurasian milfoil and water hyacinth tend to overwhelm marshlands by their rapid and abundant growth.

Size: 175,750 acres of Herbaceous Freshwater Marsh

Conservation Status: Vulnerable

Condition: Some marshlands may be quite large in extent, up to 1,000 acres, if associated with large water control structures such as dams and diversions. Large marsh habitats are found on the upper end of reservoirs. Freshwater marshes occur throughout the EGCP but are more commonly found in lowlands and floodplains. They are adjacent to a variety of agricultural, forested and urban lands. Fifty to seventy five percent of freshwater marsh habitats are estimated to have been lost in the central Gulf states. The quality of freshwater marshes has also declined due to a variety of causes including the cumulative effects of land clearing, erosion and sedimentation, hydrologic changes, pollutants and exotic species. Large areas of wetlands have been created by water control structures, but these tend to be of lower quality and often heavily impacted by alligator weed or other exotics.

THREATS AND ACTIONS FOR HERBACEOUS FRESHWATER MARSH

Threats: Dams and water management use are a major threat to freshwater marshes. Other threats include commercial and home development, timber harvest, and invasive species.

Actions: Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

Provide public education about the conservation of SGCN and/or their habitats. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.

Table 5.20 - SGCN for Freshwater Marshes.

Taxa Group (Class)	Tier	Scientific Name	Common Name	Inland Freshwater Marshes
Insects	4	*Automeris louisiana*	Louisiana Eyed Silkmoth	X
Insects	3	*Cordulegaster bilineata*	Brown Spiketail	X
Insects	3	*Euphyes pilatka*	Palatka Skipper	X
Birds	3	*Anas acuta*	Northern Pintail	X
Birds	1	*Anas fulvigula*	Mottled Duck	X
Birds	1	*Antigone canadensis pulla*	Mississippi Sandhill Crane	X
Birds	3	*Asio flammeus*	Short-eared Owl	X
Birds	2	*Botaurus lentiginosus*	American Bittern	X
Birds	3	*Calidris melanotos*	Pectoral Sandpiper	X
Birds	3	*Chlidonias niger*	Black Tern	X
Birds	2	*Coturnicops noveboracensis*	Yellow Rail	X
Birds	2	*Egretta caerulea*	Little Blue Heron	X
Birds	3	*Egretta tricolor*	Tricolored Heron	X
Birds	1	*Elanoides forficatus*	Swallow-tailed Kite	X
Birds	2	*Ixobrychus exilis*	Least Bittern	X
Birds	1	*Laterallus jamaicensis*	Black Rail	X
Birds	1	*Mycteria americana*	Wood Stork	X
Birds	3	*Nyctanassa violacea*	Yellow-crowned Night-Heron	X
Birds	3	*Nycticorax nycticorax*	Black-crowned Night-Heron	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Inland Freshwater Marshes
Birds	1	*Platalea ajaja*	Roseate Spoonbill	X
Birds	3	*Pluvialis dominica*	American Golden-Plover	X
Birds	3	*Porphyrio martinicus*	Purple Gallinule	X
Birds	3	*Quiscalus quiscula*	Common Grackle	X
Birds	2	*Rallus elegans*	King Rail	X
Birds	2	*Riparia riparia*	Bank Swallow (breeding population)	X
Birds	2	*Sternula antillarum athalassos*	Interior Least Tern	X
Birds	3	*Tringa flavipes*	Lesser Yellowlegs	X
Fishes	2	*Atractosteus spatula*	Alligator Gar	X
Fishes	3	*Enneacanthus gloriosus*	Bluespotted Sunfish	X
Fishes	3	*Fundulus blairae*	Western Starhead Topminnow	X
Fishes	3	*Fundulus dispar*	Northern Starhead Topminnow	X
Fishes	3	*Heterandria formosa*	Least Killifish	X
Fishes	4	*Leptolucania ommata*	Pygmy Killifish	X
Mammals	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	X
Mammals	2	*Perimyotis subflavus*	Tricolored Bat	X
Mammals	2	*Sorex longirostris*	Southeastern Shrew	X
Mammals	1	*Ursus americanus lutelous*	Louisiana Black Bear	X
Mammals	2	*Zapus hudsonius*	Meadow Jumping Mouse	X
Vascular Plants	1	*Alisma subcordatum*	Broad-leaved Water-plantain	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Inland Freshwater Marshes
Vascular Plants	2	*Asclepias incarnata*	Swamp Milkweed	X
Vascular Plants	4	*Bidens trichosperma*	Tickseed Sunflower	X
Vascular Plants	1	*Boltonia apalachicolensis*	Apalachicola Doll's-Daisy	X
Vascular Plants	1	*Canna flaccida*	Bandana-of-the-Everglades	X
Vascular Plants	2	*Carex alata*	Broadwing Sedge	X
Vascular Plants	2	*Carex comosa*	Bristly Sedge	X
Vascular Plants	2	*Carex scoparia*	Broom Sedge	X
Vascular Plants	3	*Carex stipata* var. *maxima*	Stalk-grain Sedge	X
Vascular Plants	3	*Cyperus bipartitus*	Shining Flatsedge	X
Vascular Plants	3	*Decodon verticillatus*	Hairy Swamp Loosestrife	X
Vascular Plants	2	*Dichanthelium cryptanthum*	Hidden-flower Witchgrass	X
Vascular Plants	4	*Didiplis diandra*	Water-purslane	X
Vascular Plants	1	*Echinodorus berteroi*	Upright Burhead	X
Vascular Plants	2	*Eleocharis elliptica*	Slender Spikerush	X
Vascular Plants	2	*Eleocharis geniculata*	Capitate Spikerush	X
Vascular Plants	1	*Eleocharis lanceolata*	Lance-like Spikerush	X
Vascular Plants	3	*Eleocharis macrostachya*	Creeping Spikerush	X
Vascular Plants	1	*Eleocharis parvula*	Small Spikerush	X
Vascular Plants	4	*Eleocharis tenuis* var. *pseudoptera*	Slender Spikerush	X
Vascular Plants	2	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Inland Freshwater Marshes
Vascular Plants	2	*Eustachys glauca*	Saltmarsh Finger-grass	X
Vascular Plants	3	*Hibiscus coccineus*	Brilliant Hibiscus	X
Vascular Plants	1	*Iris giganticaerulea*	Giant Blue Iris	X
Vascular Plants	2	*Isoetes appalachiana*	Appalachian Quillwort	X
Vascular Plants	3	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	X
Vascular Plants	3	*Ludwigia alata*	Winged Seedbox	X
Vascular Plants	2	*Marsilea vestita*	Marsilea vestita	X
Vascular Plants	2	*Mimulus ringens* var. *ringens*	Square-stem Monkeyflower	X
Vascular Plants	1	*Rhynchospora decurrens*	Swamp-forest Beakrush	X
Vascular Plants	2	*Schoenoplectiella purshiana*	Weakstalk Bulrush	X
Vascular Plants	1	*Schoenoplectus subterminalis*	Swaying Rush	X
Vascular Plants	3	*Scleria verticillata*	Low Nutrush	X
Vascular Plants	4	*Spiraea tomentosa*	Steeplebush	X
Vascular Plants	1	*Thalia dealbata*	Powdery Thalia	X
Vascular Plants	2	*Thalictrum macrostylum*	Small-leaf Meadowrue	X
Vascular Plants	3	*Utricularia purpurea*	Purple Bladderwort	X

10. Natural Lakes And Ponds

Urbanization, pollution and land-use practices have generally increased levels of toxins and nutrients in lakes. From 2018 to 2022, 35 percent of the fish kills investigated by MDEQ were associated with low dissolved oxygen resulting from natural processes, 5 percent were associated with low dissolved oxygen from unnatural processes, and 36 percent were associated with excess nutrients, sewage, and spills. Currently there are three lake habitats under fish consumption advisories for mercury or PCB. Common causes for these lakes not meeting their designated use are pesticides, nutrients and sediments. Exotic species, some of which are quite aggressive, now present a threat to native lentic communities. Particular types of concern include aquatic plants (hydrilla), fish (Silver carp and Bighead carp) and zebra mussels. Exotic zooplankton species are also reportedly present in Mississippi lakes. The exotics could impact the low end of the food chain for many fishes when they are young and throughout the lifespan of filter feeders such as paddlefish, gizzard shad and threadfin shad.

Since very few new oxbow lakes can be expected to be created naturally, long-term management approaches for the lakes that already exist are needed. Artificial restraints and other impacts on many streams alter the natural association of streams with their oxbows. Management approaches that integrate various stakeholders will be important in the future to effectively preserve oxbow habitats. Recent efforts toward reforestation and best management practices in forestry and agriculture have helped to reclaim landscapes around streams and oxbows.

Several culturally significant species utilize these habitats including cypress, black gum, oaks, swamp cane, switchcane, swamp rabbits, sunfish, bass, catfish, and bowfin.

GENERAL CONDITION

Unlike most other types, the amount of lentic habitat increases faster than it is lost due to new construction. The conditions of lentic communities vary depending on the intensity of adjacent land uses and their proximity to urban areas. Lakes are impacted by shoreline alterations or urbanization around larger reservoirs, such as Bay Springs Lake in Tishomingo County. However, stream channel alterations, levees, deforestation and water diversions impact the natural progression of oxbow lakes by modifying runoff and accelerating sediment accumulation. Some oxbows in Mississippi remain natural in form and function.

10.1 Oxbow Lakes

Oxbow lakes provide important habitat for aquatic species and a wide range of recreational opportunities. Oxbow lakes are created naturally over extended time periods as streams meander and cut off their old channels. Man-made alterations such as channelization may also convert old stream channels into oxbow lakes. Natural formation involves gradual loss of connectivity with the stream as sediment fills the ends of old channels. During periods of low stream flow, smaller pools in oxbow lakes may develop lethal conditions for species that are intolerant of high water temperatures and low oxygen levels.

Oxbow lakes support a variety of fish, amphibians, reptiles, mammals, and wading and shorebirds. Although floodwater sometimes enters or inundates oxbow lakes and allows fish to move freely in and out, the exchange of nutrients from rivers and their watersheds to the oxbow lakes is the most important factor determining higher fish abundance. Frequency, duration and timing of floods are important considerations in the natural function of oxbow lakes. Natural water level fluctuations in oxbow lakes benefit many species throughout the food chain, including invertebrates, fish, ospreys and alligators.

General habitat characteristics of oxbow lakes can often be associated with age. As the stream moves further away from an oxbow lake over time, the lake tends to become shallower, more turbid and can be expected to contain fish species more adapted to shallow habitats with low oxygen. Younger oxbow lakes that maintain a higher degree of connectivity with streams tend to be deeper and clearer and to support a fish assemblage composed of more fish-eating species.

Size: Unknown

Conservation Status: Vulnerable

Table 5.21 - Natural Lakes and Ponds Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	10. Natural Lakes and Ponds	Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
10.1 Oxbow Lake	*Oxbow Lake [No NS equivalent]*	X	X	X	X	
10.2 Beaver Pond	*Beaver Pond [No NS equivalent]*	X	X	X	X	
10.3 Ephemeral (Temporary) Pond	*East Gulf Coastal Plain Depression Pond*	X			X	
10.3 Ephemeral (Temporary) Pond	*Ephemeral Pond [No NS equivalent]*	X	X	X	X	



Beaver Pond at Wolf Creek. *Credit: Heather Sullivan*

Oxbows can be found on most small and medium sized creeks and rivers but are most common along the largest river systems. The lakes are surrounded by swamps and other bottomland hardwood forests.

Oxbow lakes are formed by rivers that abandon their channels and form new ones. If the rivers are confined by water control structures, additional oxbow lakes are prevented from forming. Older ones gradually fill in and become swamp habitats.

10.2 Beaver Ponds

The beaver is considered a keystone species, because it changes the environment by creating favorable new habitats for other species. Beavers impound small streams to allowing access to upland food sources, and to provide protection for freestanding lodges or tunnel dens. Substrates usually consist of muddy silt and clay sediments. Flow is often sluggish, and sedimentation increases over time. Beaver ponds can provide a habitat with higher diversity and abundance of aquatic plants, fish, amphibians, and aquatic invertebrates. This provides a cascading benefit to a variety of birds and mammals, such as Osprey and Indiana bats, that feed on the abundance of life inhabiting in or around the ponds as well as reliant on dead snag trees that are killed by flooding to roost and raise their young. Herons frequent the ponds in search of prey. Beaver ponds can provide refugia in the event of a fire, and in some cases reduce the effects of wildfire.

In the Southeastern U.S., beavers can cause extensive damage to valuable timberland by flooding bottomland forests and eating tree seedlings. Control measures are often adopted to reduce the damage caused to forests, lands and roads. However, landowners whose own interests are benefited by beavers may be reluctant to allow beavers to be removed from their lands. Flow devices can be installed in beaver dams that mimic a natural leak to reduce flooding, and fencing can be installed around trees to prevent beavers from felling them.

SIZE, CONDITION AND CONSERVATION STATUS - BEAVER PONDS

Size: Unknown

Conservation Status: Secure

Beaver Ponds: With the abundance of small creeks in Mississippi, there are many opportunities for beavers to develop small impoundments. These impoundments resemble small wetland swamp or marsh habitats. They usually are surrounded by bottomland hardwood forests. There are no accurate estimates of the extent of beaver ponds in the EGCP of Mississippi. Beavers are considered a nuisance species because of their potential to flood significant areas of forest, agriculture and developed land. Wildlife control measures are being taken by USDA Wildlife Services to prevent the increase of the beaver population on Mississippi creeks and rivers.

10.3 Ephemeral (Temporary) Ponds

East Gulf Coastal Plain Depression Ponds are found in upland depressions and are shallow ponds in a variety of substrates. These systems include limesinks, Grady ponds, Citronelle ponds, and flatwoods depression marshes. These are not in riparian or floodplain environments. They may serve as the origin of a stream, releasing water gradually into a drainage system during periods of wet weather. Vegetation will be in zones which are exposed as water levels decline, as well as emergent and floating plants. Wright's witchgrass, erect-leaved witchgrass, horsetail spikerush, common reed, creeping rush, beaksedges, maidencane, plumegrasses, and warty panic grass may be present.

Ephemeral ponds, also referred to as spring ponds or vernal pools, are temporary wetlands that hold water during the winter-spring season but normally dry out by late summer. They can be classified by their vegetative cover as marshes or swamps, but their special designation is necessary due to their importance to many species. Ephemeral ponds commonly form along moderate to larger size streams, but many are also found in disturbed habitats, such as ditches, croplands or other such depressions. As seasonal high flows peak and subsequently recede from the floodplain into the stream channel, ponds temporarily form in floodplain depressions. They serve as important breeding habitats for many crustaceans and amphibians and provide significant energy sources to birds, mammals and reptiles that feed on fish trapped in these pools.

10.3 Ephemeral (Temporary) Ponds

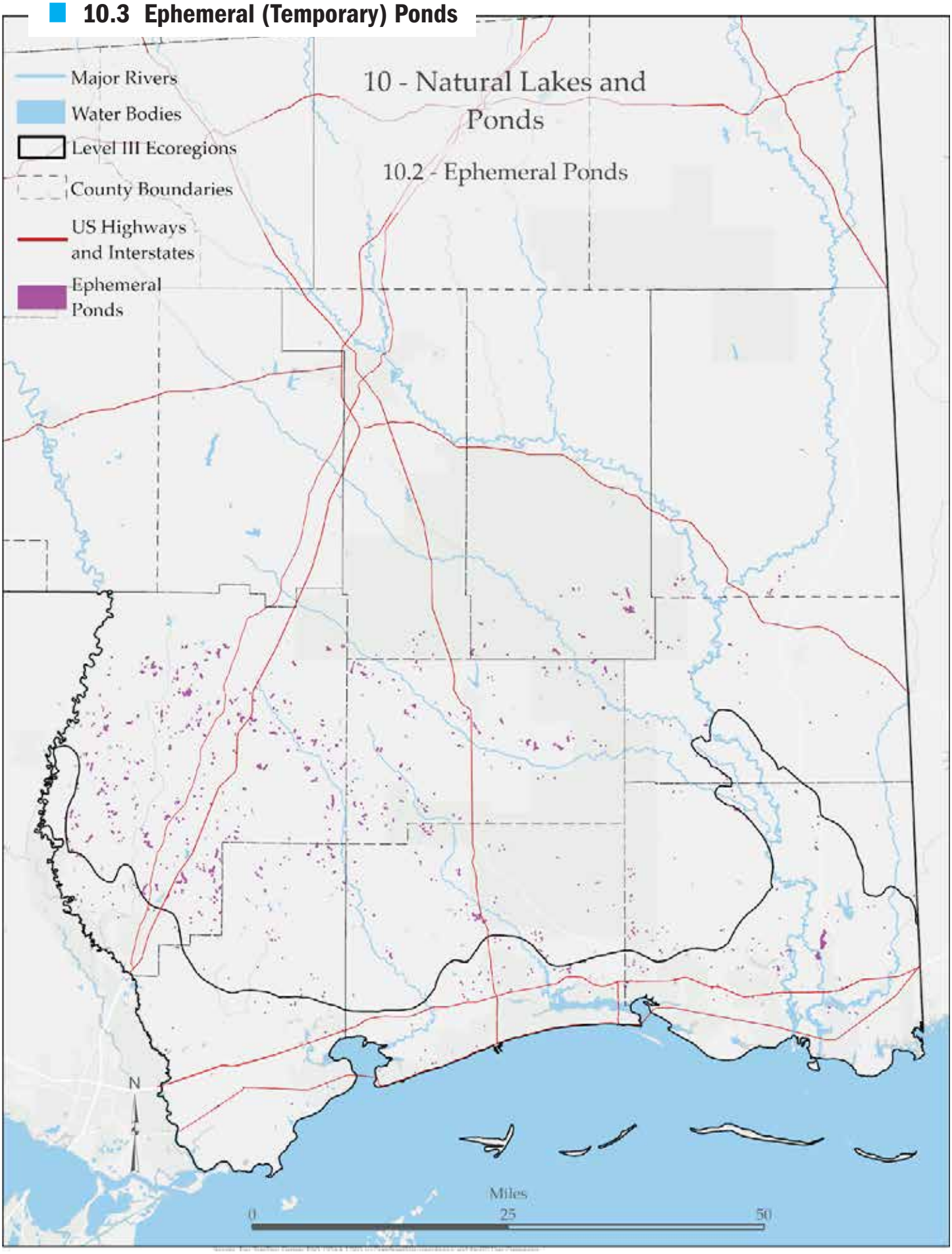


Figure 5.17. Map of Ephemeral (Temporary) Ponds



Ephemeral pond. *Credit: Tom Mann*

Grady ponds are naturally occurring ephemeral ponds of the lower coastal plain. They are found in ancient abandoned deltaic stream channels, on the upper reaches of small tributaries, and in upland depressions apparently caused by the subsidence of underlying strata. Several of the ponds were formed by alluvial processes on wide flats of ancient riverine floodplains. Minor scroll lines of the ancient rivers are evident today. The ephemeral ponds are in minor distributary channels of the old stream systems that no longer connect to local drainages. Other ponds occur in swales along the far upper reaches of small drainageways of wide coastal flats. In such instances the depressions will periodically connect with stream systems but considering the gentle local relief and the low stream flow, connectivity to the stream system is brief and accessibility by fish is minimal. Essentially, the amount of flow through the swales is very low and less likely to be utilized by predatory fish. If fish gain access to the ponds, their occupancy is short-lived because the ponds usually dry up during the fall. In addition, some of the swales may have formed through local subsidence of uplands on ridge tops and side ridges independent of streams.

These upland ponds have greater importance to smaller species of amphibians than riverine derived ponds because the latter are more shaded and subject to periodic flooding that threatens tadpole survival. Ephemeral ponds are dependent on fire to maintain open, herbaceous habitat, which is ideal for breeding amphibians. Grady ponds are essential to the survival of the endangered Mississippi gopher frog.

SIZE, CONDITION AND CONSERVATION STATUS - EPHEMERAL

Pond size: 971 acres of Ephemeral Ponds

Conservation Status: Vulnerable to critically imperiled (Grady ponds)

Condition: Ephemeral ponds, located in small depressions in floodplains and uplands, are usually associated with bottomland hardwoods or swamp forests in the lowlands and pinelands in the uplands, but can be surrounded by open pasture or cultivated land. During the wet season the temporary ponds may cover large areas on lowland flats but are significantly reduced in size and number in the dry season.

Rapid urbanization in the southern part of the state has reduced the quality of many ephemeral ponds and has increased the potential for the introduction of waterborne diseases into the ponds. Fragmentation of habitat surrounding the ponds and lack of fire to help maintain their integrity has reduced the quality of these ponds.

THREATS AND ACTIONS FOR NATURAL LAKES AND PONDS

Threats: Dams and water management use are a major threat to natural lakes and ponds. Other threats include commercial and home development, timber harvest, water pollution from various sources, and invasive species.

Actions: Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alter flow, depth, and salt intrusion. Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats. Provide public education about the conservation of SGCN and/or their habitats. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues. Discourage incompatible recreational uses. Improve enforcement of existing species protection regulations. Develop/improve urban/suburban infrastructure land use development planning/zoning to address SGCN.



Dusky Gopher Frog:

A cautionary tale of well-intended conservation and unintended consequences

The Dusky Gopher Frog (*Rana sevosa*) is a medium-sized frog in the Ranid family. They spend much of their lives in subterranean refugia found in the xeric uplands of the Longleaf Pine ecosystem and will migrate to ephemeral breeding ponds in the winter and early spring.

Like most longleaf-dwelling species, the Dusky Gopher Frog (DGF) relies on fire to maintain an open canopy grassy pond as well as a low basal area grassy longleaf forest. Due to fire suppression and private land development, the DGF experienced an extreme population decline in the late 1980s. The species, once ranging from southeastern Louisiana to southwest Alabama, became restricted to a single known breeding pond in south Mississippi in 1988. The species was eventually listed as critically endangered in 2001 and a recovery plan was established in 2015.

Since then, there has been a fantastic multi-agency effort to help recover the species. The USFS has restored more than a dozen ponds that now support DGF breeding every year, and they expect to restore another 10-15 ponds within the next decade. Entities such as Western Carolina University and The Nature Conservancy (TNC) have led the way in research and headstarting efforts to continually improve our knowledge and ability to recover the species. Every year, more than 2,000 metamorphic DGF are released into existing ponds for population bolstering and into newly restored ponds for metapopulation expansion. These efforts have helped the species make considerable progress towards recovery, but delisting is a long way away.



The recovery process, while successful for the DGF, has caused unexpected impacts on other species. The Ornate Chorus Frog (Pseudacris ornata) is a small frog that uses the same habitats and ponds as the DGF. Unlike the DGF, they are relatively short-lived, typically only living two to three years. Ornate Chorus Frogs (OCF) were observed in many of the restored DGF breeding ponds



but seemingly disappeared after the ponds were altered/restored. While the restored habitat was suitable for both species, the OCF, likely due to their shorter lifespan, was not able to outlast the restoration and became extirpated. Two populations were found in 2022, and consistent surveys have been conducted to try and locate others. Ongoing surveys will attempt to locate more populations as well as collect eggs for headstarting and translocation efforts into their historic range, including current DFG breeding ponds where they once existed.

Table 5.22 - SGCN for Natural Lakes and Ponds.

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Crayfishes	2	*Cambarellus diminutus*	Least Crayfish		X		X
Crayfishes	2	*Cambarellus lesliei*	Angular Dwarf Crayfish		X		X
Crayfishes	1	*Hobbseus attenuatus*	Pearl Rivulet Crayfish				X
Crayfishes	1	*Hobbseus cristatus*	Crested Rivulet Crayfish				X
Crayfishes	1	*Hobbseus orconectoides*	Oktibbeha Rivulet Crayfish				X
Crayfishes	3	*Hobbseus petilus*	Tombigbee Rivulet Crayfish				X
Crayfishes	3	*Hobbseus prominens*	Prominence Rivulet Crayfish				X
Crayfishes	1	*Hobbseus valleculus*	Choctaw Rivulet Crayfish				X
Crayfishes	1	*Hobbseus yalobushensis*	Yalobusha Rivulet Crayfish				X
Crayfishes	2	*Procambarus bivittatus*	Ribbon Crayfish	X			
Crayfishes	3	*Procambarus penni*	Pearl Blackwater Crayfish		X		
Crayfishes	3	*Procambarus planirostris*	Flatnose Crayfish				X
Crayfishes	2	*Procambarus shermani*	Gulf Crayfish				X
Crayfishes	3	*Procambarus viaeviridis*	Vernal Crayfish	X			X
Insects	3	*Aeshna umbrosa*	Shadow Darner		X		
Insects	3	*Amphiagrion saucium*	Eastern Red Damsel	X	X		
Insects	3	*Arigomphus lentulus*	Stillwater Clubtail		X		

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Insects	3	*Arigomphus villosipes*	Unicorn Clubtail		X		
Insects	3	*Celithemis amanda*	Amanda's Pennant		X		X
Insects	3	*Enallagma davisi*	Sandhill Bluet		X		X
Insects	3	*Enallagma pallidum*	Pale Bluet		X		X
Insects	3	*Enallagma pollutum*	Florida Bluet		X		X
Insects	2	*Epitheca spinosa*	Robust Baskettail	X			
Insects	3	*Erythrodiplax umbrata*	Band-winged Dragonlet		X		X
Insects	3	*Ischnura prognata*	Furtive Forktail		X		X
Insects	3	*Nehalennia gracilis*	Sphagnum Sprite		X		
Insects	1	*Neonympha mitchellii*	Mitchell's Satyr		X		
Insects	2	*Paracymus seclusus*	Seclusive Water Scavenger Beetle				X
Mussels	3	*Utterbackiana hartfieldorum*	Cypress Floater	X			
Amphibians	3	*Ambystoma texanum*	Smallmouth Salamander				X
Amphibians	4	*Ambystoma tigrinum*	Tiger Salamander				X
Amphibians	2	*Lithobates areolatus*	Crawfish Frog				X
Amphibians	1	*Lithobates heckscheri*	River Frog	X	X		
Amphibians	1	*Lithobates sevosus*	Dusky Gopher Frog				X
Amphibians	4	*Pseudacris collinsorum*	Collinses' Mountain Chorus Frog				X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Amphibians	1	*Pseudacris ornata*	Ornate Chorus Frog				X
Amphibians	2	*Pseudotriton montanus*	Mud Salamander		X		
Birds	3	*Anas acuta*	Northern Pintail	X			
Birds	1	*Antigone canadensis pulla*	Mississippi Sandhill Crane			X	X
Birds	2	*Aythya affinis*	Lesser Scaup	X			
Birds	3	*Calidris melanotos*	Pectoral Sandpiper			X	X
Birds	3	*Calidris pusilla*	Semipalmated Sandpiper				X
Birds	2	*Calidris subruficollis*	Buff-breasted Sandpiper			X	X
Birds	2	*Coturnicops noveboracensis*	Yellow Rail			X	X
Birds	2	*Egretta caerulea*	Little Blue Heron	X	X	X	X
Birds	3	*Egretta tricolor*	Tricolored Heron	X	X	X	X
Birds	1	*Elanoides forficatus*	Swallow-tailed Kite	X			
Birds	2	*Euphagus carolinus*	Rusty Blackbird		X	X	X
Birds	1	*Laterallus jamaicensis*	Black Rail			X	X
Birds	3	*Limnodromus griseus*	Short-billed Dowitcher				X
Birds	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker		X		
Birds	1	*Mycteria americana*	Wood Stork	X	X	X	X
Birds	3	*Nyctanassa violacea*	Yellow-crowned Night-Heron	X	X	X	X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Birds	3	*Nycticorax nycticorax*	Black-crowned Night-Heron	X	X	X	X
Birds	2	*Parkesia motacilla*	Louisiana Waterthrush		X		
Birds	1	*Platalea ajaja*	Roseate Spoonbill	X	X	X	X
Birds	3	*Pluvialis dominica*	American Golden-Plover			X	X
Birds	3	*Porphyrio martinicus*	Purple Gallinule			X	X
Birds	2	*Protonotaria citrea*	Prothonotary Warbler	X	X		
Birds	2	*Rallus elegans*	King Rail			X	X
Birds	2	*Riparia riparia*	Bank Swallow (breeding population)	X			
Birds	3	*Scolopax minor*	American Woodcock		X		
Birds	2	*Sternula antillarum athalassos*	Interior Least Tern	X			X
Birds	3	*Tringa flavipes*	Lesser Yellowlegs			X	X
Fishes	2	*Alburnops chalybaeus*	Ironcolor Shiner	X			
Fishes	2	*Atractosteus spatula*	Alligator Gar	X			
Fishes	3	*Enneacanthus gloriosus*	Bluespotted Sunfish	X	X		
Fishes	3	*Etheostoma asprigene*	Mud Darter	X			
Fishes	3	*Fundulus blairae*	Western Starhead Topminnow		X		
Fishes	3	*Fundulus dispar*	Northern Starhead Topminnow		X		
Fishes	2	*Fundulus euryzonus*	Broadstripe Topminnow		X		

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Fishes	3	*Heterandria formosa*	Least Killifish		X		
Fishes	3	*Ictiobus niger*	Black Buffalo	X			
Fishes	4	*Leptolucania ommata*	Pygmy Killifish		X		
Fishes	1	*Miniellus melanostomus*	Blackmouth Shiner	X			
Fishes	3	*Polyodon spathula*	Paddlefish	X			
Fishes	2	*Stizostedion canadense*	Sauger	X			
Mammals	3	*Aeorestes cinereus*	Hoary Bat	X	X	X	X
Mammals	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	X	X	X	X
Mammals	3	*Dasypterus intermedius*	Northern Yellow Bat		X		
Mammals	3	*Lasionycteris noctivagans*	Silver-haired Bat		X		
Mammals	3	*Myotis austroriparius*	Southeastern Myotis	X	X	X	
Mammals	1	*Myotis grisescens*	Gray Bat		X		
Mammals	1	*Myotis septentrionalis*	Northern Long-eared Bat		X		
Mammals	1	*Myotis sodalis*	Indiana Bat		X		
Mammals	2	*Perimyotis subflavus*	Tricolored Bat	X	X		X
Mammals	2	*Sorex longirostris*	Southeastern Shrew		X		
Mammals	2	*Ursus americanus*	Black Bear	X	X		X
Mammals	1	*Ursus americanus lutelous*	Louisiana Black Bear	X	X		X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Mammals	2	*Zapus hudsonius*	Meadow Jumping Mouse		X		
Reptiles	1	*Deirochelys reticularia miaria*	Western Chicken Turtle	X	X		X
Reptiles	4	*Deirochelys reticularia reticularia*	Eastern Chicken Turtle		X		X
Reptiles	2	*Graptemys flavimaculata*	Yellow-blotched Map Turtle	X			
Reptiles	2	*Graptemys gibbonsi*	Pascagoula Map Turtle	X			
Reptiles	3	*Graptemys nigrinoda*	Black-knobbed Map Turtle	X			
Reptiles	2	*Graptemys oculifera*	Ringed Map Turtle	X			
Reptiles	1	*Graptemys pearlensis*	Pearl River Map Turtle	X			
Reptiles	1	*Graptemys pulchra*	Alabama Map Turtle	X			
Reptiles	1	*Macrochelys temminckii*	Alligator Snapping Turtle	X			
Vascular Plants	3	*Andropogon dealbatus*	Wetland White Bluestem		X		
Vascular Plants	2	*Burmannia biflora*	Northern Burmannia				X
Vascular Plants	2	*Carex alata*	Broadwing Sedge	X	X		X
Vascular Plants	2	*Carex comosa*	Bristly Sedge	X	X		
Vascular Plants	3	*Carex grayi*	Asa Gray's Sedge	X			
Vascular Plants	1	*Carex striata* var. *striata*	Southern Peatland Sedge			X	X
Vascular Plants	1	*Ceratophyllum echinatum*	Prickly Hornwort				X
Vascular Plants	2	*Coreopsis nudata*	Georgia Tickseed			X	

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Vascular Plants	3	*Cyperus drummondii*	Green Flatsedge				X
Vascular Plants	3	*Cyperus flavicomus*	White-edged Flatsedge				X
Vascular Plants	3	*Cyperus neotropicalis*	American Lipocarpha				X
Vascular Plants	3	*Decodon verticillatus*	Hairy Swamp Loosestrife	X	X		
Vascular Plants	2	*Dichanthelium cryptanthum*	Hidden-flower Witchgrass				X
Vascular Plants	3	*Dichanthelium erectifolium*	Erect-leaf Witchgrass			X	X
Vascular Plants	2	*Dichanthelium wrightianum*	Wright's Witchgrass			X	X
Vascular Plants	4	*Didiplis diandra*	Water-purslane	X	X		X
Vascular Plants	2	*Dryopteris ludoviciana*	Southern Shield Wood-fern		X		
Vascular Plants	1	*Eleocharis atropurpurea*	Purple Spikerush				X
Vascular Plants	2	*Eleocharis elongata*	Slim Spikerush			X	X
Vascular Plants	1	*Eleocharis melanocarpa*	Black-fruit Spikerush				X
Vascular Plants	3	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	X		X	X
Vascular Plants	1	*Eleocharis radicans*	Rooted Spikerush		X		
Vascular Plants	3	*Eleocharis robbinsii*	Robbins Spikerush				X
Vascular Plants	1	*Eleocharis tricostata*	Three-angle Spikerush				X
Vascular Plants	2	*Eleocharis wolfii*	Wolf's Spikerush				X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Vascular Plants	2	*Fuirena longa*	Coastal-plain Umbrella-sedge			X	X
Vascular Plants	1	*Gratiola ramosa*	Branched Hedge-hyssop				X
Vascular Plants	3	*Helanthium tenellum*	Dwarf Burhead				X
Vascular Plants	2	*Hexastylis harperi*	Large-flowered Heartleaf		X		
Vascular Plants	2	*Hottonia inflata*	Featherfoil	X	X		
Vascular Plants	2	*Isoetes appalachiana*	Appalachian Quillwort		X		
Vascular Plants	2	*Juncus interior*	Inland Rush	X			
Vascular Plants	2	*Lindera subcoriacea*	Bog Spicebush			X	
Vascular Plants	1	*Lobelia boykinii*	Boykin's Lobelia			X	
Vascular Plants	3	*Lycopus amplectens*	Sessile-leaved Bugleweed		X		
Vascular Plants	2	*Mimulus ringens* var. *ringens*	Square-stem Monkeyflower		X		
Vascular Plants	2	*Myriophyllum laxum*	Loose Water-milfoil			X	X
Vascular Plants	3	*Nymphoides aquatica*	Big Floating-heart		X		X
Vascular Plants	3	*Nymphoides cordata*	Floating-heart		X		X
Vascular Plants	2	*Parnassia grandifolia*	Largeleaf Grass-of-Parnas sus			X	
Vascular Plants	2	*Pieris phillyreifolia*	Climbing Fetter-bush				X
Vascular Plants	3	*Pinguicula planifolia*	Chapman's Butterwort		X	X	
Vascular Plants	2	*Platanthera integrilabia*	White Fringeless Orchid		X		

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Vascular Plants	3	*Platanthera peramoeana*	Purpel Fringless Orchid		X		
Vascular Plants	2	*Potamogeton epihydrus*	Nuttall's Pondweed				X
Vascular Plants	2	*Potamogeton pusillus*	Slender Pondweed	X			
Vascular Plants	2	*Ranunculus flabellaris*	Yellow Water-crowfoot	X	X		
Vascular Plants	2	*Ranunculus septentrionalis*	Carolina Buttercup	X			
Vascular Plants	1	*Rhynchospora fernaldii*	Fernald's Beakrush			X	
Vascular Plants	1	*Rhynchospora harperi*	Harper's Beakrush			X	X
Vascular Plants	2	*Rhynchospora perplexa*	Pineland Beakrush				X
Vascular Plants	3	*Rhynchospora pinetorum*	Small's Beakrush			X	
Vascular Plants	1	*Rhynchospora pleiantha*	Brown Beakrush			X	
Vascular Plants	1	*Rhynchospora torreyana*	Torrey's Beakrush				X
Vascular Plants	1	*Rhynchospora tracyi*	Tracy Beakrush			X	X
Vascular Plants	2	*Rorippa aquatica*	Lake-cress	X			
Vascular Plants	2	*Ruellia noctiflora*	Night-flowering Wild-petunia			X	
Vascular Plants	1	*Sagittaria isoetiformis*	Slender Arrow-head				X
Vascular Plants	1	*Schoenoplectus subterminalis*	Swaying Rush		X		
Vascular Plants	4	*Schwalbea americana*	Chaffseed			X	
Vascular Plants	3	*Scleria georgiana*	Georgia Nutrush				X

TaxaGroup (Class)	Tier	Scientific Name	Common Name	Oxbow Lakes	Beaver Ponds	EGCP Depression Ponds	Ephemeral Pools
Vascular Plants	1	*Stylisma aquatica*	Water Southern Morning-glory				X
Vascular Plants	2	*Syngonanthus flavidulus*	Yellow Pipewort				X
Vascular Plants	3	*Tridens carolinianus*	Carolina Fluff Grass			X	
Vascular Plants	2	*Utricularia olivacea*	Piedmont Bladderwort	X	X		
Vascular Plants	3	*Utricularia purpurea*	Purple Bladderwort	X	X		X
Vascular Plants	2	*Xyris louisianica*	Kral's Yellow-eyed Grass		X		
Vascular Plants	3	*Xyris scabrifolia*	Harper's Yellow-eyed Grass		X		
Vascular Plants	3	*Xyris serotina*	Acid-swamp Yellow-eyed-grass				X

Stream Drainages in Mississippi

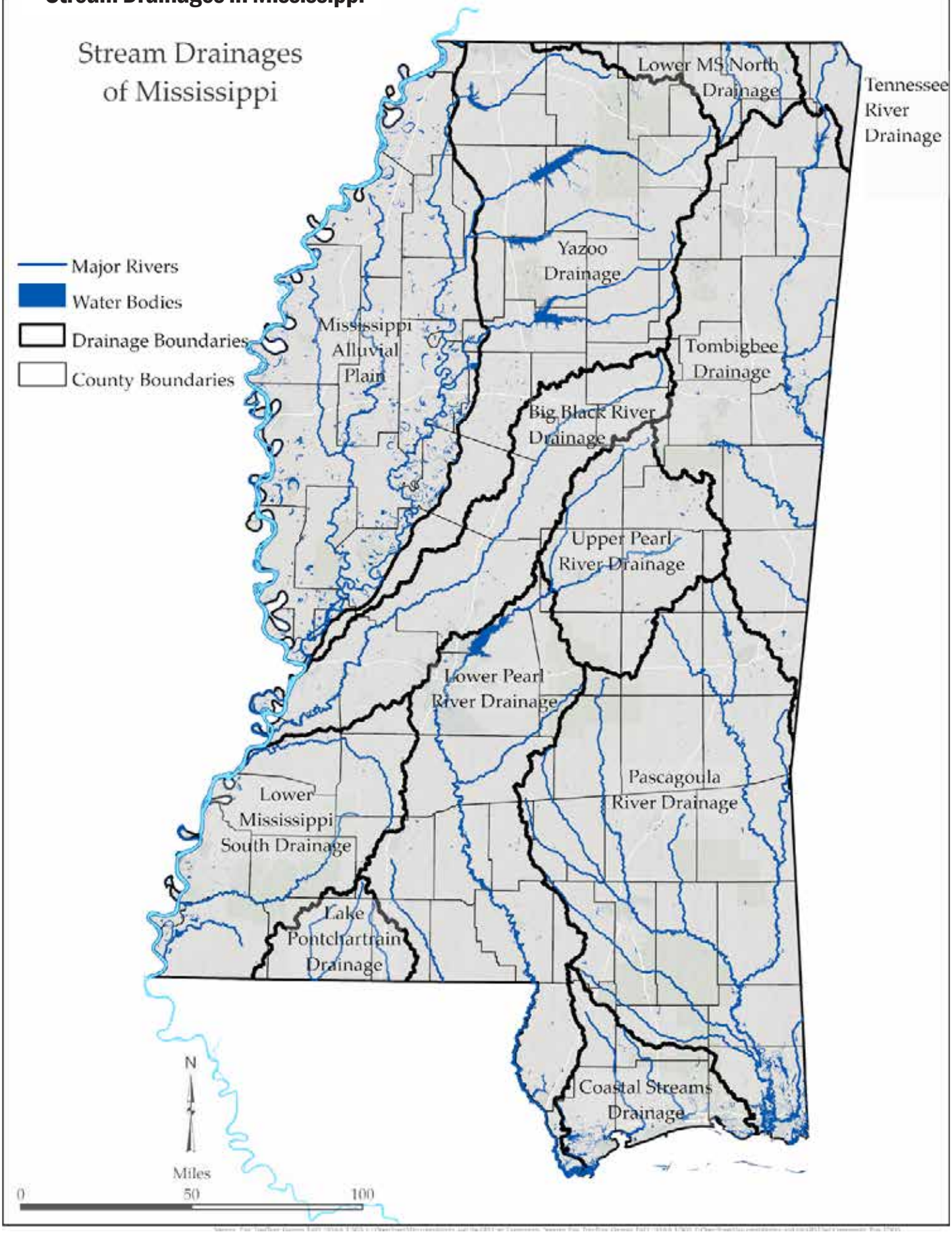


Figure 5.18. Map of Stream Drainages in Mississippi

Streams (lotic communities)

A classification system was developed based primarily on major drainages in the state as well as regional differences in soil type and topography that influence stream form and habitat characteristics. Stream size was used to develop another level of classification within regions.

Channel size influences community structure in and around a stream. Lack of a formal classification system necessitated this logical grouping of stream habitats. A wide diversity of mussels, fishes, amphibians and reptiles require lotic (flowing water) habitats for their survival.

Mississippi has about 120,000 miles of perennial streams. Mississippi law 51-1-4 defines a public waterway as "those portions of all natural flowing streams in this state having a mean annual flow of not less than one hundred (100) cubic feet per second". MDWFP GIS data indicates there are 5,719 miles of public waterways in the state. The USGS Geographic Names Information System lists almost 5,000 named streams that flow within or through the state and subdivides them into 52 hydrologic units. For the purposes of the SWAP, streams (lotic or flowing water systems) are classified into 13 major drainages and then into smaller subtypes by stream size.

GENERAL CONDITION

Streams throughout Mississippi have been subjected to a wide array of alterations. Stream channels have been widened, deepened, desnagged and straightened through channelization projects for flood control. This has resulted in shortening of streams, increases in stream gradient and loss of habitat for animals both in and near the streams. Levees now prevent many streams and rivers from spreading over flood plains. Dams have been placed on numerous streams for flood control, water supply for municipalities and industry, navigation and recreation. These dams restrict the movement of animals and alter hydrologic characteristics of the rivers on which they are built. The major tributaries of the upper Yazoo River (Coldwater, Tallahatchie, Yocona and Yalobusha) have flood control dams. The Pearl River system is now divided by Ross Barnett Dam which effectively restricts fish passage upstream from the dam. Fish passage in the Pearl River is also restricted by the Pools Bluff sill in Pearl River County and the low water weir at the City of Jackson's water treatment plant in Hinds County. Construction of the Tennessee- Tombigbee Waterway created an unnatural connection between two separate drainages and altered the Tombigbee drainage. The Tombigbee River is now a series of navigation pools impounded by nine locks and dams in Mississippi, which bears little resemblance to the original Tombigbee River. The only portion of the Tennessee River which borders Mississippi in the northeast corner is impounded by Pickwick Dam. Numerous smaller weirs and lowhead dams exist on streams throughout the state.

Land use practices in forestry and agriculture have resulted in vast increases in sediment deposition in streams as well as increased erosion. Headcutting, which can be caused by stream channel alteration, sand and gravel mining, and stream channelization, has resulted in long stretches of stream erosion and bank destabilization which move progressively upstream. Many streams throughout the state show the effects of headcutting. Most of these streams have broad, shallow channels with unstable substrate and little or no canopy cover.

Drainage of wetlands and removal of groundwater for irrigation has caused a significant decrease in the water table in some areas, especially in the Delta region. In some cases, the groundwater level is below the level of the riverbed so that groundwater does not contribute to the baseflow in the streams. This has caused extremely low flows in

Table 5.23 - Major Stream Drainages and Sub Drainages in Mississippi.

Major Stream Drainage	Sub Drainage
11. Mississippi River and Associated Drainages	11.1 Mississippi River
	11.2 Mississippi Alluvial Plain
	11.3 Upper Coastal Plain, Yazoo Drainage
	11.4 Big Black River Drainage
12. Northeast Mississippi Drainages	12.1 Northeast Hills, Tennessee River Drainage
	12.2 Tombigbee Drainage
	12.3 Lower Mississippi River North Drainage
13. Pearl River Drainages	13.1 Upper Coastal Plain, Pearl River Drainage
	13.2 Lower Coastal Plain, Pearl River Drainage
14. Southeast Mississippi Drainages	14.1 Pascagoula River Drainage
	14.2 Coastal Streams Drainage
15. Southwest Mississippi Drainages	15.1 Lake Pontchartrain Drainage
	15.2 Lower Mississippi River South Drainage

these streams during dry periods. Streams are impacted by sewage, industrial waste and agricultural runoff. The Mississippi Department of Environmental Quality (MDEQ) (2024) lists many factors which affect water quality in streams, including biological impairment, organic enrichment, pesticide contamination, elevated Phosphorus and Nitrogen levels, sedimentation, and pathogens.

Another significant potential threat to Mississippi streams is inadequate water flow due to consumptive water withdrawals. The flow regime in a stream is the dominant variable in determining the form and function of a stream. Minimum flow is determined by 7Q10 or the lowest 7-day average flow that occurs (on average) once every 10 years. Alternative instream flow levels which mimic the natural hydrograph are needed in Mississippi to provide for healthy stream ecosystems and aquatic biota. Stream riparian zones support some of the most dynamic wildlife assemblages compared to any other habitat. Healthy riparian zones also help stabilize stream banks and provide organic input and woody structure into stream channels.

Several culturally significant species utilize these habitats including sunfish, bass, catfish, and bowfin.

Small Streams. Streams of this type drain basins less than 75 square miles and often occur in the headwaters of larger streams. These streams typically have extensive canopy and low flow rates. Substrate, water depth and other microhabitat characteristics vary among streams and among reaches within these streams.

Loess Hills Small Streams. These are streams that are confined to the loess hills region of Mississippi, and are tributaries of the Big Black, Yazoo or Mississippi rivers.

Blackwater Small Streams. These streams are small, usually low gradient sluggish streams with dark, tannin- stained water. Although the waters are darkly stained, they are relatively clear.

Medium Streams. These drainage basins do not exceed 1,000 square miles. These streams of this type typically have less canopy, higher flow rates and more microhabitat types than small streams. Substrates vary from fine silt to boulders and bedrock under deep and shallow runs, riffles, deep pools and backwater areas. These streams may also have periodically inundated floodplains, which may be important for the survival of some species in the stream.

Blackwater Medium Streams. These streams are similar in size to the other medium streams but they have dark, tannin-stained waters.

Large Streams. Large streams drain basins greater than 1,000 square miles, typically have little canopy cover and contain a wide array of microhabitat types ranging from deep runs and pools to shallow riffles. Survival of some species may depend on off channel habitats and prolonged flooding over alluvial plains.

11. Mississippi River and Associated Drainages

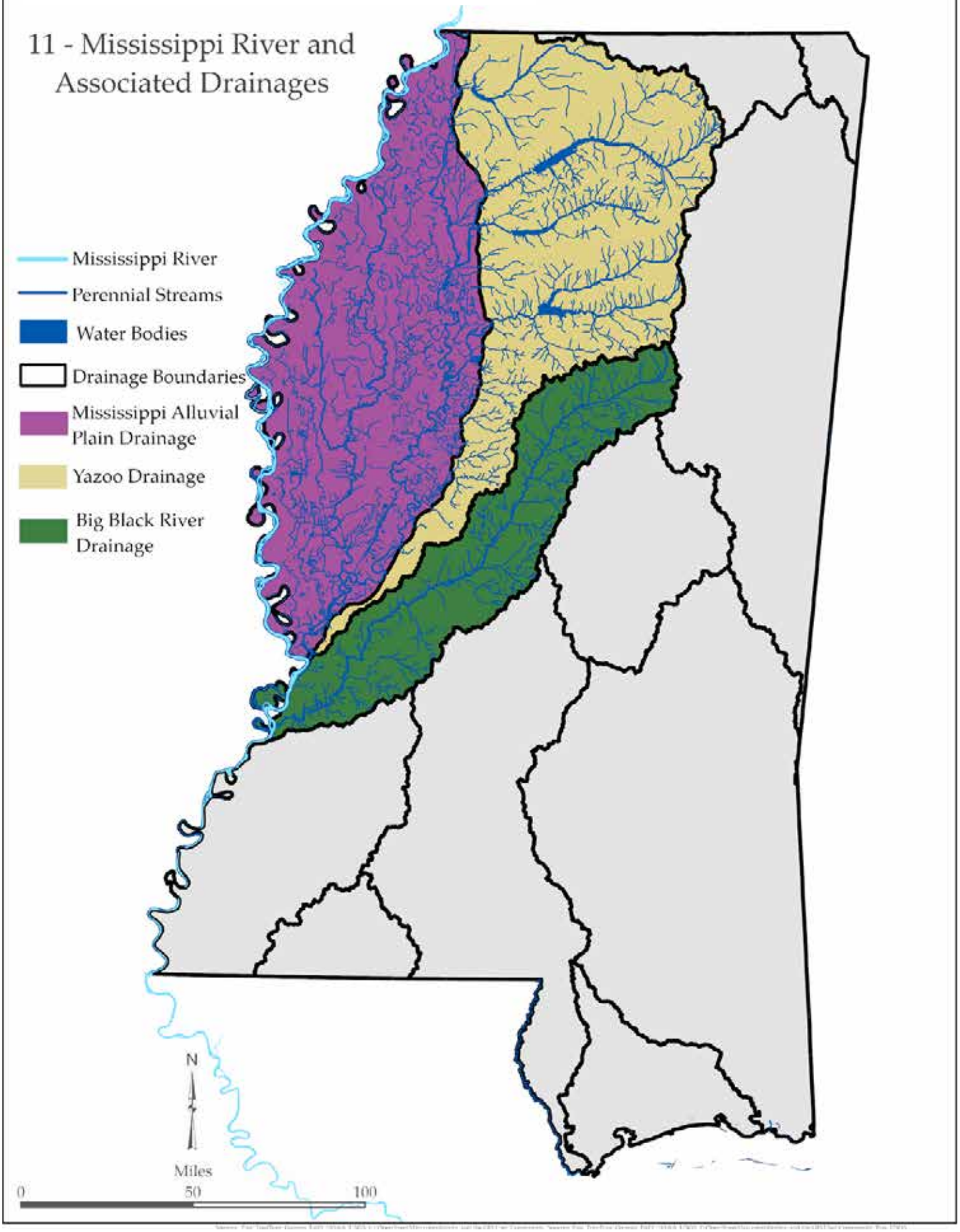


Figure 5.19. Map of Mississippi River and Associated Drainages

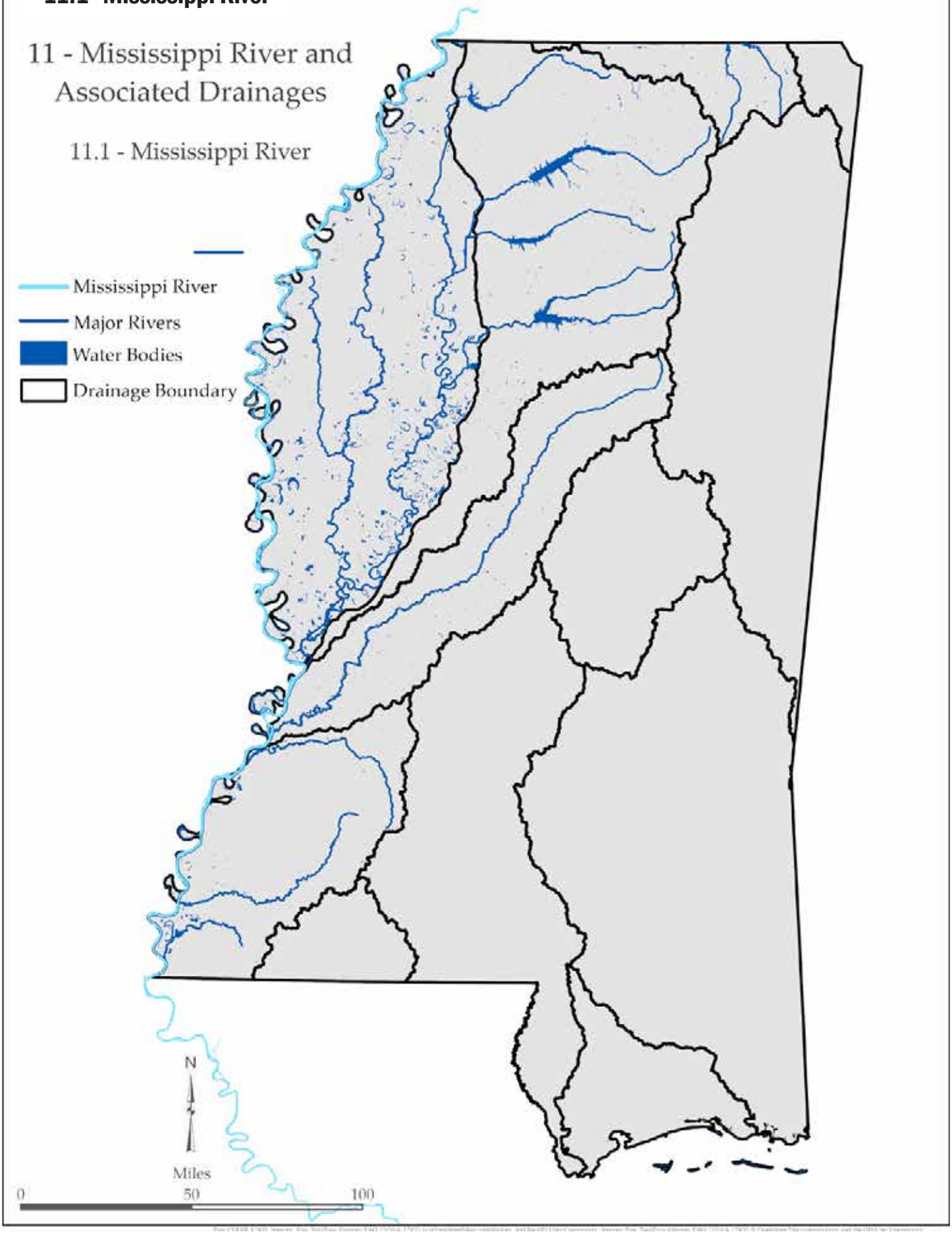


Figure 5.20. Map of Mississippi River

DESCRIPTION AND LOCATION

The Mississippi River as it borders Mississippi is a large, deep river with primarily sand or sand and gravel substrate. There are often large sand bars in the river bends. Many alterations have been made on the river, including cutting off of bendways to shorten the channel, and extensive channel stabilization with rip rap, articulated concrete mattress wing dams and dikes. Channels have also been dredged, and an extensive levee system contains floodwaters. Despite these modifications, the river has a unique fauna, for which research has been limited.

SIZE, CONDITION AND CONSERVATION STATUS

The Mississippi River is the largest river in the United States, draining about one-third of the land mass in the lower 48 states. The upstream drainage area of the Mississippi at Natchez is over 1,200,000 square miles. Because the Mississippi River is a very important artery for commerce and trade, it is constantly modified to maintain navigation channels. The channel has been shortened by cutting off river bendways. Dikes are used to direct flow of the river to maintain channels. The river's banks and the riverbed itself are armored with riprap and concrete to prevent erosion. Floodwaters are held in check by extensive levees. However, the sheer size of the Mississippi River makes it a dynamic and important biotic system, and one that is challenging to study. Because this river subtype is under constant modification it should be considered vulnerable in the state

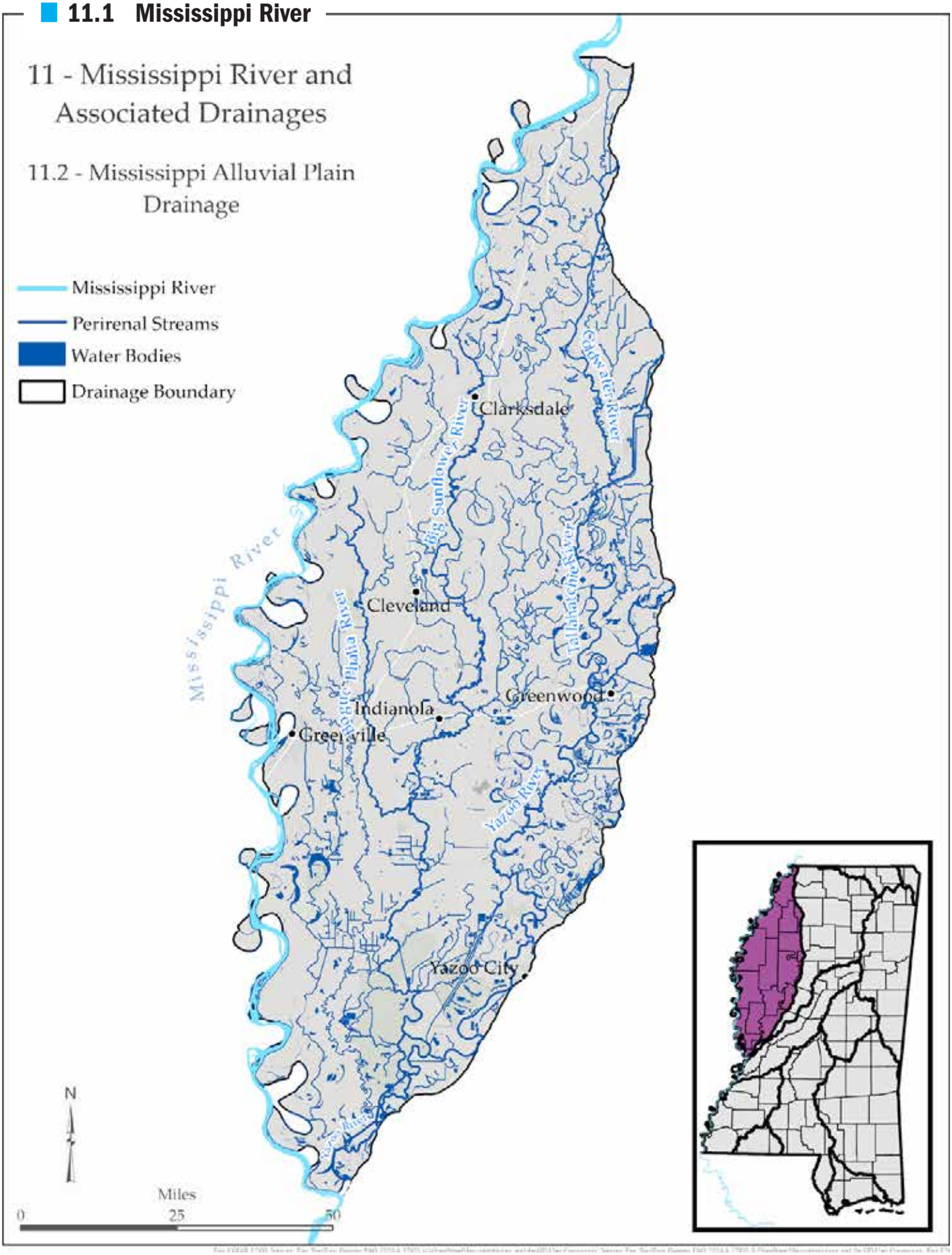
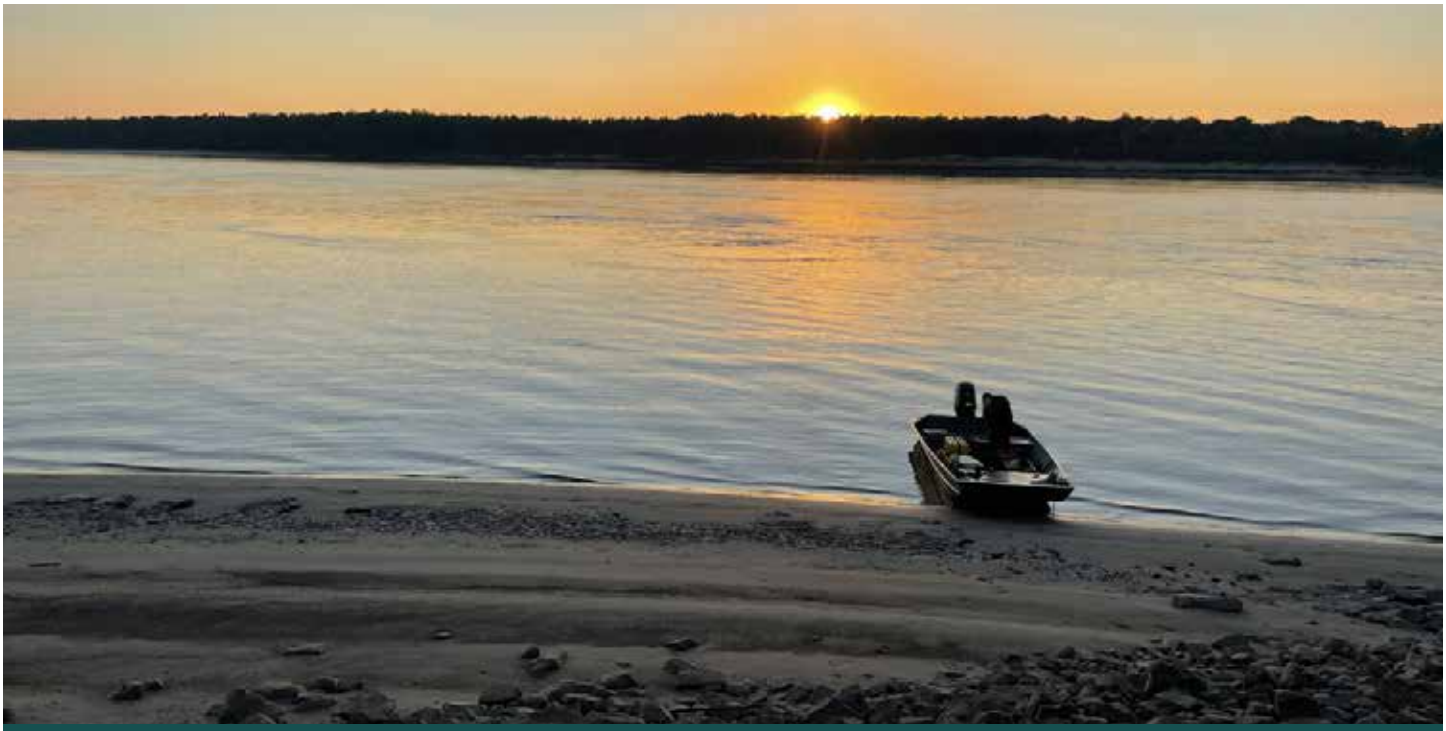


Figure 5.21. Map of Mississippi River Alluvial Plain



Mississippi River shoreline. *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

Although the Mississippi Alluvial Plain (MAP), also known as the Delta, is widest (approximately 70 miles) between Vicksburg and the Tennessee state line, it continues along the Mississippi River down to the Louisiana state line. In general, these are low gradient streams with fine substrate and sparse patches of gravel. The area is characterized by slow moving streams and abundant oxbows. This drainage includes the Big Sunflower, Tallahatchie and Yazoo rivers, and portions of the Yalobusha and Coldwater Rivers. Streams in this region have been highly modified for flood control and agricultural development. This region does, however, contain species found nowhere else in Mississippi. This system contains small, medium and large streams.

SIZE, CONDITION AND CONSERVATION STATUS

The Mississippi Alluvial Plain covers over 4.65 million acres in Western Mississippi. Streams in the MAP have been extensively modified for flood control and agricultural development. Many streams have been converted to straight canals to improve drainage for agriculture. Weirs and lowhead dams block many streams. Diversion canals have been constructed to divert water from streams during high flow. Efforts to manage water systems for agriculture and flood control within the MAP have resulted in reduction in water flows, lowering of water tables, and a "dewatering" of the alluvial plain, which has resulted in extremely low flows in some streams. Overall water quality is lower in this area than anywhere else in the state, with a region-wide advisory regarding fish consumption and numerous consumption bans in some waters of the alluvial plain because of high pesticide levels. The MAP is considered critically imperiled because of its high conservation priority rank and the widespread degradation of stream habitats in this region. Mississippi Department of Environmental Quality has or is currently devising TMDLs for many streams in the MAP (MDEQ 2006).

11.2 Upper Coastal Plain, Yazoo Drainage

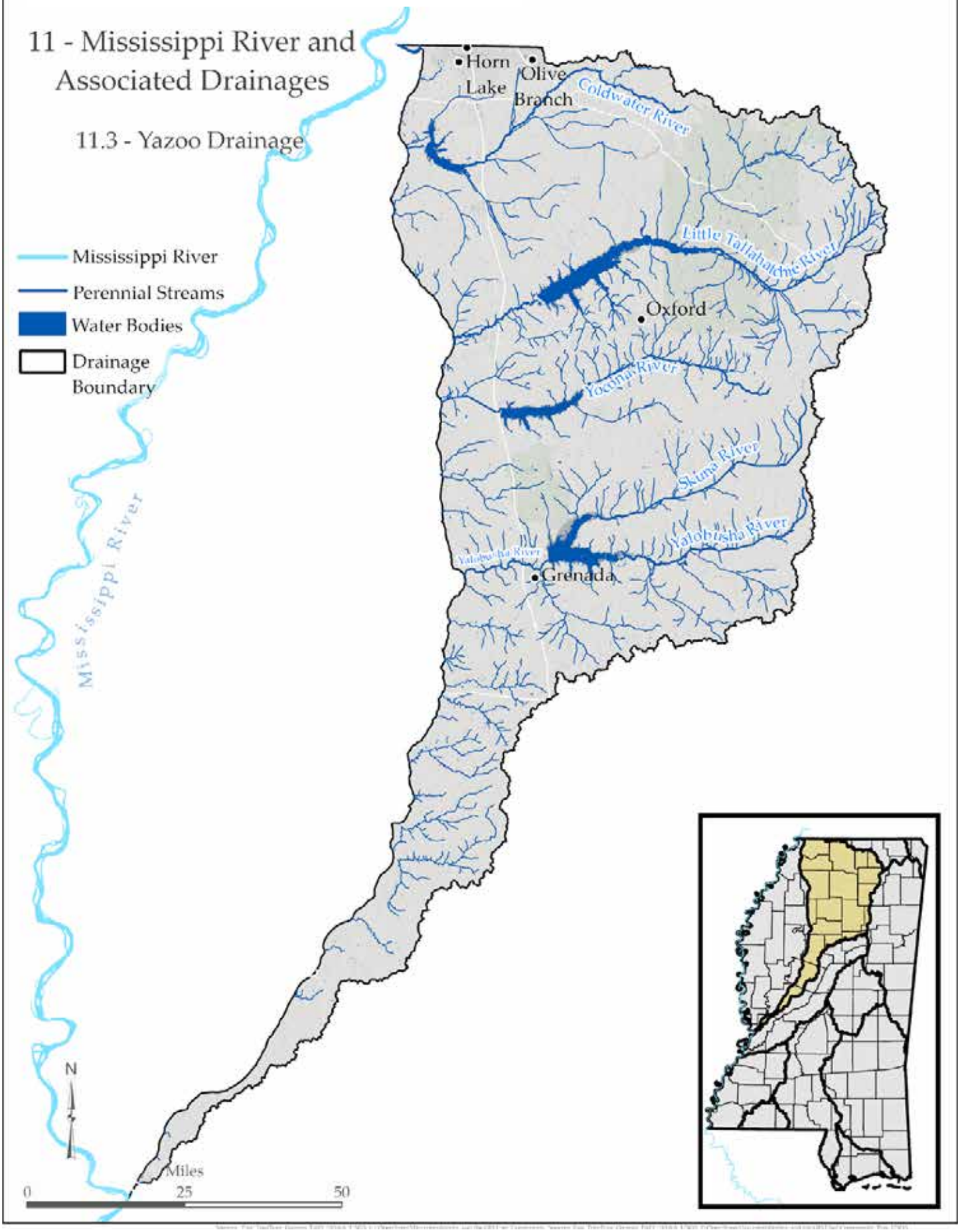


Figure 5.22. Map of Upper Coastal Plain, Yazoo Drainage



Yazoo River. *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

These streams are tributaries of the Yazoo River which lie east of the Mississippi River Alluvial Plain. Portions of the Tallahatchie, Yocona, Yalobusha and Coldwater rivers occur in this region, as well as many smaller tributaries of the Yazoo River. Many streams in this region have been modified by channelization, construction of diversion canals, desnagging and construction of flood control dams. This system contains small streams, Loess Hills streams, medium, and large streams.

SIZE, CONDITION AND CONSERVATION STATUS

The Upper Yazoo River Drainage covers approximately 4.38 million acres in northwestern Mississippi. Many streams in the upper Yazoo drainage have been channelized. Much of the surrounding lands have been converted to agriculture. The four main tributaries of the Yazoo River (Coldwater, Tallahatchie, Yocona and Yalobusha rivers) have been impounded by flood control reservoirs. Barriers to fish passage present a significant obstacle to movement of numerous species including many SGCN (i.e. Yazoo Darter). The stream habitat that remains in this drainage is considered to be vulnerable because of extensive alteration caused by channelization, agricultural use of surrounding lands and impoundments. Of the streams in the Yazoo Drainage monitored by the Mississippi Department of Environmental Quality 23 percent are rated good or very good, 36 percent are rated as fair, and 41 percent are rated as poor (MDEQ 2006).

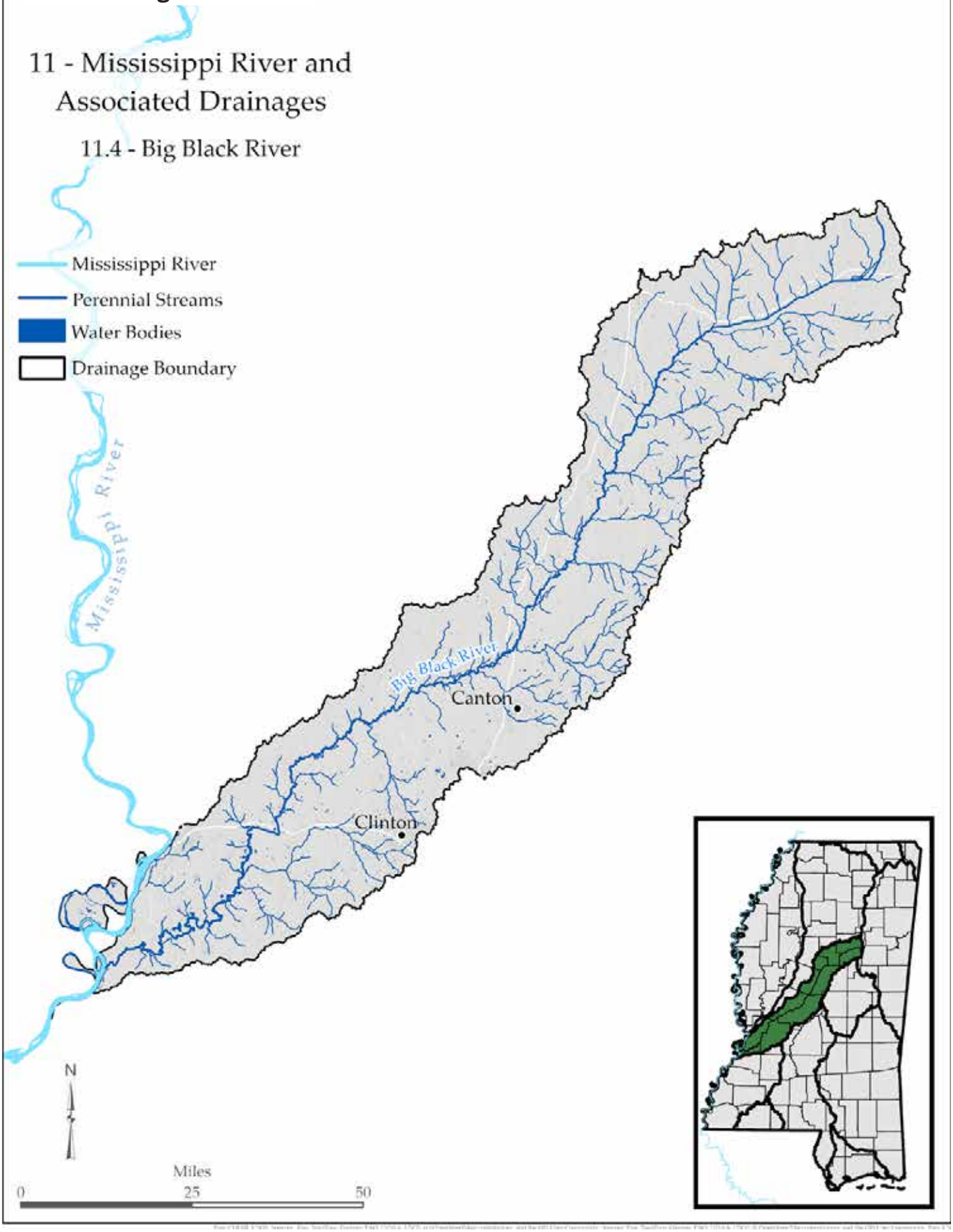


Figure 5.23. Map of Big Black River.



Big Black River. *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

The Big Black River lies south and east of the Yazoo River. The drainage extends 155 miles and averages 22 miles wide and covers all or part of 13 counties. This river has not been modified as extensively as some other large rivers in the state, although many of its tributaries have been channelized. Headcutting has destabilized much of the Big Black River in recent years. This system contains small, Loess Hills, medium, and large streams.

SIZE, CONDITION AND CONSERVATION STATUS

The Big Black River Drainage covers approximately 2.27 million acres in Mississippi. Many tributaries of the Big Black River have been channelized. The main stem has not, but has experienced extensive erosion in recent years, greatly destabilizing the stream channel.

Agriculture and other land-use practices on adjacent lands also impact the Big Black and its tributaries. Because of its high conservation priority rank and the decline in quality of stream habitats in this drainage, the Big Black Drainage is considered imperiled in Mississippi.

Table 5.24 - SGCN in Mississippi River and Associated Drainages.

Taxa Group (Class)	Tier	Scientific Name	Common Name	Mississippi River	MS Alluvial Plain	Upper Coastal Plain, Yazoo River Drainage	Big Black River Drainage
Crayfishes	4	*Faxonius etnieri*	Ets Crayfish			X	X
Crayfishes	1	*Faxonius hartfieldi*	Yazoo Crayfish			X	X
Crayfishes	1	*Hobbseus yalobushensis*	Yalobusha Rivulet Crayfish			X	X
Crayfishes	2	*Procambarus lylei*	Shutispear Crayfish			X	
Crayfishes	3	*Procambarus viaeviridis*	Vernal Crayfish		X	X	X
Insects	3	*Aeshna umbrosa*	Shadow Darner			X	
Insects	2	*Agarodes stannardi*	Stannard's Agarodes Caddisfly			X	
Insects	3	*Amphiagrion saucium*	Eastern Red Damsel			X	
Insects	2	*Hydroperla fugitans*	Austin Springfly	X			
Insects	3	*Leuctra colemanorum*	Yalobusha Needlefly			X	
Insects	3	*Nehalennia gracilis*	Sphagnum Sprite			X	
Insects	4	*Perlesta lagoi*	A Stonefly			X	X
Insects	2	*Spinalis simplex*	Wallace's Deepwater Mayfly	X			
Mussels	2	*Actinonaias ligamentina*	Mucket		X		
Mussels	2	*Arcidens confragosus*	Rock Pocketbook	X	X	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Mississippi River	MS Alluvial Plain	Upper Coastal Plain, Yazoo River Drainage	Big Black River Drainage
Mussels	4	*Cyprogenia aberti*	Western Fanshell		E		
Mussels	2	*Ellipsaria lineolata*	Butterfly		X		X
Mussels	2	*Eurynia dilatata*	Spike		X		
Mussels	2	*Lampsilis hydiana*	Louisiana Fatmucket		X		
Mussels	3	*Lasmigona complanata*	White Heelsplitter		X		X
Mussels	1	*Ligumia recta*	Black Sandshell		X		
Mussels	2	*Obovaria arkansasensis*	Southern Hickorynut				X
Mussels	1	*Obovaria subrotunda*	Round Hickorynut				X
Mussels	1	*Plethobasus cyphyus*	Sheepnose		X		
Mussels	1	*Pleurobema sintoxia*	Round Pigtoe		X	X	X
Mussels	1	*Potamilus capax*	Fat Pocketbook	X	X		
Mussels	1	*Strophitus radiatus*	Rayed Creekshell		X	X	X
Mussels	2	*Strophitus undulatus*	Creeper		X	X	X
Mussels	1	*Theliderma cylindrica cylindrica*	Rabbitsfoot		X		X
Mussels	4	*Theliderma metanevra*	Monkeyface		E	E	
Mussels	3	*Uniomerus declivis*	Tapered Pondhorn		X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Mississippi River	MS Alluvial Plain	Upper Coastal Plain, Yazoo River Drainage	Big Black River Drainage
Snails	2	*Lithasia armigera*	Armored Rocksnail	X			
Snails	1	*Lithasia hubrichti*	Big Black Rocksnail				X
Snails	2	*Lithasia verrucosa*	Varicose Rocksnail	X			
Amphibians	4	*Necturus maculosus*	Common Mudpuppy	X	X		
Amphibians	3	*Pseudotriton ruber*	Red Salamander			X	X
Birds	3	*Chlidonias niger*	Black Tern	X			
Birds	2	*Riparia riparia*	Bank Swallow (breeding population)	X			
Birds	2	*Sternula antillarum athalassos*	Interior Least Tern	X	X		
Fishes	2	*Acipenser fulvescens*	Lake Sturgeon	E			
Fishes	4	*Alosa chrysochloris*	Skipjack Herring	X	X		X
Fishes	4	*Ammocrypta clara*	Western Sand Darter				E
Fishes	4	*Anguilla rostrata*	American Eel	X	X	X	
Fishes	2	*Atractosteus spatula*	Alligator Gar	X	X	X	X
Fishes	2	*Chrosomus erythrogaster*	Southern Redbelly Dace		X	X	
Fishes	3	*Crystallaria asprella*	Crystal Darter	X			
Fishes	3	*Cycleptus elongatus*	Blue Sucker	X	X	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Mississippi River	MS Alluvial Plain	Upper Coastal Plain, Yazoo River Drainage	Big Black River Drainage
Fishes	3	*Cyprinella whipplei*	Steelcolor Shiner			X	
Fishes	3	*Etheostoma asprigene*	Mud Darter		X	X	X
Fishes	1	*Etheostoma faulkneri*	Yoknapatawpha Darter			X	
Fishes	1	*Etheostoma raneyi*	Yazoo Darter			X	
Fishes	3	*Fundulus blairae*	Western Starhead Topminnow		X	X	X
Fishes	3	*Fundulus dispar*	Northern Starhead Topminnow	X	X	X	X
Fishes	3	*Hybopsis amnis*	Pallid Shiner		X	X	X
Fishes	3	*Ichthyomyzon castaneus*	Chestnut Lamprey	X	X	X	X
Fishes	2	*Ichthyomyzon unicuspis*	Silver Lamprey	X	X		
Fishes	3	*Ictiobus niger*	Black Buffalo	X	X	X	X
Fishes	1	*Macrhybopsis meeki*	Sicklefin Chub	X			
Fishes	2	*Miniellus sabinae*	Sabine Shiner			X	X
Fishes	2	*Noturus flavus*	Stonecat	X			
Fishes	1	*Noturus gladiator*	Piebald Madtom			X	X
Fishes	2	*Percina phoxocephala*	Slenderhead Darter			E	
Fishes	3	*Polyodon spathula*	Paddlefish	X	X	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Mississippi River	MS Alluvial Plain	Upper Coastal Plain, Yazoo River Drainage	Big Black River Drainage
Fishes	1	*Scaphirhynchus albus*	Pallid Sturgeon	X			
Fishes	3	*Scaphirhynchus platorynchus*	Shovelnose Sturgeon	X	X		
Fishes	2	*Stizostedion canadense*	Sauger	X			
Reptiles	1	*Macrochelys temminckii*	Alligator Snapping Turtle	X	X	X	X
Vascular Plants	4	*Didiplis diandra*	Water-purslane	X			X
Vascular Plants	2	*Heteranthera dubia*	Grassleaf Mud-plaintain		X		

12. Northeast Mississippi Drainages

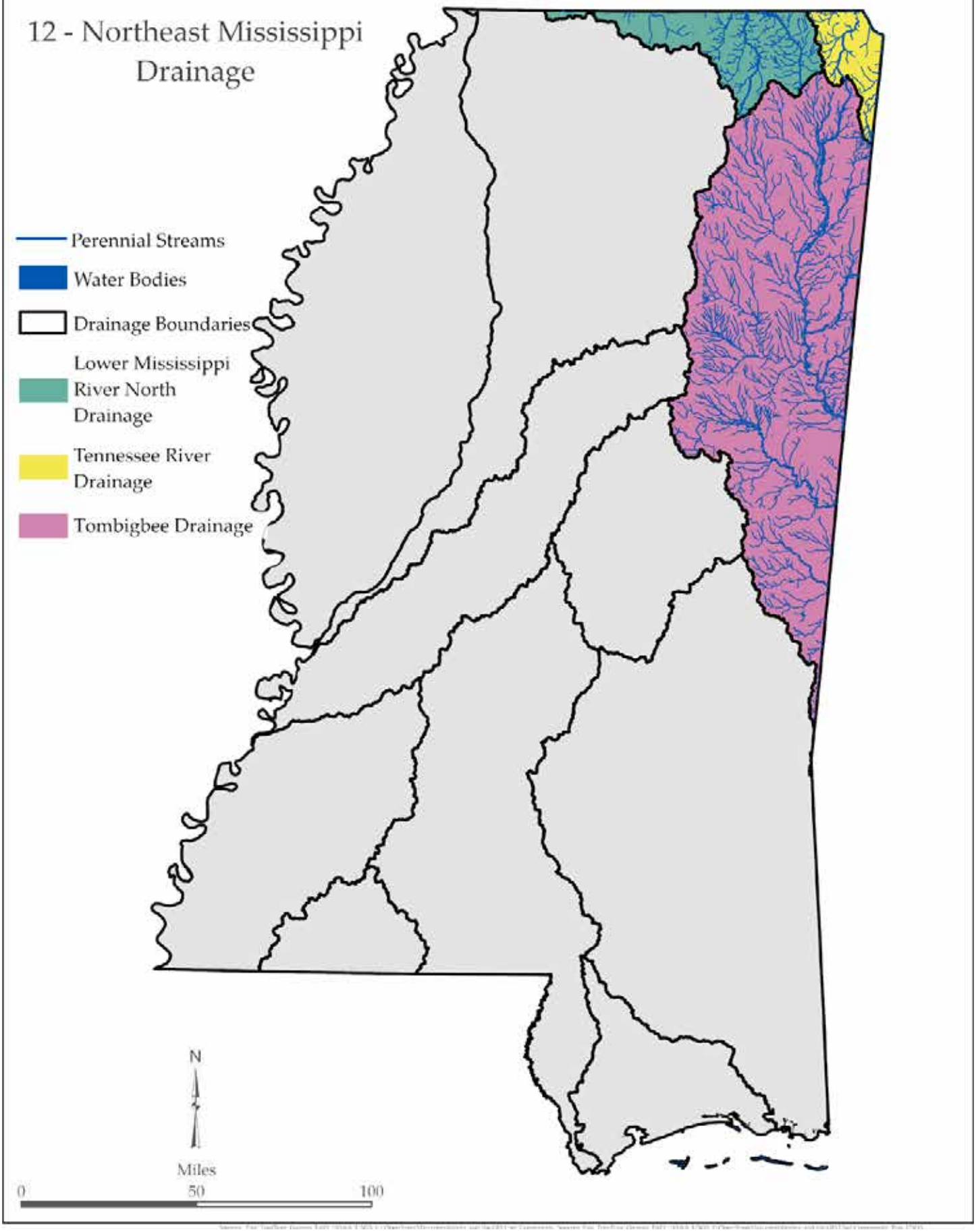


Figure 5.24. Map of Northeast Mississippi Drainages.

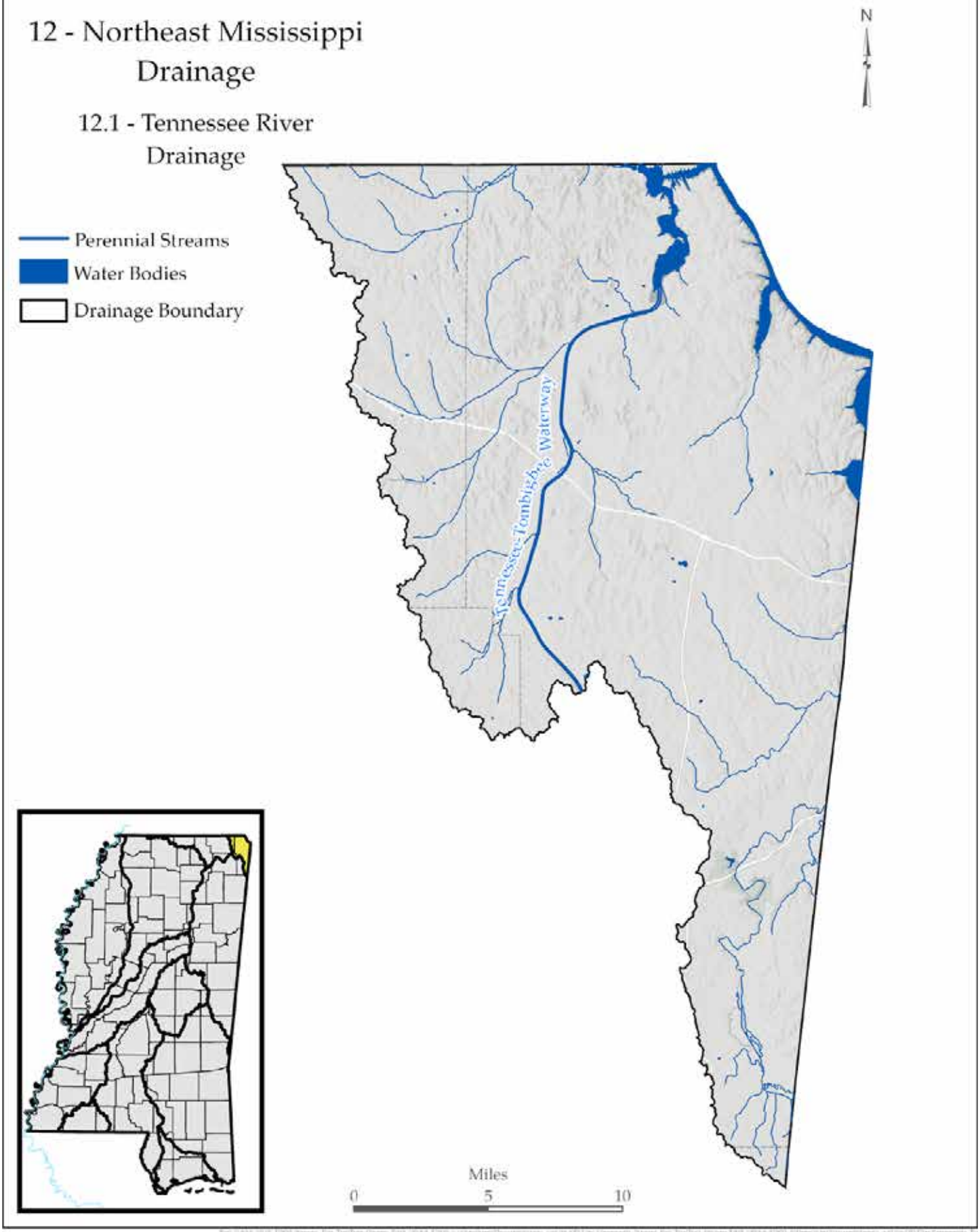


Figure 5.25. Map of Northeast Hills, Tennessee River Drainage.



Bear Creek in the Tennessee River Drainage. *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

The tributaries of the Tennessee River in the fall line hills of northeast Mississippi are unique among Mississippi streams. They are characterized by relatively high gradient and extensive areas of coarse substrate ranging from gravel to boulders, as well as exposed areas of bedrock. This area includes the Tennessee River, Bear and Yellow Creeks. These streams are faunally distinct with numerous species occurring only in this relatively small region within the state.

SIZE, CONDITION AND CONSERVATION STATUS

Spanning 269,286 acres, the Tennessee River drains only about 1,000 square miles in Northeast Mississippi. There are very few streams in this habitat subtype because very little of the Tennessee drainage lies within Mississippi's borders. Some of these streams have been at least partially channelized. Also, their flow regimes have been modified by impoundments, some of which lie outside of Mississippi. However, many of these streams have a variety of aquatic habitats which support unique and diverse faunas. Because of the unique fauna occurring in these streams, the relatively small area where these streams occur and past alterations that have occurred in these streams, they are considered vulnerable in the state. Of the streams in the Tennessee River drainage monitored by the Mississippi Department of Environmental Quality 46 percent are rated good or very good, 46 percent are rated as fair, and 8 percent are rated as poor (MDEQ 2008c).

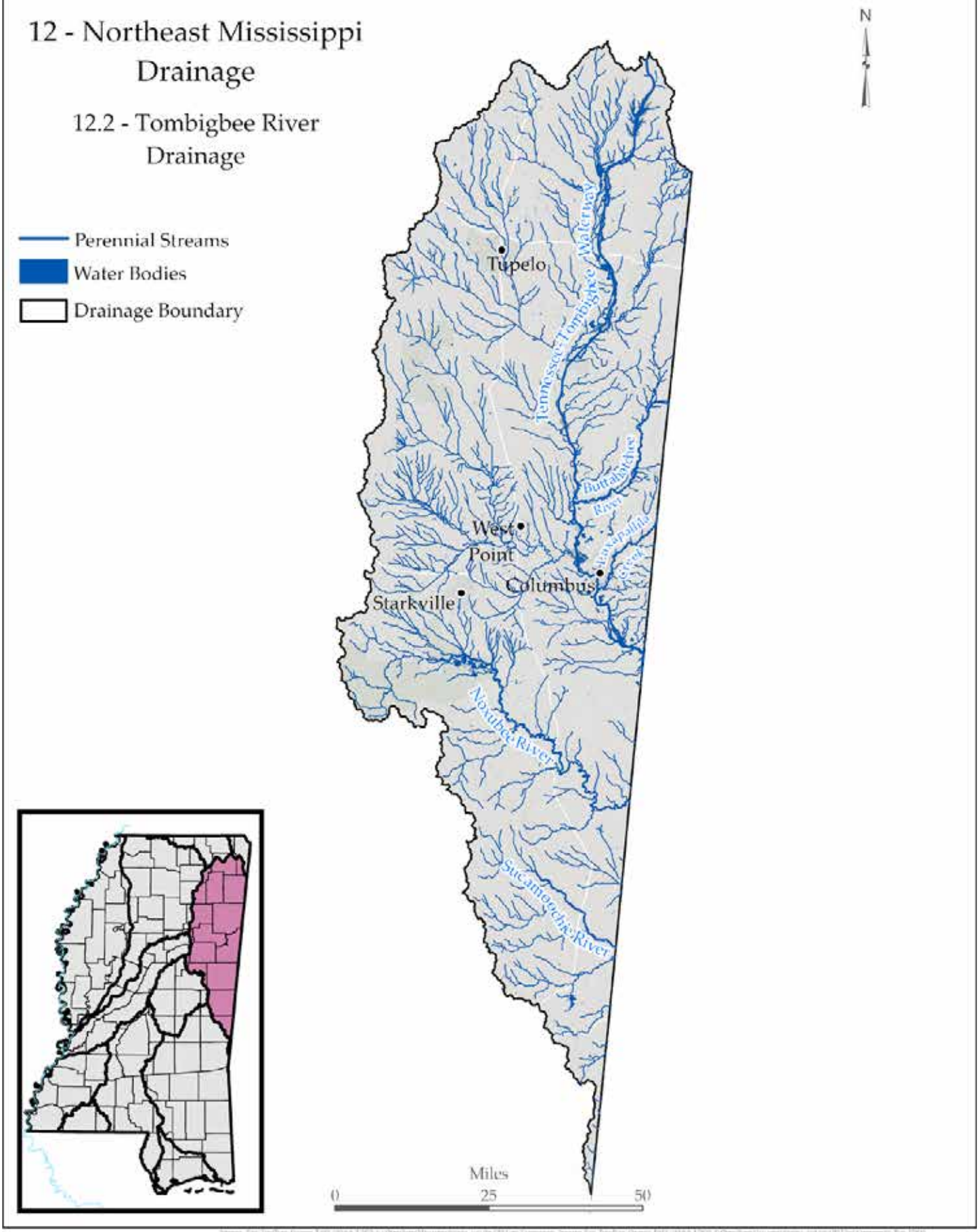


Figure 5.26. Map of Tombigbee Drainage.



Bull Mountain Creek in the Tombigbee River Drainage *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

Streams in this category are tributaries of the Tombigbee River, which has been highly modified by construction of the Tennessee-Tombigbee Waterway. The drainage covers 6,100 square miles and covers all or a portion of 19 counties in the Northeast part of Mississippi covering 3.89 million acres. There are 11,700 miles of streams in the area, most of which only carry water after heavy rains. The streams flow into Alabama before entering the Gulf of Mexico through Mobile Bay. Fauna found nowhere else in the state inhabit streams in this region. The streams of this drainage fall into three size categories: small, medium and large.

SIZE, CONDITION AND CONSERVATION STATUS

Within Mississippi, the drainage area of the Tombigbee Within Mississippi, the drainage area of the Tombigbee River covers approximately 6,100 square miles. The Tombigbee drainage has been highly modified by the construction of the Tennessee-Tombigbee Waterway. The waterway is a series of impoundments and canals with locks and dams for navigation. This has effectively isolated many tributaries by creating a lentic barrier between lotic systems. Many of the tributaries have been altered by channelization .Headcutting, erosion, and sedimentation are often problems, even in unchannelized reaches. Because of the large number of species of concern in this drainage, and the disturbed state of the drainage, it is considered imperiled in the state. Of the streams in the Tombigbee Drainage monitored by the Mississippi Department of Environmental Quality 25 percent are rated good or very good, 33 percent are rated as fair, and 42 percent rated as poor (MDEQ 2008c).



The Tombigbee River has been highly modified by the construction of the Tennessee Tombigbee Waterway. *Credit: Calvin Rezac*

12.2 Lower MS North Drainage (Hatchie and Wolf)

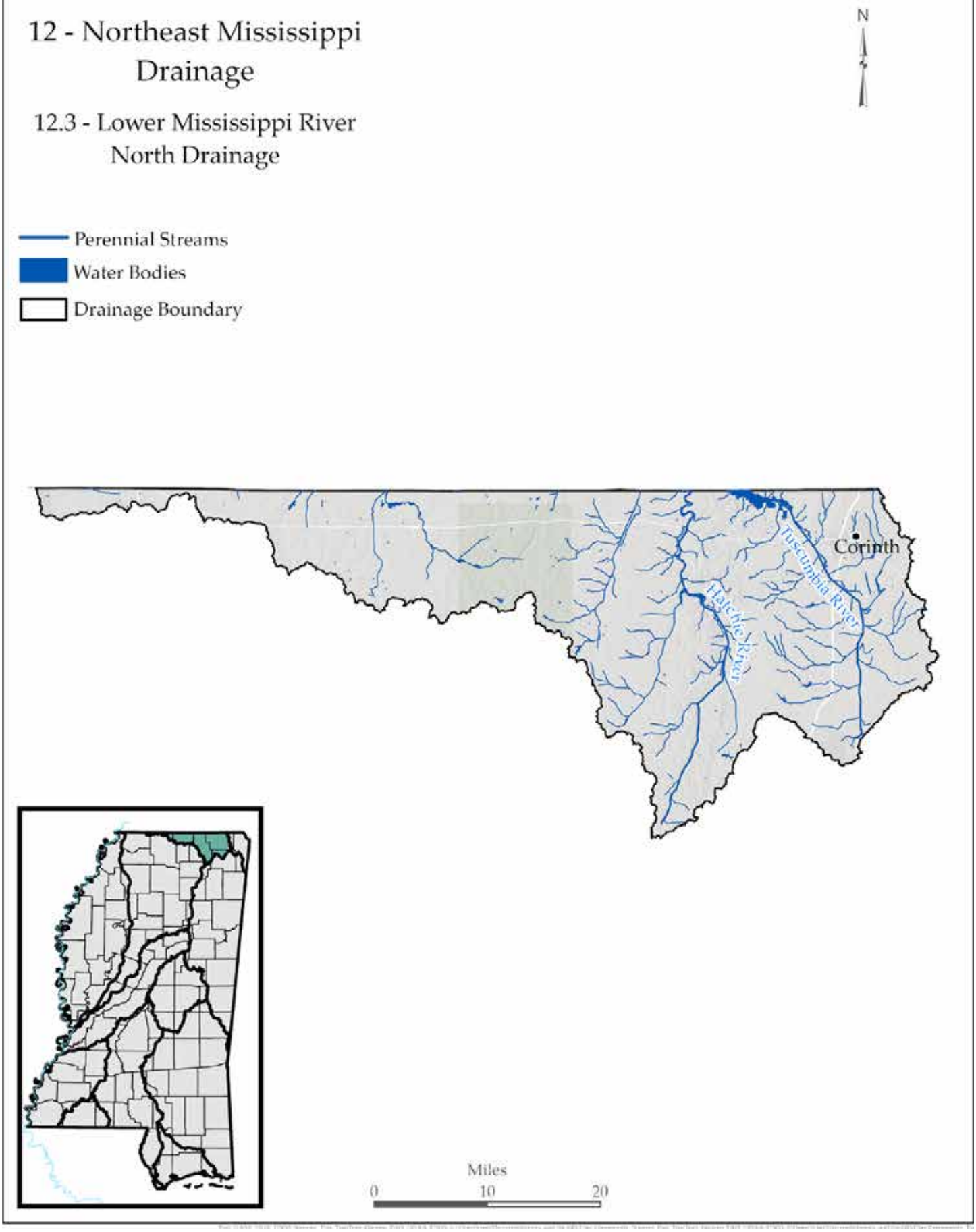


Figure 5.27. Map of Lower MS North Drainage (Hatchie and Wolf).



Wolf River in the Lower Mississippi North Drainage. *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

Although most systems in this drainage occur outside of Mississippi, portions of the Hatchie, Tuscumbia, and Wolf River systems in North Mississippi are part of this drainage. The basin drains a portion of Tennessee, and approximately 1,000 square miles in Mississippi. This system contains Small and Medium streams.

SIZE, CONDITION AND CONSERVATION STATUS

The Lower Mississippi North Drainage covers 644,149 acres and approximately 1,075 square miles in North Mississippi. Much of the Lower Mississippi North Drainage has been channelized in the past. There are very few unmodified streams in the drainage in Mississippi. However, because of the species of concern which occur in the remaining habitat, this habitat is considered vulnerable.

Table 5.25 - SGCN for Northeast Mississippi Drainages.

Taxa Group (Class)	Tier	Scientific Name	Common Name	Northeast Hills, Tennessee River Drainage	Tombigbee River Drainage	Lower MS North Drainage (Hatchie and Wolf)
Crayfishes	2	*Cambarus girardianus*	Tanback Crayfish	X		
Crayfishes	2	*Cambarus rusticiformis*	Depression Crayfish	X		
Crayfishes	3	*Faxonius erichsonianus*	Reticulate Crayfish	X		
Crayfishes	4	*Faxonius etnieri*	Ets Crayfish	X	X	X
Crayfishes	3	*Faxonius jonesi*	Sucarnoochee River Crayfish		X	
Crayfishes	3	*Faxonius mississippiensis*	Mississippi Crayfish		X	
Crayfishes	2	*Faxonius placidus*	Bigclaw Crayfish	X		
Crayfishes	2	*Faxonius validus*	Powerful Crayfish	X		
Crayfishes	1	*Faxonius wrighti*	Hardin Crayfish	X		
Crayfishes	2	*Faxonius yanahlindus*	Spinywrist Crayfish	X		
Crayfishes	1	*Hobbseus cristatus*	Crested Rivulet Crayfish		X	
Crayfishes	1	*Hobbseus orconectoides*	Oktibbeha Rivulet Crayfish		X	
Crayfishes	3	*Hobbseus petilus*	Tombigbee Rivulet Crayfish		X	
Crayfishes	3	*Hobbseus prominens*	Prominence Rivulet Crayfish		X	
Crayfishes	3	*Lacunicambarus dalyae*	Jewel Mudbug	X		
Crayfishes	3	*Procambarus ablusus*	Hatchie River Crayfish	X		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Northeast Hills, Tennessee River Drainage	Tombigbee River Drainage	Lower MS North Drainage (Hatchie and Wolf)
Crayfishes	1	*Procambarus lagniappe*	Lagniappe Crayfish		X	
Crayfishes	3	*Procambarus viaeviridis*	Vernal Crayfish			X
Insects	3	*Aeshna umbrosa*	Shadow Darner			X
Insects	2	*Agarodes stannardi*	Stannard's Agarodes Caddisfly			X
Insects	4	*Allocapnia aurora*	Aurora Snowfly		X	
Insects	4	*Allocapnia polemistis*	Black Warrior Snowfly	X	X	
Insects	3	*Amphiagrion saucium*	Eastern Red Damsel			X
Insects	4	*Hydroptila cretosa*	A Caddisfly		X	
Insects	4	*Hydroptila homochitta*	A Caddisfly		X	
Insects	4	*Hydroptila poirrieri*	A Caddisfly	X		
Insects	3	*Macromia alleghaniensis*	Allegheny River Cruiser		X	
Insects	3	*Nehalennia gracilis*	Sphagnum Sprite			X
Insects	3	*Neurocordulia yamaskanensis*	Stygian Shadowdragon		X	
Insects	3	*Stylogomphus albistylus*	Eastern Least Clubtail	X	X	X
Mussels	2	*Arcidens confragosus*	Rock Pocketbook	X	X	
Mussels	2	*Cyclonaias tuberculata*	Purple Wartyback	X		
Mussels	2	*Ellipsaria lineolata*	Butterfly	X	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	Northeast Hills, Tennessee River Drainage	Tombigbee River Drainage	Lower MS North Drainage (Hatchie and Wolf)
Mussels	1	*Elliptio arca*	Alabama Spike		X	
Mussels	1	*Elliptio arctata*	Delicate Spike		X	
Mussels	1	*Epioblasma brevidens*	Cumberlandian Combshell	X		
Mussels	1	*Epioblasma penita*	Southern Combshell		X	
Mussels	2	*Eurynia dilatata*	Spike			X
Mussels	1	*Hamiota perovalis*	Orange-nacre Mucket		X	
Mussels	2	*Lampsilis fasciola*	Wavy-rayed Lampmussel	X		
Mussels	2	*Lampsilis ovata*	Pocketbook	X		
Mussels	2	*Lasmigona alabamensis*	Alabama Heelsplitter		X	
Mussels	3	*Lasmigona complanata*	White Heelsplitter	X		
Mussels	2	*Lasmigona costata*	Flutedshell	X		
Mussels	1	*Ligumia recta*	Black Sandshell	X	X	
Mussels	1	*Medionidus acutissimus*	Alabama Moccasinshell		X	
Mussels	2	*Obovaria arkansasensis*	Southern Hickorynut		X	
Mussels	1	*Obovaria unicolor*	Alabama Hickorynut		X	
Mussels	1	*Pleurobema decisum*	Southern Clubshell		X	
Mussels	1	*Pleurobema perovatum*	Ovate Clubshell		X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	Northeast Hills, Tennessee River Drainage	Tombigbee River Drainage	Lower MS North Drainage (Hatchie and Wolf)
Mussels	1	*Pleuronaia dolabelloides*	Slabside Pearlymussel	X		
Mussels	3	*Potamilus alatus*	Pink Heelsplitter	X		
Mussels	1	*Potamilus inflatus*	Inflated Heelsplitter		X	
Mussels	2	*Pseudodontoides subvexus*	Southern Creekmussel		X	
Mussels	2	*Ptychobranchus fasciolaris*	Kidneyshell	X		
Mussels	2	*Quadrula rumphiana*	Ridged Mapleleaf		X	
Mussels	1	*Strophitus radiatus*	Rayed Creekshell		X	
Mussels	2	*Strophitus undulatus*	Creeper	X		X
Mussels	1	*Theliderma cylindrica cylindrica*	Rabbitsfoot	X		
Mussels	1	*Toxolasma lividum*	Purple Lilliput	X		
Mussels	3	*Uniomerus declivis*	Tapered Pondhorn		X	
Mussels	2	*Villosa vanuxmensis*	Mountain Creekshell	X		
Snails	1	*Elimia cylindracea*	Cylinder Elimia			X
Snails	1	*Lithasia lima*	Warty Rocksnail	X		
Snails	4	*Pleurocera vestita*	Brook Hornsnail		X	
Amphibians	1	*Cryptobranchus alleganiensis*	Hellbender	X		
Amphibians	2	*Gyrinophilus porphyriticus*	Spring Salamander	X		

Taxa Group (Class)	Tier	Scientific Name	Common Name	Northeast Hills, Tennessee River Drainage	Tombigbee River Drainage	Lower MS North Drainage (Hatchie and Wolf)
Amphibians	4	*Necturus maculosus*	Common Mudpuppy	X		
Amphibians	3	*Pseudotriton ruber*	Red Salamander	X	X	X
Fishes	2	*Acipenser fulvescens*	Lake Sturgeon	X		
Fishes	2	*Alburnops candidus*	Silverside Shiner		X	
Fishes	1	*Alburnops edwardraneyi*	Fluvial Shiner		X	
Fishes	4	*Alosa chrysochloris*	Skipjack Herring	X	X	
Fishes	2	*Ambloplites rupestris*	Rock Bass	X		
Fishes	4	*Anguilla rostrata*	American Eel		X	X
Fishes	3	*Clinostomus funduloides*	Rosyside Dace	X		
Fishes	3	*Cottus carolinae*	Banded Sculpin	X		
Fishes	3	*Crystallaria asprella*	Crystal Darter		X	
Fishes	3	*Cycleptus meridionalis*	Southeastern Blue Sucker		X	
Fishes	3	*Cyprinella callistia*	Alabama Shiner		X	
Fishes	2	*Cyprinella galactura*	Whitetail Shiner	X		
Fishes	3	*Cyprinella spiloptera*	Spotfin Shiner	X		
Fishes	3	*Cyprinella whipplei*	Steelcolor Shiner	X		X
Fishes	3	*Etheostoma blennioides*	Greenside Darter	X		

Taxa Group (Class)	Tier	Scientific Name	Common Name	Northeast Hills, Tennessee River Drainage	Tombigbee River Drainage	Lower MS North Drainage (Hatchie and Wolf)
Fishes	3	*Etheostoma duryi*	Black Darter	X		
Fishes	3	*Etheostoma flabellare*	Fantail Darter	X		
Fishes	3	*Etheostoma jessiae*	Blueside Darter	X		
Fishes	3	*Etheostoma kennicotti*	Stripetail Darter	X		
Fishes	3	*Etheostoma lachneri*	Tombigbee Darter		X	
Fishes	2	*Etheostoma nigripinne*	Blackfin Darter	X		
Fishes	3	*Etheostoma rupestre*	Rock Darter		X	
Fishes	2	*Etheostoma simoterum*	Snubnose Darter	X		
Fishes	2	*Etheostoma zonifer*	Backwater Darter		X	
Fishes	3	*Fundulus blairae*	Western Starhead Topminnow		X	
Fishes	3	*Fundulus dispar*	Northern Starhead Topminnow		X	X
Fishes	3	*Hybopsis amnis*	Pallid Shiner			X
Fishes	3	*Ichthyomyzon castaneus*	Chestnut Lamprey	X	X	
Fishes	3	*Ictiobus niger*	Black Buffalo	X	X	
Fishes	2	*Lethenteron appendix*	American Brook Lamprey	X		
Fishes	3	*Lythrurus fasciolaris*	Scarlet Shiner	X		
Fishes	3	*Miniellus boops*	Bigeye Shiner	X		

Taxa Group (Class)	Tier	Scientific Name	Common Name	Northeast Hills, Tennessee River Drainage	Tombigbee River Drainage	Lower MS North Drainage (Hatchie and Wolf)
Fishes	2	*Moxostoma anisurum*	Silver Redhorse	X		
Fishes	2	*Moxostoma breviceps*	Smallmouth Redhorse	X		
Fishes	3	*Moxostoma carinatum*	River Redhorse	X	X	
Fishes	3	*Moxostoma duquesnei*	Black Redhorse	X		
Fishes	3	*Nothonotus rufilineatus*	Redline Darter	X		
Fishes	3	*Notropis micropteryx*	Highland Shiner	X		
Fishes	4	*Noturus exilis*	Slender Madtom	X		
Fishes	1	*Noturus gladiator*	Piebald Madtom			X
Fishes	3	*Noturus munitus*	Frecklebelly Madtom		X	
Fishes	2	*Percina evides*	Gilt Darter	X		
Fishes	3	*Percina kathae*	Mobile Logperch		X	
Fishes	1	*Percina lenticula*	Freckled Darter		X	
Fishes	2	*Percina phoxocephala*	Slenderhead Darter	X		
Fishes	4	*Percina tanasi*	Snail Darter	X		
Fishes	3	*Polyodon spathula*	Paddlefish		X	
Fishes	2	*Rhinichthys obtusus*	Blacknose Dace	X		
Fishes	2	*Stizostedion canadense*	Sauger	E		

Taxa Group (Class)	Tier	Scientific Name	Common Name	Northeast Hills, Tennessee River Drainage	Tombigbee River Drainage	Lower MS North Drainage (Hatchie and Wolf)
Fishes	4	*Stizostedion sp. cf. vitreum*	Southern Walleye		X	
Reptiles	2	*Graptemys geographica*	Northern Map Turtle	X		
Reptiles	3	*Graptemys nigrinoda*	Black-knobbed Map Turtle		X	
Reptiles	1	*Graptemys pulchra*	Alabama Map Turtle		X	
Reptiles	1	*Macrochelys temminckii*	Alligator Snapping Turtle		X	X
Reptiles	2	*Regina septemvittata*	Queen Snake	X		
Vascular Plants	2	*Carex torta*	Twisted Sedge	X		
Vascular Plants	4	*Didiplis diandra*	Water-purslane		X	X
Vascular Plants	2	*Heteranthera dubia*	Grassleaf Mud-plaintain		X	
Vascular Plants	2	*Isoetes appalachiana*	Appalachian Quillwort	X	X	
Vascular Plants	2	*Plantago cordata*	Heartleaf Plantain		X	

13. Pearl River Drainages

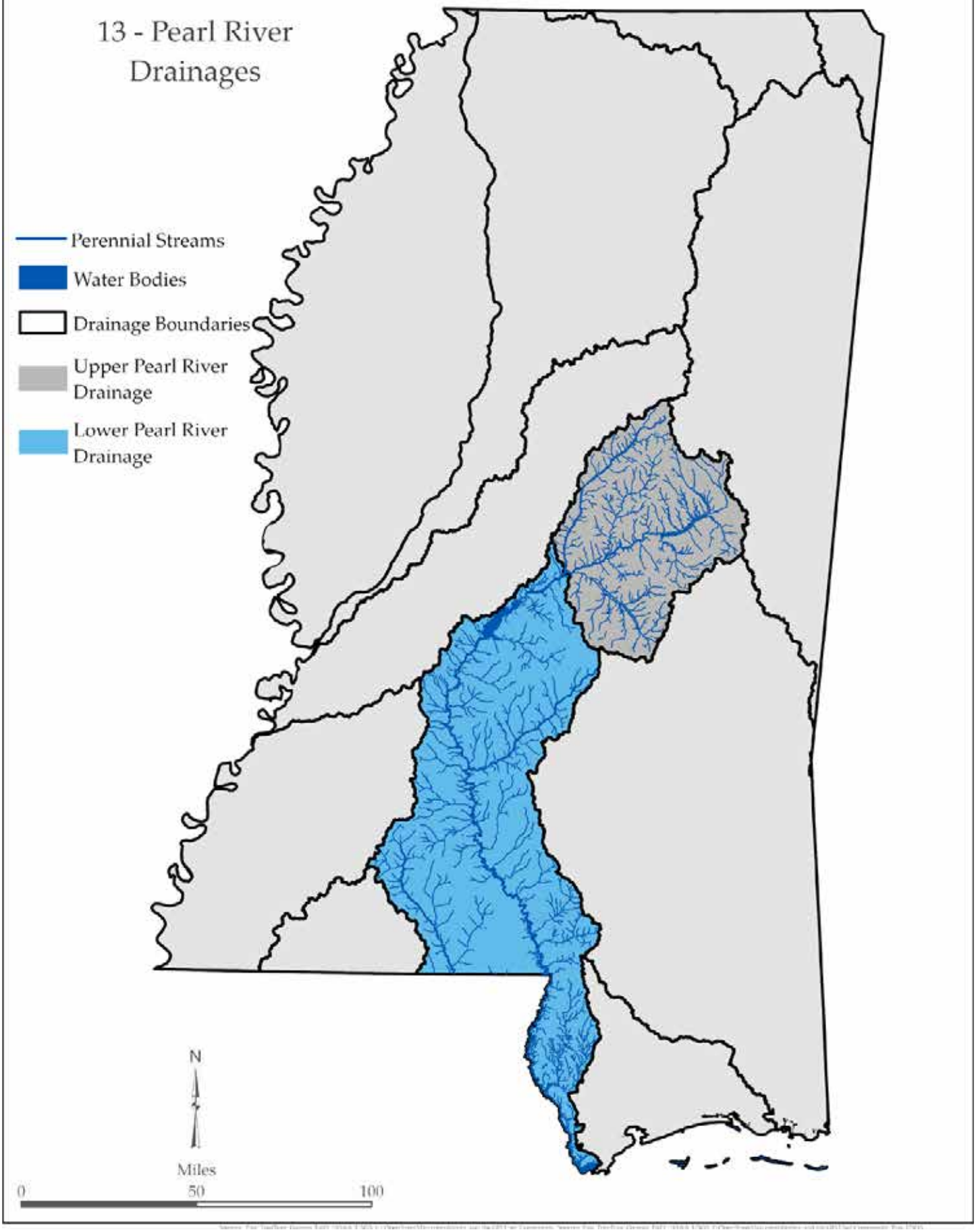


Figure 5.28. Map of Pearl River Drainages.

13.1 Upper Coastal Plain, Pearl River

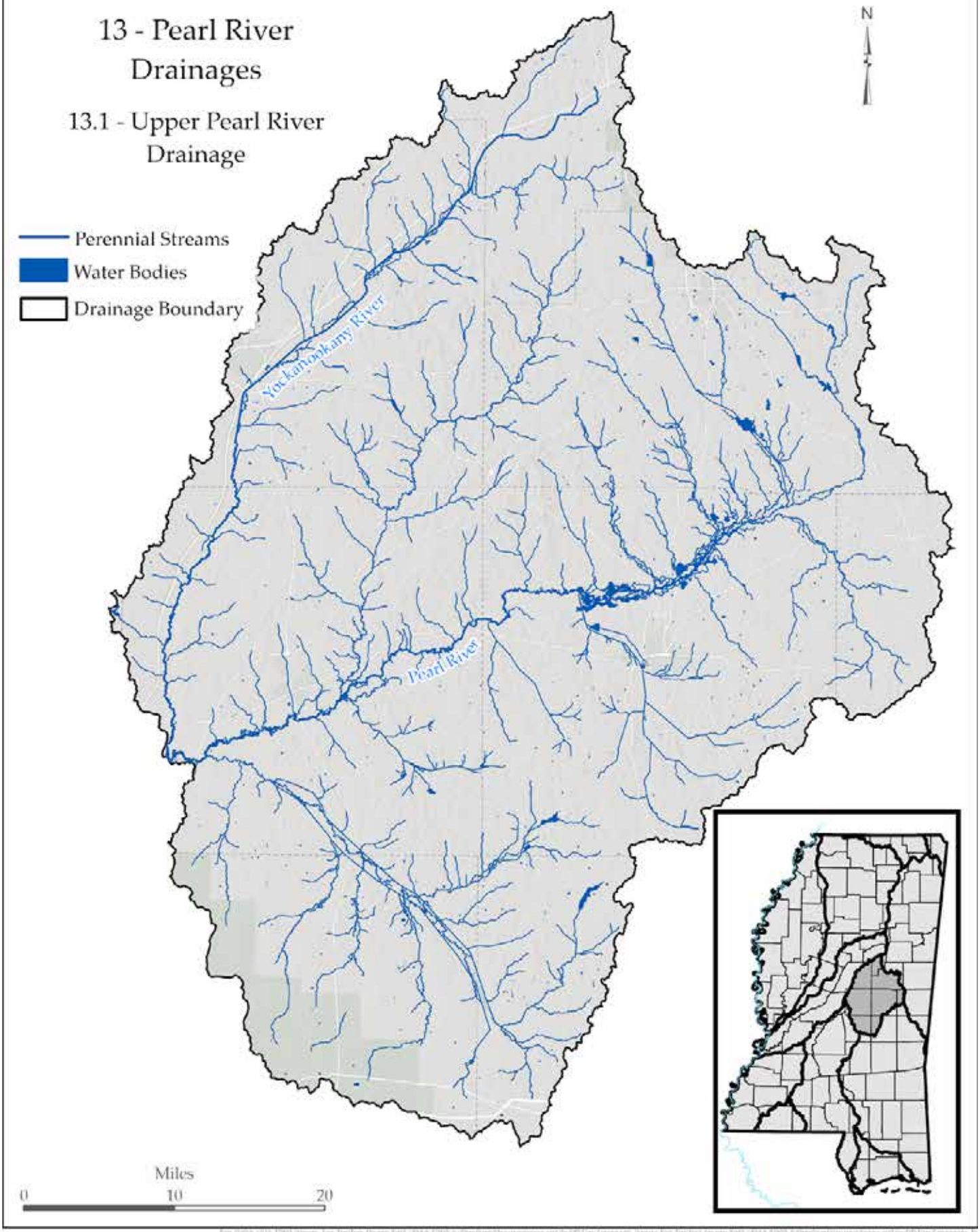


Figure 5.29. Map of Upper Coastal Plain, Pearl River.



Upper Pearl River, near Carthage. *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

This portion of the Pearl River Drainage lies north of Jackson, Mississippi. The Pearl River and the Yockanookany River are major systems in this region. The Pearl River has been highly modified by the construction of Ross Barnett Dam and by a smaller lowhead dam in Leake County. This system contains small, medium and large streams.

SIZE, CONDITION AND CONSERVATION STATUS

The drainage area of the Upper Pearl River is approximately 3.050 square miles and 1.58 million acres. The main stem of the Pearl River is impounded by Ross Barnett Reservoir dam. Tributaries have been impacted by channel modification and land use practices. One major tributary, the Yockanookany River, has been extensively channelized. Pollutants are a problem in some reaches of the Pearl and the Yockanookany, as indicated by fish consumption advisories due to mercury and polychlorinated biphenyls (PCBs) on these waters. The Upper Pearl River Drainage is considered vulnerable to further degradation. Of the streams in this drainage monitored by the Mississippi Department of Environmental Quality 58 percent are rated as good, 23 percent as fair, and 19 percent as poor or very poor (MDEQ 2007). Pollutants found in the streams are pathogens and nutrients from animal waste and failing septic systems, pesticides from agriculture and urban runoff, and eroded sediment from agricultural, timber harvesting, and construction sites.

13.2 Lower Coastal Plain, Pearl River

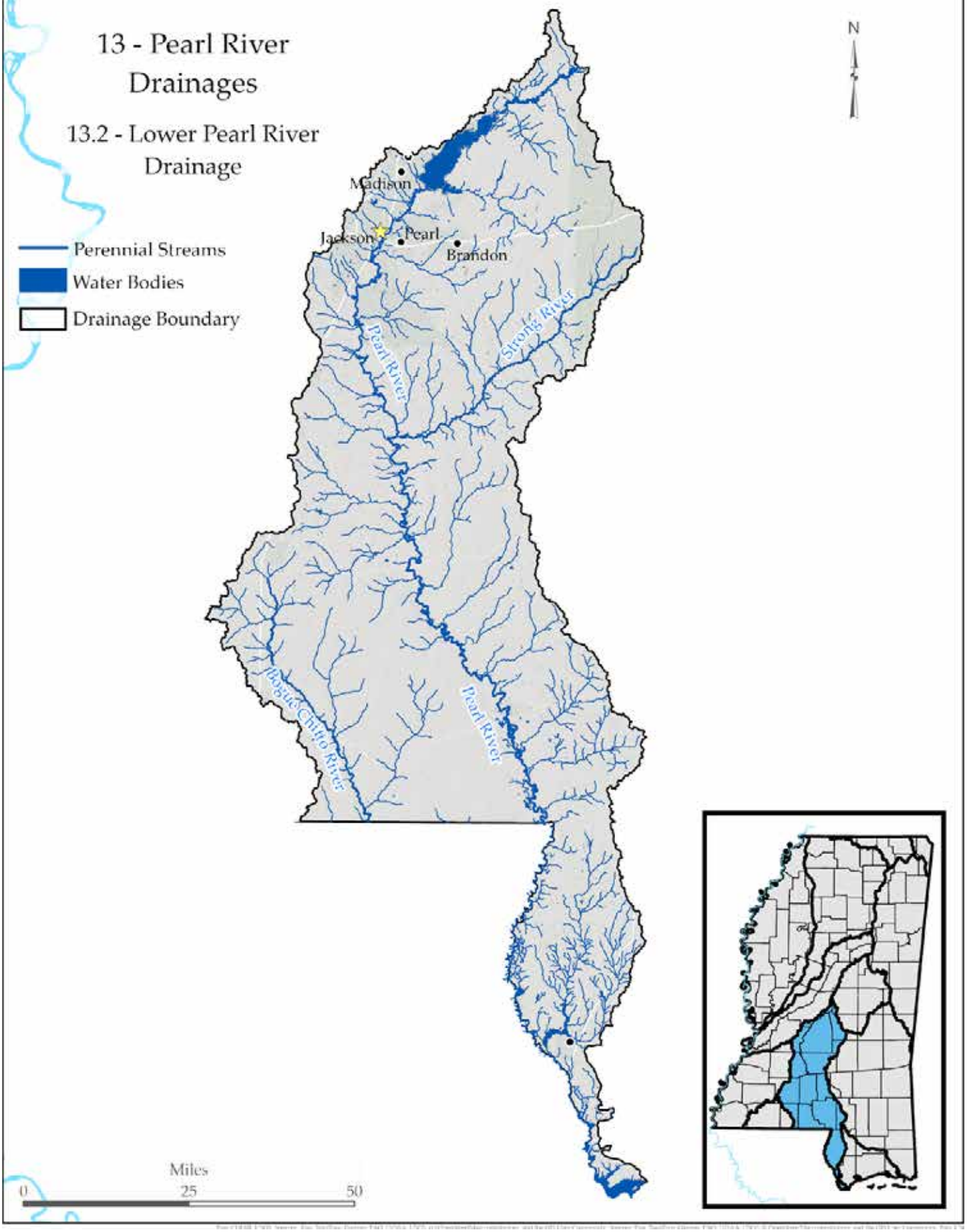


Figure 5.30. Map of Lower Coastal Plain, Pearl River.



Lower Pearl River. *Credit: Robbie Ellwanger*

DESCRIPTION AND LOCATION

This area includes the Pearl River and its tributaries downstream from Jackson, Mississippi to the Gulf of Mexico. Downstream from Marion County, Mississippi, the Pearl River forms the boundary between Louisiana and Mississippi. The Pearl River splits downstream from Bogalusa, Louisiana into the East and West Pearl. The West Pearl, which carries most of the flow, lies entirely in Louisiana. The East Pearl carries only a fraction of the flow. Impacts to streams in this drainage vary. Headcutting, channel modification, industrial pollution, increased sedimentation and changes in land use practices have altered stream habitats in this region. This system contains small streams, small blackwater streams, medium streams, medium blackwater streams, and large streams.

SIZE, CONDITION AND CONSERVATION STATUS

The Lower Pearl drainage area covers approximately 5650 square miles covering 3.41 million acres. The lower Pearl River drainage is impacted from upstream by Ross Barnett Reservoir. Reaches of the river and some of its tributaries have been channelized, but to a lesser extent than streams in northern Mississippi. However, streams in this drainage suffer some of the same impacts of increased erosion, increased sedimentation, pollution, and impacts from surrounding land use. Much of the flow of the main stem of the Pearl River is diverted just south of Bogalusa, Louisiana to the West Pearl, which lies entirely within Louisiana. A concrete sill on the Pearl River south of Bogalusa is a barrier to migrating fishes, particularly the Gulf Sturgeon, except during very high flow periods. Because of the high conservation rank of this drainage, it is considered vulnerable in the state. Of the streams monitored in the Lower Pearl Drainage by the Mississippi Department of Environmental Quality, 58 percent are rated good or very good, 23 percent are rated as fair, and 19 percent are rated as poor (MDEQ 2007). Major sources of pollution include pathogens and nutrients from animal wastes and failing septic systems, pesticides from agriculture and urban areas, and eroded sediment from agricultural, timber harvesting and construction sites.

Table 5.26 - SGCN for Pearl River Drainages.

Taxa Group (Class)	Tier	Scientific Name	Common Name	Upper Coastal Plain, Pearl River Drainage	Lower Coastal Plain, Pearl River Drainage
Crayfishes	4	*Faxonius etnieri*	Ets Crayfish	X	
Crayfishes	1	*Hobbseus attenuatus*	Pearl Rivulet Crayfish	X	
Crayfishes	1	*Hobbseus valleculus*	Choctaw Rivulet Crayfish	X	
Crayfishes	2	*Procambarus bivittatus*	Ribbon Crayfish		X
Crayfishes	3	*Procambarus penni*	Pearl Blackwater Crayfish		X
Crayfishes	2	*Procambarus shermani*	Gulf Crayfish		X
Insects	4	*Allocapnia aurora*	Aurora Snowfly		X
Insects	2	*Alloperla natchez*	Natchez Stonefly		X
Insects	4	*Attaneuria ruralis*	Giant Stone		X
Insects	3	*Enallagma pallidum*	Pale Bluet		X
Insects	3	*Enallagma pollutum*	Florida Bluet		X
Insects	4	*Helopicus bogaloosa*	Masked Springfly	X	X
Insects	4	*Hydroptila molsonae*	Molson's Microcaddisfly		X
Insects	4	*Isogenoides varians*	A Stonefly		X
Insects	3	*Neurocordulia yamaskanensis*	Stygian Shadowdragon	X	
Insects	1	*Stylurus potulentus*	Yellow-sided Clubtail		X
Insects	2	*Stylurus townesi*	Townes' Clubtail		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Upper Coastal Plain, Pearl River Drainage	Lower Coastal Plain, Pearl River Drainage
Mussels	2	*Arcidens confragosus*	Rock Pocketbook	X	X
Mussels	1	*Elliptio arctata*	Delicate Spike	X	X
Mussels	3	*Lasmigona complanata*	White Heelsplitter	X	X
Mussels	2	*Obovaria arkansasensis*	Southern Hickorynut	X	X
Mussels	1	*Obovaria cf. unicolor*	Undescribed Hickorynut	X	X
Mussels	2	*Pleurobema beadleianum*	Mississippi Pigtoe	X	X
Mussels	1	*Pleurobema riddellii*	Louisiana Pigtoe		X
Mussels	1	*Potamilus inflatus*	Inflated Heelsplitter		X
Mussels	3	*Quadrula nobilis*	Gulf Mapleleaf	X	X
Mussels	2	*Strophitus pascagoulaensis*	Pascagoula Creekshell	X	X
Mussels	3	*Uniomerus declivis*	Tapered Pondhorn		X
Mussels	3	*Utterbackiana hartfieldorum*	Cypress Floater	X	X
Snails	4	*Pleurocera vestita*	Brook Hornsnail		X
Amphibians	2	*Pseudotriton montanus*	Mud Salamander		X
Amphibians	3	*Pseudotriton ruber*	Red Salamander	X	
Fishes	1	*Acipenser desotoi*	Gulf Sturgeon		X
Fishes	2	*Alburnops chalybaeus*	Ironcolor Shiner		X
Fishes	1	*Alosa alabamae*	Alabama Shad		X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Upper Coastal Plain, Pearl River Drainage	Lower Coastal Plain, Pearl River Drainage
Fishes	4	*Alosa chrysochloris*	Skipjack Herring		X
Fishes	4	*Anguilla rostrata*	American Eel		X
Fishes	2	*Atractosteus spatula*	Alligator Gar		X
Fishes	3	*Crystallaria asprella*	Crystal Darter		X
Fishes	3	*Cycleptus meridionalis*	Southeastern Blue Sucker		X
Fishes	3	*Fundulus blairae*	Western Starhead Topminnow		X
Fishes	3	*Fundulus dispar*	Northern Starhead Topminnow	X	X
Fishes	2	*Fundulus jenkinsi*	Saltmarsh Topminnow		X
Fishes	3	*Heterandria formosa*	Least Killifish		X
Fishes	3	*Ichthyomyzon castaneus*	Chestnut Lamprey		X
Fishes	3	*Ictiobus niger*	Black Buffalo	X	X
Fishes	3	*Moxostoma carinatum*	River Redhorse		X
Fishes	3	*Noturus munitus*	Frecklebelly Madtom		X
Fishes	1	*Percina aurora*	Pearl Darter		e
Fishes	1	*Percina lenticula*	Freckled Darter		X
Fishes	3	*Polyodon spathula*	Paddlefish		X

14. Southeast Mississippi Drainages

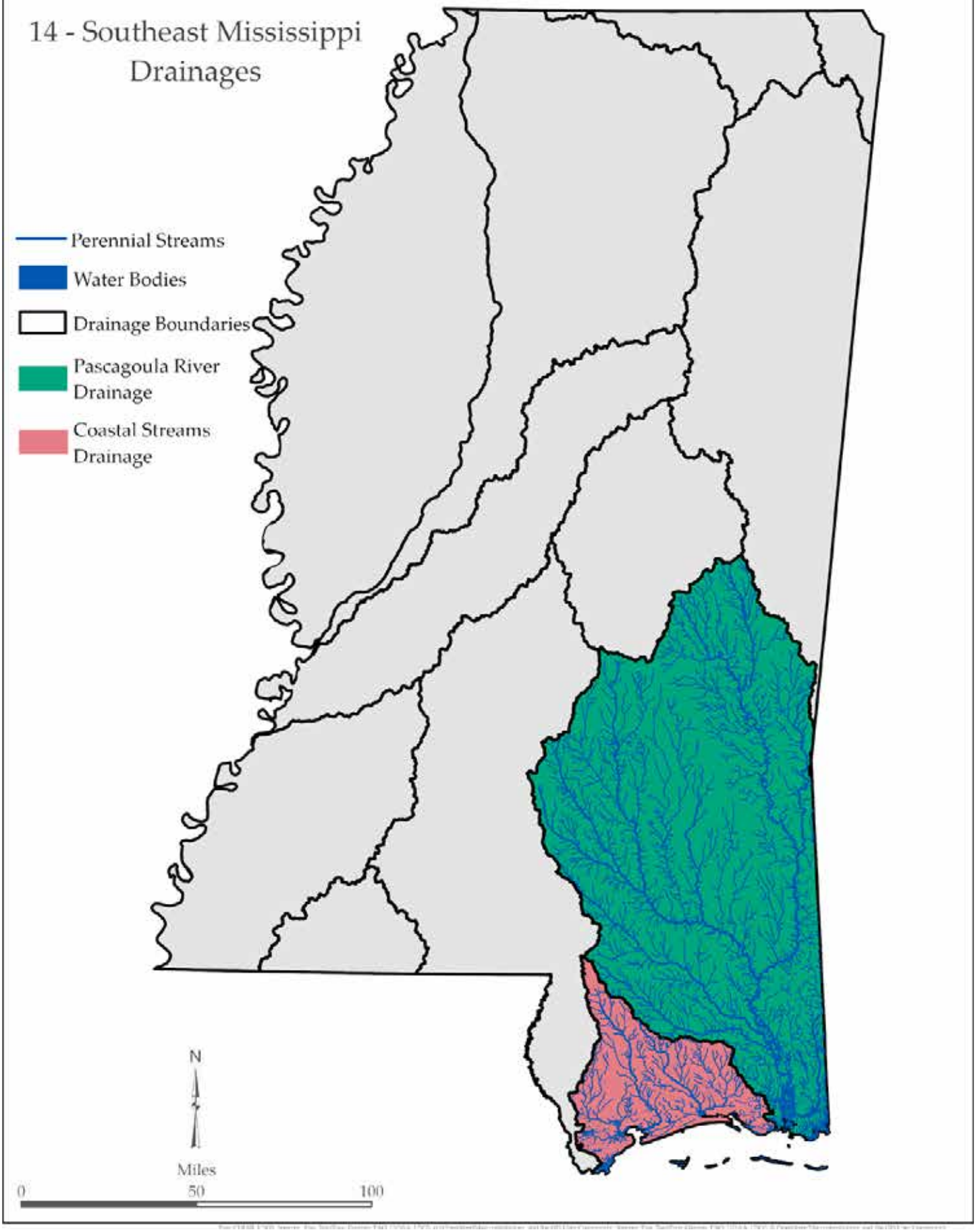


Figure 5.31. Map of Southeast Mississippi Drainages

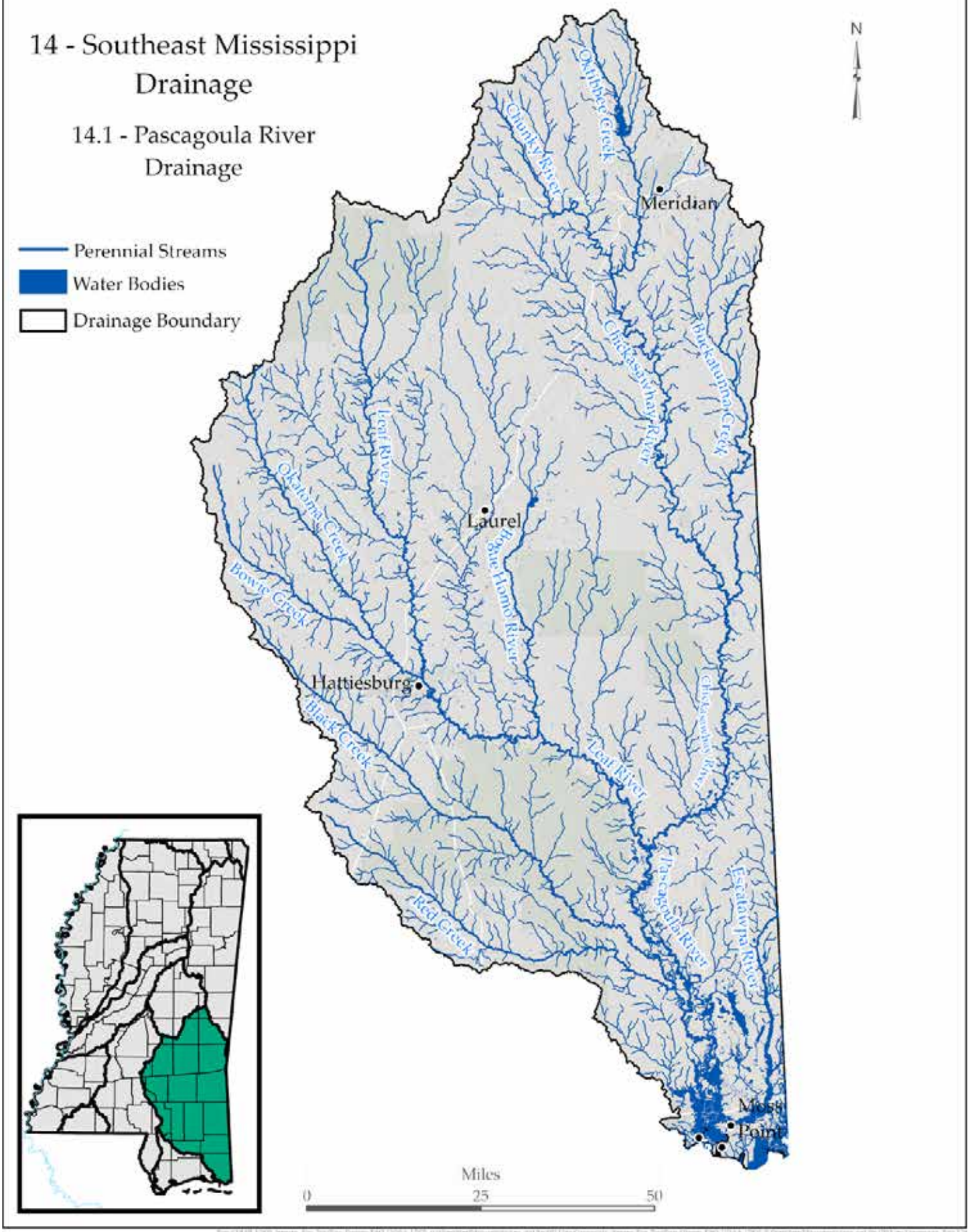


Figure 5.32. Map of Pascagoula River.



Shoals on the Chickasawhay in the Pascagoula River Drainage. *Credit: Robbie Ellwanger*

DESCRIPTION AND LOCATION

The Pascagoula River drains much of the southeastern quarter of Mississippi, covering all or parts of 22 counties. Over 15,000 miles of streams and rivers wind through the 9,600 square miles of the basin. Streams in this drainage have not been modified to the extent of streams in other areas of the state, although some of the smaller streams have been channelized. There is also a flood control reservoir on Okatibbee Creek in the upper Chickasawhay system. As in other areas of the state, some streams are experiencing accelerated rates of erosion and sedimentation, possibly due to land use changes. Many streams in this drainage are classified as blackwater streams. This system contains small, small blackwater, medium, medium blackwater, and large streams.

SIZE, CONDITION AND CONSERVATION STATUS

The Pascagoula River drainage covers approximately 9,600 square miles in Mississippi and spans 5.63 million acres. The Pascagoula drainage is largely free flowing, with only a few small impoundments on tributaries. Channel modification in the Pascagoula drainage has been less extensive than in some other drainages in the state. However, increased erosion and sedimentation have caused degradation in some areas of this drainage. Industrial development, agriculture, livestock and forestry practices may have impacts as well. Because of its high conservation priority rank, the Pascagoula drainage is considered vulnerable in the state. Of the streams monitored in the Pascagoula drainage by the Mississippi Department of Environmental Quality 61 percent are rated good or very good, 30 percent are rated fair, and 9 percent are rated poor or very poor (MDEQ 2008b). Both the Pascagoula and Escatawpa River have fish consumption advisories due to high levels of Mercury.

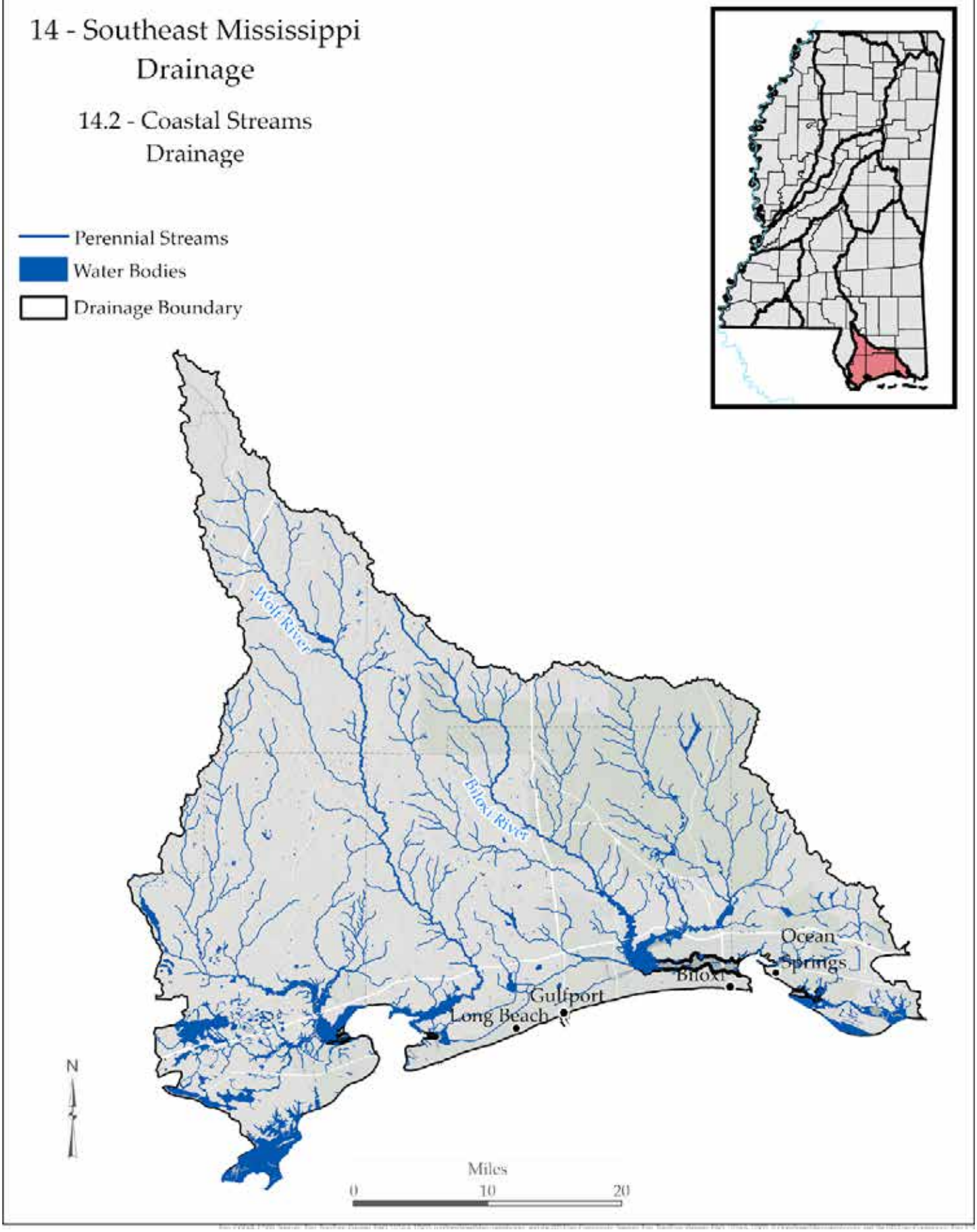


Figure 5.33. Map of Coastal Streams.



Old Fort Bayou is in the Coastal Streams Drainage. *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

Unlike other drainages in the state, the Coastal Streams Drainage is made up of small, independent watersheds rather than one large river system. These small rivers, the Wolf, Jourdan, Tchoutacabouffa, and Biloxi Rivers and their tributaries, make up the Coastal Streams Drainage.

Each is a separate river emptying into the Mississippi Sound, between the Pearl and Pascagoula rivers. All are small or medium blackwater streams. The Coastal Rivers Drainage begins in Lamar County and includes Pearl River, Hancock, Stone, Harrison, and Hancock counties. These streams have not been as heavily impacted by human activity as streams in some other areas of the state, with most of the land being rural, although increased land development in the southern part of the state is a threat to these systems.

SIZE, CONDITION AND CONSERVATION STATUS

The Coastal Streams Drainage area covers a relatively small area in South Mississippi, approximately 1,500 square miles or 992,598 acres. These streams have received fewer disturbances than streams in some other areas of the state, although there are impacts from industrial and residential development, forestry and localized channelization of streams. The coastal drainages are apparently secure. They are less disturbed than some other streams in the state. Of the streams monitored by the MDEQ, 89 percent are rated good or very good, 4 percent are rated as fair, and 7 percent are rated as poor (MDEQ 2008a).

Table 5.27 - SGCN for Southeast Mississippi Drainages.

Taxa Group (Class)	Tier	Scientific Name	Common Name	Pascagoula River Drainage	Coastal Rivers Drainages
Crayfishes	2	*Cambarellus diminutus*	Least Crayfish	X	X
Crayfishes	2	*Cambarellus lesliei*	Angular Dwarf Crayfish	X	
Crayfishes	1	*Hobbseus attenuatus*	Pearl Rivulet Crayfish	X	
Crayfishes	1	*Hobbseus cristatus*	Crested Rivulet Crayfish	X	
Crayfishes	1	*Lacunicambarus freudensteini*	Banded Mudbug	X	
Crayfishes	2	*Lacunicambarus mobilensis*	Lonesome Gravedigger	X	
Crayfishes	2	*Procambarus bivittatus*	Ribbon Crayfish	X	
Crayfishes	3	*Procambarus lecontei*	Mobile Crayfish	X	X
Crayfishes	2	*Procambarus mancus*	Lame Crayfish	X	
Crayfishes	3	*Procambarus planirostris*	Flatnose Crayfish	X	X
Crayfishes	2	*Procambarus shermani*	Gulf Crayfish	X	X
Insects	4	*Acentrella alachua*	A Mayfly	X	X
Insects	4	*Allocapnia aurora*	Aurora Snowfly	X	
Insects	4	*Baetisca escambiensis*	A Mayfly	X	
Insects	4	*Cheumatopsyche petersi*	Peters' Cheumatopsyche Caddisfly	X	X
Insects	4	*Chimarra falculata*	A Caddisfly	X	X
Insects	3	*Enallagma concisum*	Cherry Bluet	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Pascagoula River Drainage	Coastal Rivers Drainages
Insects	3	*Enallagma davisi*	Sandhill Bluet	X	
Insects	3	*Enallagma pallidum*	Pale Bluet	X	X
Insects	3	*Enallagma pollutum*	Florida Bluet	X	X
Insects	2	*Gomphus australis*	Clearlake Clubtail	X	
Insects	3	*Gomphus dilatatus*	Blackwater Clubtail	X	
Insects	2	*Gomphus geminatus*	Twin-striped Clubtail	X	
Insects	2	*Gomphus hodgesi*	Hodges' Clubtail	X	
Insects	2	*Gymnocthebius maureenae*	Maureen's Gymnocthebius Minute Moss Beetle	X	
Insects	4	*Helopicus bogaloosa*	Masked Springfly	X	
Insects	4	*Hydroptila holzenthali*	A Caddisfly	X	
Insects	4	*Hydroptila molsonae*	Molson's Microcaddisfly	X	X
Insects	4	*Hydroptila poirrieri*	A Caddisfly	X	
Insects	4	*Isonychia berneri*	A Mayfly	X	X
Insects	4	*Lepidostoma morsei*	Morse's Little Plain Brown Sedge	X	
Insects	4	*Leuctra hicksi*	Cypress Needlefly	X	
Insects	3	*Macromia alleghaniensis*	Allegheny River Cruiser	X	
Insects	3	*Nannothemis bella*	Elfin Skimmer	X	
Insects	3	*Neurocordulia yamaskanensis*	Stygian Shadowdragon	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	Pascagoula River Drainage	Coastal Rivers Drainages
Insects	4	*Oecetis daytona*	A Caddisfly	X	X
Insects	4	*Orthotrichia dentata*	Dentate Orthotrichian Microcaddisfly		X
Insects	4	*Perlesta lagoi*	A Stonefly	X	
Insects	3	*Somatochlora georgiana*	Coppery Emerald	X	
Insects	1	*Stylurus potulentus*	Yellow-sided Clubtail	X	X
Insects	2	*Stylurus townesi*	Townes' Clubtail	X	
Mussels	1	*Elliptio arctata*	Delicate Spike	X	
Mussels	3	*Lasmigona complanata*	White Heelsplitter	X	
Mussels	1	*Obovaria cf. unicolor*	Undescribed Hickorynut	X	
Mussels	2	*Pleurobema beadleianum*	Mississippi Pigtoe	X	X
Mussels	3	*Quadrula nobilis*	Gulf Mapleleaf	X	
Mussels	2	*Strophitus pascagoulaensis*	Pascagoula Creekshell	X	X
Mussels	3	*Uniomerus declivis*	Tapered Pondhorn	X	
Mussels	3	*Utterbackiana hartfieldorum*	Cypress Floater	X	
Snails	4	*Pleurocera vestita*	Brook Hornsnail	X	
Amphibians	1	*Lithobates heckscheri*	River Frog	X	X
Amphibians	2	*Pseudotriton montanus*	Mud Salamander	X	X
Amphibians	3	*Pseudotriton ruber*	Red Salamander	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	Pascagoula River Drainage	Coastal Rivers Drainages
Fishes	1	*Acipenser desotoi*	Gulf Sturgeon	X	X
Fishes	2	*Alburnops chalybaeus*	Ironcolor Shiner	X	X
Fishes	1	*Alosa alabamae*	Alabama Shad	X	X
Fishes	4	*Alosa chrysochloris*	Skipjack Herring	X	X
Fishes	4	*Anguilla rostrata*	American Eel	X	X
Fishes	2	*Atractosteus spatula*	Alligator Gar	X	X
Fishes	3	*Cycleptus meridionalis*	Southeastern Blue Sucker	X	
Fishes	3	*Enneacanthus gloriosus*	Bluespotted Sunfish	X	X
Fishes	3	*Fundulus blairae*	Western Starhead Topminnow	X	X
Fishes	3	*Fundulus dispar*	Northern Starhead Topminnow	X	X
Fishes	2	*Fundulus jenkinsi*	Saltmarsh Topminnow	X	X
Fishes	3	*Heterandria formosa*	Least Killifish		X
Fishes	4	*Leptolucania ommata*	Pygmy Killifish	e	
Fishes	1	*Miniellus melanostomus*	Blackmouth Shiner	X	
Fishes	3	*Moxostoma carinatum*	River Redhorse	X	
Fishes	1	*Percina aurora*	Pearl Darter	X	
Fishes	1	*Percina lenticula*	Freckled Darter	X	
Fishes	3	*Polyodon spathula*	Paddlefish	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	Pascagoula River Drainage	Coastal Rivers Drainages
Fishes	2	*Pteronotropis welaka*	Bluenose Shiner	X	X
Marine Mammals	1	*Trichechus manatus*	West Indian Manatee	X	X
Reptiles	2	*Farancia erytrogramma*	Rainbow Snake	X	X
Reptiles	2	*Graptemys flavimaculata*	Yellow-blotched Map Turtle	X	
Reptiles	2	*Graptemys gibbonsi*	Pascagoula Map Turtle	X	
Reptiles	1	*Macrochelys temminckii*	Alligator Snapping Turtle	X	X
Reptiles	1	*Pseudemys alabamensis*	Alabama Red-bellied Turtle	X	X
Reptiles	2	*Regina septemvittata*	Queen Snake	X	
Nonvascular Plants	1	*Riccia warnstorfii*	a liverwort	X	
Vascular Plants	2	*Balduina angustifolia*	Coastal Plain Honeycomb-head	X	
Vascular Plants	2	*Chamaecyparis thyoides*	Atlantic White Cedar	X	
Vascular Plants	4	*Didiplis diandra*	Water-purslane	X	X
Vascular Plants	3	*Eryngium aquaticum*	Marsh Rattlesnake-master		X
Vascular Plants	2	*Heteranthera dubia*	Grassleaf Mud-plaintain	X	
Vascular Plants	3	*Hibiscus coccineus*	Brilliant Hibiscus	X	
Vascular Plants	3	*Hymenocallis choctawensis*	Florida Panhandle Spider-lily	X	
Vascular Plants	3	*Ludwigia alata*	Winged Seedbox		X
Vascular Plants	3	*Luziola bahiensis*	Brazilian Loziola	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	Pascagoula River Drainage	Coastal Rivers Drainages
Vascular Plants	2	*Nuphar lutea* ssp. *ulvacea*	West Florida Cow-Lily	X	
Vascular Plants	3	*Nymphoides aquatica*	Big Floating-heart	X	
Vascular Plants	2	*Potamogeton epihydrus*	Nuttall's Pondweed	X	
Vascular Plants	2	*Potamogeton pusillus*	Slender Pondweed	X	
Vascular Plants	2	*Rhynchospora crinipes*	Hairy-peduncled Beakrush	X	X
Vascular Plants	2	*Sagittaria chapmanii*	Chapman's Arrowhead	X	
Vascular Plants	1	*Schoenoplectus subterminalis*	Swaying Rush	X	
Vascular Plants	2	*Triglochin striata*	Arrow-grass	X	X

15. Southwest Mississippi Drainages

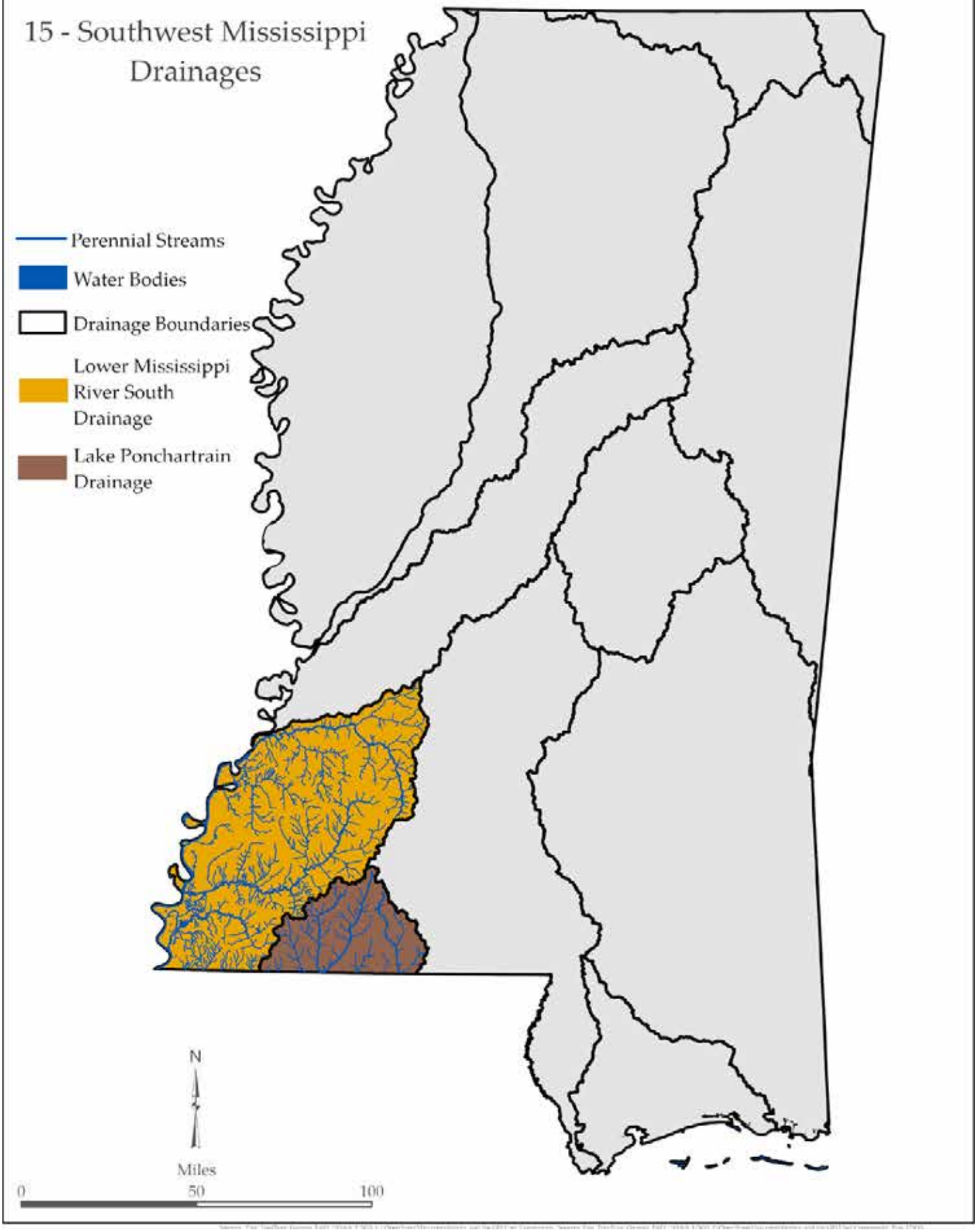


Figure 5.34. Map of Southwest Mississippi Drainages.

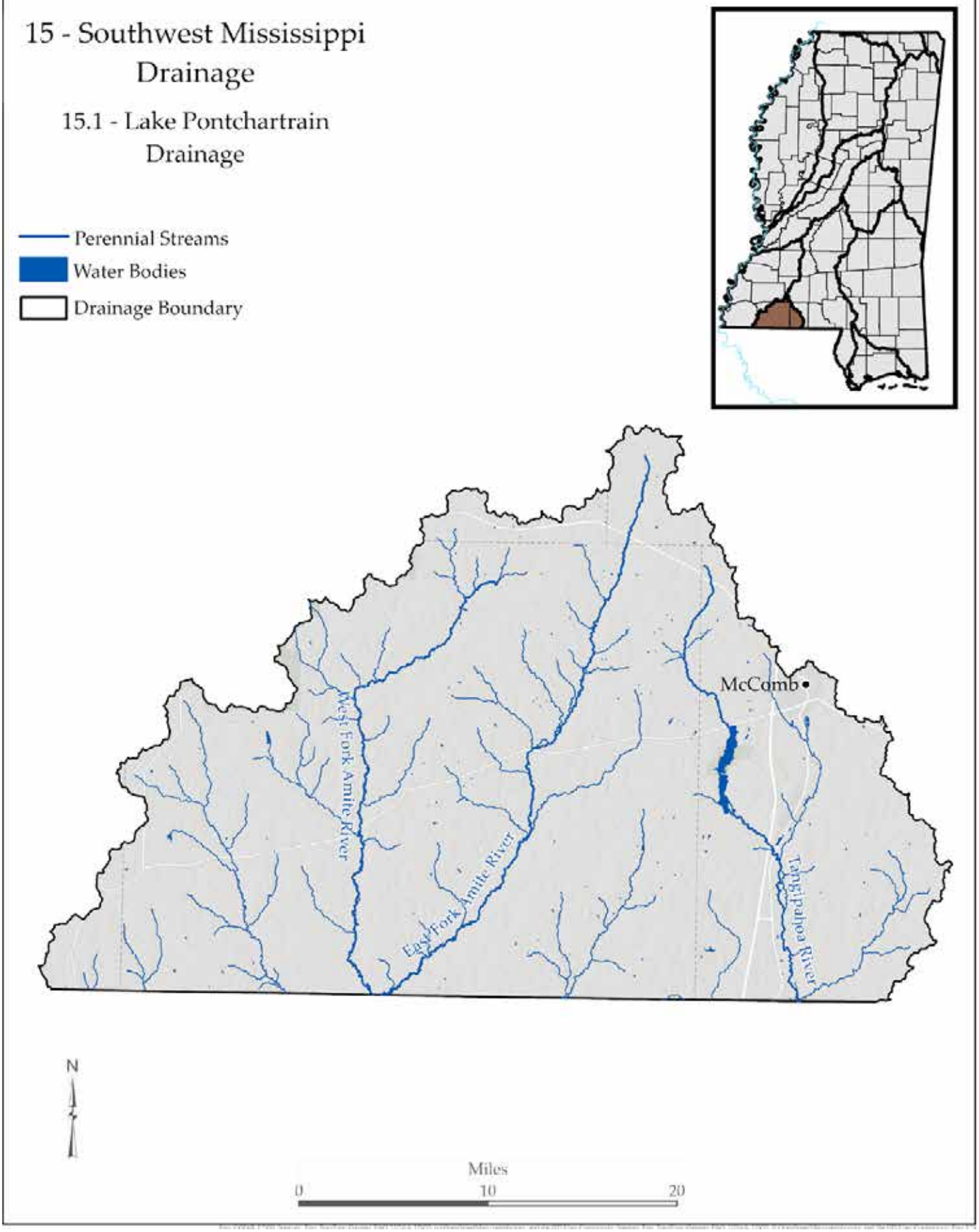


Figure 5.35. Map of Lake Pontchartrain.

DESCRIPTION AND LOCATION

These are generally small to medium sized streams in southwestern Mississippi which drain into Lake Pontchartrain. Streams in this drainage include the Amite, Tangipahoa, and Tickfaw Rivers. The lower portions of the larger streams lie in Louisiana. This system contains small, small blackwater, medium, medium blackwater, and large streams.

SIZE, CONDITION AND CONSERVATION STATUS

Only the headwaters of streams draining into Lake Ponchartrain, Louisiana are in Mississippi, covering a drainage area of approximately 1200 square miles or 578,552 acres. Streams in this drainage have been impacted by localized channelization and construction of small impoundments. Although there is a lack of information regarding this drainage it is assumed to be vulnerable.

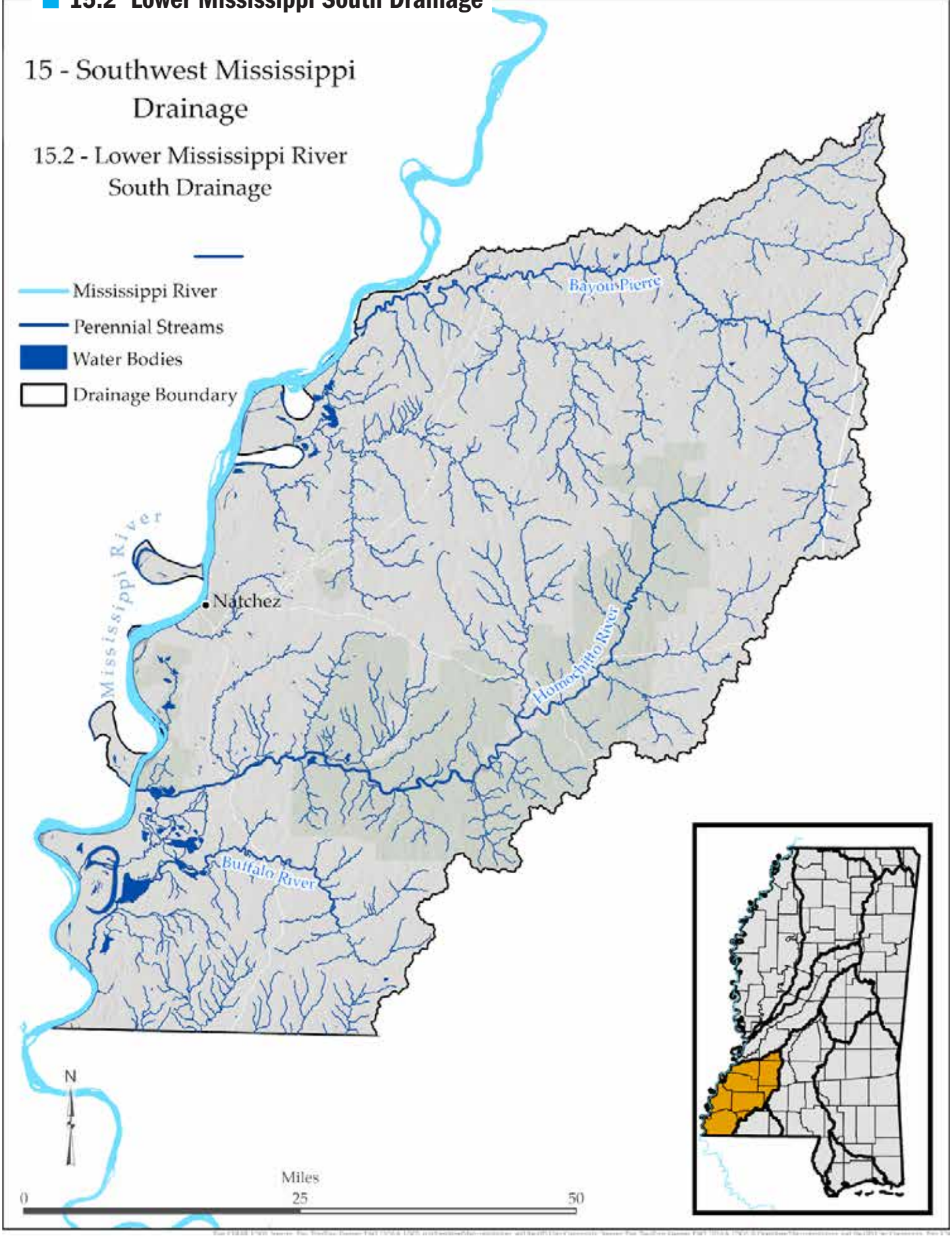


Figure 5.36. Map of Lower Mississippi South Drainage.



Bayou Pierre in the Lower Mississippi South Drainage. *Credit: Calvin Rezac*

DESCRIPTION AND LOCATION

This drainage contains tributaries of the Mississippi River, including Bayou Pierre, Homochitto and Buffalo River systems. It covers all or part of 11 counties in Southwest Mississippi and lies primarily outside of the Mississippi Alluvial Plain. The primary land use in the area is forestry. Streams in this drainage are divided into three categories: small, medium and large.

SIZE, CONDITION AND CONSERVATION STATUS

Streams in the Lower Mississippi South drain approximately 3,200 square miles covering 2.22 million acres. These streams have been severely affected by extreme headcutting in recent years, causing extensive erosion, sedimentation and channel destabilization. This has caused widening of stream channels, elimination of canopy cover and general degradation of stream habitats. Agricultural and forestry practices may also have impacts. Because of these impacts the streams of the Lower Mississippi South drainage are considered imperiled in the state.

Table 5.28 - SGCN for Southwest Mississippi Drainages.

Taxa Group (Class)	Tier	Scientific Name	Common Name	Lake Ponchartrain Drainage	Lower MS South Drainage
Crayfishes	3	*Procambarus penni*	Pearl Blackwater Crayfish		X
Insects	4	*Allocapnia aurora*	Aurora Snowfly	X	X
Insects	2	*Alloperla natchez*	Natchez Stonefly		X
Insects	2	*Epitheca spinosa*	Robust Baskettail		X
Insects	2	*Haploperla chukcho*	Chukcho Stonefly		X
Insects	3	*Homoeoneuria cahabensis*	Cahaba Sand-filtering Mayfly		X
Insects	4	*Hydroptila poirrieri*	A Caddisfly	X	X
Insects	4	*Hydroptila tusculum*	A Caddisfly	X	
Insects	4	*Nemocapnia carolina*	Southern Snowfly	X	X
Insects	4	*Neoperla coxi*	A Stonefly		X
Insects	1	*Ophiogomphus australis*	Southern Snaketail	X	
Insects	4	*Setodes dixiensis*	A Caddisfly	X	
Mussels	2	*Arcidens confragosus*	Rock Pocketbook		X
Mussels	2	*Obovaria arkansasensis*	Southern Hickorynut	X	
Mussels	1	*Obovaria subrotunda*	Round Hickorynut		X
Mussels	1	*Obovaria cf. unicolor*	Undescribed Hickorynut	X	
Mussels	2	*Pleurobema beadleianum*	Mississippi Pigtoe	X	
Mussels	1	*Potamilus capax*	Fat Pocketbook		X
Mussels	1	*Potamilus inflatus*	Inflated Heelsplitter	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	Lake Ponchartrain Drainage	Lower MS South Drainage
Mussels	2	*Strophitus pascagoulaensis*	Pascagoula Creekshell	X	
Mussels	1	*Strophitus radiatus*	Rayed Creekshell		X
Mussels	2	*Strophitus undulatus*	Creeper		X
Mussels	3	*Uniomerus declivis*	Tapered Pondhorn		X
Amphibians	3	*Pseudotriton ruber*	Red Salamander		X
Fishes	1	*Alosa alabamae*	Alabama Shad	X	
Fishes	4	*Alosa chrysochloris*	Skipjack Herring	X	X
Fishes	4	*Anguilla rostrata*	American Eel	X	X
Fishes	2	*Atractosteus spatula*	Alligator Gar		X
Fishes	2	*Chrosomus erythrogaster*	Southern Redbelly Dace		X
Fishes	3	*Crystallaria asprella*	Crystal Darter		X
Fishes	3	*Etheostoma asprigene*	Mud Darter		X
Fishes	3	*Fundulus blairae*	Western Starhead Topminnow		X
Fishes	2	*Fundulus euryzonus*	Broadstripe Topminnow	X	
Fishes	3	*Hybopsis amnis*	Pallid Shiner		X
Fishes	3	*Ichthyomyzon castaneus*	Chestnut Lamprey	X	X
Fishes	1	*Nothonotus rubrus*	Bayou Darter		X
Fishes	2	*Stizostedion canadense*	Sauger		X
Reptiles	1	*Macrochelys temminckii*	Alligator Snapping Turtle	X	X
Nonvascular Plants	2	*Anthoceros punctatus*	a hornwort		X
Vascular Plants	4	*Didiplis diandra*	Water-purslane		X

Maritime, Estuarine Fringe and Marine Habitats

The Southern Coastal Plain ecoregion within Mississippi consists of a diverse array of habitats that grade from upland maritime and estuarine fringe beaches to maritime grasslands, bays, lakes and tidal streams, down to seagrass beds, and into the Mississippi Sound, Barrier Islands and smooth and hardbottom marine habitats of the Gulf of America. For the purposes of the SWAP, maritime and estuarine fringe, estuarine and marine habitats are presented as a group.

	16. Maritime and Estuarine Fringe	Level III Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
16.1 Beach and Dune	*Florida Panhandle Beach Vegetation*				X	
16.1 Beach and Dune	*Mainland Natural Beaches [No NS Equivalent]*				X	
16.1 Beach and Dune	*East Gulf Coastal Plain Dune and Coastal Grassland*				X	
16.2 Maritime Forest	*East Gulf Coastal Plain Maritime Forest*				X	
16.2 Maritime Forest	*East Gulf Coastal Plain Freshwater Tidal Wooded Swamp*				X	
16.3 Coastal Wetlands	*Southern Coastal Plain Interdunal Wetland*				X	
16.4 Estuarine Marshes	*North-Central Gulf of Mexico Salt and Brackish Tidal Marsh*				X	
16.4 Estuarine Marshes	*Mississippi Sound Fresh and Oligohaline Tidal Marsh*				X	
16.5 Salt Pannes	*Salt Flats and Pannes [No NS Equivalent]*				X	
16.6 Shell Middens and Estuarine Shrublands	*Shell Middens and Estuarine Shrublands [No NS Equivalent]*				X	

	17. Estuary and Mississippi Sound (Inside or Associated with Barrier Islands)	Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
17.1 Estuarine Bays, Lakes and Tidal Stream	*Estuarine Bays, Lakes, and Tidal Streams [No NS Equivalent]*				X	
17.2 Seagrass Beds	*Northern Gulf of Mexico Seagrass Bed*				X	
17.3 Mollusk Reefs	*Mollusk Reef [No NS Equivalent]*				X	
17.4 Mississippi Sound	*Mississippi Sound (Smooth Bottom) [No NS Equivalent]*				X	
17.5 Barrier Island Passes	*Barrier Island Passes [No NS Equivalent]*				X	

	18. Marine Habitats (Outside Barrier Islands)	Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
18.1 Marine Habitats	*Marine Habitats (Smooth Bottoms) [No NS Equivalent]*					X
18.2 Hard Bottoms and Oceanic Reefs	*Hard Bottoms and Oceanic Reefs [No NS Equivalent]*					X

Table 5.29 - Maritime and Estuarine Fringe Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	18 Maritime and Estuarine Fringe	Level III Ecoregions				
Habitat Subtypes	NatureServe Terrestrial Ecological Systems	SP	MAP	MVLP	SCP	Marine
16.1 Beach and Dune	*Florida Panhandle Beach Vegetation*				X	
16.1 Beach and Dune	*Mainland Natural Beaches [No NS Equivalent]*				X	
16.1 Beach and Dune	*East Gulf Coastal Plain Dune and Coastal Grassland*				X	
16.2 Maritime Forest	*East Gulf Coastal Plain Maritime Forest*				X	
16.2 Maritime Forest	*East Gulf Coastal Plain Freshwater Tidal Wooded Swamp*				X	
16.3 Coastal Wetlands	*Southern Coastal Plain Interdunal Wetland*				X	
16.4 Estuarine Marshes	*North-Central Gulf of Mexico Salt and Brackish Tidal Marsh*				X	
16.4 Estuarine Marshes	*Mississippi Sound Fresh and Oligohaline Tidal Marsh*				X	
16.5 Salt Pannes	*Salt Flats and Pannes [No NS Equivalent]*				X	
16.6 Shell Middens and Estuarine Shrublands	*Shell Middens and Estuarine Shrublands [No NS Equivalent]*				X	

Many of the barrier island habitats, parts of which are considered wilderness, remain in good condition, but hurricanes have caused overwash and additional destabilization of the fragile dune systems. The barrier islands are gradually diminishing in size by wave erosion and reduced sand accretion. Exotic weeds, which have gained footholds on the mainland in pine flatwoods and savannas, live oak woodlands and shell middens, as well as on the islands, continue to reduce the condition of these landscapes.

Though the marine economy in the U.S. is driven by tourism, recreation, seafood markets, ship building, aquaculture and offshore energy, these uses of coastal areas as industrial, urban and residential centers have disturbed much of the natural landscape surrounding coastal wetlands in Mississippi. According to the National Oceanic Service, coastal areas account for less than 10 percent of the total land in the contiguous U.S. but are home to almost 40 percent of the U.S. population making population densities over five times greater in coastal shoreline counties than in non-coastal counties. This rapid urbanization of U.S. coasts has destroyed a significant number of coastal wetlands and fringe habitats, degraded coastal water quality and severely stressed other coastal ecosystems. A healthy coastal economy ultimately depends on healthy coastal ecosystems.

Several culturally significant species utilize these habitats including cypress, black gum, oaks, dwarf palmetto, swamp cane, switchcane, and rabbits

16.1 Beach and Dune

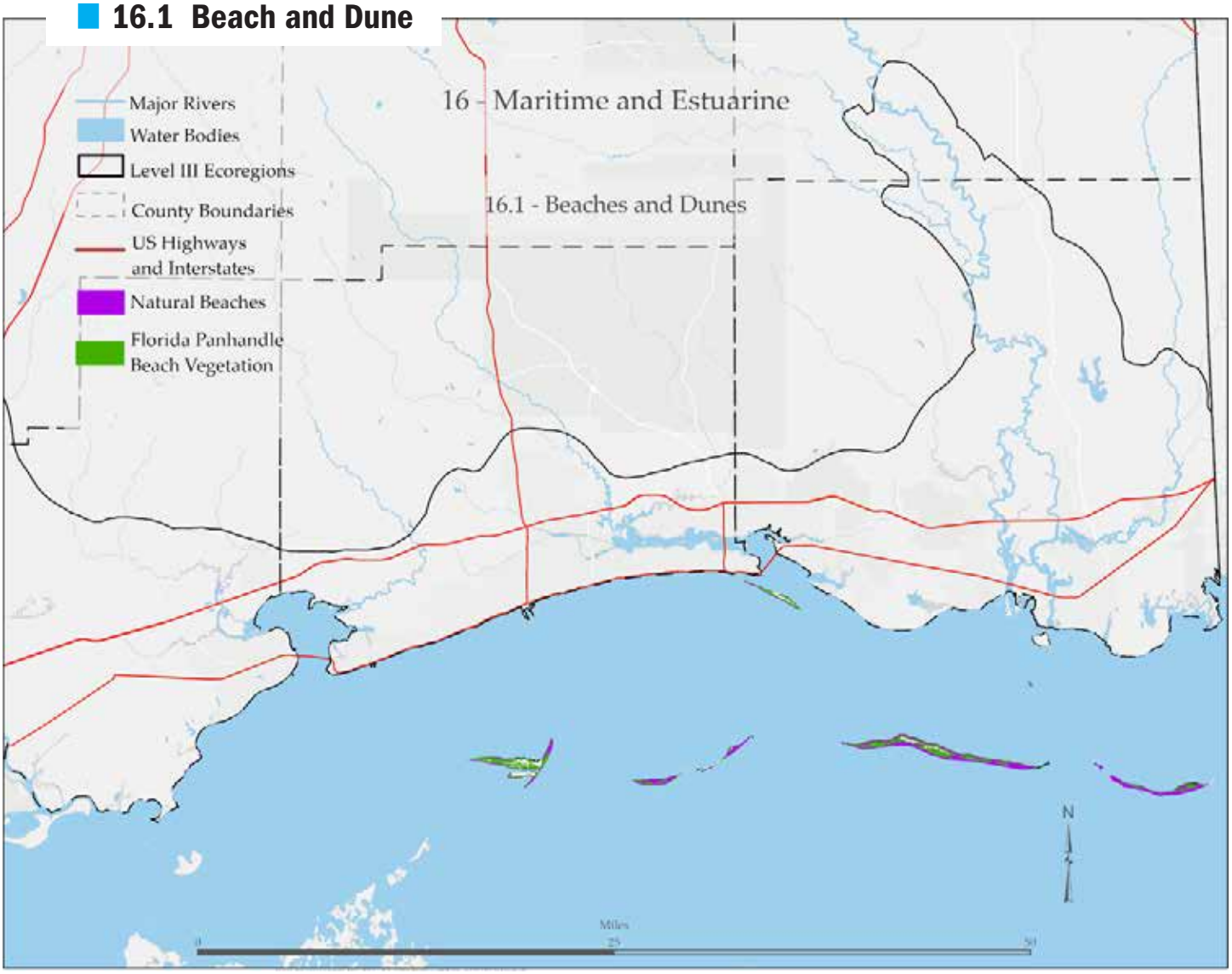


Figure 5.37. Map of Maritime and Estuarine Fringe: Beach and Dune.

Florida Panhandle Beach Vegetation includes the sand intertidal shore and the low-gradient sand above the daily high tide line. It is affected by wind and salt spray, seasonal high tides, and storm surges. It is defined by the presence of sea oats, Gulf Coast bluestem, woody goldenrod, and squareflower. The intertidal beach is considered to have two parts; the foreshore, or swash zone, where waves break in moderate weather; and the backshore, where waves break during storm surges and high tides. Tropical storms can strike the Mississippi coast several times annually and hurricanes, on average, about once every five or six years, causing significant beach erosion. The northern shores are often narrow, more steeply sloped, and may locally exhibit vertical sand cliffs. They are somewhat protected from massive waves generated by storms striking from the open ocean. The beaches consist of well-sorted, fine to coarse sand containing large quantities of quartz and minor amounts of shell and heavy minerals. Both shorelines experience erosion and accretion on an on-going basis, as prevailing currents move sand westward. Sand movement and storms have caused the islands to decrease in size over the past century. The backshore is the area of the beach between the high tide line and the dunes and serves as a transition zone to the vegetated landscape. The wrack line forms at the edge of the high tide mark and seaborne debris and dead animals accumulate, creating foraging grounds for many species. Beach vegetation is usually very sparse and confined to the upper edges of the backshore. Sea oats, beach morning glory and gulf bluestem are the most capable of tolerating the harsh conditions of the backshore. A few animals, such as the ghost crab, amphipods and various insects, are permanent residents. A component of beach habitats in Mississippi are ephemeral habitats such as wrack line deposits including bryozoans, algae, seagrasses, and detritus. These are seasonally important and provide structural habitat and nutrient and carbon sources that are used by invertebrates, fishes and wading birds.



Florida panhandle beach vegetation at Cat Island.
Credit: Holley Muraco

Natural beaches of the mainland are predominantly found at the mouths of rivers, such as the Pearl and Pascagoula Rivers. Their substrates are muddy in texture because they originate from the eroding intertidal marshes, where the shoreline retreats several feet every year. However, a few significant segments of sand or shell beach exist along the mainland, such as along the Rigolets Islands. The Rigolets are a group of small marshy islands that occur on the borders of Mississippi and Alabama. Additional sand beaches are found at Point aux Chenes, southwest of the mouth of Graveline Bayou, southeast of the mouth Davis Bayou in Jackson County, on Big Island in Back Bay of Biloxi in Harrison County and between the mouth of Bayou Caddy and Landmark Bayou in Hancock County. A few smaller beaches occur in other areas. These beaches are very important nesting areas for the Mississippi diamondback terrapin. In addition to beaches of the larger coastal water bodies, mud and sandy mud shores line the tidal streams of the coastal estuaries. These shorelines have similar ecological functions as mud flats. Mud shores harbor numerous microorganisms such as phytoplankton, fungi, bacteria and protozoans that serve as an important food source for benthic invertebrates (polychaetes, mollusks and crustaceans), which in turn support mid and upper level consumers such as crabs, shorebirds, shrimp and fish. Wading and shorebirds are especially dependent on mud shores. Herons, egrets, sandpipers, plovers, godwits, willets, terns, gulls, ducks and osprey frequent this habitat.

East Gulf Coastal Plain Dune and Coastal Grassland includes the coastal dunes along the northern Gulf of Mexico and consists of herbaceous and embedded shrublands on the barrier islands and other near-coastal areas on the mainland where salt spray, saltwater over wash, and sand movement are ecological forces. Diagnostic plants include beach rosemary, woody goldenrod, Gulf Coast bluestem, squareflowers, and Gulf Coast sunrose. Back beaches and semi-stable dunes commonly support a sparse cover of a variety of graminoids, including gulf bluestem, Leconte's flatsedge, sea oats, and southern umbrella sedge. Common herbs are squareflower, poorjoe, pineland scalypink, Dixie sandmat, camphorweed, coastal sands frostweed and beach morning glory. The stable dunes, also called relict dunes, have a crust that is strengthened by the presence of microscopic organisms. Excessive pedestrian traffic on hiking trails will disturb relict dunes, causing them to erode, but they can also be buried by encroaching dunes. Relic dunes are dominated by shrubby species: Florida rosemary, woody goldenrod, prickly pear, saw palmetto and occasionally sand live oak. Barrier island uplands include dry to mesic meadows and inland dune systems. Both habitats consist of excessively well-drained windblown sand, and some upland areas may be periodically overwashed by storm surges. The most erosive sections of the islands are directly adjacent to the beaches where there is the least amount of vegetation cover and greatest exposure to wind, and salt spray. As flats and berms along the back beach become desiccated, the sand particles are less cohesive and readily drift on windy days. Wind erosion, salt spray and exposure to excessive heat keeps the areas sparsely vegetated. Slightly inland from the shore, a series of vegetated linear swales and dune ridges parallel the coastline. The dunes are either semi-stable and display some active sand movement or stable and firm. The dry meadows are dominated by southern umbrella sedge, torpedo grass, broomsedge, needlepod rush and contain lesser amounts of saltmeadow cordgrass. These non-forested areas are somewhat higher than marshes, but with more available moisture than beach or relic dunes. This habitat occupies swales behind the primary dunes and along low treeless interior beach ridges in exposed areas. They may be inundated in some seasons but usually dry out in the summer and fall. Slightly elevated above brackish marshes are the salt meadows, which are dominated by salt meadow cordgrass and torpedo grass. Saltmarsh morning glory, dotted smartweed, bushy goldentop, and poorjoe are common forbs. The estuarine shrublands contain an abundance of eastern baccharis, wax myrtle and yaupon, which range in height from three to eight feet tall. Saltmarsh cordgrass and torpedo grass form a rather continuous ground cover within these shrublands.



Dune and Coastal Grassland. *Credit Heather Sullivan*

CONDITION, SIZE AND CONSERVATION STATUS OF BEACH AND DUNE

Size: 6,499 acres of Florida Panhandle Beach Vegetation

Conservation Status: Imperiled

Narrow bands of intertidal beach habitat circumscribe the barrier islands. Contiguous segments of this habitat range up to 100 acres in size. The beaches mark the interface between subtidal areas and marsh or dry sandy uplands. The barrier island beaches are largely considered intact because very limited development has occurred on the islands. Environmental forces continually reshape these habitats making them a place of constant transition.

Size: 4,949 acres of Natural Beaches

Conservation Status: Imperiled

Mainland beaches are narrow, linear, intertidal areas that extend along bayous, bays and tidal rivers. They form the interface between subtidal areas and intertidal marshes and occasionally directly adjoin uplands. On average, mud flats and muddy shorelines cover less than **500 acres** along approximately 300 miles of tidal stream. During high tide they become submerged, and at low tide they reemerge and expand in size. Natural subsidence is occurring in coastal areas and documented sea level increases are causing beachline erosion along the estuarine marshlands of the state. Storm surges create additional shoreline erosion. Due to these forces, the habitat is always in a state of transition. Urbanization is encroaching on some beaches where bulkheading and vegetation clearing is taking place.

Conservation Status: Imperiled

Barrier island dunes and scrub consist of long, narrow segments of land that are surrounded by brackish or marine water. The uplands are exposed to frequent strong winds and tidal storm surges. The upland substrates are sandy and dry. Each of the five islands supports a total of 2,000 acres in long, contiguous patches, each up to 1,000 acres in size. Adjacent habitats include barrier island wetlands and ponds.

Barrier island uplands are gradually being diminished by a lack of sand aggradation, which is necessary to compensate for normal losses caused by wind and wave action during storms. The size of the relict dunes has been diminished and apparently the area occupied by mobile sand dunes is increasing. Some areas have exotic weeds (cogongrass). However, most of the islands are protected as a national park by federal statutes and some areas are designated as “wilderness”.

16.2 Maritime Woodlands

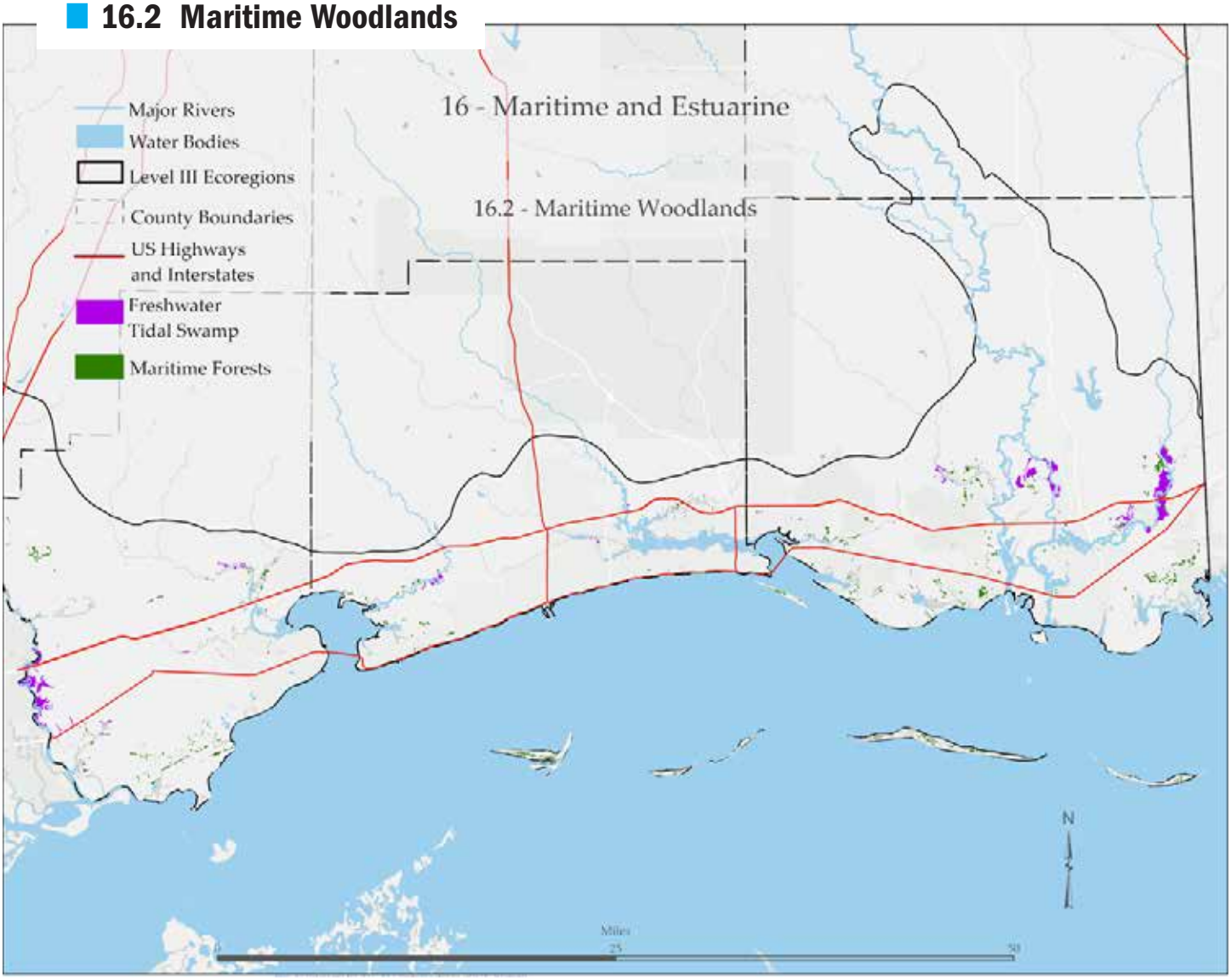


Figure 5.38. Map of Maritime and Estuarine Fringe: Maritime Woodlands

East Gulf Coastal Plain Maritime Forests are a mosaic of woody plants found on the barrier islands and near-coastal strands. These are in more protected areas than the EGCP Dune and Coastal Grassland community and are relatively stable dunes. Salt spray and storm surges influence the vegetation, which includes pines (sand, slash, and longleaf) and live oak. Pond cypress and sweetbay magnolia may be found in wetland inclusions. Sand live oak, dwarf live oak, yaupon, saw palmetto, winged sumac, beach rosemary, wax myrtle, eastern Baccharis and American beautyberry may compose the shrub layer. Small saltmeadow cordgrass, black needlerush, and switchgrass are the main parts of the herbaceous layer. Two types of woodlands are found on the barrier islands: slash pine dominated and live oak and /or sand live oak dominated woods. Soils vary from sandy to peaty and fire is an important component of the habitats. Live oaks represent a climax woodland community on the islands.

The island's slash pine woodlands are found on low flats, along pond shores and within swales of the linear dune systems. They are composed of dense to open stands of slash pine and often contain an abundance of shrubs such as yaupon, saw palmetto, wax myrtle and occasionally, sand live oak. Herbs include bushy goldentop, erect centella, manyflower marsh pennywort, seaside primrose willow, salt-marsh morning glory and Maryland meadowbeauty.

East Gulf Coastal Plain Freshwater Tidal Wooded Swamps are found in tidally flooded portions of river floodplains, where large outflows of freshwater keep salinity levels at a minimum. Typical canopy tree species are water gum, tupelo gum, bald cypress, and green ash. Other trees that may be present are sweetbay magnolia, southern red cedar, laurel oak, pond cypress, slash pine, Atlantic white cedar, and redbay. Small trees and shrubs include dwarf palmetto and buckwheat tree. Sawgrass forms the herbaceous layer.

SIZE, CONDITION AND CONSERVATION STATUS OF FRESHWATER TIDAL SWAMP

Size: 3,866 acres

Conservation Status: Vulnerable

In accompaniment with the pine flatwoods, coastal live oak woodlands are situated on prominent coastal cheniers and ancient beach ridges that straddle the coastline. The live oak woodlands are comprised of native live and upland laurel oaks and contain an understory often dominated by saw palmetto. Most of the coastal upland habitat has been urbanized. Therefore, it is likely that the maritime live oak forest is one of the rarest communities found in Mississippi.



Maritime Forest at Cat Island.
Credit: Holley Muraco

The soils of the coastal pinelands are deep, poorly drained and slowly permeable. The landform is level to nearly level stream terraces and lowland flats of the coastal plain. They are grayish brown, have fine loamy textures, and are saturated during the winter and spring. Small depressions and some flat areas are ponded for several days during wet seasons. A seasonally high water table is within several inches of the soil surface from December through April. The wet conditions produce mottles of yellowish brown colors. The soils have very strongly acid to strongly acid reactions throughout their profile.

The live oak woodlands are found on deep sand ridges that are excessively well drained. They may include Darlington's oak, live oak, dwarf live oak and rarely turkey oak. Gopher apple, elegant blazing star, prickly pear cactus, and woody goldenrod are common herbaceous plants found in this habitat.

Slash pine along with the dominant understory species of this community can tolerate seasonally wet or saturated soils, including saturation due to periodic storm surges of brackish water. The community is delineated from other coastal slash pine woodlands by the dominance of saltmeadow cordgrass in its understory. Saltmeadow cordgrass relinquishes its dominance a short distance inland, but occasionally the species will persist several miles inland along creek channels and bayous. Purple bluestem, button eryngo, switchgrass, Jamaica swamp sawgrass, and gulf coast swallow-wort are common associates. Wax myrtle, eastern baccharis and yaupon shrubs are commonly encountered in this community. The community is fire dependent and can become brushy and inaccessible to pedestrian traffic during long intervals between burns. Maritime woodlands, including maritime live oak forests provide essential points for neotropical migrants staging their trans-Gulf journey in the fall and recuperating upon their return in the spring.

SIZE, CONDITION AND CONSERVATION STATUS OF MARITIME FORESTS

Size: 2,407 acres

Conservation Status: Critically imperiled

Situated in highly urbanized coastal areas, maritime woodlands have been significantly impacted by widespread development. Areas of this subtype are usually less than 100 acres but may extend in a narrow band along the shoreline for several miles. Some of the wettest areas near the Hancock County marsh and within the Grand Bay National Estuarine Research Reserve in Jackson County remain intact and provide prime examples of this subtype. The live oak woodlands have been extensively developed, but a few pockets remain on some large private holdings.

Extensive areas of maritime woodlands have been developed for other uses. Woodlands found on private lands are vulnerable to commercial development or intensive forest management. Many of the remaining areas are under public ownership. Cogongrass is rampant across the range of this community and has invaded much of the roadsides and woodlands in the vicinity. Its increased presence makes the maritime woodlands especially vulnerable to new infestations of this pandemic weed.

16.3 Coastal Wetlands

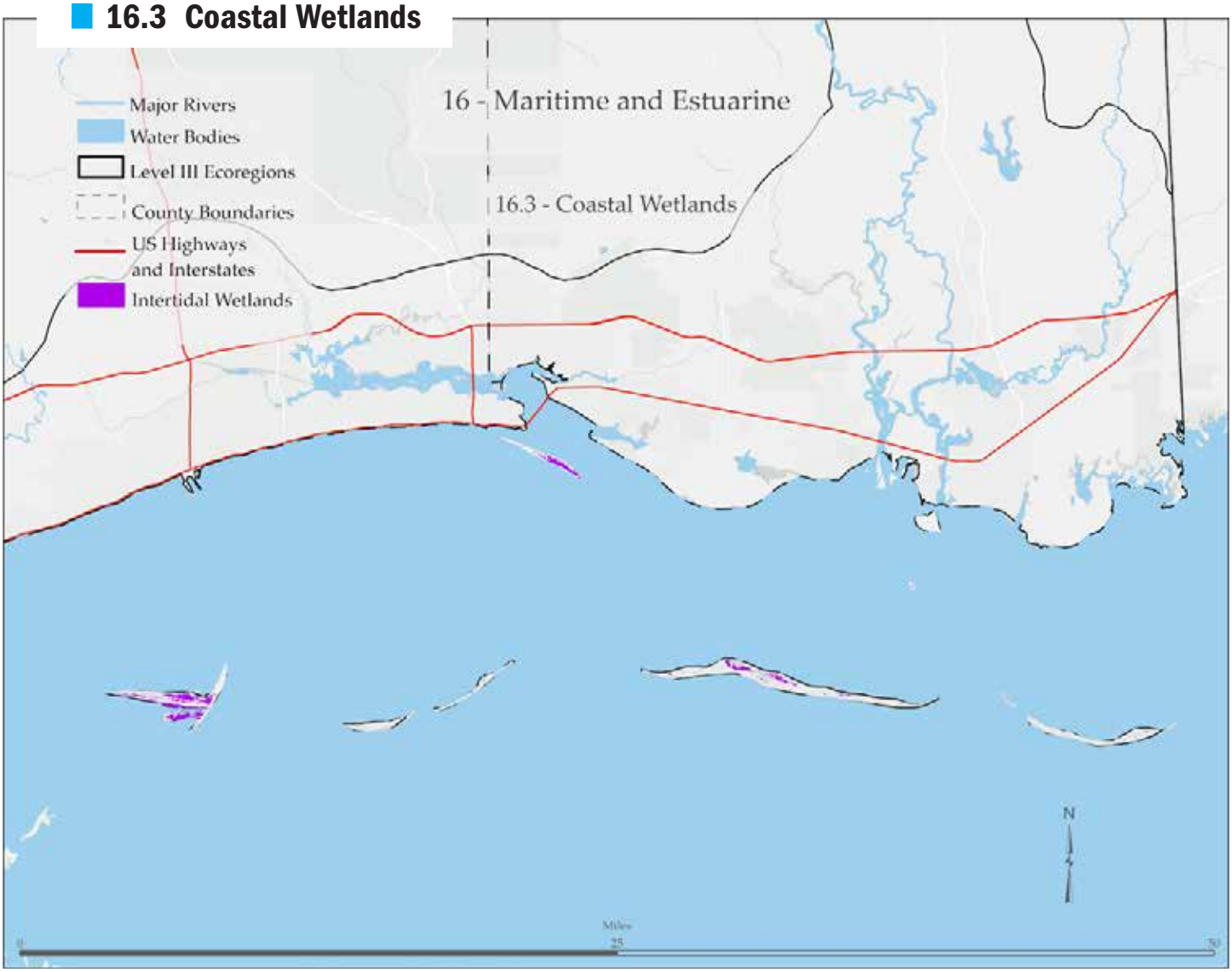


Figure 5.39. Map of Maritime and Estuarine Fringe: Coastal Wetlands.



Interdunal tidal wetlands at Cat Island. *Credit: Holley Muraco*

Southern Coastal Plain Interdunal Wetlands encompass the wettest dune swales and basins on the barrier islands and mainland coastal areas. These support pond or marsh vegetation and are permanently or semipermanently flooded with freshwater but are affected by salt spray or overwash during storms. Grasses dominate the community with common bushy bluestem, sawgrass, saltgrass, spikerushes, marsh fimbry, switchgrass, Gulfdune paspalum, beaksedges, common threesquare, and southern cattail most obvious. The deepest areas of inundation will be vegetated by white waterlily and bladderworts, closer to shore Jamaica swamp sawgrass will dominate and the borders of the marsh will be composed of black needlerush. Cattails and bulltongue arrowhead will be present with the Jamaica swamp sawgrass. Saltmeadow cordgrass, marsh fimbry and American cupscale are also usually found in association with the black needlerush community. Wet habitats of the barrier island chain include a variety of low flats, linear depressions, swales, ponds, and intertidal zones. They occur along the seashore or at slightly higher elevations. Linear-ridged sand dunes form the depressions in which the wetlands occur. They receive freshwater drainage from uplands and/or ocean processes.

Size: 1,050 acres of Intertidal Wetlands

Conservation Status: Imperiled

Barrier island wetlands remain in good condition because most are under public ownership and are not threatened by development initiatives. Unfortunately, the exotic weed torpedo grass has become well established. Several of the communities making up this subtype are considered vulnerable because of a gradual decrease in wetland surface area and the presence of exotic weeds. However, most of the wetlands are protected from further development and are maintained as a protected area by the National Park Service.

16.4 Estuarine Marshes

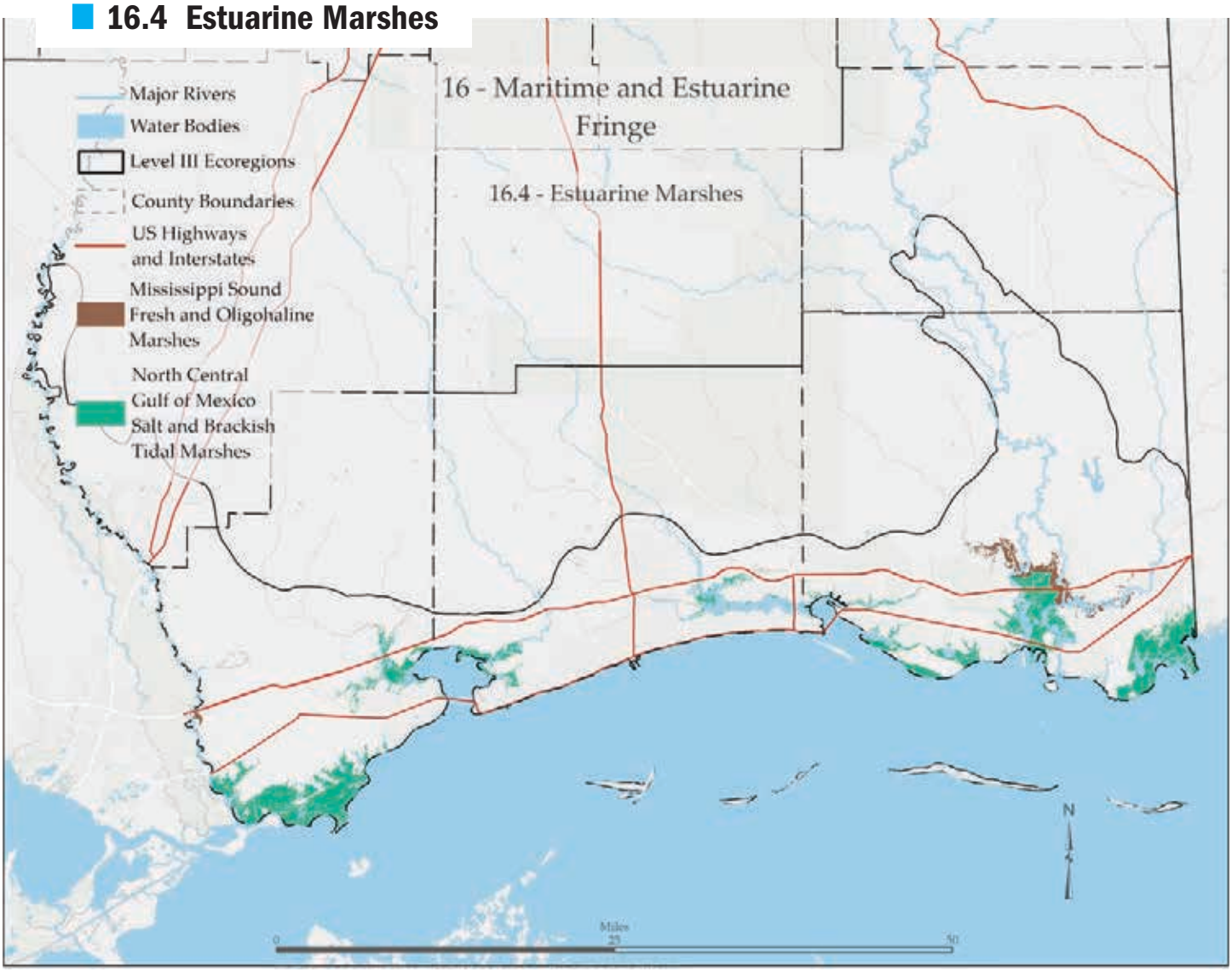


Figure 5.40. Map of Maritime and Estuarine Fringe: Estuarine Marshes.



Northern Gulf of Mexico salt and brackish tidal marsh. *Credit: Heather Sullivan*

Salt, brackish and intermediate marshes and salt pannes account for most of the intertidal marsh habitat of Mississippi, which totals almost 70,000 acres. Fire has been an important factor influencing the vegetation of the marshes, estuarine shrublands and maritime flatwoods.

Intertidal salt, brackish and tidal freshwater marshes create a fringe along the coast and barrier islands and cover substantial lowland flats along mouths of streams and bays. Tidal marshes are situated on organic muck substrates that are often interlaced to varying degrees with mineral horizons that were likely deposited during storm surges. Some levees and reworked mineral sediments are situated along the mouths of larger coastal streams. Saltmarshes are characterized by their low position within the tidal zone and their increased exposure to higher water salinities.

North-Central Gulf of Mexico Salt and Brackish Tidal Marshes are found from the Pearl River to the eastern Mississippi state line. These marshes border protected bays, sounds, lagoons, and other low-energy shorelines. Brackish needlerush marshes dominate this system, but cordgrasses occur in narrow embedded bands. Sawgrass, saltgrass, switchgrass, Olney threesquare, and common threesquare will also be present. Yaupon and stunted live oaks may occur in areas.

Saltmarsh vegetation can be classified into several zones of elevation. The lowest zone situated at sea level or slightly below is composed of frequently flooded smooth cordgrass marshes that form a narrow fringe of green shimmering spikes along exposed shorelines and outer sections of tidal creeks and bays. The plants are often partially submerged and are flooded daily. With a slight increase in elevation, frequently flooded marshes are superseded by irregularly flooded marshes. Irregularly flooded saline marshes are situated at intermediate levels, just above mean high water of the tidal zone. They are dominated by salt pannes are present, especially within the Grand Bay National Estuarine Research Reserve and on the east end of Deer Island. The pannes are infrequently flooded and are exposed for long periods. Some pannes are situated on sloping ground but receive sublateral flow from high marsh zones, evidently a source of additional salts. During periods of exposure moisture is evaporated and soluble salts build up to lethal levels for most plants in the upper soil horizons. The community usually supports a few short halophytic plants including saltwort, glasswort, turtleweed, seepweed, and saltgrass. Where salinity is extremely high the pannes become barren. Brackish marshes are characterized by a salinity range of 0.1 to 1.5 percent through most of the year, and this impacts the vegetation present in this habitat. They are often composed of relatively pure stands of black needlerush, but smooth cordgrass is a common associate in zones. Carolina sea lavender, American bulrush and sturdy bulrush may be occasionally found in brackish marshes.

Mississippi Sound Fresh and Oligohaline Tidal Marshes are associated with mud-bottomed bays behind the barrier islands. Diverse freshwater marshes dominate the system. Beaked spikerush, narrowleaf whitetop sedge, southern beaksedge, giant bulrush, and southern wild-rice are the most common species present, but bulltongue arrowhead, bagpod, southern seaside goldenrod, narrowleaf loosestrife, and southern cattail may be found in some stands. Tidal freshwater marshes contain the most diverse complement of emergent sedges, grasses and forbs of all tidal marsh types. However, they are minor in extent, only occupying about 1,000 acres. Bulltongue arrowhead, switchgrass, shortbristle beaksedge and spikerush are commonly encountered.

Oligohaline marshes are positioned near major sources of freshwater and are largely protected from major storm surges. Jamaica swamp sawgrass is the dominant species, but a comparatively high diversity of plants is present.



Mississippi Sound fresh and oligohaline marsh - Pascagoula. *Credit: Heather Sullivan*

Size: 5,105 acres of MS Sound Fresh and Oligohaline Marshes and 45,052 acres of North Central Gulf of Mexico Salt and Brackish Tidal Marshes

Conservation Status: Imperiled

Estuarine marshes are found in four large patches (greater than 10,000 acres) at the edge of the Mississippi Sound on active or historic riverine deltas. They are also found in narrow fringes along bays and isolated bayous. Many of the adjacent habitats are highly urbanized residential or commercial areas (including an oil refinery). Adjacent habitats that are undeveloped consist of estuarine shrubland or maritime forest/savanna.

Estuarine marshes except those peripheral to urban areas are generally in good condition. Erosion is occurring along some exposed shorelines. Some of the natural ecological processes, such as wildfire, are likely reduced during modern times.

Thousands of hectares of North-Central Gulf of Mexico Salt and Brackish Tidal Marsh system have been lost due to dredging, filling, draining, erosion, and other factors (Stout 1984). These factors continue to impact coastal marshes in this system. In addition, these marshes are impacted by point and nonpoint source pollutants. With rising sea levels, marsh loss is expected when sedimentation and organic matter accumulation cannot keep pace with rising waters. Sea-level rise is expected to impact marshes with insufficient buffers to allow landward migration. Increased storm intensity predicted under future climate change also threatens this system.

16.5 Salt Pannes

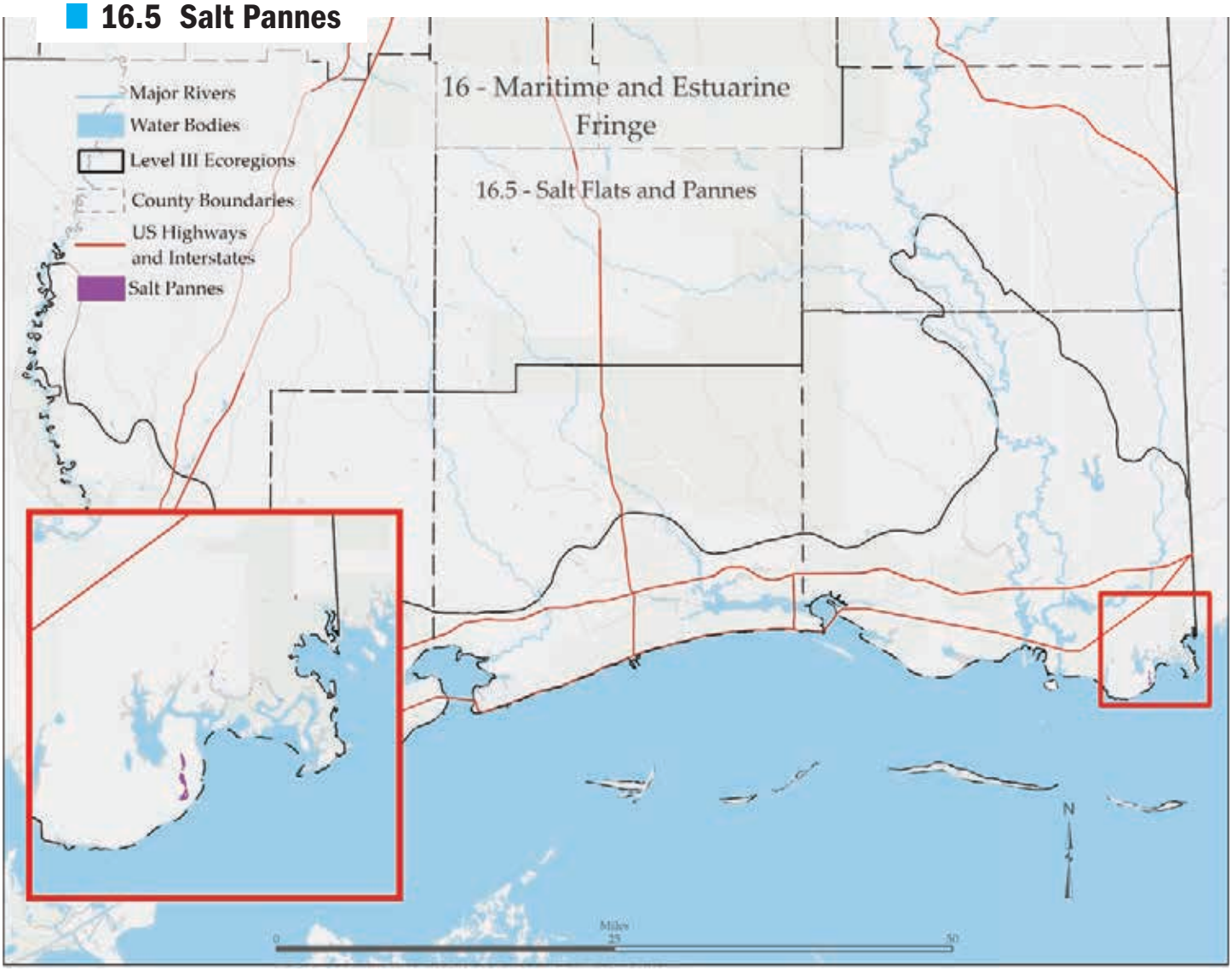


Figure 5.41. Map of Maritime and Estuarine Fringe: Salt Pannes.

Size: 52 acres of Salt Pannes

Conservation Status: Critically imperiled

Small patches of a few acres to several dozen acres of salt pannes are mainly found in the Grand Bay National Estuarine Research Reserve in Jackson County, along the eastern end of Deer Island in Harrison County, and in the Hancock County marshes. The patches are surrounded by estuarine marsh habitat. In Jackson County, the condition of the pannes appears to be stable. However, some losses of this habitat have occurred due to an increase in seawater levels (or subsidence) and beach erosion.

Salt pannes are sparsely vegetated zones that appear to be in good condition, but their historical character is unknown and therefore it is not possible to make a comparison of their original condition. They may be less well vegetated than in the past, and succulent species may be less common today than in the past. General subsidence of the Grand Bay marshes will eventually change the hydrology of these areas, likely allowing additional flushing of salts. This would enable taller marsh herbs to invade the salt pannes.



Salt panne and salt flat. *Credit: Heather Sullivan*

16.6 Shell Middens and Estuarine Shrublands

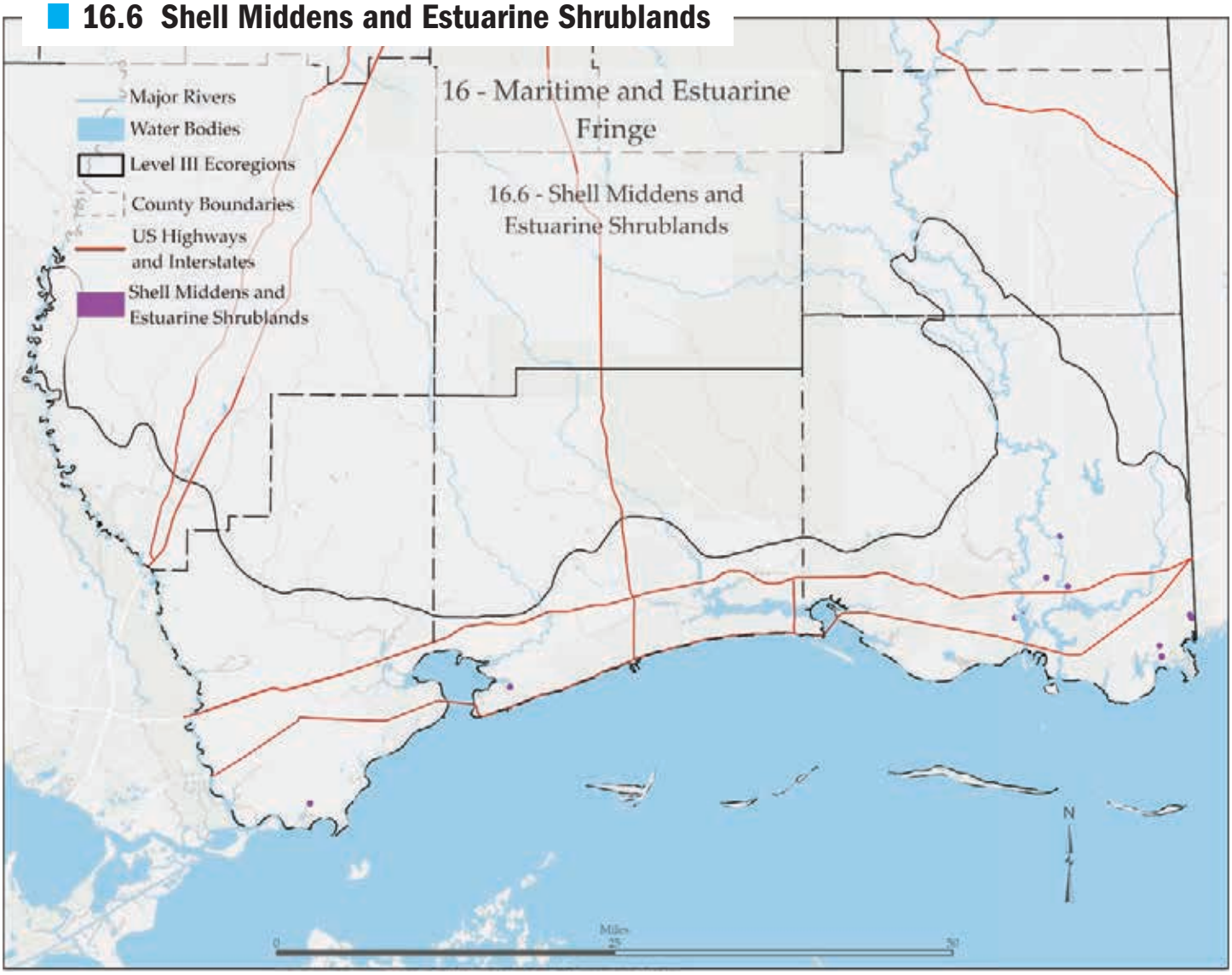


Figure 5.42. Map of Maritime and Estuarine Fringe: Shell Middens and Estuarine Shrublands.

Rare shell midden habitats that support a unique shrub community occur along intertidal marsh fringes and on small islands within the marsh. The breakdown of the oyster shell on middens creates unique soil conditions, which support a characteristic plant community. Plants found on shell middens include southern red cedar, coral bean, gum bully, red buckeye, yucca and prickly pear. Shell middens occur along edges of bayous as small circular patches, about one acre in size. Some shell middens are infested with cogongrass while those not surrounded by marsh lands are exposed to shoreline erosion.

Estuarine shrublands are found in small linear patches that follow the shoreline of estuarine marshes and adjoin upland areas. Some bays have wide extensive areas (100 acres) of this type (east side of St. Louis Bay). The habitat is adjoined by forested or developed uplands and maritime forests. The estuarine shrublands occupy a zone just above the salt meadows, where the transition from one to the other may be abrupt or gradual, blending into the salt meadows as they form the final zone of tidal vegetation.

Estuarine shrublands are apparently stable communities and seem to be in good condition. However, not being exposed to periodic wildfire as in presettlement times may have a deleterious effect on the subtype. Increased nutrient loads from runoff (fertilizer, sewage etc.) of estuarine waters may have resulted in a change in abundance and/or dominance of some of the associated shrub species.

Just inland from the normal tidally influenced areas are non-tidal habitats including maritime pine flatwoods, non-tidal swamps and freshwater marshes.

SIZE, CONDITION AND CONSERVATION STATUS

Size: Unknown

Conservation Status: Shell middens are critically imperiled and estuarine shrublands are Vulnerable

THREATS AND ACTIONS FOR MARITIME, ESTUARINE FRINGE AND MARINE HABITATS

Threats: Habitat shifting/alteration and storms/flooding resulting from climate change are major threats to this region. Other significant threats include invasive species, fire suppression, incompatible recreational uses, and water management/use.

Actions: Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

Provide public education about the conservation of SGCN and/or their habitats. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues. Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alter flow, depth, and salt intrusion. Limit bulkheading along coastal drainages. Discourage/limit human access in highly critical areas and special habitats, when possible.

Table 5.30 - SGCN for Maritime and Estuarine Fringe.

Taxa Group (Class)	Tier	Scientific Name	Common Name	Florida Panhandle Beach Vegetation	Mainland Beaches	EGCP Dune and Coastal Grassland	EGCP Maritime Forest	EGCP Fresh water Tidal Swamp	SCP Interdunal Wetlands	North-Central Gulf of Mexico Salt and Brackish Tidal Marshes	Mississippi Sound Fresh and Oligohaline Marshes	Salt Flats and Pannes	Shell Middens and Estuarine Shrublands
Arachnids	4	*Arctosa sanctaerosae*	Santa Rosa Wolf Spider	X	X	X							
Insects	4	*Automeris louisiana*	Louisian a Eyed Silkmoth				X			X			
Insects	2	*Euphyes bayensis*	Bay St. Louis Skipper							X			
Insects	3	*Euphyes pilatka*	Palatka Skipper							X			
Insects	4	*Hesperapis oraria*	Gulf Coast Solitary Bee			X	X						
Insects	4	*Papaipema maritima*	Maritime Sunflower Borer							X			
Insects	2	*Pogonomy rmex badius*	Florida Harvester Ant			X							
Birds	1	*Ammospiza maritima*	Seaside Sparrow						X	X		X	
Birds	1	*Ammospiza nelsoni*	Nelson's Sparrow						X	X		X	
Birds	3	*Anas acuta*	Northern Pintail							X			
Birds	1	*Anas fulvigula*	Mottled Duck						X	X		X	
Birds	1	*Antigone canadensis pulla*	Mississippi Sandhill Crane							X			
Birds	3	*Antrostomus carolinensis*	Chuck-will's-widow			X	X						X
Birds	1	*Antrostomus vociferus*	Eastern Whip-poor-will			X	X						X
Birds	3	*Asio flammeus*	Short-eared Owl			X			X	X			
Birds	2	*Aythya affinis*	Lesser Scaup							X			

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Birds	2	*Botaurus lentiginosus*	American Bittern						X	X			
Birds	1	*Calidris canutus*	Red Knot	X					X				
Birds	3	*Calidris melanotos*	Pectoral Sandpiper	X	X				X	X		X	
Birds	3	*Calidris pusilla*	Semipalmated Sandpiper	X	X	X			X	X		X	
Birds	2	*Calidris subruficollis*	Buff-breasted Sandpiper	X	X				X	X		X	
Birds	1	*Centronyx henslowii*	Henslow's Sparrow				X						
Birds	1	*Charadrius melodus*	Piping Plover	X	X				X				
Birds	1	*Charadrius nivosus*	Snowy Plover	X	X	X			X			X	
Birds	1	*Charadrius wilsonia*	Wilson's Plover	X		X			X	X		X	
Birds	3	*Chlidonias niger*	Black Tern	X	X				X	X			
Birds	3	*Chordeiles minor*	Common Nighthawk			X	X						X
Birds	2	*Cistothorus palustris marianae*	Marian's Marsh Wren							X			
Birds	3	*Coccyzus americanus*	Yellow-billed Cuckoo			X	X						X
Birds	3	*Columbina passerina*	Common Ground Dove			X	X						
Birds	2	*Coturnicops noveboracensis*	Yellow Rail				X		X	X		X	
Birds	2	*Egretta caerulea*	Little Blue Heron		X				X	X		X	
Birds	2	*Egretta rufescens*	Reddish Egret	X	X				X			X	

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Birds	3	*Egretta tricolor*	Tricolored Heron		X				X	X		X	
Birds	1	*Falco sparverius paulus*	Southeastern American Kestrel				X						
Birds	1	*Gelochelidon nilotica*	Gull-billed Tern	X	X				X	X		X	
Birds	2	*Geothlypis formosa*	Kentucky Warbler			X	X						X
Birds	1	*Haematopus palliatus*	American Oystercatcher	X	X	X			X	X		X	
Birds	2	*Helmitheros vermivorum*	Worm-eatingWarbler			X	X						X
Birds	2	*Hylocichla mustelina*	Wood Thrush			X	X						X
Birds	2	*Ixobrychus exilis*	Least Bittern						X	X			
Birds	2	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike			X	X						
Birds	3	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike			X	X						
Birds	1	*Laterallus jamaicensis*	Black Rail						X	X		X	
Birds	3	*Limnodromus griseus*	Short-billed Dowitcher	X	X	X			X	X		X	
Birds	2	*Limnothlypis swainsonii*	Swainson's Warbler			X	X						X
Birds	2	*Limosa fedoa*	Marbled Godwit	X	X				X			X	
Birds	3	*Melanerpes erythrocep halus*	Red-headed Woodpecker				X						
Birds	3	*Nyctanassa violacea*	Yellow-crowned Night-Heron		X				X	X		X	
Birds	3	*Nycticorax nycticorax*	Black-crowned Night-Heron		X				X	X		X	

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Birds	2	*Parkesia motacilla*	Louisiana Waterthrush			X	X						X
Birds	2	*Passerina ciris*	Painted Bunting			X	X						X
Birds	2	*Peucaea aestivalis*	Bachman's Sparrow				X						
Birds	3	*Piranga olivacea*	Scarlet Tanager (breeding population)			X	X						X
Birds	1	*Platalea ajaja*	Roseate Spoonbill						X	X		X	X
Birds	3	*Pluvialis dominica*	American Golden-Plover	X	X				X	X		X	
Birds	3	*Porphyrio martinicus*	Purple Gallinule							X			
Birds	2	*Protonota ria citrea*	Prothonotary Warbler			X	X						X
Birds	2	*Rallus elegans*	King Rail							X			
Birds	1	*Rynchops niger*	Black Skimmer	X	X				X	X			
Birds	3	*Scolopax minor*	American Woodcock				X						
Birds	2	*Setophaga cerulea*	Cerulean Warbler			X	X						X
Birds	2	*Setophaga discolor*	Prairie Warbler			X	X						X
Birds	1	*Sterna hirundo*	Common Tern (breeding population)	X					X	X		X	
Birds	1	*Sternula antillarum antillarum*	Coastal Least Tern	X	X				X	X		X	
Birds	2	*Thalasseus maximus*	Royal Tern	X	X				X	X		X	
Birds	1	*Thalasseus sandvicensis*	Sandwich Tern	X	X				X	X		X	

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Birds	3	*Tringa flavipes*	Lesser Yellowlegs	X	X				X	X		X	
Birds	3	*Tringa semipalmata*	Willet	X	X	X			X	X		X	
Birds	1	*Vermivora chrysoptera*	Golden-winged Warbler			X	X						X
Birds	2	*Vireo gilvus*	Warbling Vireo			X	X						X
Fishes	2	*Fundulus jenkinsi*	Saltmarsh Topminnow							X			
Fishes	3	*Heterandria formosa*	Least Killifish							X			
Fishes	4	*Leptolucania ommata*	Pygmy Killifish							X			
Marine Fishes	4	*Archosargus rhomboidalis*	Western Atlantic Seabream							X			
Marine Fishes	4	*Carcharhinus porosus*	Smalltail Shark							X			
Marine Fishes	4	*Hippocampus erectus*	Lined Seahorse							X			
Marine Fishes	4	*Megalops atlanticus*	Tarpon							X			
Marine Fishes	1	*Pristis pectinata*	Smalltooth Sawfish							X			
Marine Fishes	4	*Pristis pristis*	Largetooth Sawfish							X			
Mammals	2	*Sorex longirostris*	Southeastern Shrew				X						
Reptiles	3	*Coluber flagellum flagellum*	Eastern Coachwhip			X							
Reptiles	4	*Heterodon simus*	Southern Hognose Snake				X						
Reptiles	1	*Malaclemys terrapin pileata*	Mississippi Diamondback Terrapin	X	X				X	X		X	X

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Reptiles	2	*Nerodia clarkii clarkii*	Gulf Salt Marsh Snake						X	X		X	
Reptiles	1	*Pseudemys alabamensis*	Alabama Red-bellied Turtle				X			X			
Reptiles	2	*Rhadinaea flavilata*	Pine Woods Snake				X						
Marine Reptiles	2	*Caretta caretta*	Loggerhead Sea Turtle	X	X								
Nonvascular Plants	1	*Archidium hallii*	Hall's Archidium Moss				X						
Nonvascular Plants	2	*Cylindrocolea rhizantha*	a liverwort				X						
Nonvascular Plants	2	*Lejeunea floridana*	a liverwort				X						
Nonvascular Plants	2	*Plagiochila floridana*	Florida Leafy Liverwort				X						
Vascular Plants	3	*Amaranthus australis*	Southern Amaranth			X			X	X			
Vascular Plants	3	*Andropogon dealbatus*	Wetland White Bluestem			X							
Vascular Plants	3	*Aristida spiciformis*	Pine Barren Three-awn Grass			X	X						
Vascular Plants	3	*Aristida tenuispica*	Southern Arrowfeather			X			X				
Vascular Plants	1	*Astragalus obcordatus*	Florida Milkvetch				X						
Vascular Plants	1	*Avicennia germinans*	Black Mangrove						X				
Vascular Plants	2	*Balduina angustifolia*	Coastal Plain Honeycomb-head			X	X		X				
Vascular Plants	4	*Bidens trichosperma*	Tickseed Sunflower							X			

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Vascular Plants	1	*Boltonia apalachic olensis*	Apalachicola Doll's-Daisy							X			
Vascular Plants	1	*Canna flaccida*	Bandana-of-the-Everglades							X			
Vascular Plants	1	*Carex dasycarpa*	Velvet Sedge				X						
Vascular Plants	1	*Chamaecrista horizontalis*	Florida Senna			X							
Vascular Plants	2	*Chamaecy paris thyoides*	Atlantic White Cedar					X					
Vascular Plants	3	*Cirsium lecontei*	Leconte's Thistle			X			X				
Vascular Plants	1	*Conradina canescens*	Blue-sage			X	X						
Vascular Plants	2	*Crocanthemum arenicola*	Coastals and Frostweed	X		X							
Vascular Plants	2	*Cyperus articulatus*	Jointed Flatsedge							X			
Vascular Plants	2	*Cyperus lecontei*	LeConte's Flatsedge	X	X								
Vascular Plants	1	*Cyperus ochraceus*	Pond Flatsedge							X			
Vascular Plants	3	*Desmodium tenuifolium*	Slim-leaf Tick-trefoil			X			X				
Vascula r Plants	3	*Dichanthelium erectifolium*	Erect-leaf Witchgrass			X	X						
Vascula r Plants	1	*Eleocharis albida*	White Spikerush							X			
Vascular Plants	1	*Eleocharis ambigens*	Obscure Spikerush							X			
Vascular Plants	3	*Eleocharis cellulosa*	Carolina Spikerush						X	X			
Vascular Plants	2	*Eleocharis geniculata*	Capitate Spikerush						X	X			

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Vascular Plants	3	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush								X		
Vascular Plants	1	*Eleocharis parvula*	Small Spikerush						X				
Vascular Plants	4	*Eleocharis rostellata*	Beaked Spikerush							X	X		
Vascular Plants	3	*Eryngium aquaticum*	Marsh Rattlesnake-master							X			
Vascular Plants	2	*Euphorbia inundata* var. *inundata*	Florida Pine Spurge			X							
Vascular Plants	2	*Eustachys glauca*	Saltmarsh Finger-grass							X			
Vascular Plants	2	*Eustoma exaltatum*	Tall Prairie-gentian							X			
Vascular Plants	2	*Galium bermudense*	Coastal Bedstraw			X	X						
Vascular Plants	1	*Gratiola ramosa*	Branched Hedge-hyssop			X							
Vascular Plants	4	*Helianthus debilis* ssp. *tardiflorus*	Gulf Coast Beach Sunflower	X			X						
Vascular Plants	3	*Hibiscus coccineus*	Brilliant Hibiscus							X			
Vascular Plants	1	*Hypoxis curtissii*	Curtiss' Yellow Star-grass						X				
Vascular Plants	2	*Ipomoea brasiliensis*	Railroad Morning-glory	X		X							
Vascular Plants	1	*Ipomoea macrorhiza*	Large-stem Morning-glory				X						X
Vascular Plants	1	*Iris giganticae rulea*	Giant Blue Iris				X						
Vascular Plants	2	*Juniperus silicicola*	Southern Red Cedar				X	X		X			X
Vascular Plants	3	*Lilaeopsis carolinensis*	Carolina Lilaeopsis							X			

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Vascular Plants	3	*Ludwigia alata*	Winged Seedbox						X	X			
Vascular Plants	2	*Lycium carolinianum*	Carolina Wolf-berry	X		X					X	X	X
Vascular Plants	3	*Nymphoid esaquatica*	Big Floating-heart							X			
Vascular Plants	3	*Paronychi aerecta* var. *corymbosa*	Beach Sand-squares	X		X							
Vascular Plants	3	*Paronychia erecta* var. *erecta*	Beach Sand-squares	X		X							
Vascular Plants	2	*Paspalum monostachyum*	Gulfdune Paspalum	X					X				
Vascular Plants	4	*Phaseolus sinuatus*	Sandhill Bean		X								
Vascular Plants	4	*Physalis arenicola*	Cypress-head Ground-cherry				X						
Vascular Plants	1	*Pinus clausa*	Sand Pine				X						
Vascular Plants	2	*Polanisia tenuifolia*	Slenderleaf Clammy-weed			X							
Vascular Plants	2	*Senega balduinii*	White Milkwort						X				
Vascular Plants	3	*Quercus austrina*	Bluff Oak				X						
Vascular Plants	2	*Quercus minima*	Dwarf Live Oak			X	X						
Vascular Plants	2	*Quercus myrtifolia*	Myrtle-leaf Oak			X							
Vascular Plants	3	*Rhododen dron austrinum*	Orange Azalea				X		X				
Vascular Plants	2	*Ruellia noctiflora*	Night-flowering Wild-petunia			X			X				
Vascular Plants	3	*Sageretia minutiflora*	Tiny-leaved Buckthorn				X						X

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Vascular Plants	2	*Sapindus marginatus*	Florida Soapberry				X						X
Vascular Plants	3	*Schizachyrium maritimum*	Gulf Bluestem	X	X				X				
Vascular Plants	2	*Schoenoplectus americanus*	Three-square Bulrush							X			
Vascular Plants	3	*Scleria georgiana*	Georgia Nutrush						X				
Vascular Plants	3	*Scleria verticillata*	Low Nutrush						X				
Vascular Plants	2	*Setaria corrugata*	Coast Bristle Grass			X	X						
Vascular Plants	2	*Solanum pseudogracile*	Glowing Nightshade			X							
Vascular Plants	2	*Triglochin striata*	Arrow-grass		X					X			
Vascular Plants	3	*Verbena xutha*	Gulf Vervain				X						
Vascular Plants	2	*Xyris flabelliformis*	Savannah Yellow-eyed-grass			X			X				
Vascular Plants	2	*Xyris louisianica*	Kral's Yellow-eyed Grass				X			X			

17. Estuary and Mississippi Sound (inside or associated with barrier islands)

Table 5.31 - Estuary and Mississippi Sound Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	19. Estuary and Mississippi Sound (Inside or Associated with Barrier Islands)	Level III EPA Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
17.1 Estuarine Bays, Lakes and Tidal Stream	*Estuarine Bays, Lakes, and Tidal Streams [No NS Equivalent]*				X	
17.2 Seagrass Beds	*Northern Gulf of Mexico Seagrass Bed*				X	
17.3 Mollusk Reefs	*Mollusk Reef [No NS Equivalent]*				X	
17.4 Mississippi Sound	*Mississippi Sound (Smooth Bottom) [No NS Equivalent]*				X	
17.5 Barrier Island Passes	*Barrier Island Passes [No NS Equivalent]*				X	

Estuarine habitats include subtidal and intertidal areas. Subtidal habitats include the water column and benthic areas below extreme low water of spring tides. Texture of the substrate, salinity and water depth are important parameters that distinguish subtidal habitats from one another. Except for some of the barrier island lagoons, they have variable salinity levels.

Estuarine areas that are partially enclosed by the mainland include embayments, lakes and tidal streams. Barrier island ponds or lagoons fit within this group. Over 300 Mississippi tidal creeks and riverine bayous cover approximately 5,500 acres. Coastal areas are also served by eight tidally influenced rivers that extend through estuarine habitat for over 85 miles and cover an estimated 4,500 acres. The total surface area of the Mississippi Sound is approximately 500,000 acres; 25 percent is classified as nearshore habitat, less than two meters (6.5 feet) deep and 75 percent as offshore habitat.

GENERAL CONDITION

According to reports of the NOAA National Sea Grant College Program, “nearly half of the nation’s coastal wetlands have been lost, and wetland losses in some states exceed 90 percent”. Gulf coast states possess the largest proportion of coastal wetlands remaining (17,000 square miles), yet these areas are also disappearing rapidly due to coastal development. Beaches, dunes, seagrasses, coral reefs, oyster reefs and other valuable habitats face significant pressures. Loss and deterioration of coastal habitats, especially estuaries and wetlands, have dramatically affected U.S. fishery stocks. Landings of estuarine dependent fishes are down.

Issues affecting the coastal estuaries are the Gulf “Dead Zone;” the impacts of metropolitan sewage outflows on coastal waters; stormwater runoff containing chemicals and excess nutrients; and the causes and effects of toxic chemical contamination of oysters and mussels. Furthermore, wetland losses are affecting the function of coastal ecosystems by contributing to nutrient enrichment of coastal waters and the occurrence of harmful algal blooms, such as red and brown tides.

Particularly on the mainland, pressure on coastal wetland habitats has dramatically increased over the past 50 years. A significant percentage of coastal wetlands have been destroyed by filling and dredging. By 1972, 12 percent of the intertidal marshes of Mississippi had been drained, filled or fragmented. Coastal environments provide some of the most attractive living areas in the nation. It will continue to be a challenge to protect these areas for present and future generations so that they may continue to enjoy the numerous benefits of a healthy wetland ecosystem along the Mississippi coast. Over 90,000 acres of land have been designated by the Mississippi Department of Marine Resources as coastal preserve habitat, much of which is tidal marsh, creeks and lakes.



Tidal stream in Bay St. Louis. *Credit: Calvin Rezac*

17.1 Estuarine Bays, Lakes and Tidal Streams

The term embayment refers to large, protected, low energy, subtidal areas that are enclosed on three sides by land. Mississippi has two such embayments, St. Louis Bay and Biloxi Bay. The bays range in depth from one to ten feet, except in minor channel segments where the depth reaches 30 feet. The textures of bottom substrates range from muddy sand to sandy mud. Bays are partially-mixed to well-mixed systems, depending on the season and experience tidal surges of one to one and one-half feet on average, but occasionally reach four feet. Salinity levels are in a constant state of flux depending on the ebb and flow of the tides and weather systems impacting the region and season. Additional parameters defining these waters include turbidity, pH, dissolved oxygen, nutrients and chlorophyll levels. The muddy bottoms support a diverse group of benthic life forms, mainly polychaetes, mollusks, insects and crustaceans, many of which prefer the bays over other estuarine areas. Numerous species inhabit the coastal bay waters, and the most economically important are menhaden, sea trout, redfish, flounder, shrimp, and blue crabs. Bays and bayous are important foraging areas for many birds such shorebirds and waterbirds.

Besides coastal bays, coastal ponds and lakes contribute additional open water estuarine habitat. There are over 100 coastal estuarine ponds of many different sizes totaling almost 4,000 acres. Examples include Bangs Lake and Graveline Bayou in Jackson County. The lakes are usually very shallow, from one to ten feet deep and contain a similar complement of aquatic species to those found in bays. The small, circular or oval ponds and lagoons of the barrier islands also number in the hundreds. Due to their shallow nature and differences in connectivity, they exhibit a wider range of temperatures and salinity levels than mainland ponds. The ponds harbor a diverse group of fishes and birds. When exposed to hurricane winds, these ponds are radically changed through overwash, erosion and species exchanges.

Mississippi's tidal streams can be classified into three general types: tidal marsh creeks, coastal tidal creeks and riverine estuary bayous. Tidal marsh creeks primarily drain estuarine marshes. Coastal tidal creeks serve as minor conduits for freshwater discharge from surrounding uplands. Riverine estuary bayous serve as interdistributary channels within riverine estuaries. Substrates are usually muddy sand or sandy. Salinity, pH and turbidity change along a gradient that extends from the upper reaches of tidal creeks to their outlets.

Important animal groups inhabiting tidal creeks include mollusks, crustaceans, other invertebrates, salt tolerant reptiles, fishes, mammals, birds and others. Examples are oysters, bluecrabs, shrimp, drum, mullet, diamondback terrapin, clapper rail, otter and raccoon.

Portions of the river channels affected by tides or by saltwater intrusion, called the salt wedge (a layer of denser saltwater underlying a less dense layer of fresh water), are called tidal river habitats. The tidal river channels along the Mississippi coast have a wide range of flow rates, widths and depths. Substrates range in texture from sand along segments with higher flow rates to mud along sluggish segments. A large complement of fish and bird species are also encountered in tidal river habitats.

Size: unknown

Conservation Status: Vulnerable

Tidally affected streams, lakes, and bays extending along the Mississippi Sound, form a complex of subtidal estuarine communities that range in size from 100 to 10,000 acres in size. Several large complexes of this subtype occur within the bays and the riverine deltas of the Mississippi coast. These tidal areas serve as major conduits for freshwater inflow and are important avenues for water movement through brackish marshes. The water bodies are usually nestled within brackish marsh habitats but occasionally adjoin maritime forest or urbanized properties. Further inland, riverine estuaries adjoin bottomland hardwood forests.

The quality of estuarine bays, lakes and tidal streams is dependent on the water quality of the region. In the past they were exposed to very high levels of industrial pollution. Water pollution is monitored more judiciously today, but water quality issues persist in this highly developed region. Stagnation during drought can cause fish kills. Higher pollution loads lead to increased possibility of algae blooms and anoxic conditions that lead to fish kills.

17.2 Seagrass Beds

Northern Gulf of Mexico Seagrass Bed is a system found behind protective barrier islands and in near-shore areas. Mississippi coastal waters contain three submergent bed types: barrier island seagrass, widgeon grass and American wildcelery (tapegrass) beds. The types can be distinguished by differences in species composition, habitat requirements and location within the estuary. Barrier island seagrass beds originally contained three species of seagrasses: shoalweed, turtle, and manatee grasses. Several of these have become very rare or have disappeared altogether. The beds, now composed almost entirely of shoalweed, occur in less turbid, moderately saline habitats of the nearshore zone north of the barrier islands with a couple of nearshore mainland exceptions, including Grand Bay National Estuarine Research Reserve. The barrier island pond/lagoon areas are often dominated by wigeon grass and contain trapped fresh or brackish water. Widgeon grass beds occur in shallow and moderately turbid waters that are lower in salinity. The beds are found in bays, along bayous, on submerged mudflats and occasionally in barrier island ponds. Both widgeon grass and shoalweed abundance in Mississippi waters have fluctuated dramatically over time due to damage caused by hurricanes and anthropogenic impacts. While hurricanes tend to temporarily displace these grasses from some locations, they may also allow them to establish in others by shifting sediments, making previously unusable areas more conducive to seagrass colonization.

Widgeon grass and shoalweed are often interchangeable within a specific area depending on rainfall, turbidity, and depth. Shoalweed requires slightly higher salinities than widgeon grass and during long periods of drought will colonize areas generally occupied by widgeon grass due to lower freshwater inflows. The opposite can also occur during times of excessive rainfall. Recently, widgeon grass has returned to many of the areas in which it once existed while shoalweed (and the other historical species) seems less able to recover on its own. American wildcelery prefers freshwater or oligohaline waters and can be found growing on muddy substrates in the upper reaches of many estuarine bayous and streams flowing into coastal bays and the Mississippi Sound. The lower limits of wildcelery are near the mouths of coastal streams. American wild-celery forms beds of submerged strap- or ribbon-like leaves from several inches to several feet in length. Wildcelery is occasionally found growing with widgeon grass. Seagrass beds provide nursery habitat, forage areas, and refuge for numerous aquatic species. Productivity and aerial coverage of seagrass beds can be promoted by improving local water quality, increasing public awareness, and by reducing mechanical damage to the beds.

Although not technically a seagrass bed, the macroscopic algae bed community is mentioned here to recognize that it once occurred in Mississippi waters. They still exist in waters off the southern Florida coast. Macroscopic algae beds were observed near Cat Island in the past but have not been recorded in recent years. Algae beds are predominantly composed of macrophytic red algae that are attached to benthic shell material. They grow to a height of about two feet.

Size: Unknown

Conservation Status: Imperiled

Seagrass beds are found in a variety of shallow subtidal habitats in bays, bayous and rivers along the coastal mainland and in the Mississippi Sound. Seagrasses require fairly clear water for sunlight to penetrate to a depth where the plants are attached and growing.

Seagrass beds formerly covered an estimated 19,000 acres, but recent estimates indicate that only a fraction of the original beds exist today. Seagrass beds were extensive prior to going into serious decline due to damage caused by Hurricane Camille. They may have been increasing somewhat in abundance along the coastal mainland in areas of lower salinity levels. Those that occur just north of the barrier islands remain sparsely populated and only a remnant of their original extent. The extensive loss of seagrass beds is due to a variety of causes, including hurricane damage, a decline in water quality, and destruction of the beds by channel maintenance, dredging, commercial fishery trawling, recreational fishing activities and even damage from anchor dragging by recreational watercraft. Seagrass beds of widgeon grass and tape grass found along the coastal mainland and in tidal creeks and rivers seem to be recovering from earlier declines.

17.3 Mollusk Reefs

Mollusk or oyster reefs are beds of oysters that range from just a few oysters to thousands of oysters covering large areas. They may be permanently submerged to intermittently exposed. Most of the sediments associated with oyster reefs consist of sandy mud or gravelly muddy sand. Oysters require a hard substrate for attachment, i.e., other shell material, wood or rock. Once attachment is secure, the oysters can perpetuate themselves by building on the shells of other animals. Weather events, water depth, temperature, salinity, turbidity, nutrient availability, accumulation of heavy metals and substrate type are factors affecting oyster growth. They generally prefer moderate levels of nutrients, temperature, etc., for proper growth. Large fluctuations in salinity can lead to die-off. Oyster reefs create habitat and shelter that is beneficial to hundreds of other species.

Size: Unknown

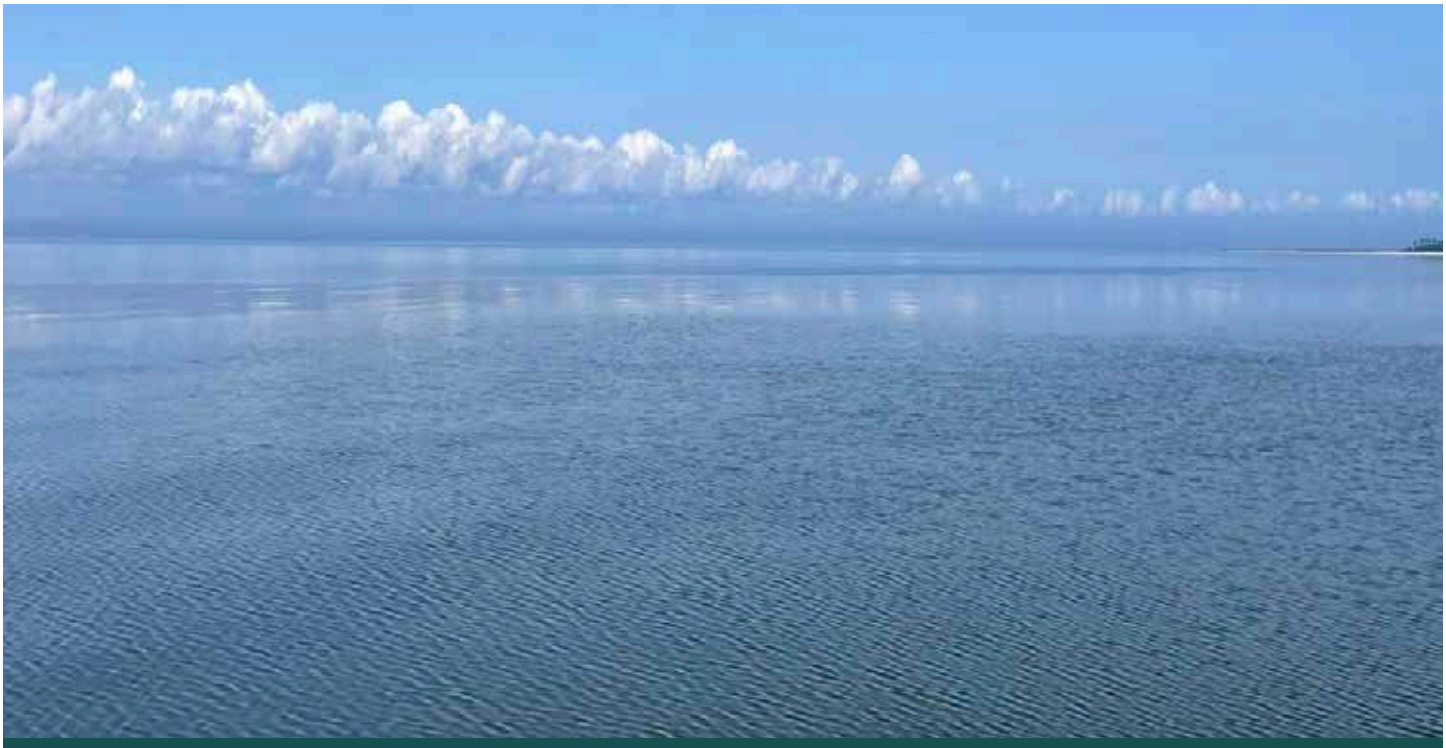
Conservation Status: Vulnerable

Mollusk reefs are found in small and large patches on the Mississippi Sound bottom and in the bays along the coast of the mainland. Some of them have been created by seeding additional shells. Oysters prefer moderately saline waters and are exposed to additional predators when salinity rises significantly. Oyster reef acreage *has increased slightly over the past two decades*. The Mississippi Department of Marine Resources (MDMR) manages 17 natural oyster reefs.

Approximately 97% of the commercially harvested oysters in Mississippi come from the reefs in the western Mississippi Sound, primarily from Pass Marianne, Telegraph and Pass Christian reefs. According to the MDMR, about 7,400 acres are in the western Mississippi Sound, and the remainder are uncharted or hidden reefs. The MDMR has planted over 5,000 acres of oyster cultch from 1997 – 2005 to restore and enhance oyster reefs in the Mississippi sound.Productive oyster reefs are dependent on water quality. Pollution that enters the Sound is detrimental to the viability of the oyster reefs. With the increases in population in the coastal urban areas, there is an increased potential for an increased level of pollutants and nutrients in the water. Oyster harvesters are major advocates for improving water quality of the Sound.

Mississippi Sound (Smooth Bottom)

The Mississippi Sound is considered a lagoon of marine origin whereas embayments are likely drowned river valleys. The term “sound” is defined as a water body extending parallel to the coast that is separated from the open ocean by land. A chain of barrier islands serves as the outer boundary of the Mississippi Sound. Based on hydrological differences among sections of the Sound, it is considered to have three zones. The West Sound is fed by higher freshwater inflows. The Central Sound is an area of poor circulation, little freshwater inflow and experiences extensive tidal flushing. The East Sound is dominated by water inflow from the Mobile Bay and Petit Bois Pass. General westward current movement on both the northern and southern shores of the Sound is sufficient to induce appreciable sand movement along the shoreline. Maintenance dredging can interrupt this sand movement and remove sands from the nearshore transport system. Salinity levels are within the polyhaline range and are typically lowest along the mainland where levels fluctuate more widely.



Mississippi Sound near Cat Island. *Credit: Holley Muraco*

Several habitat types have been described for the Mississippi Sound. They are classified based on differences in depth and texture of substrate. Each supports a discrete assemblage of benthic organisms that help to define the ecological communities. Nearshore communities are those with depths less than 6.5 feet; offshore communities have depths greater than 6.5 feet. The near- and off-shore zones are subclassified into three types: mud, sandy mud and sand bottom types. The Mississippi Sound supports important stocks of fish and invertebrates, providing foraging areas for many bird species including brown pelicans, dolphins, marine turtles such as the Kemp's Ridley and loggerhead and occasionally manatees.

Size: Unknown

Conservation Status: Vulnerable

The Mississippi Sound is a linear body of water about 12 miles wide that extends the length of the state into Alabama. It comprises a variety of subtidal habitats that are recognized by their differences in depth and substrate texture. The Sound is circumscribed by a variety of subtidal and intertidal estuarine habitats, natural beaches and man-made beaches that form the boundary between the Sound and an extensive coastal metropolitan area.

The condition of the habitats of the Mississippi Sound are largely dependent on the quality of the waters entering the Sound and the degree of impact caused by shippers, fishermen, and recreationists using the Sound. Pollutants, such as heavy metals and hydrocarbons, and high nutrient loads, which originate from agricultural lands and population centers, enter the Sound and reduce the quality of the habitat for wildlife species.

17.5 Barrier Island Passes

An additional Mississippi Sound type is the tidal pass, a habitat type defined for areas between the barrier islands where there is an enhanced tidal current. The surge through the tidal passes creates strong currents that inhibit the accumulation of finer sediments. The bottom substrates of tidal passes are regarded as clean sandy bottoms. The tidal passes serve as major conduits for the exchange of water and faunal recruitment between estuarine and marine waters. Benthic communities within these areas are sufficiently different to warrant separation from the other communities of the Mississippi Sound.

Size: Unknown

Conservation Status: Secure

The barrier island passes subtype is confined to the natural tidal flow channels found between the barrier islands. Tidal currents, which are much stronger in the pass areas, create sandy bottom habitats because muddy sediments are unable to settle from the water column.

Some of the passes have been dredged to allow large ship travel. The dredging may have disrupted the westward drift of sand movement along the southern shores of the islands. Other factors that may have degraded this habitat are considered to have a minor impact on this subtype.

THREATS AND ACTIONS FOR ESTUARY AND MISSISSIPPI SOUND (INSIDE AND ASSOCIATED WITH BARRIER ISLANDS)

Threats: Habitat shifting/alteration and storms/flooding resulting from climate change are major threats to this region. Other significant threats include invasive species, incompatible recreational uses, household sewage and urban wastewater, oil and gas drilling, harmful harvesting of aquatic resources, and water management/use.

Actions: Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

Provide public education about the conservation of SGCN and/or their habitats. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues. Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats. Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alter flow, depth, and salt intrusion. Limit bulkheading along coastal drainages. Maintain/improve/restore hydrologic and geomorphic integrity. Discourage/limit human access in highly critical areas and special habitats, when possible. Monitor/limit commercial/residential/industrial point source erosion and sedimentation or pollution into streams/atmosphere. Monitor/address SGCN harvest/over harvest issues. Develop/improve urban/suburban infrastructure land use development planning/zoning to address SGCN.

Table 5.32 - SGCN for Estuary and Mississippi Sound (Inside or Associated with Barrier Islands).

Taxa Group (Class)	Tier	Scientific Name	Common Name	Estuarine Bays, Lakes and Tidal Streams	Northern Gulf of Mexico Seagrass Bed	Mollusk Reefs	Mississippi Sound	Barrier Island Passes
Insects	4	*Automeris louisiana*	Louisiana Eyed Silkmoth	X				
Birds	3	*Anas acuta*	Northern Pintail	X				
Birds	1	*Anas fulvigula*	Mottled Duck	X				
Birds	2	*Aythya affinis*	Lesser Scaup	X	X		X	X
Birds	3	*Chlidonias niger*	Black Tern	X			X	X
Birds	2	*Egretta caerulea*	Little Blue Heron	X				
Birds	2	*Egretta rufescens*	Reddish Egret	X				
Birds	3	*Egretta tricolor*	Tricolored Heron	X				
Birds	1	*Gelochelidon nilotica*	Gull-billed Tern	X	X		X	X
Birds	1	*Haematopus palliatus*	American Oystercatche r			X		
Birds	3	*Nyctanassa violacea*	Yellow-crow ned Night-Heron	X				
Birds	3	*Nycticorax nycticorax*	Black-crown ed Night-Heron	X				
Birds	1	*Platalea ajaja*	Roseate Spoonbill	X				
Birds	1	*Rynchops niger*	Black Skimmer	X	X		X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Estuarine Bays, Lakes and Tidal Streams	Northern Gulf of Mexico Seagrass Bed	Mollusk Reefs	Mississippi Sound	Barrier Island Passes
Birds	1	*Sterna hirundo*	Common Tern (breeding population)	X	X		X	X
Birds	1	*Sternula antillarum antillarum*	Coastal Least Tern	X	X		X	X
Birds	2	*Thalasseus maximus*	Royal Tern	X	X		X	X
Birds	1	*Thalasseus sandvicensis*	Sandwich Tern	X	X		X	X
Fishes	1	*Acipenser desotoi*	Gulf Sturgeon	X	X		X	X
Fishes	1	*Alosa alabamae*	Alabama Shad	X			X	
Fishes	4	*Alosa chrysochloris*	Skipjack Herring	X			X	
Fishes	2	*Atractosteus spatula*	Alligator Gar	X	X		X	
Fishes	3	*Enneacanthus gloriosus*	Bluespotted Sunfish	X				
Fishes	2	*Fundulus jenkinsi*	Saltmarsh Topminnow	X	X		X	
Fishes	3	*Heterandria formosa*	Least Killifish	X	X			
Fishes	4	*Leptolucania ommata*	Pygmy Killifish	X	X			
Marine Fishes	2	*Aetobatus narinari*	Whitespotted Eagle Ray	X			X	X
Marine Fishes	4	*Archosargus rhomboidalis*	Western Atlantic Seabream		X	X	X	
Marine Fishes	3	*Carcharhinus acronotus*	Blacknose Shark		X		X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Estuarine Bays, Lakes and Tidal Streams	Northern Gulf of Mexico Seagrass Bed	Mollusk Reefs	Mississippi Sound	Barrier Island Passes
Marine Fishes	2	*Carcharhinus plumbeus*	Sandbar Shark	X			X	X
Marine Fishes	4	*Carcharhinus porosus*	Smalltail Shark	X			X	
Marine Fishes	4	*Epinephelus itajara*	Atlantic Goliath Grouper	X			X	X
Marine Fishes	4	*Hippocampus erectus*	Lined Seahorse		X	X	X	
Marine Fishes	4	*Manta birostris*	Giant Manta Ray					X
Marine Fishes	4	*Megalops atlanticus*	Tarpon	X		X	X	X
Marine Fishes	4	*Mobula hypostoma*	Atlantic Pygmy Devil Ray				X	X
Marine Fishes	4	*Mobula tarapacana*	Sicklefin Devil Ray					X
Marine Fishes	2	*Narcine bancroftii*	Caribbean Electric Ray					X
Marine Fishes	2	*Negaprion brevirostris*	Lemon Shark	X	X			X
Marine Fishes	1	*Pristis pectinata*	Smalltooth Sawfish	X	X		X	X
Marine Fishes	4	*Pristis pristis*	Largetooth Sawfish		X			
Marine Fishes	3	*Rhinoptera brasiliensis*	Brazilian Cownose Ray	X	X	X	X	X
Marine Fishes	2	*Sphyrna lewini*	Scalloped Hammerhead		X	X	X	X
Marine Fishes	2	*Sphyrna mokarran*	Great Hammerhead		X	X	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Estuarine Bays, Lakes and Tidal Streams	Northern Gulf of Mexico Seagrass Bed	Mollusk Reefs	Mississippi Sound	Barrier Island Passes
Marine Mammals	1	*Balaenoptera ricei*	Rice's Whale		X		X	
Marine Mammals	1	*Eubalaena glacialis*	North American Right Whale		X		X	
Marine Mammals	4	*Feresa attenuata*	Pygmy Killer Whale		X		X	
Marine Mammals	4	*Globicephala macrorhynchu s*	Short-finned Pilot Whale		X		X	
Marine Mammals	4	*Physeter macrocephalus*	Sperm Whale		X		X	
Marine Mammals	1	*Trichechus manatus*	West Indian Manatee	X	X		X	
Reptiles	1	*Graptemys pulchra*	Alabama Map Turtle		X			
Reptiles	1	*Malaclemys terrapin pileata*	Mississippi Diamondbac k Terrapin	X	X	X	X	
Reptiles	2	*Nerodia clarkii clarkii*	Gulf Salt Marsh Snake	X				
Reptiles	1	*Pseudemys alabamensis*	Alabama Red-bellied Turtle	X	X			
Marine Reptiles	2	*Caretta caretta*	Loggerhead Sea Turtle	X	X		X	X
Marine Reptiles	3	*Chelonia mydas*	Green Sea Turtle		X		X	X
Marine Reptiles	3	*Dermochelys coriacea*	Atlantic Leatherback Sea Turtle				X	X
Marine Reptiles	4	*Eretmochelys imbricata*	Hawksbill Sea Turtle				X	X
Marine Reptiles	1	*Lepidochelys kempii*	Kemp's Ridley Sea Turtle	X	X	X	X	X

Taxa Group (Class)	Tier	Scientific Name	Common Name	Estuarine Bays, Lakes and Tidal Streams	Northern Gulf of Mexico Seagrass Bed	Mollusk Reefs	Mississippi Sound	Barrier Island Passes
Vascular Plants	3	*Amaranthus australis*	Southern Amaranth	X				
Vascular Plants	4	*Bidens trichosperma*	Tickseed Sunflower	X				
Vascular Plants	1	*Canna flaccida*	Bandana-of-t he-Everglade s	X				
Vascular Plants	2	*Cyperus articulatus*	Jointed Flatsedge	X				
Vascular Plants	1	*Cyperus ochraceus*	Pond Flatsedge	X				
Vascular Plants	1	*Eleocharis albida*	White Spikerush	X				
Vascular Plants	1	*Eleocharis ambigens*	Obscure Spikerush	X				
Vascular Plants	1	*Eleocharis parvula*	Small Spikerush	X				
Vascular Plants	4	*Eleocharis rostellata*	Beaked Spikerush	X				
Vascular Plants	3	*Eryngium aquaticum*	Marsh Rattlesnake-master	X				
Vascular Plants	2	*Halodule wrightii*	Shoal-grass		X			
Vascular Plants	2	*Halophila engelmannii*	Engelmann's Sea-grass		X			
Vascular Plants	3	*Hibiscus coccineus*	Brilliant Hibiscus	X				
Vascular Plants	3	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	X				
Vascular Plants	2	*Nuphar lutea* ssp. *ulvacea*	West Florida Cow-Lily	X				

Taxa Group (Class)	Tier	Scientific Name	Common Name	Estuarine Bays, Lakes and Tidal Streams	Northern Gulf of Mexico Seagrass Bed	Mollusk Reefs	Mississippi Sound	Barrier Island Passes
Vascular Plants	4	*Nymphaea mexicana*	Banana Water-lily	X				
Vascular Plants	2	*Pieris phillyreifolia*	Climbing Fetter-bush	X				
Vascular Plants	2	*Ptilimnium costatum*	Eastern Bishopweed	X				
Vascular Plants	3	*Rhododendron austrinum*	Orange Azalea	X				
Vascular Plants	2	*Schoenoplectus americanus*	Three-square Bulrush	X				
Vascular Plants	2	*Syringodium filiforme*	Manatee-grass		X			
Vascular Plants	2	*Thalassia testudina*	Turtle-grass		X			
Vascular Plants	2	*Triglochin striata*	Arrow-grass	X				

18. Marine Habitats (outside barrier islands)

Marine habitats of the Mississippi Gulf Coast occur in the region beyond the barrier islands within the western third of the Mississippi-Alabama continental shelf. Nearshore and offshore regions of the shelf are roughly two million acres in size. The shelf extends southward along a gradual sloping plain of unconsolidated sand, muddy sand and mud substrates for approximately 100 miles. It gradually deepens from the shallows off the barrier islands to a depth of 600 feet along the outer continental shelf.

Over the ages, the continental shelf has been the recipient of many thousands of feet of sediment deposition from past and present major river systems. The Mississippi River historically emptied into Mississippi waters. The Chandeleur Islands are the remnants of its ancient delta. Salinity levels of the water column exceed 30 parts per thousand and turbidity is higher than in Floridian waters. Most of the time, oxygen levels of the water are sufficient. On occasion a massive current system streaming from tropical regions east of the South American continent, called the Loop Current, penetrates the region and brings oceanic fauna that can include invasive species. During abnormal current shifts, nutrient-enriched water from the Mississippi River may drift into the region and cause hypoxic conditions. Along with estuarine areas, these northern Gulf waters are known as the "Fertile Fisheries Crescent", an area of remarkably productive fisheries.

For the purposes of the SWAP, discussion of marine habitats is generally limited to those located within the three-mile territorial boundaries of Mississippi.

GENERAL CONDITION

A renewed effort in conservation of the rich commercial fishery and shellfish resources of the "Fertile Fisheries Crescent" and a potential for additional exploitation of the mineral resources of the northeastern Gulf of Mexico has led to several large ecological research studies on the Mississippi -Alabama Continental Shelf. The studies defined environmental character, effects of the Loop current, complex species-environment relationships, species distribution and major fish and shrimp assemblages. Total fishes of northern Gulf of Mexico excluding the southern Florida reef habitats number around 1,200 species; almost 400 species are found within the Mississippi - Alabama Continental Shelf. The reef areas attract a large number and variety of fishes.

Unfortunately, marine areas are losing some of their productivity because of the loss of tidal marsh habitats and overfishing. The small area of reef habitat and the long time required for many commercial reef fish to reach maturity could potentially make overfishing a problem. Mississippi Department of Marine Resources, Artificial Reef Program has increased the amount of reef available. Mississippi's inshore artificial reefs are composed of several different types of material for development including crushed concrete, limestone, and oyster shell. The development of these reefs has diversified habitat and increased high quality fishing sites which has proven in the past to support a great ecosystem for Mississippi's inshore reefs. These artificial reefs provide the preponderance of both vertical relief and hard substrate for a variety of fish and invertebrate species. The Mississippi Department of Marine Resources in conjunction with Mississippi Gulf Fishing Banks has 15 permitted offshore reef sites. The sites combined cover approximately 16,000 acres, with sites ranging from 3 to 10,000 acres. The sites located north of the barrier islands consist of concrete rubble while the sites located south of the barrier islands consist of concrete culverts, steel hull vessels, and "Florida Limestone" artificial reef pyramids. The soft bottom areas may also be vulnerable to overfishing. In addition, oil spills and other pollutants that persist in the open seas and sea floor decrease the quality of marine habitats.

During the 1970s and 1980s scientists at Dauphin Island Sea Lab found small, isolated patches of lag deposits composed of shell and rock gravel that occasionally included pebble to cobble sized sandstone and iron pebbles. These hard bottoms within territorial waters of Mississippi as well as those in Alabama were continually in burial-exhumation cycles, exposed and covered up and were particularly influenced by tropical and winter storm events. There is no significant hard bottom in Mississippi territorial waters.

Table 5.33 - Marine Habitats (Outside Barrier Islands) Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	19. Marine Habitats (Outside Barrier Islands)	Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
18.1 Marine Habitats	*Marine Habitats (Smooth Bottoms)* *[No NS Equivalent]*					X
18.2 Hard Bottoms and Oceanic Reefs	*Hard Bottoms and Oceanic Reefs* *[No NS Equivalent]*					X

18.1 Marine Habitats (Smooth Bottoms)

A large diversity of species inhabits the marine waters and resides in or on the bottom substrates. Over 370 species of fish and an abundance of mollusks, polychaetes, crustaceans and echinoderms, among others, can be found. The prodelta fan of soft sedimentary mud extends eastward from the birdsfoot delta of the Mississippi River. It is a zone of sedimentation that has smothered the development of reefs in the western part of the region. Benthic creatures such as urchins are found in abundance on the fan.

Marine habitats can be classified as nearshore or offshore, usually based on depth of the water column. The substrate and sand component will affect the species associations in each area. There are 6 ecological communities in this habitat.

The Nearshore Mud Bottom – Marine community is described as a high-energy environment no more than 10 m in depth and in areas with silt and clay substrate containing less than 50 percent sand. Less than 1 percent of the nearshore zone has a mud bottom.

Nearshore Mixed-fine Bottom- – Marine communities are in a high-energy environment no more than 10 m in depth and in areas with silt and clay substrate containing 50-85 percent sand. This substrate underlies roughly 20 percent of the nearshore zone in Mississippi coastal waters.

Nearshore Sand Bottom – Marine communities are a high-energy environment no more than 10 m in depth and with a substrate composed of more than 85 percent sand and underlies approximately 80 percent of the nearshore zone.

Offshore Mud Bottom Community – Marine communities are those occupying areas with depths greater than 10 meters, and with substrates containing less than 50 percent sand. This is a low-energy environment.

Offshore Mixed-fine Bottom – Marine communities are low-energy environments in areas of 10 to100 meter depth with substrates containing 50 to 85 percent sand.

Offshore Sand Bottom – Marine communities are low-energy environments at depths greater than 10 meters and with a substrate composed of more than 85 percent sand.

Size: Unknown

Conservation Status: Secure

For the purposes of the SWAP, marine habitats only extend to the state jurisdictional limit of three miles beyond the outer shores of the barrier island chain. This stretch of marine habitat forms the upper shore face where sediments are larger grained and well sorted. In deeper water below the breaker zone, the sediments are mixed and contain more silt and clay.

Issues affecting the quality of this habitat are water pollution and dredging. Oil and gas exploration and shipping increase the chances of oil spills in the vicinity of the barrier island shores.

18.2 Hard Bottoms and Oceanic Reefs

A very small portion of the bottom of marine habitats within Mississippi's jurisdictional waters is composed of rock outcrops and consolidated features. These sections of the shelf are called reef and inter-reef bottoms. The linear segments represent ancient shoreline ridges of cemented sand, shell and gravel. Although the hard bottom habitats lie mostly east of the Mississippi coast, i.e. south of Mobile Bay and around Desoto Canyon, some calcareous outcrops occur south of Biloxi in 60 feet of water and along most of the continental shelf edge within the 150 to 300 foot depth. The linear reef and inter-reef sections along the shelf edge are part of a system of reefs that ring the Gulf of Mexico. The reefs contain topographic features of irregular small depressions and mounts reaching 30 feet in height. They serve as important spawning areas for many fish species and support commercial and recreational fisheries. The reefs contain an intriguing list of aquatic animals including many types of corals, sponges, crinoids, bryozoans, alcyonarians and oysters.

Size: Unknown

Conservation Status: Vulnerable

Few hard bottom and oceanic reefs are known to occur in state jurisdictional waters. Only small, isolated patches of lag deposits composed of shell and rock gravel are found off the barrier islands. Most hard bottoms are primarily found in deeper waters on the mid- and outer continental shelf.

The high popularity of oceanic deep-sea fishing has increased the potential for overfishing of hard bottom and oceanic reef areas. Oil exploration in the vicinity increases the potential of exposure of these areas to pollution and disturbances and physical damage to bottom dwelling species, including delicate coral formations.

THREATS AND ACTIONS FOR MARINE HABITATS (OUTSIDE WITH BARRIER ISLANDS)

Threats: Oil and gas drilling, harmful harvesting of aquatic resources, and invasive species are the highest threats to this region.

Actions: Plan and conduct additional research on SGCN. Encourage restoration and improve management of altered/degraded habitat when possible. Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats. Monitor/address SGCN harvest/over harvest issues. Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Provide public education about the conservation of SGCN and/or their habitats. Monitor/limit commercial/residential/industrial point source erosion and sedimentation or pollution into streams/atmospheres.

Table 5.34 - SGCN for Marine Habitats (Outside Barrier Islands).

Taxa Group (Class)	Tier	Scientific Name	Common Name	Estuarine Bays, Lakes and Tidal Streams	Northern Gulf of Mexico Seagrass Bed
Birds	1	*Gelochelidon nilotica*	Gull-billed Tern	X	
Birds	1	*Rynchops niger*	Black Skimmer	X	
Birds	2	*Thalasseus maximus*	Royal Tern	X	
Birds	1	*Thalasseus sandvicensis*	Sandwich Tern	X	
Marine Fishes	2	*Aetobatus narinari*	Whitespotted Eagle Ray	X	X
Marine Fishes	4	*Archosargus rhomboidalis*	Western Atlantic Seabream		X
Marine Fishes	3	*Carcharhinus acronotus*	Blacknose Shark	X	X
Marine Fishes	2	*Carcharhinus plumbeus*	Sandbar Shark	X	X
Marine Fishes	4	*Carcharhinus porosus*	Smalltail Shark	X	
Marine Fishes	4	*Carcharias taurus*	Sand Tiger Shark		X
Marine Fishes	4	*Epinephelus itajara*	Atlantic Goliath Grouper		X
Marine Fishes	4	*Isurus oxyrinchus*	Shortfin Mako Shark	X	
Marine Fishes	4	*Manta birostris*	Giant Manta Ray	X	X
Marine Fishes	4	*Megalops atlanticus*	Tarpon	X	
Marine Fishes	4	*Mobula hypostoma*	Atlantic Pygmy Devil Ray	X	
Marine Fishes	4	*Mobula tarapacana*	Sicklefin Devil Ray	X	

Taxa Group (Class)	Tier	Scientific Name	Common Name	Estuarine Bays, Lakes and Tidal Streams	Northern Gulf of Mexico Seagrass Bed
Marine Fishes	2	*Negaprion brevirostris*	Lemon Shark	X	X
Marine Fishes	1	*Pristis pectinata*	Smalltooth Sawfish	X	X
Marine Fishes	4	*Pristis pristis*	Largetooth Sawfish	X	
Marine Fishes	3	*Rhinoptera brasiliensis*	Brazilian Cownose Ray	X	X
Marine Fishes	2	*Sphyrna lewini*	Scalloped Hammerhead	X	X
Marine Fishes	2	*Sphyrna mokarran*	Great Hammerhead	X	X
Marine Mammals	1	*Balaenoptera ricei*	Rice's Whale	X	X
Marine Mammals	1	*Eubalaena glacialis*	North American Right Whale	X	X
Marine Mammals	4	*Feresa attenuata*	Pygmy Killer Whale	X	X
Marine Mammals	4	*Globicephala macrorhynchus*	Short-finned Pilot Whale	X	X
Marine Mammals	4	*Physeter macrocephalus*	Sperm Whale	X	X
Marine Mammals	1	*Trichechus manatus*	West Indian Manatee	X	
Marine Reptiles	2	*Caretta caretta*	Loggerhead Sea Turtle	X	X
Marine Reptiles	3	*Chelonia mydas*	Green Sea Turtle	X	X
Marine Reptiles	3	*Dermochelys coriacea*	Atlantic Leatherback Sea Turtle	X	X
Marine Reptiles	4	*Eretmochelys imbricata*	Hawksbill Sea Turtle	X	X
Marine Reptiles	1	*Lepidochelys kempii*	Kemp's Ridley Sea Turtle	X	X

19. Artificial Habitats

Artificial habitats are those that have been made or altered by humans in some way. While often considered degraded or disturbed, these habitats will be used by some SGCN species, most often birds and bats. These areas may contain some remnant of the original vegetation but are usually greatly altered, with many invasive or exotic species dominating. Small patches of less disturbed habitat may exist within larger disturbed areas that allow for many species to survive, and sometimes thrive. For the purposes of the SWAP, artificial habitats are organized into ten subtypes and described below.

Artificial habitats are found in terrestrial, stream, wetland, estuarine and marine systems. They include man-made impoundments, beaches, agricultural lands, plantation pine forests, rights-of-ways, artificial reefs, buildings, bridges, cleared shrublands and urban and suburban landscapes.

Table 5.35 - Artificial Habitat Subtypes and NatureServe Terrestrial Ecological Systems by Ecoregion.

	19 Artificial Habitats	Level III EPA Ecoregions				
Habitat Subtypes	**NatureServe Terrestrial Ecological Systems**	**SP**	**MAP**	**MVLP**	**SCP**	**Marine**
19.1 Urban and Suburban Lands	*Urban and Suburban Lands [No NS Equivalent]*	X	X	X	X	
19.2 Buildings, Bridges, and Overpasses	*Buildings, Bridges, and Overpasses, Etc. [No NS Equivalent]*	X	X	X	X	
19.3 Utility Right-of-Ways	*Utility Right-of-ways [No NS Equivalent]*	X	X	X	X	
19.4 Hay and Pasture Lands	*Hay and Pasture Lands [No NS Equivalent]*	X	X	X	X	
19.5 Cultivated Forests	*Cultivated Forests [No NS Equivalent]*	X	X	X	X	
19.6 Shrublands	*Shrublands [No NS Equivalent]*	X	X	X	X	
19.7 Agricultural/Aquacultural Fields	*Agricultural/Aquacultural Fields [No NS Equivalent]*	X	X	X	X	
19.8 Impoundments	*Impoundments [No NS Equivalent]*	X	X	X	X	
19.9 Man-made Beaches	*Man-made Beaches [No NS Equivalent]*				X	
19.10 Artificial Reefs	*Artificial Reefs [No NS Equivalent]*				X	X

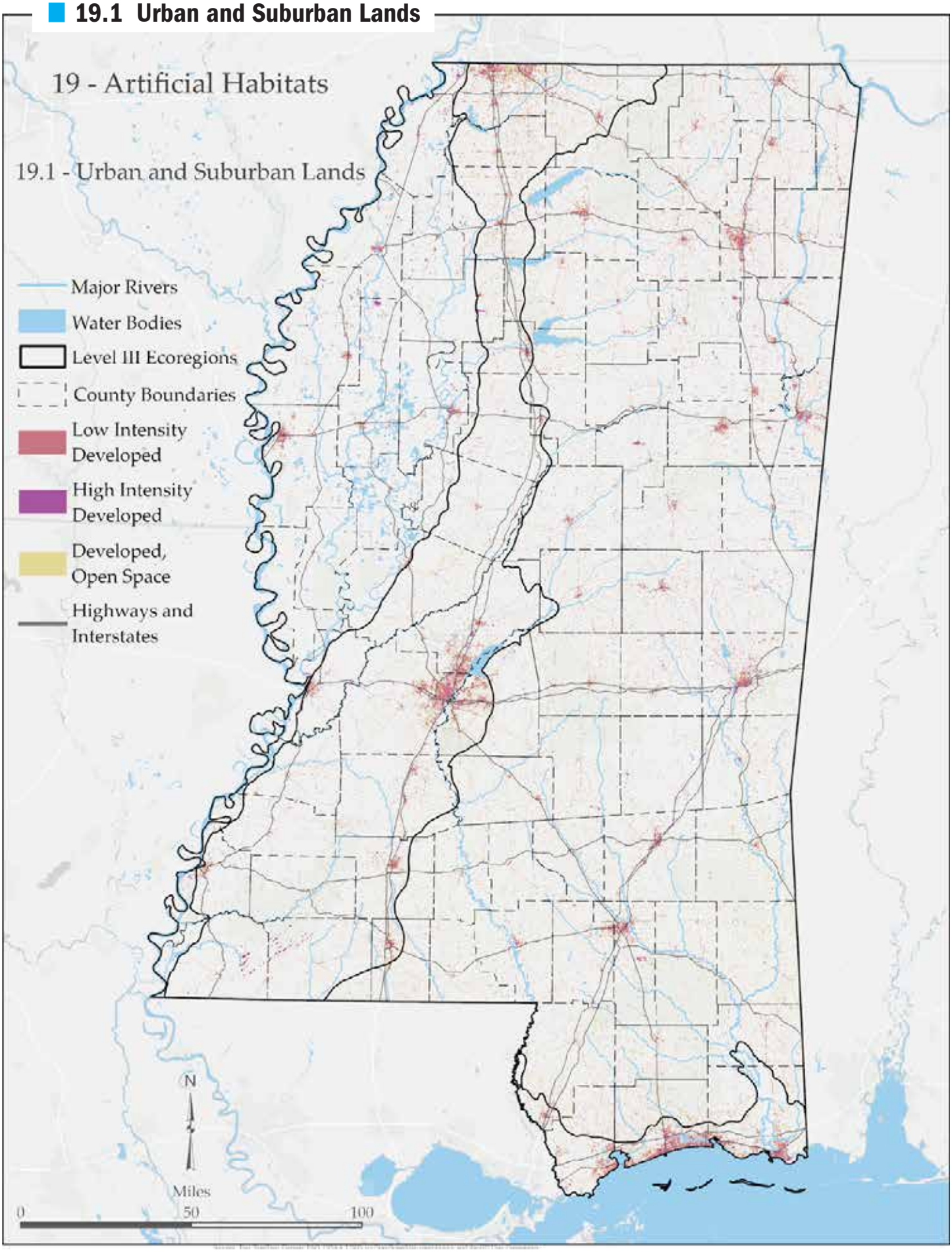


Figure 5.43. Map of Artificial Habitats: Urban and Suburban Lands



Suburban intersection with drainage infrastructure. *Credit: Calvin Rezac*

A growing portion of the total land mass of Mississippi, nearly two percent of the state, is regarded as urban or suburban land. Urban and suburban lands contain numerous residential, commercial and industrial buildings, extensive paved areas and are heavily impacted by construction activities. With the increased concentration of people in urban and suburban areas, there is an increase in reliance on purchased goods, appliances, and synthetic packaging; volume of waste products to dispose; air and water pollution from industrial as well as residential sources, such as pesticides and fertilizers used on gardens and lawns. With the higher percentage of paved surfaces, there is also an increased amount of runoff and flash flooding, causing increased erosion and a degradation of the water quality of streams below these areas. Vacant lots, landscaped yards, vegetable gardens, fruit orchards, and wooded areas along drainages provide some habitats beneficial to wildlife.

There are numerous native animals that spend part or all their lives inside the city limits. Many programs, such as the National Wildlife Federation's Backyard Wildlife Habitat certification program, work to improve habitat quality in urban and suburban areas for wildlife. Habitat generalists, including birds like the mockingbird, house wren and mourning dove, and mammals such as opossums, raccoons and squirrels, can find food and shelter in a variety of ways and can survive quite well in simplified urban habitats. Terns and other shorebirds are known to create nesting areas on the rooftops of businesses close to the man-made beaches along the coast. Most rare species tend to avoid the urban areas, if possible, or are extirpated from developed areas due to deterioration of their habitats.

High and low density developed lands and developed open spaces in Mississippi cover approximately 2.03 million acres. Urban lands are defined by the high percentage of impervious surfaces – pavement, buildings, and parking lots – that are developed there. The urban centers have populations that range in size from a few thousand to several hundred thousand acres in the Jackson Metro area. Urban lands are surrounded by less developed areas usually consisting of hardwood and pine forests and cutover areas, agricultural fields and wetlands along creeks and rivers.

SGCN species are rarely found in urban and suburban areas partially due to the loss of habitat for these species and the increased pollution levels that occur in these areas. However, some species of wildlife, (especially birds) have thrived in urban settings and may be more common than in presettlement times. Least Terns are known to create nesting areas on the large, flat roofs of commercial buildings along the coast. Osprey nesting on power poles near water is a common sight along the Mississippi Coast. Urban lands may contain parks and possibly functional riverine bottomlands that provide corridors and stopping points for migratory birds.

Urban and suburban lands are **secure** because this habitat is common, widespread and abundant in the state.

19.2 Buildings, Bridges, and Overpasses, Etc.

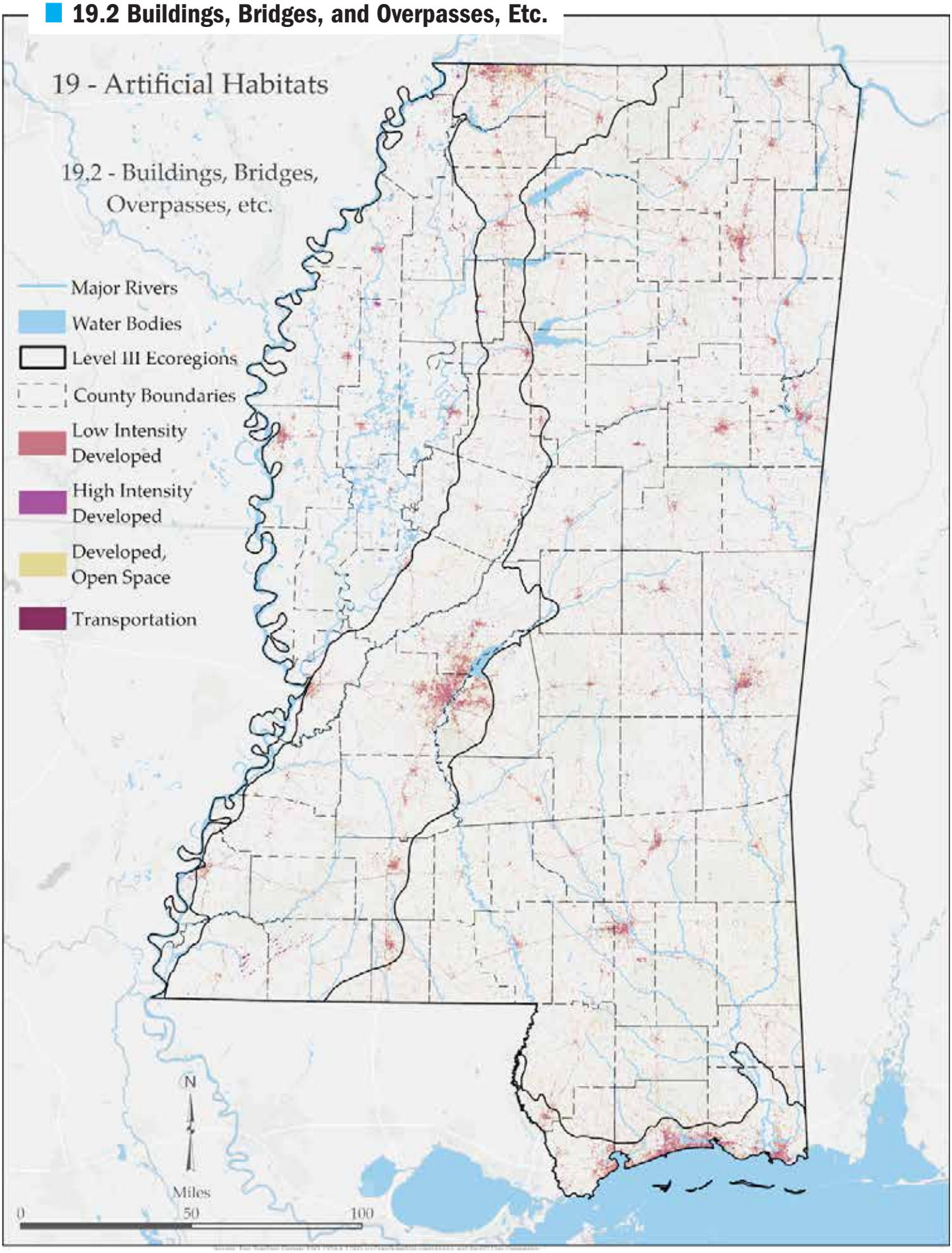


Figure 5.44. Map of Artificial Habitats: Buildings, Bridges, and Overpasses, Etc.



Bridge over stream in Corinth, Mississippi. *Credit: Calvin Rezac*

Structures such as buildings, bridges, overpasses, and culverts can provide habitat for several bird and bat species. The structures can serve as nesting sites or as winter roosts. Properly designed bridges and culverts can mitigate loss of habitat for some bat species. For little to no cost, existing bridges can be modified to provide better roosting habitat for bats. Buildings provide safe havens from predators and protection from harsh environmental conditions such as cold, wind and rain. However, these structures are highly susceptible to human disturbances from traffic and rebuilding efforts. Abandoned buildings, while commonly used as bat roosts, decay quickly and become unsuitable over time. As a result, bridges and buildings often do not provide a permanent roosting site for many bat species.

This habitat subtype is mostly concentrated in urban centers. Some are found in isolated areas such as bridges and culverts along major road systems, or abandoned homes in rural areas. There are thousands of buildings in the state. Acreage of this subtype is combined in that of urban and suburban lands type. Buildings are made of impervious materials and cause increased amounts of runoff. There are no significant threats or problems concerning the condition of this habitat. Development of this subtype usually results in the loss of other more valuable wildlife habitat.

Buildings, bridges, overpasses and culverts are **common, widespread, and abundant** and considered secure in the state and cover approximately 139,113 acres.

19.3 Utility Right-of-Ways

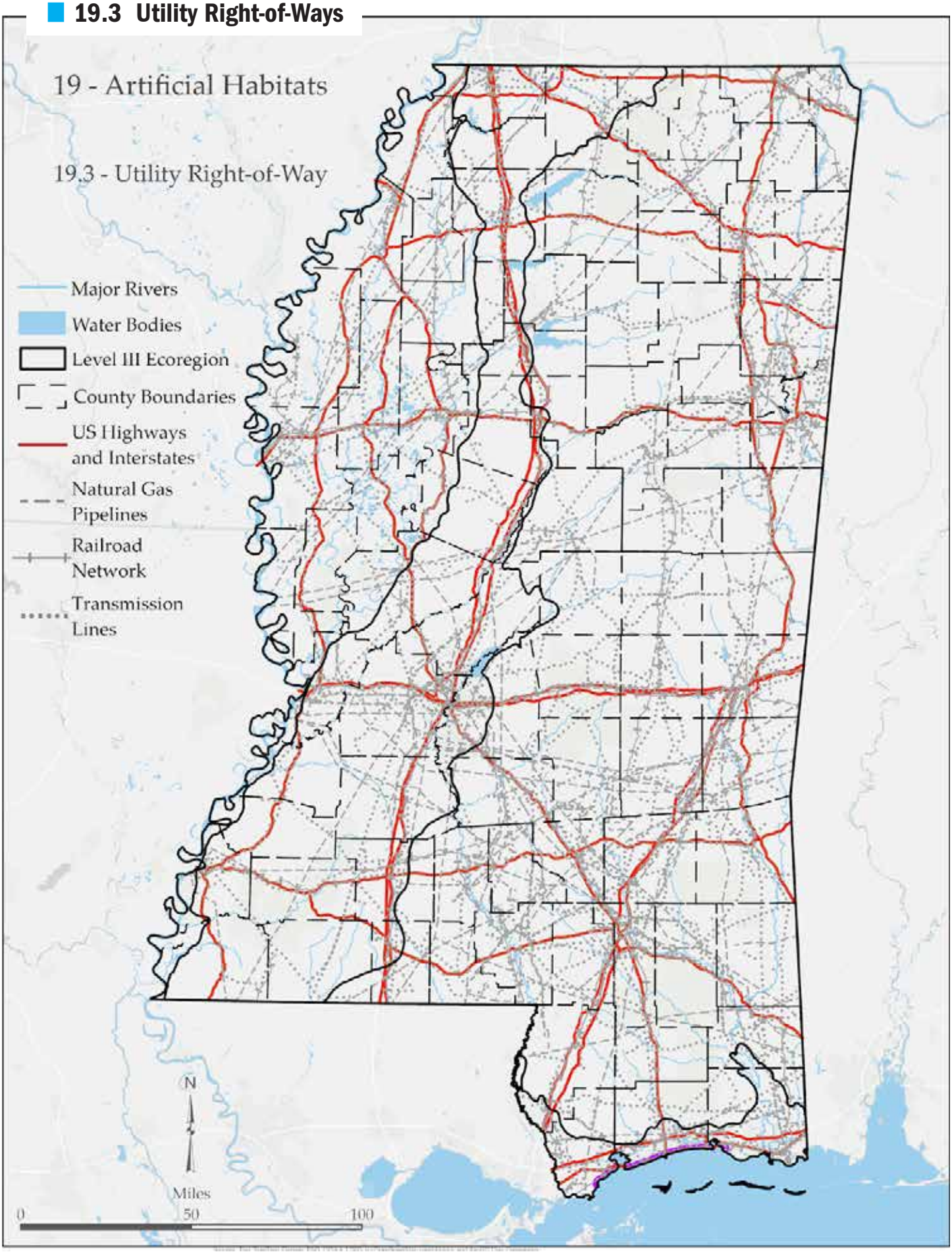


Figure 5.45. Map of Artificial Habitats: Utility Right-of-Ways



Overhead utility right-of-way across pitcher plant bog. *Credit: Heather Sullivan*

Utility Right-of-ways (ROWs) are corridors used for transmission lines or gas pipelines. In the Eastern U.S. many are found in wooded areas. Impacts on surrounding ecosystems can be detrimental but properly managed ROWs can have positive aspects. ROWs can contain grass, shrub or wetland habitats, or a mixture of many habitats.

Gas pipeline ROWs usually involve much more impact on the environment, denuding most of the corridor, and the gas pipeline industry requires that herbaceous cover be maintained over shrub cover. The plant communities in which utility ROWs have had a positive effect are those that are graminoid or herbaceous species dominated or communities where fire played a factor in maintaining the community. Pitcherplant bogs/flats and inland freshwater marshes often form in low areas on the ROW corridors. The maintenance of the ROWs to minimize woody species also benefits prairie remnants and sandhill communities.

ROWs are found throughout the state. Railroad networks span 3,575 survey miles. Transmission lines cover 9.341 survey miles and natural gas pipelines cover 6,615 miles. Development of this subtype usually results in the loss of other more valuable wildlife habitat.

Utility ROWs are common, widespread, and abundant and considered **secure** in the state.

19.4 Hay and Pasture Lands

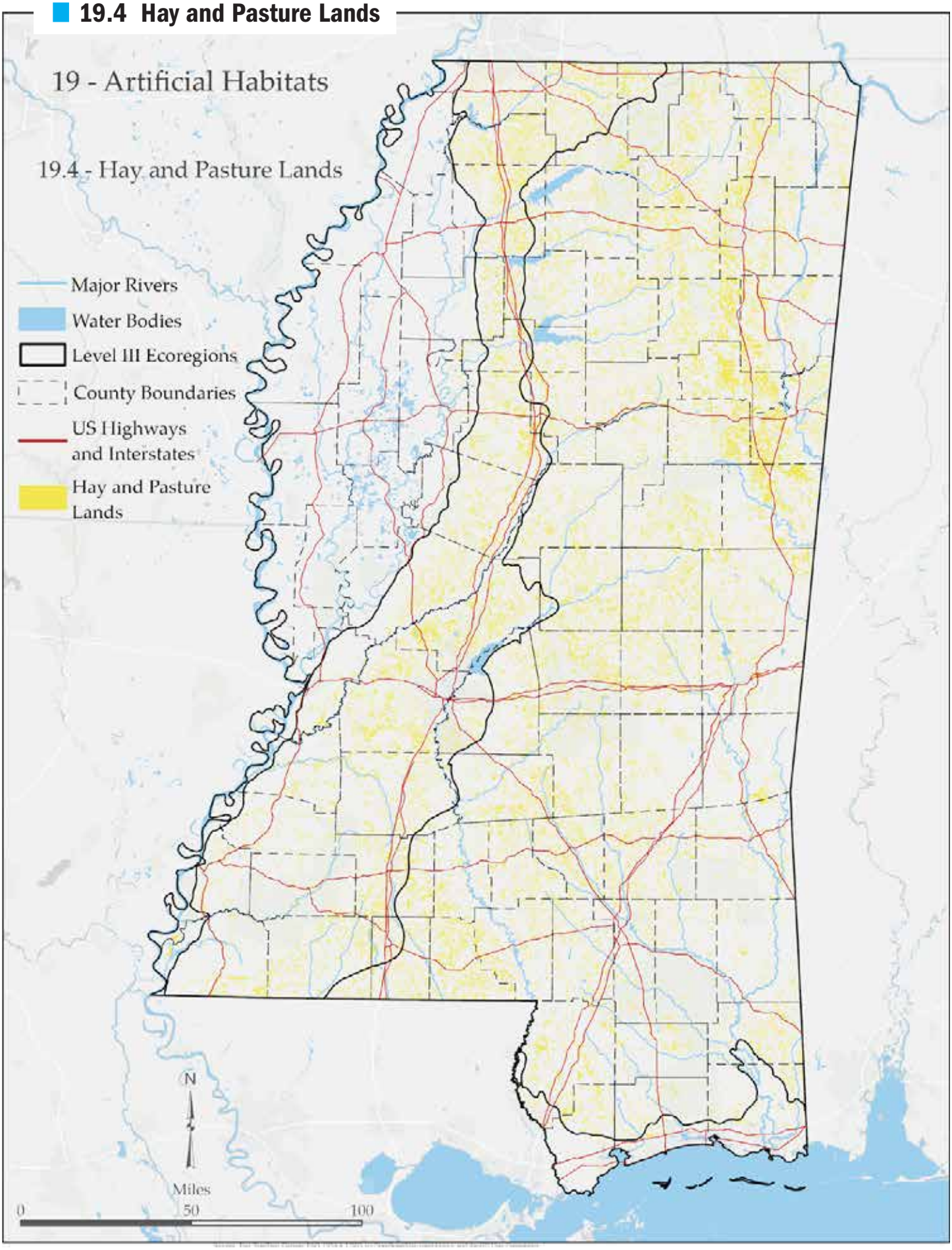


Figure 5.46. Map of Artificial Habitats: Hay and Pasture Lands



Hay and pasture. *Credit: Calvin Rezac*

A large percentage of the land surface area of Mississippi is in various states of regeneration following logging, cropping, or natural disasters, such as catastrophic fires or windstorms. Recent land use/land cover classification studies based on satellite imagery indicate that from 34 to 49 percent of Mississippi is non-forested and is dominated by shrubs, small trees, and herbs. The land use/land cover estimates indicate that there are nearly 2.77 million acres of hay and pastureland.

Hay lands and improved pastures may be seeded to produce bahia grass, fescue, Bermuda grass and other varieties. Many areas including hay lands, vacant fields, roadsides and yards are maintained by periodic mowing during the growing season. Mowing reduces their overall value for wildlife by eliminating vegetative cover and reducing insect concentrations and seed production. Areas not mowed support a larger number of ruderal herbs including annual ragweed, Canada goldenrod, annual marsh elder and Queen Anne's lace.

Pasturelands are often improved by liming and fertilizing and planting non-native grass varieties, such as fescue and Bermuda grass. Unimproved pastures that are heavily grazed contain a variety of native and non- native grasses and weeds. Some weeds that are unpalatable will increase in grazed pastures. If left ungrazed or not managed by mowing, tillage, or prescribed burning, trees and shrubs quickly invade and form brushy thickets and eventually woodlands.

Hay and pasture lands are considered common, widespread and abundant in the state and are **secure** from significant declines in extent or quality.

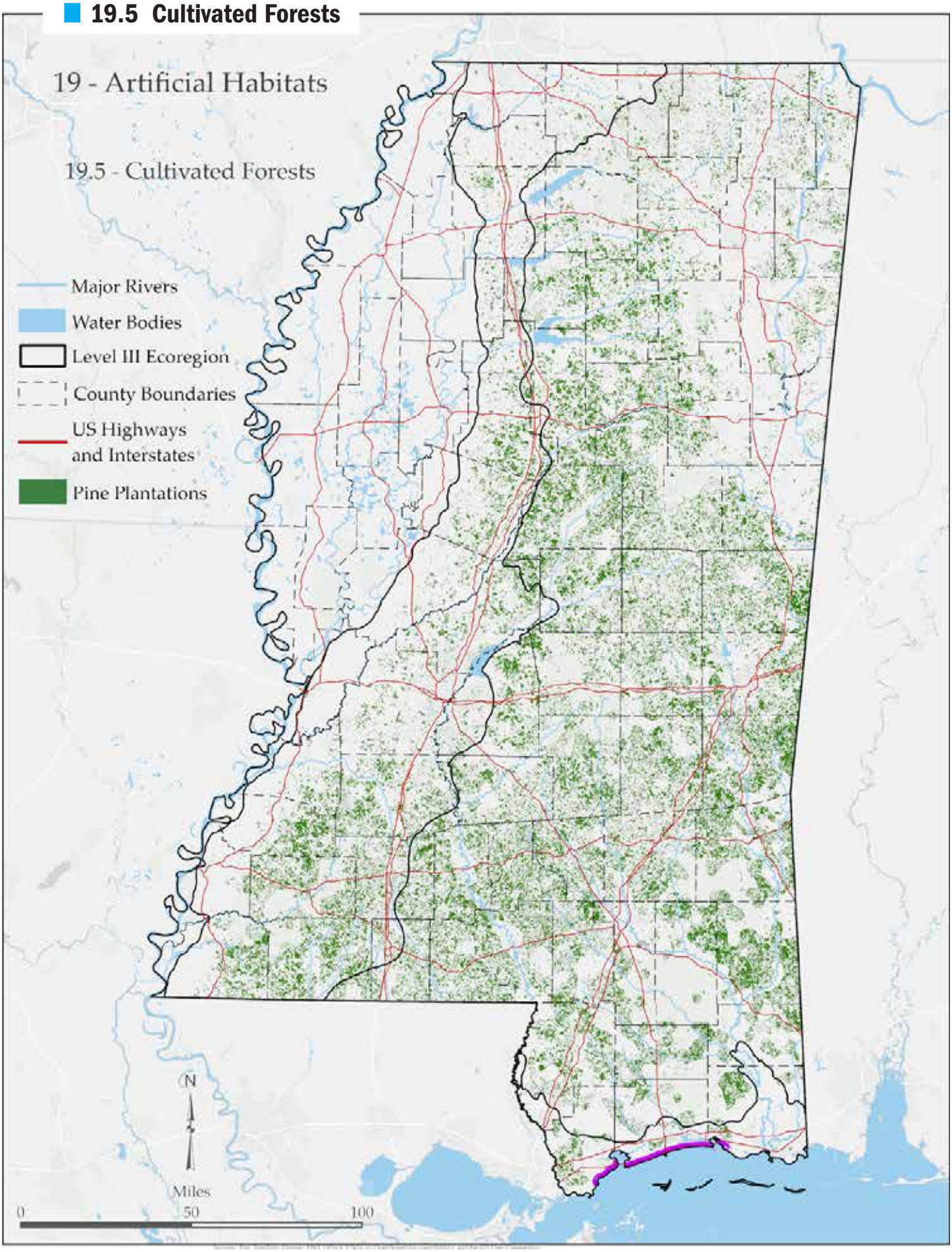


Figure 5.47. Map of Artificial Habitats: Cultivated Forests

Pine plantations occupy a wide range of topographic positions and soil types. Establishment of pine plantations is generally practiced in moderately well-drained, acidic to neutral soils. Pine plantation establishment is usually unsuccessful on sites where pine species are naturally absent or exhibit poor growth due to insufficient drainage, although techniques such as bedding have been used to overcome drainage limitations on some sites. Establishment of pine plantations can also be difficult on sites with excessively well drained soils. Most pine plantations are established in loblolly or slash pines. Shortleaf pine is also adapted to many sites across the region and may increase in acreage established on suitable sites due to higher value timber products (e.g. poles) and potential for mitigation of complete stand loss from fire in young plantations.

Pine plantations are typically established by planting seedlings grown in nurseries on a uniform spacing within and between rows of trees. Seedling density at planting is controlled by spacing, and this may vary depending on objectives of establishment. Much research and development has gone into producing "improved" loblolly and slash pine seedling stocks through various plant breeding or selection methods that favor timber production characteristics such as fast growth, desirable stem form, disease resistance, and site adaptability. Pine plantations are frequently planted for production of timber products or where a quickly established forest cover is desired (e.g. visual screening, soil stabilization, windbreaks, and other conservation-oriented uses), or for development into a more diverse, future forest type, or some combination of these and other objectives. Much of the acreage established in pine plantations is found on industrial and non-industrial private lands, although many publicly owned lands also establish pine plantations to meet various land use objectives.

Pine plantations are generally viewed as monotypic forests that lack structural (e.g. varied canopy layers) and compositional (e.g. variety of plants) habitat diversity. However, the extent to which a given pine plantation provides wildlife habitat value depends on its age, structure, composition, and management. These characteristics are largely a function of age of trees; silvicultural or other manipulative treatments; weather effects (e.g. storm damage); natural mortality caused by competition, insects, or diseases; and site-specific growing conditions (e.g. soil fertility, moisture, and site preparation prior to planting).

In all upland regions of the state except the Mississippi River alluvial plain, parts of the loess hills and the Black belt regions, there has been significant conversion of forest and agricultural lands to pine plantations, which are estimated to cover almost 14 percent of the state (over 4.35 million acres). Parcels range widely in size but can reach several thousand acres in extent on the most suitable areas. Blocks of plantations are interspersed with natural regeneration forests, shrublands, agricultural lands, urban/suburban areas, and many other habitat types. Most of these pine plantations are established to loblolly pine, but slash pine is also planted in more southern portions of the region. More landowners in the region are establishing longleaf pine because of conservation programs (e.g. America's Longleaf Initiative), site and climate adaptations, and landowner objectives that favor longleaf pine establishment. However, longleaf pine plantations are not considered as part of the discussion of these artificial habitats.

Pine species may or may not be considered an off-site species for a given site. Pine may be suitable for the site, but establishing or converting other forest types to predominately monoculture forest stands simplifies habitats. Practices such as bedding to favor pine growth on wet sites negatively affect site hydrology. Furthermore, off-site pine species may be more susceptible to losses from disease or insect pests and extreme weather events (e.g. wind and drought).



Planted pine – cultivated forest.
Credit: Heather Sullivan

Pine plantations will continue to be a part of modern landscapes, and although this habitat type may not be considered ideal wildlife habitat, there are stages in which different wildlife species utilize and sometimes thrive in these habitats. Silvicultural management activities (e.g. thinning and prescribed burning) that are part of normal production timber objectives can enhance habitat conditions for some wildlife species during the life of the stand. On sites better suited to longleaf pine, interim management of existing loblolly or slash pine stands can enhance some wildlife benefits until it is feasible to re-establish longleaf pine. Other management practices to enhance wildlife habitat in pine plantations may include decreasing planting densities, establishing or retaining desirable hardwood trees, and controlling invasive species.

Young pine plantations (0 to 5 years of age) usually provide short-term early successional habitat and are used by wildlife species associated with this early seral stage. During this time, other tree and shrub species may become established.

As young pine plantations progress from seedlings to saplings (5 to 12 years of age), canopy closure of pines usually occurs and the ground is almost completely shaded. As a result, herbaceous understory plant coverage is sparse, and the ground is covered with a substantial amount of leaf litter and other residue. Because it is difficult to manage young pine plantations with prescribed fire, other tree species that have become established often persist under the dominant pine canopy. Some songbirds that utilize closed-canopy forests find dense plantations suitable for various habitat requirements (e.g. feeding or nesting), and deer and turkey may use the heavy cover for concealment.

When pine plantations reach 12 to 25 years of age, trees are of sufficient size to remove merchantable timber products such as pulpwood through thinning. This is often termed a mid-rotation age class because it is approximately halfway through the life of the stand in the context of a timber production rotation that ends in complete harvest of the stand. Often a second thinning occurs after the initial thinning to utilize additional timber products and increase growing space for trees that will be left, although some stands may be completely harvested at this time if it meets certain timber production objectives. Thinning intensity and timing are primarily a function of land use objectives, tree growth rates, and timber market demand for specific products. Understory productivity increases as plantations are thinned to reduce stem and canopy density, although reduction in canopy density is only for a few years as residual tree crowns grow to occupy the open space.

Hardwood species such as sweetgum formerly suppressed underneath the pine canopy may also be released and capture much of the sunlight that is allowed through the pine canopy. After thinning, prescribed fire can be introduced to increase herbaceous vegetation and reduce hardwood brush. If necessary, selective herbicide treatments may also be applied to control hardwood brush invasion and favor more herbaceous ground cover. These management practices can increase habitat diversity and in turn increase wildlife species diversity.

When pine plantations reach 25 years of age and older, stands are usually either harvested completely (clear cut) or a decision may be made to perpetuate the stand. Frequently, the rotation is started over by replanting pine. Perpetuating and maintaining the stand will mimic more of a natural pine or mixed pine-hardwood stand. Depending on land use objectives, perpetuated stands may be managed to maintain a relatively dominant pine component or allowed to revert to a climax forest type.

Pine Plantations are a **secure** subtype as they are common, widespread, and abundant in the state.

19.6 Shrublands

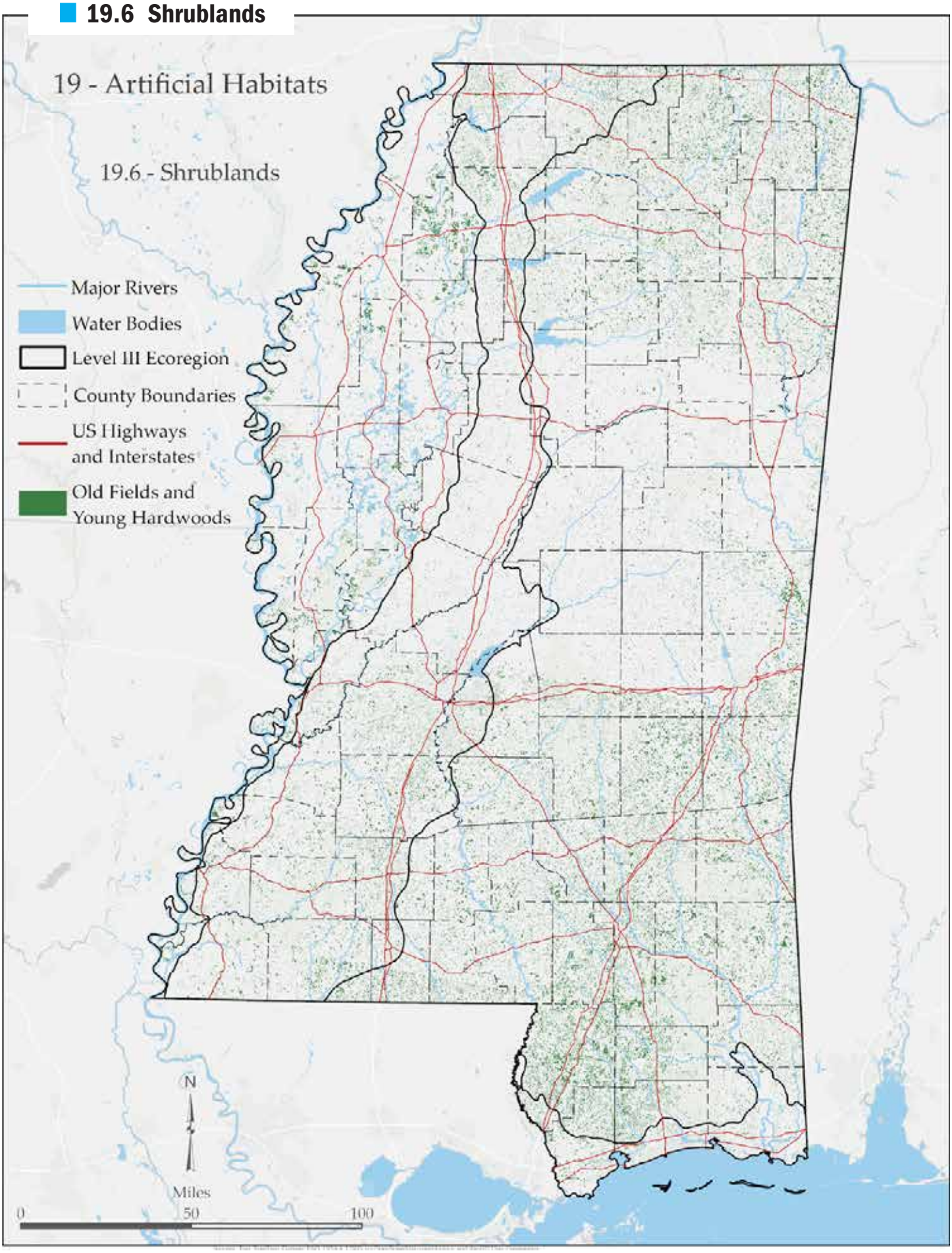


Figure 5.48. Map of Artificial Habitats: Shrublands

Shrublands are old fields or fallow lands that contain a variety of annual and perennial weeds, shrubs and/or young trees. Grasses such as broomsedge, purpletop tridens, velvet panicum, bristlegrass, Bahia grass and Johnson grass often flourish in these areas. Ideal growing conditions in the spring bring a flush of ephemeral herbs to mowed areas, waste places, vacant lots and roadsides. Spring grasses include bluegrass, Bermuda grass, cheatgrass, cattail sedge, little barley, little bentgrass and perennial ryegrass. If fields and grassy openings are left untended over several years, many vines, shrubs and trees such as gallberry, possumhaw, eastern redcedar, Chinese privet, rattan-vine, persimmon, eastern baccharis, and various pines steadily advance into these areas. Herbs, vines and shrubs flourish as nutrients and light becomes available after logging.

Old fields or fallow lands contain a variety of annual and perennial weeds and may support such grasses as purpletop tridens, velvet panicum, bristlegrass, bahia grass, and Johnson grass. Many fields, roadsides, and yards are maintained in an open grassy condition by mowing periodically during the growing season. Areas not mowed support many ruderal herbs including annual ragweed, Canada goldenrod, annual marshelder, and Queen Anne's lace. Ideal growing conditions in the spring bring a flush of ephemeral herbs to mowed areas, waste places, vacant lots, and along roadsides. The seasonal wetness prevents the areas from being mowed. Some of the common forbs are bittercress, bluestar, Carolina bristlemallow, butterweed, bedstraw, buttercup, chervil, chickweed, cinquefoil, clover, cornsalad, corn speedwell, crowpoison, dandelion, forget me not, garlic, geranium, Japanese mazus, lyreleaf sage, field madder, Philadelphia fleabane, plantain, Carolina ponysfoot, spotted medick, toadflax, and Venus' lookingglass. If fields and grassy openings are left unattended over several years, shrubs, vines, and small pine and hardwood trees, such as possumhaw holly, eastern redcedar, Chinese privet, rattan vine, persimmon, and eastern baccharis will steadily increase in cover.

During the succession back to forest cover, the herb phase commonly lasts from one to several years. Annual grasses and herbs are the first to invade exposed or cleared areas. Perennial grasses, forbs and vines such as greenbriers and blackberries are prolific as other shrubs become established. Shrubs, coppicing hardwoods (originating from roots or suckers) and seedling hardwoods then overshadow the openings and reduce the abundance of herbs. Within five to ten years, shrubs and trees regain dominance. Scrub vegetation often contains a wide variety of opportunistic and invasive species like poison ivy, Japanese honeysuckle and Chinese privet. The southern upland scrub-shrub type is dominated by southern bayberry and blackberry shrubs. Other common components include red maple, inkberry, yaupon, various oak species and blueberries.

The wetland scrub-shrub community consists of mixed shrubs and young trees. Southern bayberry, yaupon, and large gallberry tend to form dense thickets. Other shrubs and small trees that may be present include red maple, hickory, blackgum, giant cane, buttonbush, planer tree, ash, possumhaw, Chinese privet, sugarberry and hawthorns. Vines may also be found in abundance; common vines include ladies' eardrops, grapes, trumpet creeper, peppervine, Japanese honeysuckle. These usually form in cutover coastal palustrine woodlands that are succeeding to pine woodlands; its vegetation is a result of management or modification of natural vegetation, or the lack of fire.

Herbaceous wetlands with shrubs, which are maintained by mowing, have bog herbaceous vegetation with associated shrubs such as titi and sweetbay saplings. This is another cutover coastal palustrine woodland type, which succeeds to pine woodlands. In this community, the vegetation is a result of mowing or other similar modifications and the lack of fire.

The northern upland shrub and wetland scrub-shrub communities make up this subtype in this ecoregion. A large percentage of the land surface area of Mississippi is in various stages of regeneration after clearing due to logging, cropping, or natural disasters such as catastrophic fires or windstorms. The small stature of shrubs and young hardwood trees is the main distinguishing feature differentiating this type from others. In the first years of growth after disturbance, shrubs have been released, and trees proportionately cover a small area of the ground surface. With the loss of canopy trees, herbs, vines, and shrubs that were already established will flourish. They quickly respond to the increased nutrient and light availability. Although widely varying in duration of their abundance, the herb phase commonly lasts from one to several years. Annual grasses and herbs are the first to invade exposed or cleared areas. Perennial grasses, forbs, and vines such as greenbriers and blackberries will become widespread. Shrubs, coppicing hardwoods, and seedling hardwoods overshadow the openings and reduce the abundance of herbs. If the opening is an old field, a variety of trees that have wind dispersed seeds including such species as pines, sweetgum, ash, winged elm, and red maple readily encroach into openings. Often hickories and oaks are also prevalent. Within the next five to ten years, shrubs and trees regain dominance. Scrub – shrub vegetation often contains a wide variety of opportunistic and invasive species like poison ivy, Japanese honeysuckle, and Chinese privet. The northern scrub – shrub type contains a variety trees, shrubs, woody vines, including devil's walking stick, eastern baccharis, American beautyberry, common persimmon, sassafras, sweetgum, hickory, oak, sumac, winged elm, grape, Virginia creeper, and poison ivy. Wetland scrub – shrub vegetation contains an abundance of vines including American buckwheat vine, grape, trumpet creeper, peppervine, Japanese honeysuckle, and an assortment of shrubs and trees, i.e., red maple, hickory, swamp tupelo, giant cane, common buttonbush, planertree, ash, possumhaw holly, Chinese privet, sugarberry, and hawthorn. The vegetation is deemed a forest once trees reach an average height of 15 feet tall.

The vegetation is deemed a forest once trees reach an average height of 15 feet tall. Trees that have wind dispersed seeds such as pine, sweetgum, ash, winged elm and red maple encroach into old-field openings. Hickories and oaks, which are dispersed by animals, are often prevalent.

The wetland scrub-shrub community consists of mixed shrubs and young trees. Southern bayberry, yaupon, and large gallberry tend to form dense thickets.

Shrublands include old fields and cutover areas dominated by young hardwoods or pines and shrub species released following canopy removal. Cutover areas are generally interspersed with pine and hardwood forest lands, and old fields are more commonly embedded in a landscape dominated by agricultural fields and pasturelands. These early-successional, shrub-dominated communities occupy about 16 percent of Mississippi.

The vegetation of this subtype is in transition as trees gain coverage and dominance of the stand. Succession of open shrubland or old fields can be set back with prescribed fire. Wildlife species that thrive in open shrubland habitats are usually common; however, some, including the gopher tortoise and Northern Bobwhite, will use them until they become so congested with young trees and shrubs that herbaceous vegetation is shaded out. Shrublands are particularly susceptible to invasion by aggressive, exotic vegetation such as cogongrass.

Spanning over 1.83 million acres, Shrublands (Old Fields and Young Hardwoods) are common, widespread, and abundant in the state and are considered secure from significant decline.

19.7 Agricultural/Aquacultural Fields



Row crop agriculture. *Credit: Heather Sullivan*

According to the USDA Census of Agriculture, in 2024 Mississippi had over 10.4 million acres of land in agriculture (including nursery and greenhouse crops) which cover 35 percent of the land area of the state. The average farm is 328 acres and 86 percent are operated by families or individuals. The remainder are operated by partnerships, corporations or other entities. As estimated by the Natural Resources Conservation Service, 55 percent of Mississippi's farmland is in cropland and produces such commodities as rice, soybeans, cotton, sweet potatoes, other vegetables, and oil seed. Cereal crops include corn, sorghum, and winter wheat.

Of particular interest to wildlife, shallow impounded fields used for aquatic crops like rice, have become important to waterbirds for feeding and breeding sites. The weed seeds, residual crop seeds, and invertebrates provide food for many bird species during the breeding season and the fall and winter months. Once seen as a pest, waterbirds now are recognized for natural weed and pest control. Mammals, amphibians, and reptiles also use impounded agricultural fields.

Catfish farms (aquaculture ponds) are included in this section to recognize the commercial aspect of these deep impounded fields versus the recreational use of artificial ponds in the next section, as well as the larger footprint of the farms. Thousands of waterfowl are attracted to these structures in the winter months. Mississippi State University recommends a mosaic of habitats for farmers who are interested in attracting waterfowl, including 50% flooded croplands, 20% forested wetlands, 10-20% moist soil wetlands with grasses and sedges, and the remainder in catfish ponds. Catfish farms have some value as foraging habitat for other waterbirds, but often this use results in conflicts between piscivorous birds and catfish producers. These conflicts have resulted in large-scale efforts to control depredation of catfish at these facilities; however, catfish ponds are still widely used by fish-eating birds.

Sod farms can provide valuable wildlife habitat, particularly for birds. Migratory periods receive the greatest use, especially by shorebirds but also raptors like Peregrine Falcons and Accipiters which are attracted by the influx of shorebirds. Like many stopover habitats, they may be more

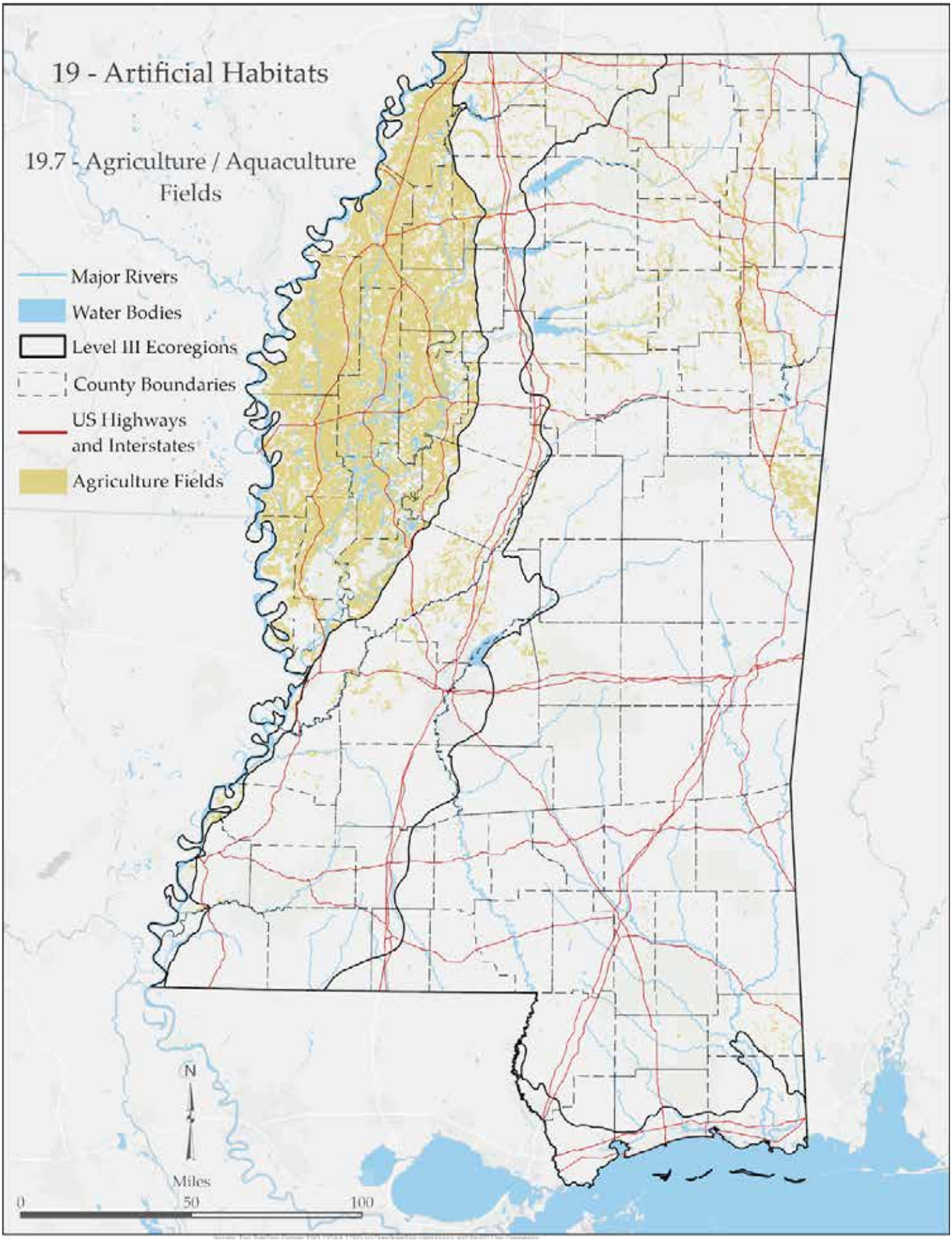


Figure 5.49. Map of Artificial Habitats: Agricultural/Aquacultural Fields

likely to be used during fallout conditions resulting from strong weather events that force migrating shorebirds out of the skies. Stopover duration may vary depending on many conditions. Some shorebird species are more likely to forage in wet muddy substrates and might stay longer if fallout coincides with sod harvesting which exposes the soil. Other species, such as American Golden Plovers and Buff-breasted Sandpipers, will use sod farms as foraging habitat even in dry conditions.

The amount and type of herbaceous cover will depend on many factors including field usage, crop types and frequency of agricultural treatments. Most of the upland areas of the state that were of suitable soil type and slope were farmed at one time. Many of the more productive areas continue to be farmed. Agriculture and aquaculture encompass approximately 3.82 million acres in Mississippi with the vast majority in the Mississippi River Alluvial Plain (Delta). Most of the upland areas of the state that were of suitable soil type and slope were farmed at one time. Many of the more productive areas continue to be farmed. Although modern agriculture techniques, chemicals and fertilizers increase crop yields, they generally reduce the availability of cover and food sources for wildlife. “Clean” farming practices are somewhat detrimental to wildlife because there is very little byproduct for food or cover. Areas such as field edges, weedy patches and wet areas remain attractive to some wildlife species. If fields are left vacant after harvest, they temporarily provide sources of food for wildlife, which scavenge for weed seeds and unharvested grains.

Although modern agriculture techniques, chemicals and fertilizers increase crop yields, they generally reduce the availability of cover and food sources for wildlife. “Clean” farming practices are somewhat detrimental to wildlife because there is very little byproduct for food or cover. Areas such as field edges, weedy patches and wet areas remain attractive to some wildlife species. If fields are left vacant after harvest, the fields temporarily provide sources of food for wildlife, which scavenge for weed seeds and unharvested grains.

Some farmers enhance the habitat value of their fields by setting aside patches of unharvested crops for wildlife or maintaining fields in early succession by disking or prescribed burning fields to manage for northern bobwhite and mourning dove. Northern bobwhite, which are in considerable decline, are dependent on the availability of ample cover and food (seeds and insects) resources from native grasses and forbs in agricultural landscapes. Agriculture fields surrounding the Mississippi Sandhill Crane National Wildlife Refuge in Jackson County are often used by the Mississippi sandhill crane in the winter and spring seasons. Urban/suburban expansion into these agricultural lands has reduced their availability to cranes as foraging habitat.

Agriculture fields are common and widespread in the state and are **unlikely to show any significant decline in acreage**, but some farming techniques are reducing the quality of these lands for wildlife.

19.8 Impoundments

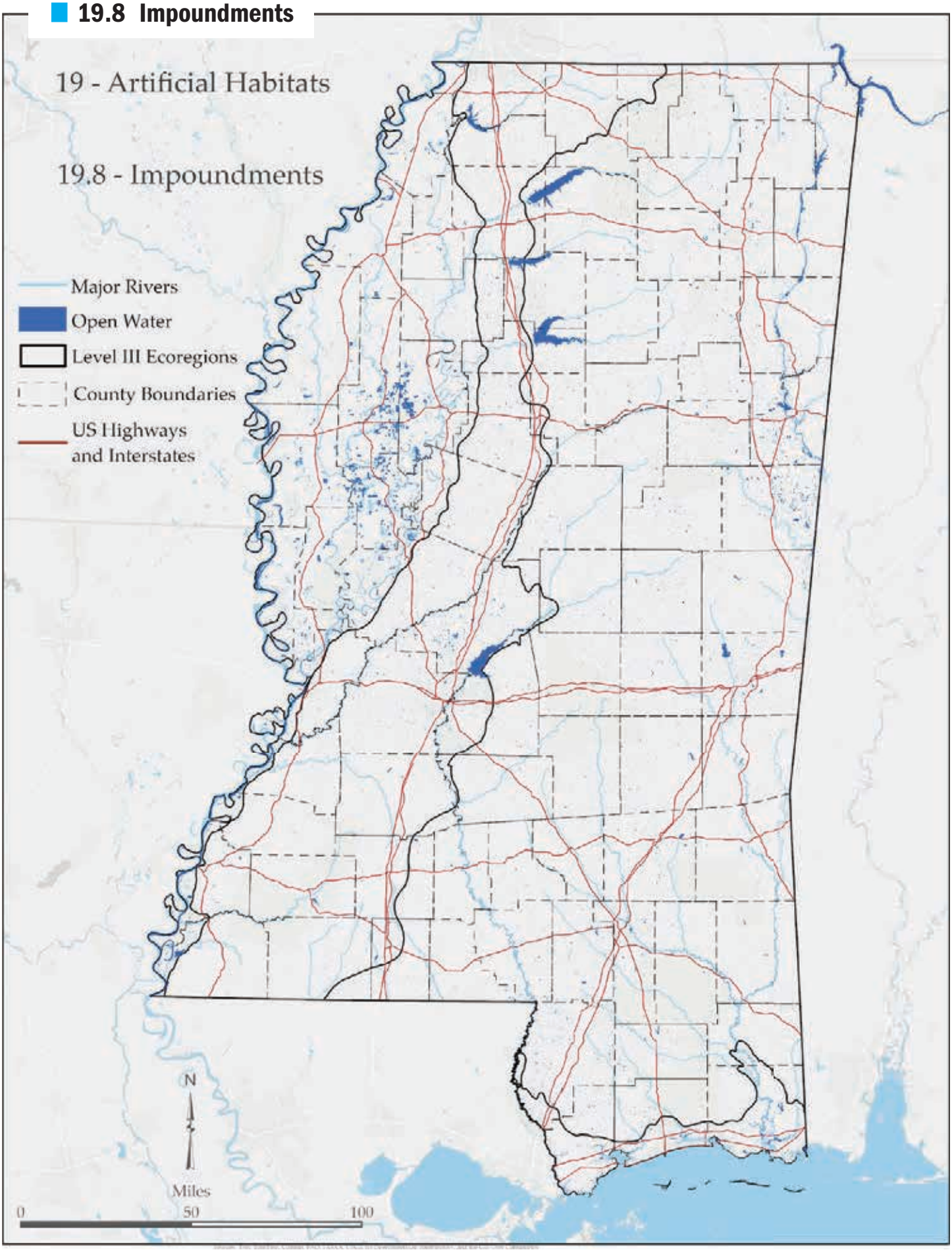
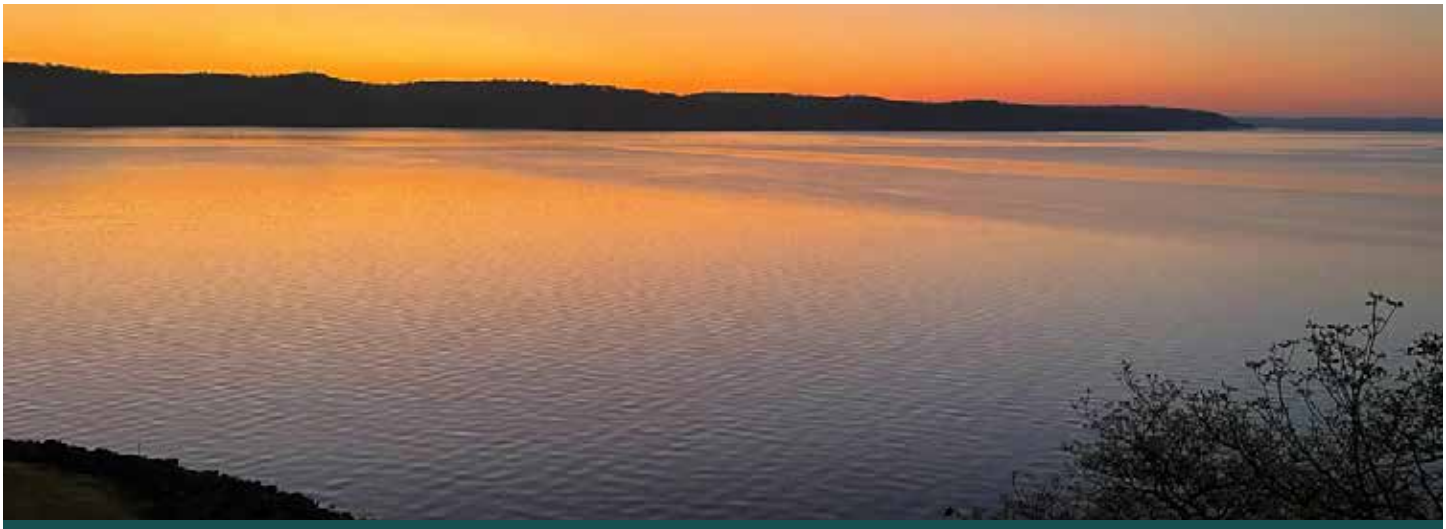


Figure 5.50. Map of Artificial Habitats: Impoundments



Large Impoundment – Pickwick Reservoir. *Credit: Calvin Rezac*

Man-made reservoirs are water bodies impounded for the purpose of navigation, flood control, recreation and water supply. A reservoir conforms to the original topography of the valley and floodplain. Substrates usually consist of muddy silt and clay sediments. In the upper reaches, reservoirs form marshy, shallow flats or conform to the stream channel. Flow is often sluggish, and sedimentation increases over time. The marshy littoral (nearshore) and open water habitats are attractive for wildlife. Land use and vegetation cover within the watershed surrounding the reservoir will affect its water quality. Almost one percent of the land area of Mississippi is in reservoirs.

Dams have been constructed on several large rivers and creeks in the state. Some reservoirs are large; the largest, Grenada Lake, is 35,280 acres. Ross Barnett Reservoir is the second largest at 33,000 acres in size. The Corps of Engineers operates and manages 5 flood control reservoirs (Grenada, Arkabutla, Enid, Grenada, Okatibbee and Sardis) and nine navigation reservoirs (Aberdeen Lake, Amory Lock [Lock A], Aliceville Lake [Tom Bevill Lock and Dam], Bay Springs Lake [Jamie Whitten Lock and Dam], Columbus Lake [John C. Stennis Lock and Dam], Fulton Lock [Lock C], G.V. Montgomery Lock [Lock E], Glover Wilkins Lock [Lock B] and John Rankin Lock [Lock D]) along the Tennessee-Tombigbee Waterway. These reservoirs are usually rimmed with federally managed woodland and recreational sites. Residential areas are often situated adjacent to reservoirs. Woodlands adjoin most reservoir shores except where entered by streams. At the mouths of feeder streams, a large area of marshland habitat is often encountered. Sometimes urban centers are located nearby. There are 968,529 acres of open waters in the state.

Large open water bodies often have significant problems with shore bank erosion. There is little opportunity for marsh plants to become established because wave action and shifting sediments prevent them from doing so, except in some of the most protected coves. Drawdown of flood control reservoirs leaves wide unvegetated shorelines exposed and barren. Sedimentation is an issue on reservoirs. Sediment from upstream slowly fills reservoirs and can increase turbidity. The reservoir subtype is **common, widespread, and abundant** in the state and is not vulnerable to significant declines.

Throughout Mississippi there is an abundance of small impoundments built as borrow pits, flood control structures, recreational fishing ponds, farm ponds or catfish ponds. For the purposes of this document any manmade impoundment less than 50 acres is considered a pond. Farm and residential area ponds are usually created by positioning dams across small drainageways or in depressions where runoff accumulates. The contributing drainage area needs to be large enough to maintain a suitable water level during dry periods.

Farm ponds are often fringed by marsh herbs, crops, pastures and forestlands, but many are also found in residential areas. They provide habitat for fish and a variety of other aquatic species and are frequented by shorebirds and wading birds during winter drawdown and provide refuge during drought periods.

Artificial ponds are often managed as commercial or private recreational fish production areas and are not usually managed for ducks or other aquatic animals. Most modern farm ponds are too deep for waterfowl use and are built with steep sides to reduce the growth of aquatic vegetation. A good pond for fishing is usually not a good pond for ducks. The introduction of black carp in catfish ponds is a controversial issue in Mississippi because of the potential of this exotic species escaping from the aquaculture ponds and becoming established in natural water bodies. Artificial ponds provide habitat for shore and wading birds during drought periods and winter drawdown.

Mississippi has more than 160,000 small water bodies totaling more than 190,000 acres, ranging in size from one-half acre to five acres. Management of artificial ponds, such as herbicide treatment of aquatic weeds and adding pond bottom structure, is often designed to improve recreational fishing opportunities. Artificial ponds are **widespread and abundant a**nd are not considered likely to decline in extent or value to wildlife in the future.

19.9 Man-made Beaches

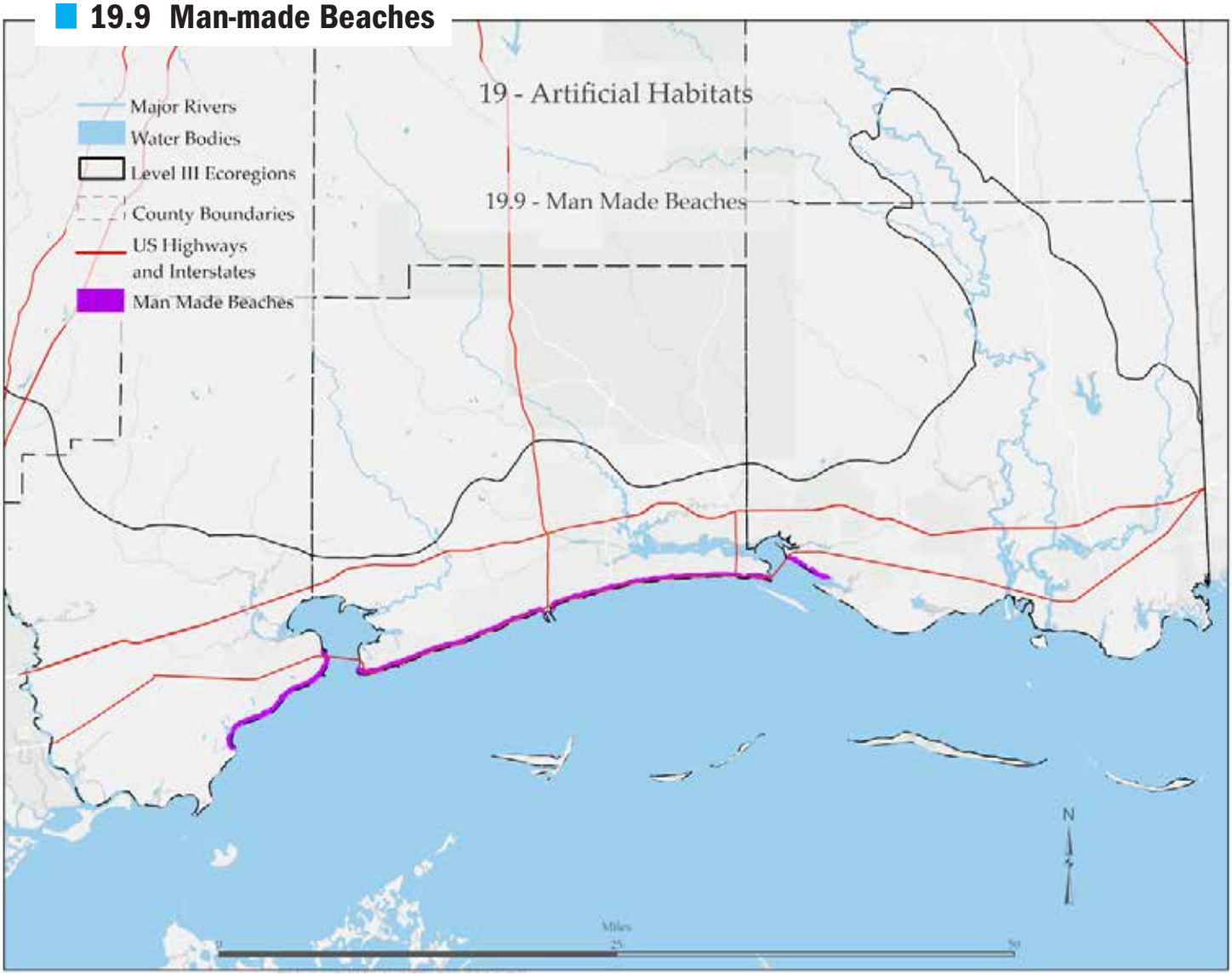


Figure 5.51. Map of Artificial Habitats: Man-made Beaches

Artificial sand beaches are often less than 200 feet wide and are accompanied by a cement seawall that minimizes erosion along the mainland. Wind and wave action gradually work the sand back into the Mississippi Sound. Tons of replenishing sand is periodically pumped from nearshore areas. Invertebrates associated with natural sand shores recolonize artificial beaches after the treatments have been completed. Resident and migratory birds contribute greatly to the diversity found along artificial sand beaches.

A component of beach habitats in Mississippi is ephemeral habitat such as wrack line deposits including bryozoans, algae, seagrasses, and detritus. These are seasonally important and provide structural habitat and nutrient and carbon sources that are used by invertebrates, fishes and birds. Regular beach grooming removes this wrack and limits its utility for wildlife.

Size: 1,501 acres

Man-made beaches are confined to a few long segments along the north shore of the Mississippi Sound. All man-made beaches are adjacent to transportation corridors and urban or residential areas. Mississippi's highly engineered coastline totals 80 miles in length, of which 36 miles are artificial beaches. Storm surges, beach clean-up operations, and recreational activities reduce the availability of this habitat for wildlife. Some efforts are being implemented to reduce the amount of sand erosion and banking on nearby roadways. Other efforts are being implemented to protect the colonies of nesting least terns with fencing, signage and citizen monitoring.

19.10 Artificial Reefs

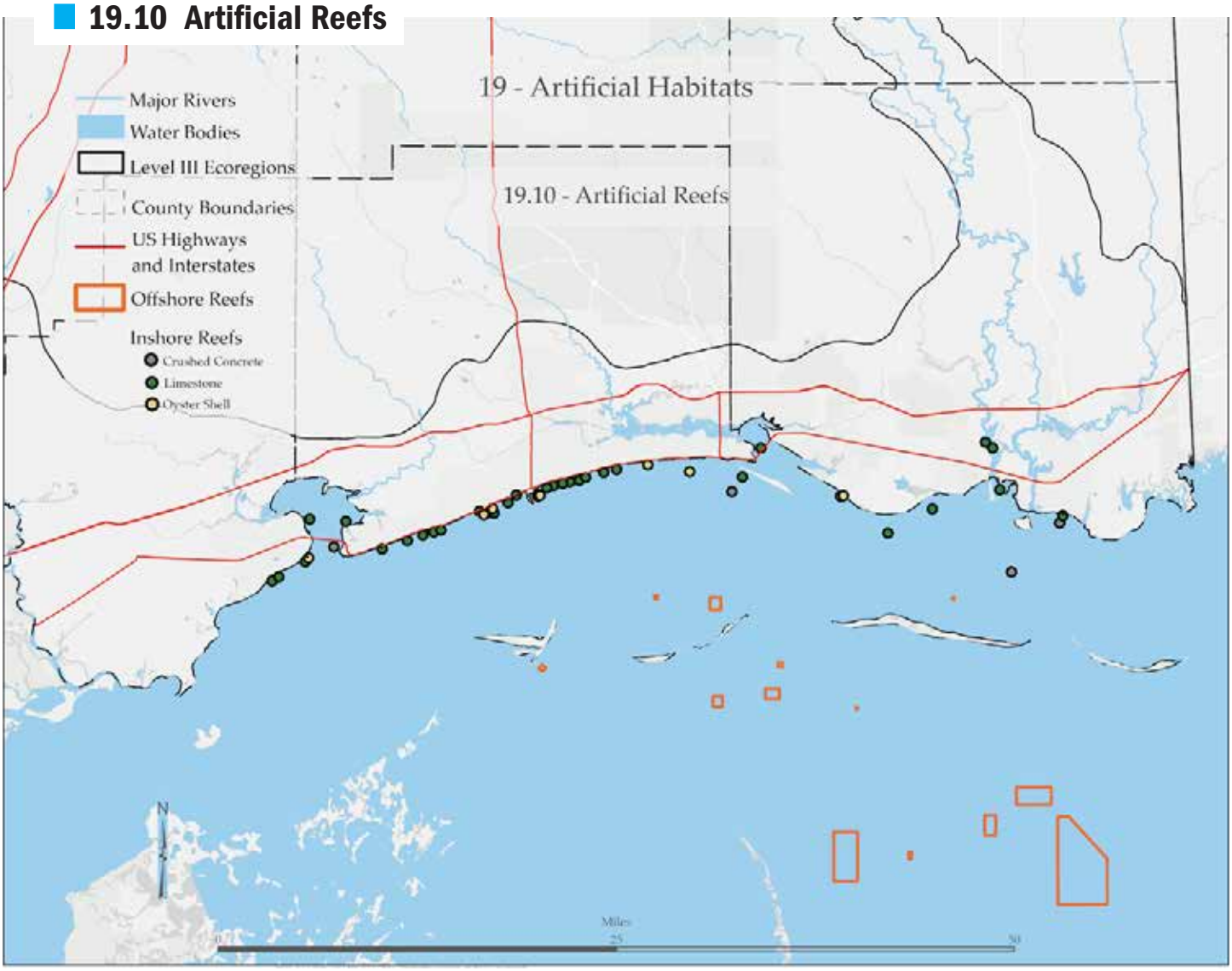


Figure 5.52. Map of Artificial Habitats: Artificial Reefs.

Artificial reefs are structures, usually with hard surfaces, that are intentionally placed in the water to provide conditions attractive to fish and invertebrates. In marine waters off the coast of Mississippi, several artificial reefs have been created to enhance sportfishing. These reefs are constructed out of several types of materials: sunken liberty ships and military equipment and concrete rubble.

One of the liberty ships, called the Waterhouse Reef, was sunk in 1975 about eight kilometers south of the western end of Horn Island, in 14 meters of water. Around 31 primary (obligate) reef fishes moved into the newly created reef habitat. With the addition of 29 facultative species that colonized the area, a total of 60 species occupied the reef after two years.

The MDMR Rigs to Reef Program offers conservation minded alternatives for oil platforms, as opposed to onshore disposal with no subsequent habitat value. The average platform jacket can provide up to 2-3 acres of hard bottom habitat for marine invertebrates and fishes, and these submerged platform jackets currently provide habitat for thousands of marine species. This habitat is beneficial to both the marine organisms that inhabit these reef systems and the commercial and recreational fishermen who seek the highly prized fish that can be found within this newly created ecosystem.

Artificial reefs have been established throughout the Mississippi Sound and cover an estimated 16,218 acres. Their positioning and establishment require approval by federal and state agencies, including the Mississippi Department of Marine Resources.

Artificial reefs consist of essentially inert discarded materials. There are **no concerns** for the condition of these habitats.

THREATS AND ACTIONS TO SGCN IN ARTIFICIAL HABITATS.

Threats: Invasive species are the main threat to species in artificial habitats. Problematic native species, the continued expansion of urban and suburban areas into natural areas, and fire suppression are also threats to the species that may be in or around artificial habitats.

Actions: Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present. Develop/improve urban/suburban infrastructure land use development planning/zoning to address SGCN. Provide public education about the conservation of SGCN and/or their habitats. Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs. Encourage proper disposal and cleanup of waste and litter. Discourage/limit human access in highly critical areas and special habitats, when possible. Encourage restoration and improve management of habitat by controlled burning at necessary frequencies and seasons. Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats. Improve environmental review and permit process and oversight and enforcement of existing regulations in important habitats/populations. Improve enforcement of existing species protection regulations.

Table 5.36 - SGCN for Artificial Habitats

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
2	Arachnids	*Amblyomma tuberculatum*	Gopher Tortoise Tick	X		X	X	X	X	X			
2	Crayfishes	*Cambarus girardianus*	Tanback Crayfish								X		
2	Crayfishes	*Creaserinus burrisi*	Burris' Burrowing Crayfish			X							
1	Crayfishes	*Creaserinus danielae*	Speckled Burrowing Crayfish			X							
1	Crayfishes	*Creaserinus gordoni*	Camp Shelby Burrowing Crayfish			X							
3	Crayfishes	*Lacunicambarus dalyae*	Jewel Mudbug			X							
1	Crayfishes	*Lacunicambarus freudensteini*	Banded Mudbug			X							
2	Crayfishes	*Lacunicambarus mobilensis*	Lonesome Gravedigger			X							
2	Crayfishes	*Procambarus barbiger*	Jackson PrairieCrayfish	X		X	X			X			
1	Crayfishes	*Procambarus fitzpatricki*	Spinytail Crayfish			X							
3	Crayfishes	*Procambarus hagenianus hagenianus*	Southeastern Prairie Crayfish	X		X	X			X			
3	Crayfishes	*Procambarus hagenianus vesticeps*	Egyptian Crayfish	X		X	X			X			
2	Crayfishes	*Procambarus shermani*	Gulf Crayfish			X							
2	Insects	*Aphodius troglodytes*	Aphodius Tortoise Commensal ScarabBeetle	X		X	X	X	X	X			
3	Insects	*Arigomphus lentulus*	Stillwater Clubtail								X		

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
3	Insects	*Arigomphus villosipes*	Unicorn Clubtail								X		
2	Insects	*Bombus fraternus*	Southern PlainsBumble Bee			X	X		X	X			
3	Insects	*Bombus pensylvanicus*	American Bumblebee	X		X	X		X	X			
4	Insects	*Ceratophaga vicinella*	Gopher TortoiseShell Moth	X		X	X	X	X	X			
2	Insects	*Chelyoxenus xerobatis*	Gopher Tortoise HisterBeetle	X		X	X	X	X	X			
2	Insects	*Eutrichota gopheri*	Gopher TortoiseBurrow Fly	X		X	X	X	X	X			
2	Insects	*Machimus polyphemi*	Gopher TortoiseRobber Fly	X		X	X	X	X	X			
2	Insects	*Onthophagus polyphemi*	Onthophagus Tortoise Commensal ScarabBeetle	X		X	X	X	X	X			
2	Insects	*Paracymus seclusus*	Seclusive Water ScavengerBeetle								X		
2	Insects	*Philonthus testudo*	Western Gopher TortoiseRove Beetle	X		X	X	X	X	X			
2	Insects	*Pogonomyrmex badius*	Florida HarvesterAnt	X		X	X	X	X	X			
2	Mussels	*Cyclonaias tuberculata*	Purple Wartyback								X		
3	Mussels	*Potamilus alatus*	Pink Heelsplitter								X		
2	Mussels	*Quadrula rumphiana*	Ridged Mapleleaf								X		
3	Mussels	*Utterbackiana hartfieldorum*	Cypress Floater								X		
3	Amphibia ns	*Ambystoma texanum*	Smallmouth Salamander			X				X			

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
4	Amphibians	*Ambystoma tigrinum*	Tiger Salamander							X			
2	Amphibians	*Lithobates areolatus*	Crawfish Frog				X			X	X		
1	Amphibians	*Lithobates sevosus*	Dusky GopherFrog			X							
4	Amphibians	*Necturus maculosus*	Common Mudpuppy								X		
2	Birds	*Accipiter striatus*	Sharp-shinned Hawk (breedingpopulation)					X					
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow				X			X			
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow			X	X			X			
3	Birds	*Anas acuta*	Northern Pintail							X	X		
1	Birds	*Antigone canadensis pulla*	Mississippi SandhillCrane				X			X			
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow			X	X	X	X				
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will					X					
2	Birds	*Aquila chrysaetos*	Golden Eagle					X					
3	Birds	*Asio flammeus*	Short-eared Owl				X			X			
2	Birds	*Aythya affinis*	Lesser Scaup								X		
2	Birds	*Botaurus lentiginosus*	American Bittern							X			
1	Birds	*Calidris canutus*	Red Knot									X	

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
3	Birds	*Calidris melanotos*	Pectoral Sandpiper							X	X	X	
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper							X	X	X	
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper				X			X	X		
2	Birds	*Chaetura pelagica*	Chimney Swift	X	X								
1	Birds	*Charadrius melodus*	Piping Plover									X	
1	Birds	*Charadrius nivosus*	Snowy Plover									X	
1	Birds	*Charadrius wilsonia*	Wilson's Plover									X	
3	Birds	*Chlidonias niger*	Black Tern								X	X	
3	Birds	*Chordeiles minor*	Common Nighthawk	X	X	X	X						
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo					X					
2	Birds	*Colinus virginianus*	Northern Bobwhite			X	X	X	X	X			
3	Birds	*Columbina passerina*	Common Ground Dove			X	X	X	X	X			
2	Birds	*Coturnicops noveboracensis*	Yellow Rail				X			X			
2	Birds	*Egretta caerulea*	Little Blue Heron								X		
2	Birds	*Egretta rufescens*	Reddish Egret									X	
3	Birds	*Egretta tricolor*	Tricolored Heron								X		
1	Birds	*Falco sparverius paulus*	Southeastern American Kestrel				X			X			
1	Birds	*Gelochelidon nilotica*	Gull-billed Tern									X	

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
2	Birds	*Geothlypis formosa*	Kentucky Warbler					X					
1	Birds	*Haematopus palliatus*	American Oystercatcher									X	
2	Birds	*Hylocichla mustelina*	Wood Thrush					X					
2	Birds	*Ixobrychus exilis*	Least Bittern							X			
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	X		X	X			X			
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	X		X	X			X			
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher							X	X	X	
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler					X					
2	Birds	*Limosa fedoa*	Marbled Godwit									X	
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	X									
1	Birds	*Mycteria americana*	Wood Stork								X		
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron							X	X		
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron							X	X		
2	Birds	*Passerina ciris*	Painted Bunting						X				
2	Birds	*Peucaea aestivalis*	Bachman's Sparrow					X	X				
1	Birds	*Platalea ajaja*	Roseate Spoonbill							X	X		

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
3	Birds	*Pluvialis dominica*	American Golden-Plover				X			X	X		
3	Birds	*Porphyrio martinicus*	Purple Gallinule							X			
3	Birds	*Quiscalus quiscula*	Common Grackle	X									
2	Birds	*Rallus elegans*	King Rail							X			
2	Birds	*Riparia riparia*	Bank Swallow (breedingpopulation)								X		
1	Birds	*Rynchops niger*	Black Skimmer									X	
3	Birds	*Scolopax minor*	American Woodcock				X		X				
2	Birds	*Setophaga discolor*	Prairie Warbler					X	X				
3	Birds	*Sitta pusilla*	Brown-headed Nuthatch					X					
3	Birds	*Spizella pusilla*	Field Sparrow			X	X		X				
1	Birds	*Sternula antillarum antillarum*	Coastal Least Tern									X	
2	Birds	*Sternula antillarum athalassos*	Interior Least Tern								X		
3	Birds	*Sturnella magna*	Eastern Meadowlark				X						
2	Birds	*Thalasseus maximus*	Royal Tern									X	
1	Birds	*Thalasseus sandvicensis*	Sandwich Tern									X	
1	Birds	*Thryomanes bewickii*	Bewick's Wren	X	X				X				

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
3	Birds	*Tringa flavipes*	Lesser Yellowlegs							X	X	X	
3	Birds	*Tringa semipalmata*	Willet									X	
2	Fishes	*Acipenser fulvescens*	Lake Sturgeon								X		
2	Fishes	*Ambloplites rupestris*	Rock Bass								X		
2	Fishes	*Etheostoma zonifer*	Backwater Darter								X		
3	Fishes	*Hybopsis amnis*	Pallid Shiner								X		
3	Fishes	*Ichthyomyzon castaneus*	Chestnut Lamprey								X		
3	Fishes	*Ictiobus niger*	Black Buffalo								X		
2	Fishes	*Moxostoma breviceps*	Smallmouth Redhorse								X		
3	Fishes	*Polyodon spathula*	Paddlefish								X		
2	Fishes	*Stizostedion canadense*	Sauger								X		
2	Marine Fishes	*Aetobatus narinari*	Whitespotted Eagle Ray									X	X
4	Marine Fishes	*Archosargus rhomboidalis*	Western Atlantic Seabream										X
3	Marine Fishes	*Carcharhinus acronotus*	Blacknose Shark									X	X
2	Marine Fishes	*Carcharhinus plumbeus*	Sandbar Shark										X
4	Marine Fishes	*Carcharhinus porosus*	Smalltail Shark									X	

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
4	Marine Fishes	*Epinephelus itajara*	Atlantic GoliathGrouper										X
4	Marine Fishes	*Manta birostris*	Giant Manta Ray										X
2	Marine Fishes	*Negaprion brevirostris*	Lemon Shark									X	
1	Marine Fishes	*Pristis pectinata*	Smalltooth Sawfish									X	
4	Marine Fishes	*Pristis pristis*	Largetooth Sawfish									X	
3	Marine Fishes	*Rhinoptera brasiliensis*	Brazilian Cownose Ray									X	
2	Marine Fishes	*Sphyrna lewini*	Scalloped Hammerhead										X
2	Marine Fishes	*Sphyrna mokarran*	Great Hammerhead										X
2	Mammals	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	X	X								
3	Mammals	*Lasionycteris noctivagans*	Silver-haired Bat	X									
3	Mammals	*Lasiurus cinereus*	Hoary Bat	X				X					
3	Mammals	*Lasiurus intermedius*	Northern Yellow Bat	X									
3	Mammals	*Myotis austroriparius*	Southeastern Myotis	X	X								
1	Mammals	*Myotis grisescens*	Gray Bat		X						X		
1	Mammals	*Myotis septentrionalis*	Northern Long-eared Bat	X	X			X			X		
1	Mammals	*Myotis sodalis*	Indiana Bat		X						X		
3	Mammals	*Neogale frenata*	Long-tailed Weasel	X			X	X	X				

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
2	Mammals	*Perimyotis subflavus*	Tricolored Bat	X	X			X			X		
2	Mammals	*Peromyscus polionotus*	Oldfield Mouse			X	X		X				
2	Mammals	*Sorex longirostris*	Southeastern Shrew			X		X	X				
1	Mammals	*Spilogale putorius*	Eastern Spotted Skunk	X			X	X	X				
2	Mammals	*Ursus americanus*	Black Bear	X									
1	Mammals	*Ursus americanus luteolus*	Louisiana Black Bear	X									
2	Mammals	*Zapus hudsonius*	Meadow JumpingMouse			X	X		X				
3	Reptiles	*Coluber flagellum flagellum*	Eastern Coachwhip			X	X	X	X	X			
2	Reptiles	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake			X		X	X				
1	Reptiles	*Gopherus polyphemus*	Gopher Tortoise	X		X	X	X	X	X			
3	Reptiles	*Graptemys nigrinoda*	Black-knobbed Map Turtle								X		
2	Reptiles	*Lampropeltis calligaster calligaster*	Prairie Kingsnake				X		X	X			
2	Reptiles	*Lampropeltiscalligaster rhombomaculata*	Mole Kingsnake				X	X	X	X			
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle								X		
1	Reptiles	*Malaclemys terrapin pileata*	Mississippi Diamondback Terrapin	X									
2	Reptiles	*Nerodia clarkii clarkii*	Gulf Salt Marsh Snake	X									

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
2	Reptiles	*Ophisaurus attenuatus*	Slender Glass Lizard			X	X	X	X	X			
1	Reptiles	*Pituophis melanoleucus lodingi*	Black Pine Snake			X							
2	Reptiles	*Plestiodon anthracinus*	Coal Skink			X		X					
1	Reptiles	*Pseudemys alabamensis*	Alabama Red-bellied Turtle	X									
2	Marine Reptiles	*Caretta caretta*	Loggerhead Sea Turtle									X	X
4	Marine Reptiles	*Eretmochelys imbricata*	Hawksbill Sea Turtle										X
1	Marine Reptiles	*Lepidochelys kempii*	Kemp's Ridley SeaTurtle										X
2	Nonvascular Plants	*Anthoceros punctatus*	a hornwort	X	X		X	X		X	X		
1	Nonvascul ar Plants	*Archidium hallii*	Hall's Archidium Moss			X							
3	Nonvascular Plants	*Bruchia ravenelii*	Ravenel's Bruchia Moss	X			X						
2	Nonvascular Plants	*Fissidens amoenus*	Hall's Fissidens Moss					X					
3	Nonvascular Plants	*Lejeunea cladogyna*	a liverwort	X	X								
1	Nonvascular Plants	*Macromitrium richardii*	Richard's Macromitrium Moss			X	X						
3	Nonvascular Plants	*Orthotrichum exiguum*	Small Wood-bark Moss		X								
1	Nonvascular Plants	*Riccia warnstorfii*	a liverwort								X		
2	Nonvascular Plants	*Sphaerocarpos donnellii*	a liverwort	X	X	X	X	X			X		

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1	Nonvascular Plants	*Sphaerosporoceros adscendens*	a hornwort				X	X					
3	Nonvascular Plants	*Sphagnum carolinianum*	Carolina Peatmoss			X	X						
3	Nonvascular Plants	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss			X					X		
1	Nonvascular Plants	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss								X		
1	Nonvascular Plants	*Tortula porteri*	Porter's Screw Moss		X								
2	Vascular Plants	*Acer leucoderme*	Chalk Maple				X						
3	Vascular Plants	*Agalinis filicaulis*	Thread-stem False Foxglove			X							
1	Vascular Plants	*Agalinis homalantha*	San Antonio False-foxglove						X				
2	Vascular Plants	*Agalinis linifolia*	Flaxleaf False Foxglove			X							
3	Vascular Plants	*Agalinis oligophylla*	Ridge-stem False-foxglove			X	X	X					
3	Vascular Plants	*Agrimonia incisa*	Incised Groovebur	X		X	X						
1	Vascular Plants	*Alophia drummondii*	Purple Pleat-leaf			X							
3	Vascular Plants	*Andropogon dealbatus*	Wetland White Bluestem			X							
3	Vascular Plants	*Andropogon perangustatus*	Narrow-leaved Bluestem			X							
2	Vascular Plants	*Andropogon tracyi*	Tracy's Bluestem			X							
2	Vascular Plants	*Anemone caroliniana*	Carolina Anemone		X		X	X					

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1	Vascular Plants	*Apios priceana*	Price's Potato-bean				X						
4	Vascular Plants	*Arabidopsis lyrata* ssp. *lyrate*	Lyreleaf Rockcress		X								
3	Vascular Plants	*Aristida beyrichiana*	Southern Wiregrass	X		X							
3	Vascular Plants	*Aristida tenuispica*	Southern Arrowfeather	X									
2	Vascular Plants	*Asclepias hirtella*	Green Milkweed	X	X	X	X	X					
2	Vascular Plants	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch		X		X						
2	Vascular Plants	*Balduina angustifolia*	Coastal Plain Honeycomb-head		X								
1	Vascular Plants	*Baptisia nuttalliana*	Nuttall's Wild Indigo			X	X	X					
2	Vascular Plants	*Baptisia sphaerocarpa*	Green Wild Indigo			X	X						
4	Vascular Plants	*Bidens trichosperma*	Tickseed Sunflower								X		
3	Vascular Plants	*Borodinia canadensis*	Sicklepod		X								
2	Vascular Plants	*Bulbostylis ciliatifolia*	Capillary Hairsedge	X		X	X						
2	Vascular Plants	*Burmannia biflora*	Northern Burmannia								X		
2	Vascular Plants	*Callirhoe triangulata*	Clustered Poppy-mallow			X							
1	Vascular Plants	*Canna flaccida*	Bandana-of-the-Evergla des			X							
2	Vascular Plants	*Carex alata*	Broadwing Sedge	X							X		

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2	Vascular Plants	*Carex comosa*	Bristly Sedge	X			X						
1	Vascular Plants	*Carex fissa* var. *aristata*	Hammock Sedge			X	X						
1	Vascular Plants	*Carex fissa* var. *fissa*	Hammock Sedge				X						
1	Vascular Plants	*Carex frankii*	Frank's Sedge					X					
3	Vascular Plants	*Carex gravida*	Heavy-fruited Sedge				X	X					
3	Vascular Plants	*Carex grayi*	Asa Gray's Sedge								X		
3	Vascular Plants	*Carex hyalina*	Tissue Sedge				X						
2	Vascular Plants	*Carex mesochorea*	Midland Sedge					X					
3	Vascular Plants	*Carex molestiformis*	Ozark Plateau Sedge				X	X					
3	Vascular Plants	*Carex radiata*	Stellate Sedge	X	X								
3	Vascular Plants	*Carex reznicekii*	Reznicek's Sedge		X								
2	Vascular Plants	*Carex scoparia*	Broom Sedge			X	X	X					
3	Vascular Plants	*Carex stipata* var. *maxima*	Stalk-grain Sedge			X	X						
1	Vascular Plants	*Ceratophyllum echinatum*	Prickly Hornwort								X		
1	Vascular Plants	*Ceratopteris pteridoides*	Floating Antler Fern								X		
2	Vascular Plants	*Chamaecyparis thyoides*	Atlantic White Cedar			X							

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4	Vascular Plants	*Cicuta maculata* var. *bolanderi*	Bolander's Water-hemlock			X	X						
3	Vascular Plants	*Cirsium lecontei*	Leconte's Thistle			X							
2	Vascular Plants	*Cladium mariscoides*	Twig Rush			X							
3	Vascular Plants	*Clematis subreticulata*	Alabama Leatherflower				X						
1	Vascular Plants	*Clinopodium arkansanum*	Low Calamint				X	X					
1	Vascular Plants	*Coelorachis cylindrica*	Pitted Jointgrass			X	X						
2	Vascular Plants	*Convolvulus catesbyanus*	Catesby's Bindweed				X						
2	Vascular Plants	*Coreopsis nudata*	Georgia Tickseed			X					X		
1	Vascular Plants	*Crataegus ashei*	Ashe's Hawthorn				X	X					
1	Vascular Plants	*Crataegus mollis* var. *meridionalis*	Gallion Hawthorn					X					
2	Vascular Plants	*Crataegus triflora*	Three-flowered Hawthorn				X	X					
2	Vascular Plants	*Crocanthemum arenicola*	Coastal-sand Frostweed										X
2	Vascular Plants	*Cuphea viscosissima*	Blue Waxweed				X						
3	Vascular Plants	*Cyperus bipartitus*	Shining Flatsedge				X	X					
3	Vascular Plants	*Cyperus drummondii*	Green Flatsedge			X							
2	Vascular Plants	*Cyperus elegans*	Sticky Flatsedge	X	X	X							

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1	Vascular Plants	*Cyperus engelmannii*	Slender Sand Flatsedge	X		X							
3	Vascular Plants	*Cyperus flavicomus*	White-edged Flatsedge	X		X	X				X		
2	Vascular Plants	*Cyperus lecontei*	Le Conte's Flatsedge										X
3	Vascular Plants	*Cyperus neotropicalis*	American Lipocarpha			X	X				X		
1	Vascular Plants	*Cyperus ochraceus*	Pond Flatsedge		X								
1	Vascular Plants	*Cyperus refractus*	Reflexed Flatsedge				X	X	X				
3	Vascular Plants	*Dalea mountjoyae*	White-tassels	X		X							
3	Vascular Plants	*Decodon verticillatus*	Hairy Swamp Loosestrife	X			X				X		
1	Vascular Plants	*Desmodium ochroleucum*	Creamflower Tick-trefoil				X						
3	Vascular Plants	*Diaperia prolifera* var. *prolifera*	Big-head Evax				X	X					
2	Vascular Plants	*Dichanthelium cryptanthum*	Hidden-flower Witchgrass				X				X		
2	Vascular Plants	*Dichanthelium curtifolium*	Shortleaf Witchgrass			X	X						
3	Vascular Plants	*Dichanthelium nudicaule*	Naked-stemmed Panic Grass			X							
2	Vascular Plants	*Dichanthelium wrightianum*	Wright's Witchgrass			X							
4	Vascular Plants	*Didiplis diandra*	Water-purslane	X							X		
2	Vascular Plants	*Diphasiastrum digitatum*	Fan Club-moss				X	X					

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2	Vascular Plants	*Dryopteris ludoviciana*	Southern ShieldWood-fern			X							
1	Vascular Plants	*Echinodorus berteroi*	Upright Burhead				X						
3	Vascular Plants	*Eleocharis cellulosa*	Carolina Spikerush								X		
1	Vascular Plants	*Eleocharis coloradoensis*	Dwarf Spikerush		X		X						
2	Vascular Plants	*Eleocharis compressa*	Flat-stem Spikerush				X						
2	Vascular Plants	*Eleocharis elongata*	Slim Spikerush			X							
2	Vascular Plants	*Eleocharis erythropoda*	Bald Spikerush				X						
1	Vascular Plants	*Eleocharis lanceolata*	Lance-like Spikerush				X						
3	Vascular Plants	*Eleocharis macrostachya*	Creeping Spikerush		X		X						
1	Vascular Plants	*Eleocharis melanocarpa*	Black-fruit Spikerush								X		
3	Vascular Plants	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	X		X							
2	Vascular Plants	*Eleocharis ovata*	Ovate Spikerush				X						
4	Vascular Plants	*Eleocharis palustris*	Creeping Spikerush	X	X		X						
1	Vascular Plants	*Eleocharis parvula*	Small Spikerush				X				X		
1	Vascular Plants	*Eleocharis radicans*	Rooted Spikerush	X									
3	Vascular Plants	*Eleocharis robbinsii*	Robbins Spikerush								X		

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1	Vascular Plants	*Eleocharis tricostata*	Three-angle Spikerush			X							
2	Vascular Plants	*Eleocharis wolfii*	Wolf's Spikerush	X									
2	Vascular Plants	*Elymus villosus*	Hairy Wild Rye		X		X						
2	Vascular Plants	*Endotropis lanceolata*	Lance-leaved Buckthorn				X	X					
1	Vascular Plants	*Equisetum arvense*	Field Horsetail				X						
3	Vascular Plants	*Eriocaulon texense*	Texas Pipewort			X							
1	Vascular Plants	*Eryngium hookeri*	Hooker's Coyote-thistle				X						
1	Vascular Plants	*Euphorbia discoidalis*	Summer Spurge				X						
2	Vascular Plants	*Euphorbia inundata* var. *inundata*	Florida Pine Spurge			X							
2	Vascular Plants	*Eustachys glauca*	Saltmarsh Finger-grass			X							
2	Vascular Plants	*Eustoma exaltatum*	Tall Prairie-gentian		X	X							
2	Vascular Plants	*Fuirena longa*	Coastal-plain Umbrella-sedge			X					X		
1	Vascular Plants	*Gratiola ramosa*	BranchedHedge-hyssop			X							
3	Vascular Plants	*Gymnocladus dioicus*	Kentucky Coffeetree		X								
3	Vascular Plants	*Helanthium tenellum*	Dwarf Burhead								X		
3	Vascular Plants	*Helenium brevifolium*	Shortleaf Sneezeweed			X							

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4	Vascular Plants	*Helianthus debilis* ssp. *tardiflorus*	Gulf Coast BeachSunflower										X
1	Vascular Plants	*Helianthus verticillatus*	Whorled Sunflower				X	X					
3	Vascular Plants	*Herbertia lahue*	Herbertia			X	X	X					
3	Vascular Plants	*Hexalectris spicata*	Crested Coralroot			X	X						
2	Vascular Plants	*Hexastylis harperi*	Large-flowered Heartleaf	X									
3	Vascular Plants	*Hibiscus coccineus*	Brilliant Hibiscus			X							
1	Vascular Plants	*Hieracium venosum*	Rattlesnake Hawkweed				X						
2	Vascular Plants	*Hottonia inflata*	Featherfoil	X							X		
3	Vascular Plants	*Hymenocallis choctawensis*	Florida Panhandle Spider-lily			X							
2	Vascular Plants	*Hymenocallis occidentalis* var. *eulae*	Woodland Spider-lily				X						
2	Vascular Plants	*Hypericum canadense*	Canadian St.John's-wort			X					X		
2	Vascular Plants	*Hypericum myrtifolium*	Myrtle-leaved St.Johnswort			X							
2	Vascular Plants	*Ilex cassine*	Dahoon Holly			X							
1	Vascular Plants	*Ipomoea macrorhiza*	Large-stem Morning-glory		X	X							
1	Vascular Plants	*Iresine diffusa*	Felicidad			X							
2	Vascular Plants	*Isoetes appalachiana*	Appalachian Quillwort	X			X						

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2	Vascular Plants	*Isoetes louisianensis*	Louisiana Quillwort			X							
2	Vascular Plants	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort			X	X						
2	Vascular Plants	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort			X	X						
1	Vascular Plants	*Isoetes mississippiensis*	Mississippi Quillwort			X							
2	Vascular Plants	*Juncus interior*	Inland Rush				X						
2	Vascular Plants	*Juniperus silicicola*	Southern Red Cedar		X								
3	Vascular Plants	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	X	X	X	X				X		
3	Vascular Plants	*Linum floridanum* var. *chrysocarpum*	Yellow-fruit ed Flax			X							
2	Vascular Plants	*Lupinus perennis* ssp. *gracilis*	Sundail Lupine	X			X						
3	Vascular Plants	*Luziola bahiensis*	Brazilian Loziola			X							
3	Vascular Plants	*Lycopus amplectens*	Sessile-leaved Bugleweed			X					X		
3	Vascular Plants	*Macranthera flammea*	Flame Flower			X							
2	Vascular Plants	*Malus ioensis*	Iowa Crabapple			X	X						
3	Vascular Plants	*Marshallia angustifolia*	Slim-leaf Barbara's-buttons	X		X	X						
3	Vascular Plants	*Marshallia trinervia*	Broadleaf Barbara's-buttons			X	X						
2	Vascular Plants	*Marsilea vestita*	Marsilea vestita				X		X				

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3	Vascular Plants	*Matelea obliqua*	Climbing Milkweed		X		X						
2	Vascular Plants	*Mimulus ringens* var. *ringens*	Square-stem Monkeyflower	X			X						
2	Vascular Plants	*Mirabilis albida*	Pale Umbrella-wort				X						
2	Vascular Plants	*Mirabilis linearis*	Narrowleaf Four-o'clock				X						
1	Vascular Plants	*Myriopteris alabamensis*	Alabama Lipfern				X						
2	Vascular Plants	*Nabalus asper*	Rough Rattlesnake-root					X					
2	Vascular Plants	*Nemastylis geminiflora*	Prairie Pleatleaf		X		X						
2	Vascular Plants	*Nestronia umbellula*	Nestronia				X						
4	Vascular Plants	*Nymphaea mexicana*	Banana Water-lily								X		
3	Vascular Plants	*Nymphoides aquatica*	Big Floating-heart								X		
3	Vascular Plants	*Nymphoides cordata*	Floating-heart								X		
3	Vascular Plants	*Oenothera grandiflora*	Large-flowered Evening-primrose				X						
4	Vascular Plants	*Oenothera heterophylla* ssp. *orientalis*	Alabama Evening-primrose				X						
3	Vascular Plants	*Oenothera triloba*	Stemless Evening-primrose				X	X					
2	Vascular Plants	*Opuntia macrorhiza*	Twisted-spine Prickly-pear						X				
2	Vascular Plants	*Orthochilus ecristatus*	Giant Orchid				X	X					

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2	Vascular Plants	*Packera aurea*	Golden Groundsel				X						
2	Vascular Plants	*Packera tomentosa*	Woolly Groundsel				X	X					
2	Vascular Plants	*Palafoxia callosa*	Small Palafoxia				X	X					
3	Vascular Plants	*Palhinhaea cernua*	Nodding Clubmoss			X							
3	Vascular Plants	*Paronychia erecta* var. *corymbosa*	Beach Sand-squares										X
3	Vascular Plants	*Paronychia erecta* var. *erecta*	Beach Sand-squares										X
2	Vascular Plants	*Paronychia patula*	Pineland Nailwort								X		
2	Vascular Plants	*Perideridia americana*	Eastern Eulophus				X						
1	Vascular Plants	*Phacelia hirsuta*	Hairy Scorpionweed				X	X					
3	Vascular Plants	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed			X	X						
4	Vascular Plants	*Physalis arenicola*	Cypress-head Ground-cherry										X
1	Vascular Plants	*Physaria gracilis* ssp. *gracilis*	Spreading Bladder-pod				X	X					
3	Vascular Plants	*Pinguicula planifolia*	Chapman's Butterwort			X							
2	Vascular Plants	*Pinguicula pumila*	Dwarf Butterwort			X							
1	Vascular Plants	*Pinus clausa*	Sand Pine					X					
3	Vascular Plants	*Pinus virginiana*	Virginia Pine				X	X	X				

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4	Vascular Plants	*Pityopsis pinifolia*	Taylor County Silk-grass			X							
2	Vascular Plants	*Plantago cordata*	Heartleaf Plantain				X						
2	Vascular Plants	*Platanthera conspicua*	Large White-fringe Orchid			X							
2	Vascular Plants	*Platanthera integrilabia*	White FringelessOrchid	X			X						
2	Vascular Plants	*Platanthera lacera*	Green-fringed Orchid			X	X	X			X		
2	Vascular Plants	*Polytaenia nuttallii*	Prairie Parsley		X		X	X					
2	Vascular Plants	*Potamogeton epihydrus*	Nuttall's Pondweed			X					X		
2	Vascular Plants	*Potamogeton pusillus*	Slender Pondweed			X	X				X		
2	Vascular Plants	*Pycnanthemum flexuosum*	Narrowleaf Mountainmint			X							
2	Vascular Plants	*Pycnanthemum pilosum*	Whorled Mountainmint					X					
2	Vascular Plants	*Quercus palustris*	Pin Oak				X	X					
2	Vascular Plants	*Ranunculus flabellaris*	Yellow Water-crowfoot	X			X						
2	Vascular Plants	*Ranunculus septentrionalis*	Carolina Buttercup								X		
2	Vascular Plants	*Rhododendron alabamense*	Alabama Rhododendron				X						
2	Vascular Plants	*Rhynchosia latifolia*	Prairie Rhynchosia				X						
3	Vascular Plants	*Rhynchospora baldwinii*	Baldwin's Beakrush			X							

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2	Vascular Plants	*Rhynchospora careyana*	Broad-fruit Horned Beakrush			X					X		
3	Vascular Plants	*Rhynchospora distans*	Fasciculate Beakrush			X							
1	Vascular Plants	*Rhynchospora divergens*	White-seeded Beakrush				X						
2	Vascular Plants	*Rhynchospora harveyi*	Harvey's Beakrush			X							
2	Vascular Plants	*Rhynchospora perplexa*	Pineland Beakrush			X							
2	Vascular Plants	*Rorippa aquatica*	Lake-cress				X				X		
1	Vascular Plants	*Rudbeckia grandiflora* var. *alismifolia*	Rough Coneflower				X	X					
1	Vascular Plants	*Rudbeckia subtomentosa*	Sweet Coneflower					X					
2	Vascular Plants	*Ruellia noctiflora*	Night-flowering Wild-petunia			X							
3	Vascular Plants	*Sabatia campestris*	Prairie Pink	X	X	X	X						
2	Vascular Plants	*Sabatia decandra*	Bartram's Rose-gentian			X							
2	Vascular Plants	*Sabulina patula*	Pitcher's Stitchwort				X						
2	Vascular Plants	*Sagittaria chapmanii*	Chapman's Arrowhead			X	X						
1	Vascular Plants	*Sagittaria isoetiformis*	Slender Arrow-head								X		
2	Vascular Plants	*Salix caroliniana*	Carolina Willow				X						
1	Vascular Plants	*Salvia chapmanii*	Chapman's Sage				X						

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1	Vascular Plants	*Sarracenia alabamensis* ssp. *wherryi*	Wherry's Sweet Pitcher-plant			X							
2	Vascular Plants	*Sarracenia leucophylla*	Whitetop Pitcherplant			X							
1	Vascular Plants	*Sarracenia rosea*	Purple Pitcherplant			X							
2	Vascular Plants	*Sceptridium jenmanii*	Alabama Grapefern			X	X						
3	Vascular Plants	*Sceptridium lunarioides*	Winter Grape-fern	X	X	X	X	X					
2	Vascular Plants	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem			X	X						
2	Vascular Plants	*Schoenoplectus americanus*	Three-square Bulrush		X								
3	Vascular Plants	*Scleria elliottii*	Broad-leaved Hairy Nutrush			X	X	X					
3	Vascular Plants	*Scleria georgiana*	Georgia Nutrush	X		X							
3	Vascular Plants	*Scleria verticillata*	Low Nutrush			X							
2	Vascular Plants	*Senega ambigua*	Whorled Milkwort					X					
2	Vascular Plants	*Senega curtissii*	Curtiss' Milkwort					X					
3	Vascular Plants	*Silphium terebinthinaceum* var. *luciae-brauniae*	Lucy Braun's Prairie Dock				X	X					
2	Vascular Plants	*Smilax pulverulenta*	Downy Carrion-flower				X						
2	Vascular Plants	*Solanum pseudogracile*	Glowing Nightshade			X	X						
2	Vascular Plants	*Solidago brachyphylla*	Dixie Goldenrod			X							

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2	Vascular Plants	*Solidago juncea*	Early Goldenrod				X	X					
2	Vascular Plants	*Sophronanthe hispida*	Pineland Hedge-Hyssop			X							
2	Vascular Plants	*Sphenopholis penysIvanica*	SwampWedgescale				X	X					
4	Vascular Plants	*Spiraea tomentosa*	Steeplebush					X					
1	Vascular Plants	*Spiranthes floridana*	Florida Ladies'-tresses			X							
2	Vascular Plants	*Spiranthes lacera* var. *gracilis*	Southern Slender Ladies'-tresses		X	X	X	X					
2	Vascular Plants	*Spiranthes longilabris*	Giant Spiral Ladies'-tresses			X							
3	Vascular Plants	*Stellaria pubera*	Giant Chickweed			X	X						
2	Vascular Plants	*Stylisma pickeringii* ssp. *pattersonii*	Pickering Morning-glory			X	X						
2	Vascular Plants	*Stylisma pickeringii* ssp. *pickeringii*	Pickering Morning-glory			X	X						
3	Vascular Plants	*Symphyotrichum ericoides* var. *ericoides*	White Heath Aster				X	X					
2	Vascular Plants	*Symphyotrichum pratense*	Barrens Silky Aster				X						
2	Vascular Plants	*Syngonanthus flavidulus*	Yellow Pipewort			X							
1	Vascular Plants	*Thalia dealbata*	Powdery Thalia				X						
2	Vascular Plants	*Thalictrum macrostylum*	Small-leaf Meadowrue			X	X						
2	Vascular Plants	*Thelesperma filifolium*	Stiff Greenthread				X	X					

Tier	TaxaGroup (Class)	Scientific Name	Common Name	Urban and suburban lands	Buildings, bridges, etc.	Utility right-of-ways	Hay and pasturelands	Cultivated Forest	Shrub lands	Agriculture / Aquaculture Fields	Impoundments	Man-made beaches	Artificial reefs
3	Vascular Plants	*Tiarella cordifolia*	Heart-leaved Foam-flower				X						
3	Vascular Plants	*Tomostima cuneifolia*	Wedgeleaf Whitlow-grass				X						
3	Vascular Plants	*Tridens carolinianus*	Carolina Fluff Grass				X						
3	Vascular Plants	*Tridens chapmanii*	Chapman's Redtop			X							
1	Vascular Plants	*Trifolium carolinianum*	Carolina Clover	X		X	X	X					
4	Vascular Plants	*Trifolium reflexum*	Buffalo Clover				X	X					
2	Vascular Plants	*Utricularia olivacea*	Piedmont Bladderwort	X							X		
3	Vascular Plants	*Utricularia purpurea*	Purple Bladderwort			X					X		
3	Vascular Plants	*Verbena xutha*	Gulf Vervain			X	X						
3	Vascular Plants	*Veronicastrum virginicum*	Culver's-root					X					
3	Vascular Plants	*Xyris drummondii*	Drummond's Yellow-eyed-grass			X							
2	Vascular Plants	*Xyris louisianica*	Kral'sYellow-eyed Grass	X		X					X		
3	Vascular Plants	*Xyris scabrifolia*	Harper's Yellow-eyed Grass	X							X		
2	Vascular Plants	*Yeatesia viridiflora*	Green-flower Yeatesia			X	X						
2	Vascular Plants	*Zephyranthes simpsonii*	Rainlily			X	X						

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CHAPTER 6

Threats and Priority Conservation Actions for Mississippi's SGCN and Their Habitats

The third element required by Congress in the development of this Action Plan involves the description of problems that may adversely affect SGCN or their habitats. There are several different approaches noted in the literature, but most rely on identification of "stresses" or "threats" and/or "sources of stress" in the environment. Stresses are some attribute of an ecosystem that is impaired either directly or indirectly by humans. A 'stress' is a symptom that results from a threat. A threat is the activity or processes that have caused or may be causing the "destruction, degradation, and/or impairment" of an ecosystem. Direct threats are sources of stress. *The Best Practices for State Wildlife Action Plans (2012)* recommends using the definitions and hierarchy found in the Salafsky et al. (2008) paper: *A Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions*. Creating consistency across state plans will make multi-state cooperation and projects easier to design by identifying shared threats and actions across states. The MDWFP SWAP Technical Committee originally completed a comparison of threats for the 2005 SWAP, and applied Salasfky's standard lexicon for the 2015 SWAP. For this 2025 iteration, we continued to use the standard for all SGCN and habitat threats.

The Technical Committee also assigned a *high, medium,* or *low* rank to the identified threats to aid in determining the most critical problems for each identified habitat subtype and to facilitate identification of priority conservation actions. The assignment of ranks to these threats, while subjective, is an attempt to identify the magnitude of the threat. As additional planning and analysis of priority conservation actions are developed in the future, a more detailed threats analysis using national conventions for measuring threats is recommended. See Appendix 11 for a table of threats and conservation actions by Mississippi habitat type.

Mississippi's landscape has changed dramatically since European settlement. There are no places remaining that have not been affected by humans. Urbanization, proliferation of highways, agriculture, fencing, dams and stream channelization, commercial forestry and many other actions have modified wildlife and fisheries habitat. Many of these land use changes have come at a great cost to wildlife. It is not our intent to debate the benefits and detriments of land use changes and historical activities on Mississippi's landscape. Rather, we must take a meaningful look at the landscapes and habitats as they exist today and develop plans on how best to implement management practices that benefit Mississippi's native fish and wildlife, particularly SGCN. Some problems or threats defined herein are based on legal and accepted practices. Thus, the threats identified are meant to include those practices harmful to wildlife. It should be understood that the manner in which a human activity or practice is conducted along with the scale at which it is conducted determines if it has a significant negative, neutral, or positive impact on wildlife populations.

The threats may be historic, current, or potential. For example, conversion of natural forest stands to agricultural uses in Mississippi represents an impact that is mostly historic. Less forest conversion occurs today from agriculture production, but it is important to demonstrate that wildlife populations have been affected by these past land uses when trying to develop a long-range conservation strategy that considers potential recovery for species requiring these habitats.

Those threats that are regional or extend beyond state boundaries such as climate threats are discussed in more detail in Chapter 2: A Regional Perspective for Mississippi.

Table 6.1 - Threat Categories and Descriptions

General threat categories used for Mississippi's SWAP taken from Salafsky et al. (2008).

THREAT	SUBTHREAT		DESCRIPTION
1 Residential and Commercial Development Threats from human settlements or other nonagricultural land uses with a substantial footprint	**1.1**	Housing and Urban Areas	Human cities, towns, and settlements including non-housing development typically integrated with housing
	1.2	Commercial and Industrial Areas Factories and other commercial centers	Factories and other commercial centers
	1.3	Tourism and Recreation Areas	Tourism and recreation sites with a substantial footprint
2 Agriculture and Aquaculture Threats from farming and ranching as a result of agricultural expansion and intensification, including silviculture, mariculture and aquaculture	**2.1**	Annual and Perennial Non-timber Crops	Crops planted for food, fodder, fiber, fuel, and other uses
	2.2	Wood and Pulp Plantations	Stands of trees planted for timber or fiber outside of natural forests, often with non-native (or off-site) species
	2.3	Livestock Farming and Ranching	Domestic terrestrial animals raised in one location on farmed or non-local resources (farming); also domestic orsemi-domesticated animals allowed to roam in the wild and supported by natural habitats (ranching)
	2.4	Marine and Freshwater Aquaculture	Aquatic animals raised in one location on farmed or non-local resources; also hatchery fish allowed to roam in the wild
3 Energy Production and Mining Threats from production of non-biological resources	**3.1**	Oil and Gas Drilling	Exploring for, developing, and producing petroleum and other liquid hydrocarbons
	3.2	Mining and Quarrying	Exploring for, developing, and producing minerals and rocks
	3.3	Renewable Energy	Exploring, developing, and producing renewable energy
4 Transportation and Service Corridors Threats from long narrow transport corridors and the vehicles that use them including associated wildlife mortality	4.1	Road and Railroads	Surface transportation on roadways and dedicated tracks
	4.2	Utility and Service Lines	Transport of energy and resources
	4.3	Shipping Lanes	Transport on and in freshwater and ocean waterways
	4.4	Flight Paths	Air and space transport

THREAT	SUBTHREAT		DESCRIPTION
5 Biological Resource Use Threats from consumptive use of "wild" biological resources including both deliberate and unintentional harvesting effects; also persecution or control of specific species	**5.1**	Hunting and Collecting of Terrestrial Animals	Killing or trapping terrestrial wild animals or animal products for commercial, recreation, subsistence, research or cultural purposes, or for control/ persecution reasons; includes accidental mortality/bycatch
	5.2	Gathering Terrestrial Plants	Harvesting plants, fungi, and other non- timber/non-animal products for commercial, recreation, subsistence, research or cultural purposes, or for control reasons
	5.3	Logging and Wood Harvesting	Harvesting trees and other woody vegetation for timber, fiber, or fuel
	5.4	Fishing and Harvesting Aquatic Resources	Harvesting aquatic wild animals or plants for commercial, recreation, subsistence, research, or cultural purposes, or for control/persecution reasons; includes accidental mortality/ bycatch
6 Human Intrusions and Disturbance Threats from human activities that alter, destroy, and disturb habitats and species associated with non-consumptive uses of biological resources	**6.1**	Recreational Activities	People spending time in nature or traveling in vehicles outside of established transport corridors, usually for recreational reasons
	6.2	War, Civil Unrest and Military Exercises	Actions by formal or paramilitary forces without a permanent footprint
	6.3	Work and Other Activities	People spending time in or traveling in natural environments for reasons other than recreation, military activities, or research
7 Natural Systems Modifications Threats from actions that convert or degrade habitat in service of "managing" natural or semi-natural systems, often to improve human welfare	**7.1**	Fire and Fire Suppression	Suppression or increase in fire frequency and/or intensity outside of its natural range of variation
	7.2	Dams and Water Management/ Use	Changing water flow patterns from their natural range of variation either deliberately or as a result of other activities
	7.3	Other Ecosystem Modifications	Other actions that convert or degrade habitat in service of "managing" natural systems to improve human welfare
8 Invasive and Other Problematic Species and Genes Threats from non-native and native plants, animals, pathogens/microbes, or genetic materials that have or are predicted to have harmful effects on biodiversity following their introduction, spread, and/or increase in abundance	**8.1**	Invasive Non-Native/Alien Species	Harmful plants, animals, pathogens and other microbes not originally found within the ecosystem(s) in question and directly or indirectly introduced and spread into it by human activities
	8.2	Problematic Native Species	Harmful plants, animals, or pathogens and other microbes that are originally found within the ecosystem(s) in question, but have become out-of- balance or released directly or indirectly due to human activities
	8.3	Introduced Genetic Material	Human altered or transported organisms or genes

THREAT	SUBTHREAT		DESCRIPTION
9 Pollution Threats from introduction of exotic and/or excess materials or energy from point and non-point sources	**9.1**	Household Sewage and Urban Waste Water	Water-borne sewage and non-point runoff from housing and urban areas that include nutrients, toxic chemicals and/or sediments
	9.2	Industrial and Military Effluents	Water-borne pollutants from industrial and military sources including mining, energy production, and other resource extraction industries that include nutrients, toxic chemicals and/or sediments
	9.3	Agriculture and Forestry Effluents	Water-borne pollutants from agricultural, silvicultural, and aquaculture systems that include nutrients, toxic chemicalsand/or sediments, including the effects of these pollutants on the site where they are applied
	9.4	Garbage and Solid Wastes	Rubbish and other solid materials including those that entangle wildlife
	9.5	Air-borne Pollutants	Atmospheric pollutants from point and non-point sources
	9.6	Excess Energy	Excess Energy- Inputs of heat, sound, or light that disturb wildlife or ecosystems
10 Geologic Events Threats from catastrophic geological events	**10.1**	Volcanoes	Volcanic events
	10.2	Earthquakes/tsunamis	Earthquakes and associated events
	10.3	Avalanches/landslides	Avalanches or landslides
11 Climate Change and Severe Weather Long-term climatic changes and other severe climatic or weather events outside the natural range of variation that could negatively affect a vulnerable species or habitat	**11.1**	Habitat Shifting and Alteration	Major changes in habitat composition and location
	11.2	Droughts	Periods in which rainfall falls below the normal range of variation
	11.3	Temperature Extremes	Periods in which temperatures exceed or go below the normal range of variation
	11.4	Storms and Flooding	Extreme precipitation and/or wind events or major shifts in seasonality of storms

Priority Conservation Actions

For each threat identified as important to priority habitat types and subtypes for SGCN, the Technical Committee developed a comprehensive list of conservation actions that would reduce the effect of the threat. As with the threats, Mississippi has adopted the Conservation Actions recommended by Salafsky (2008). Conservation actions are interventions or priorities undertaken by agencies, landowners, partners and others to reach objectives and ultimately conservation goals. The following is a list and description of the general conservation action categories used for Mississippi's SWAP taken from Salafsky et al. (2008):

Table 6.2: Conservation Action Categories, Descriptions and Examples

Conservation Actions and Categories	Description	Examples
A1. Land and Water Protection Actions to identify, establish, or expand parks and other legally protected areas, and to protect resource rights		
A1.1. Site/area protection	Establishing or protecting public or private parks, reserves, and other areas	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs
A1.2. Resource and habitat protection	Establishing protection or easements of some specific aspect of the resource on public or private lands	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs
A2. Land and Water Management Actions directed at conserving or restoring sites, habitats and the wider environment		
A2.1. Site/area management	Management of protected areas and other resource lands for conservation	Discourage/limit human access in highly critical areas and special habitats, when possible
A2.1. Site/area management	Management of protected areas and other resource lands for conservation	Discourage incompatible recreational uses
A2.2.Invasive/problematic species control	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons
A2.2.Invasive/problematic species control	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Control exotic and invasive species (plant and animal)
A2.2.Invasive/problematic species control	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators
A2.2.Invasive/problematic species control	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Limit/discourage the introduction of propagation of exotic and invasive species. Control/eradicate such species when present
A2.3. Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons
A2.3. Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage and improve management of altered/degraded habitat whenpossible
A2.3. Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Maintain/improve/restore hydrologic and geomorphic integrity
A2.3. Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats
A2.3. Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Monitor/limit commercial/residential/industrial point source erosion and sedimentation or pollution intostreams/atmosphere
A2.3. Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Enhance viability of SGCN by providing habitat corridors between disjunct populations or subpopulations

Conservation Actions and Categories	Description	Examples
A3. Species Management Actions directed at managing or restoring species, focused on the species of concern itself		
A3.1. Species Management	Managing specific plant and animal populations of concern	Plan and conduct additional research on SGCN
A3.1. Species Management	Managing specific plant and animal populations of concern	Monitor/address SGCN harvest/over harvest issues
A3.1. Species Management	Managing specific plant and animal populations of concern	Continue to restrict/monitor scientific collection of SGCN
A3.1. Species Management	Managing specific plant and animal populations of concern	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators
A3.2. Species recovery	Manipulating, enhancing, or restoring specific plant and animal populations, vaccination programs	Develop/implement/continue recovery plans for individual SGCNs
A3.2. Species recovery	Manipulating, enhancing, or restoring specific plant and animal populations, vaccination programs	Initiate propagation program or establish nest box program for selected SGCN
A3.3. Species reintroduction	Reintroducing species to places where they formally occurred or benign introductions	Initiate propagation program or establish nest box program for selected SGCN
A3.4. Ex situ conservation	Protecting biodiversity out of it native habitats (i.e. captive breeding programs)	Initiate propagation program or establish nest box program for selected SGCN
A4. Education and Awareness Actions directed at people to improve understanding and skills, and influence behavior		
A4.1. Formal Education	Enhancing knowledge and skills of students in a formal degree program	Provide public education about the conservation of SGCN and/or their habitats
A4.2. Training	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons
A4.2. Training	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Discourage incompatible forestry practices
A4.2. Training	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Provide public education about the conservation of SGCN and/or their habitats

Conservation Actions and Categories	Description	Examples
A4.3. Awareness and communications	Raising environmental awareness and providing information through various media outlets	Discourage/limit human access in highly critical areas and special habitats, when possible
A4.3. Awareness and communications	Raising environmental awareness and providing information through various media outlets	Discourage incompatible recreational uses
A4.3. Awareness and communications	Raising environmental awareness and providing information through various media outlets	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators
A4.3. Awareness and communications	Raising environmental awareness and providing information through various media outlets	Promote and develop landownerincentive and assistance programs for conservation of SGCN and their habitats
A4.3. Awareness and communications	Raising environmental awareness and providing information through various media outlets	Encourage appreciation of SGCN and their habitats by providing public access and compatible recreational activities
A4.3. Awareness and communications	Raising environmental awareness and providing information through various media outlets	Encourage proper disposal and cleanup of waste and litter
A4.3. Awareness and communications	Raising environmental awareness and providing information through various media outlets	Provide public education about the conservation of SGCN and/or their habitats
A5. Law and Policy Actions to develop, change, influence, and help implement formal legislation, regulations, and voluntary standards		
A5.1. Legislation	Making, implementing, changing, influencing, or providing input into formal government sector legislation or policies at all levels: international, national, state/provincial, local, tribal. Species protection laws, hunting bans	Develop/improve urban/suburbaninfrastructure land use development planning/zoning to address SGCN
A5.1. Legislation	Making, implementing, changing, influencing, or providing input into formal government sector legislation or policies at all levels: international, national, state/provincial, local, tribal. Species protection laws, hunting bans	Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites
A5.2. Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Develop/implement/continue recovery plans for individual SGCNs
A5.2. Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Encourage and improve agricultural/forestry/watershed land-use planning and BMPs toaddress nonpoint pollution, erosion, and water quality issues

Conservation Actions and Categories	Description	Examples
A5.2. Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Develop/improve urban/suburbaninfrastructure land use development planning/zoning to address SGCN
A5.2. Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alterflow, depth, and salt intrusion
A5.3. Private sector standards and codes	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Encourage and improve agricultural/forestry/watershed land-use planning and BMPs toaddress nonpoint pollution, erosion, and water quality issues
A5.3. Private sector standards and codes	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Discourage incompatible forestry practices
A5.4. Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Monitor/limit commercial/residential/industrial point source erosion and sedimentation or pollution into streams/ atmospheres
A5.4. Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites
A5.4. Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Improve environmental review and permit process and oversight and enforcement of existing regulations in important habitats/ populations
A5.4. Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alterflow, depth, and salt intrusion
A5.4. Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Discourage incompatible recreational uses
A5.4. Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Improve enforcement of existing species protection regulations
A5.4. Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Continue to restrict/monitor scientific collection of SGCN
A5.4. Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Encourage proper disposal and cleanup of waste and litter

Conservation Actions and Categories	Description	Examples
A6. Livelihood, Economic, and other Incentives Actions to use economic and other incentives to influence behavior		
A6.1. Linked enterprises and livelihood alternatives	Developing enterprises that directly depend on the maintenance of natural resources or provide substitute livelihoods as a means of changing behaviors and attitudes	Encourage appreciation of SGCN and their habitats by providing public access and compatible recreational activities
A6.2. Substitution	Promoting alternative products and services that substitute for environmentally damaging ones	Discourage incompatible recreational uses
A6.3. Market forces	Using market mechanisms to change behaviors and attitudes	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats
A6.4. Conservation payments	Using direct or indirect payments to change behaviors and attitudes	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs
A6.4. Conservation payments	Using direct or indirect payments to change behaviors and attitudes	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats
A6.5. Non-monetary values	Using intangible values to change behaviors and attitudes	
A7. External Capacity Building Actions to build the infrastructure to do better conservation		
A7.1. Institutional and civil society development	Creating or providing nonfinancial support and capacity building for nonprofits, government agencies, communities, and for-profits	
A7.2. Alliance and partnership development	Forming and facilitating partnerships, alliances, and networks of organizations	
A7.3. Conservation finance	Raising and providing funds for conservation work	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats

Major Threats affecting Mississippi Habitats and Recommended Conservation Actions

Of the threats identified in Salafsky (2008), several affect multiple habitats throughout the state such as **development, climate shifts and severe weather, invasive species, and natural system modifications.**

Development, both urban/suburban and industrial, was identified as a top threat, affecting well over half the sub-habitats. Energy development has become a threat in many states and although it is still new in Mississippi, it is poised to cause issues in the near future. Combined with roads/railways and utility/service lines, development affects just about every habitat in Mississippi. The increasing presence of nonnative/alien species, both plant and animal, also significantly impacts many Mississippi habitats. Other threats are more regional, such as the altered fire regimes, particularly in the Southeastern Plains and Southern Coastal Plain ecoregions. The Intergovernmental Panel on Climate Change (IPCC) has identified climate change and various impacts associated with climate change as threats and the USFWS has instructed that all SWAP documents address these threats. But pervasive threats such as sea level rise, changing weather patterns and the associated habitat losses that come with climate shifts are too pervasive for one agency or even a state to address independently. A robust description and analysis of Mississippi's climate resiliency within a regional context is presented in *Chapter 2: A Regional Perspective for Mississippi*. Natural system modifications such as hydrologic modifications in streams are discussed within the stream drainage descriptions in *Chapter 5: Ecoregions and Habitats of Mississippi.*

The following tables summarize the threats that were ranked by habitat type (Tables 6.3 and 6.4).

Table 6.3 - Total threats ranked for each sub-habitat type, according to Salafsky et al. (2008).

	Salafsky Classification	Salafsky Classification	High	Medium	Low	Total	Weighted Total
1	Residential and Commercial Development	1.1 Housing and Urban Areas	20	24	15	59	123
		1.2 Commercial and Industrial Areas	12	15	18	45	84
		1.3 Tourism and Recreation Areas	5	11	18	34	55
2	Agriculture and Aquaculture	2.1 Annual and Perennial Non-timber Crops	18	4	11	33	73
		2.2 Wood and Pulp Plantations	21	9	8	38	89
		2.3 Livestock Farming and Ranching	5	13	19	37	60
		2.4 Marine and Freshwater Aquaculture	0	0	2	2	2
3	Energy Production and Mining	3.1 Oil and Gas Drilling	16	4	11	31	67
		3.2 Mining and Quarrying	15	13	11	39	82
		3.3 Renewable Energy	5	3	12	20	33
4	Transportation and Service Corridors	4.1 Road and Railroads	10	22	19	51	93
		4.2 Utility and Service Lines	7	7	17	31	52
		4.3 Shipping Lanes	4	3	1	8	19
		4.4 Flight Paths	0	0	0	0	0
5	Biological Resource Use	5.1 Hunting and Collecting of Terrestrial Animals	1	2	9	12	16
		5.2 Gathering Terrestrial Plants	0	13	19	32	45
		5.3 Logging and Wood Harvesting	29	13	3	45	116
		5.4 Fishing and Harvesting Aquatic Resources	12	9	7	28	61

	Salafsky Classification	Salafsky Classification	High	Medium	Low	Total	Weighted Total
6	**Human Intrusions and Disturbance**	6.1 Recreational Activities	14	19	31	64	111
		6.2 War, Civil Unrest and Military Exercises	0	0	0	0	0
		6.3 Work and Other Activities	0	0	1	1	1
7	**Natural Systems Modifications**	7.1 Fire and Fire Suppression	17	3	3	23	60
		7.2 Dams and Water Management/Use	41	4	5	50	136
		7.3 Other Ecosystem Modifications	18	5	10	33	74
8	**Invasive and Other Problematic Species and Genes**	8.1 Invasive Non-Native/Alien Species	56	13	7	76	201
		8.2 Problematic Native Species	12	15	4	31	70
		8.3 Introduced Genetic Material	2	0	3	5	9
9	**Pollution**	9.1 Household Sewage and Urban Waste Water	11	10	9	30	62
		9.2 Industrial and Military Effluents	6	8	7	21	41
		9.3 Agriculture and Forestry Effluents	10	18	15	43	81
		9.4 Garbage and Solid Wastes	4	13	17	34	55
		9.5 Air-borne Pollutants	1	1	12	14	17
		9.6 Excess Energy	0	2	3	5	7
10	**Geologic Events**	10.1 Volcanoes	0	0	0	0	0
		10.2 Earthquakes/tsunamis	0	0	0	0	0
		10.3 Avalanches/landslides	0	0	3	3	3
11	**Climate Change and Severe Weather**	11.1 Habitat Shifting and Alteration	28	2	18	48	106
		11.2 Droughts	20	21	9	50	111
		11.3 Temperature Extremes	11	22	12	45	89
		11.4 Storms and Flooding	29	18	6	53	129

Table 6.4 - Total threats ranked for each sub-habitat type, according to Salafsky et al. (2008), sorted by descending weighted total. Categories 1, 3, and 4 are treated as a Development Group.

	Salafsky Classification	Salafsky Classification	High	Medium	Low	Total	Weighted Total
1	**Residential and Commercial Development**	1.1 Housing and Urban Areas	20	24	15	59	123
		1.2 Commercial and Industrial Areas	12	15	18	45	84
		1.3 Tourism and Recreation Areas	5	11	18	34	55
3	**Energy Production and Mining**	3.1 Oil and Gas Drilling	16	4	11	31	67
		3.2 Mining and Quarrying	15	13	11	39	82
		3.3 Renewable Energy	5	3	12	20	33
4	**Transportation and Service Corridors**	4.1 Road and Railroads	10	22	19	51	93
		4.2 Utility and Service Lines	7	7	17	31	52
		4.3 Shipping Lanes	4	3	1	8	19
		4.4 Flight Paths	0	0	0	0	0
							608
11	**Climate Change and Severe Weather**	11.1 Habitat Shifting and Alteration	28	2	18	48	106
		11.2 Droughts	20	21	9	50	111
		11.3 Temperature Extremes	11	22	12	45	89
		11.4 Storms and Flooding	29	18	6	53	129
							435
8	**Invasive and Other Problematic Species and Genes**	8.1 Invasive Non-Native/Alien Species	56	13	7	76	201
		8.2 Problematic Native Species	12	15	4	31	70
		8.3 Introduced Genetic Material	2	0	3	5	9
							280
7	**Natural Systems Modifications**	7.1 Fire and Fire Suppression	17	3	3	23	60
		7.2 Dams and Water Management/Use	41	4	5	50	136
		7.3 Other Ecosystem Modifications	18	5	10	33	74
							270

	Salafsky Classification	Salafsky Classification	High	Medium	Low	Total	Weighted Total
9	**Pollution**	9.1 Household Sewage and Urban Waste Water	11	10	9	30	62
		9.2 Industrial and Military Effluents	6	8	7	21	41
		9.3 Agriculture and Forestry Effluents	10	18	15	43	81
		9.4 Garbage and Solid Wastes	4	13	17	34	55
		9.5 Air-borne Pollutants	1	1	12	14	17
		9.6 Excess Energy	0	2	3	5	7
							263
5	**Biological Resource Use**	5.1 Hunting and Collecting of Terrestrial Animals	1	2	9	12	16
		5.2 Gathering Terrestrial Plants	0	13	19	32	45
		5.3 Logging and Wood Harvesting	29	13	3	45	116
		5.4 Fishing and Harvesting AquaticResources	12	9	7	28	61
							238
2	**Agriculture and Aquaculture**	2.1 Annual and Perennial Non-timber Crops	18	4	11	33	73
		2.2 Wood and Pulp Plantations	21	9	8	38	89
		2.3 Livestock Farming and Ranching	5	13	19	37	60
		2.4 Marine and Freshwater Aquaculture	0	0	2	2	2
							224
6	**Human Intrusions and Disturbance**	6.1 Recreational Activities	14	19	31	64	111
		6.2 War, Civil Unrest and Military Exercises	0	0	0	0	0
		6.3 Work and Other Activities	0	0	1	1	1
							112
10	**Geologic Events**	10.1 Volcanoes	0	0	0	0	0
		10.2 Earthquakes/tsunamis	0	0	0	0	0
		10.3 Avalanches/landslides	0	0	3	3	3
							3

Invasive Species

Invasive species can be either non-native species introduced through some human interaction, or native species that have invaded an area due to lack of proper management. They are all organisms that are capable of negatively affecting the native biota of an area, directly and/or through modification of the habitat itself. Invasive species can include fungi (e.g., chestnut blight, *Pseudogymnoascus destructans*) and various microorganisms (laurel wilt), as well as plants and animals. Generally, most species categorized as invasives arrived here with human assistance, sometimes on purpose. European Starlings were intentionally introduced in the 1890s; Kudzu was originally introduced as an ornamental plant, then used as erosion control.

Other species found their way into the Southeast US on their own. Red imported fire ants first showed up in the Mobile, Alabama, area sometime during the 1930s or 40s. Although the exact mode of introduction is unknown, like many invasives, it most likely arrived as a stowaway in material imported from South America. Japanese stiltgrass and cogongrass, both highly invasive weeds, arrived as packing material around shipments of a more desirable commodity. Many exotic species have become established via release of animals purchased in the pet trade (such as Burmese pythons in southeastern Florida, and numerous non-native fishes), and of plants purchased in the horticultural trade (e.g., Chinese privet, Chinese tallow tree, cogongrass). There are species that had many modes of introduction: cogongrass was used as packing material, imported for the plant trade, and planted as cattle forage.

Some species, like the Mediterranean gecko and greenhouse frog, are relatively innocuous and present no known significant harm to native animals, plants, or habitats. Others pose significant threats. Species such as wild hogs, escaped from captivity or were, and still are, deliberately introduced for “hunting” opportunities. This practice has serious negative consequences for Mississippi’s native habitats and agricultural enterprises.

Invasive species are most likely to invade when habitats have been disturbed, due to natural perturbations such as fire, hurricanes, or tornadoes or anthropogenic disturbances such as land-clearing, timber harvest, or development. Some invasive species are able to invade intact natural habitats. There are invasive species, like fire ants and Japanese honeysuckle, that have the potential to occur statewide, and in many different habitats. Others may be limited to a certain region of the state, or a particular habitat, such as Chinese privet only occurring in mesic sites.

Impact of Invasive Species in Mississippi

It would be a monumental task to compile a complete list of non-native invasive species currently in Mississippi with invasives running the gamut from fungi to large mammals. The MNHP lists over 600 non-native plants introduced to Mississippi and includes those considered the worst invasive weeds: alligatorweed, Chinese tallow tree, Chinese privet, Cogongrass, Cuban bullrush, Japanese stiltgrass, kudzu and water hyacinth. Some of the most problematic invasive animals in Mississippi include the fire ant, wild hogs, nutria, Asian carp, tilapia, spotted wing drosophila, and zebra mussels. In marine systems along Mississippi shores, Australian spotted jellyfish and lionfish warrant concern. For other invasives, like the emerald ash borer, they have not arrived yet, but inevitably will find their way here. For most invasive species, there is no ‘magic bullet’ to achieve satisfactory control. It is preferable to prevent invasives from arriving to begin with. Once established it may be impossible to eradicate them without causing unacceptable harm to native ecosystems. Just a few of the worst invasives in Mississippi and their impacts on native habitats and species are discussed below.

Most Mississippians have inadvertently stepped in a fire ant mound and felt the painful consequences. What most people probably do not understand is the impact this nearly ubiquitous species might have on other organisms in terrestrial habitats throughout the state. These impacts likely have profound ramifications throughout many terrestrial ecosystems. Fire ants have negatively affected gopher tortoises, northern bobwhite, Florida harvester ants, and other Mississippi SGCN. Efforts to eradicate them through aerial application of poison bait have deleterious consequences on native species of ants and the fire ants bounce back faster than native species. It is important to note that fire ants flourish in forests—such as longleaf pine—where a relatively low stocking density of trees permits ample sunlight to reach the forest floor, facilitating growth of herbaceous plants necessary for species such as tortoises and many game species. Fire ants also flourish in disturbed areas, such as wildlife food plots and along road margins. The same conditions targeted as desirable by wildlife managers in the longleaf/open pine ecosystem actually facilitates fire ant presence. The benefits of management techniques must be weighed against the deleterious effects of disturbance.

Wild hogs (also referred to as wild pigs, wild boar or feral swine) are a non-native invasive species that poses a serious risk to Mississippi’s natural resources. While the introduction of wild hogs to Mississippi can be attributed in part to escaped livestock, the majority almost certainly come from animals released into the wild for the purpose of hunting. Besides damage to agriculture and forest resources, hogs can be substantial predators of ground nesting birds and turtles (eggs and hatchlings), small mammals, salamanders, frogs, crabs, mussels, snakes, and a host of other species. Damage to native plant communities caused by rooting, wallowing and trampling can have severe long term effects on native wildlife habitats. Because of the low mortality rate and high reproductive potential this species can be difficult to eradicate. Most non-lethal means will be cost prohibitive in the long term, leaving lethal methods as the best option. Hunting and trapping are the most practical and widely used option. In an effort to control the spread, it is now illegal in Mississippi to move wild hogs, except for the purposes of slaughter. Cogongrass, like fire ants, arrived on the shores of the US through the Port of Mobile. This is rapidly spreading across Mississippi, by seed or vegetatively. It grows in allelopathic monocultures and out-competes native herbaceous flora and can even damage tree roots. A fire tolerant species, it burns very hot, and may even kill trees like longleaf pine that are generally fire tolerant. This is a species with direct, species by species impacts, and indirect impacts due to its alteration of entire habitats. Like

other invasive species, it thrives in the same open forest conditions wildlife managers seek to achieve in longleaf forests, and to a lesser degree in other habitats. It easily establishes itself in disturbed areas. Once established it is very difficult to eradicate and requires multiple treatments and long-term vigilance.

Of emerging concern is the abundance of fungal pathogens affecting species in many states. *Psuedogymnoascus destructans* (Pd), the fungus that causes White-nose Syndrome (WNS) in bats have devastated cave dwelling bat populations in the Eastern United States, many of which are listed as SGCN in Mississippi. In the winter of 2013- 2014, low levels of the fungus were found at 4 locations in Mississippi. Continued monitoring of bat hibernacula in Mississippi will be critical in catching the disease early and helping to stop its spread throughout the state.



White-nose syndrome has devastated cave dwelling bat populations in the Eastern U.S. *Credit: Katelin Cross*

The Chytrid fungus, *Batrachochytrium dendrobatidis* (Bd), is an aquatic pathogen that seems to be focused on amphibians. The fungus has been identified in numerous frog and salamander species throughout the world and may be responsible for the greatest loss of biodiversity of amphibian species. Amphibians imported for bait or captured from the wild and released in new locations is one of the primary means of spread with Bd. Increased regulations concerning the importation of amphibians, for bait or the pet trade, should be explored to help control the spread of the fungus. In addition, education and communication should stress the dangers of releasing captured amphibians into new locations to help prevent spread.

Snake Fungal Disease (SFD) is a newly emerging disease impacting certain snake populations. Reports of snakes with fungal infections were recorded prior to 2006, but the last few years have seen a great increase in the number of snakes submitted for testing. The fungus *Ophidiomyces ophiodiicola* (Oo) is associated with SFD but hasn't been definitely linked to the disease. Due to the cryptic nature of snakes, population-level impacts of the disease are not yet widely known and are difficult to assess. In the southeast, Tennessee and Florida have confirmed cases of SFD. To date, SFD has not been found in snakes in Mississippi. Increased monitoring of snake species and a standardized method to report suspected cases in Mississippi is needed.

Conservation Actions to address invasive species include:

CONSERVATION ACTION 2: LAND AND WATER MANAGEMENT

- Increase early detection and response to presence of invasive species.
- Coordinate with other agencies, NGO's, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.
- Investigate development of more effective, lower cost control methods.

CONSERVATION ACTION 4: EDUCATION AND AWARENESS

- Increase educational awareness of invasive species and their control.
- Promote the use of native species for landscaping and wildlife habitat.

CONSERVATION ACTION 5: LAW AND POLICY

- Encourage regulatory and legislative response to importation of non-native invasive species.
- Encourage increased control of the transport and release of live non-native wildlife and plants.

CONSERVATION ACTION 6: LIVELIHOOD, ECONOMIC AND OTHER INCENTIVES

- Identify sources of funding for long term control efforts: private and public sources of funding.
- Develop technical assistance, incentive, and cost sharing programs to prevent invasions, control or eradicate existing invasive species, and restore natural disturbance regimes on private lands.

CONSERVATION ACTION 7 EXTERNAL CAPACITY BUILDING

- Forming and facilitating partnerships, alliances and networks with Local, State and Federal Agencies, through Joint Ventures, NGO's (The Nature Conservancy, The Audubon Society, Land Trusts, Mississippi Wildlife Federation, National Wildlife Federation, Wildlife Mississippi, etc.) and private landowners; Providing input to state, regional, and national organizations to help fight invasive species.

Development

MDWFP's SWAP Technical Committee identified the threat of both urban/suburban and industrial development as threats to over half of the sub-habitat types listed. Add to that the threat from second homes/vacation homes, roadways and associated management, utility rights of way, and energy development and just about every habitat in Mississippi is under threat from some type of development. The following table summarizes the overall development threats that are affecting Mississippi's habitats.

Table 6.5 - Development threats ranked for each sub-habitat type, according to Salafsky et al. (2008).

	Salafsky Classification	Salafsky Classification	High	Medium	Low	Total	Weighted Total
1	Residential and Commercial Development	1.1 Housing and Urban Areas	20	24	15	59	123
		1.2 Commercial and Industrial Areas	12	15	18	45	84
		1.3 Tourism and Recreation Areas	5	11	18	34	55
3	Energy Production and Mining	3.1 Oil and Gas Drilling	16	4	11	31	67
		3.2 Mining and Quarrying	15	13	11	39	82
		3.3 Renewable Energy	5	3	12	20	33
4	Transportation and Service Corridors	4.1 Roads and Rail Roads	10	22	19	51	93
		4.2 Utility and Service Lines	7	7	17	31	52
		4.3 Shipping Lanes	4	3	1	8	19
		4.4 Flight Paths	0	0	0	0	0

Urban Sprawl

Urban sprawl is defined as the spreading of development (homes, businesses and associated infrastructure) from cities into nearby undeveloped areas. These areas are characterized by a mix of homes and small businesses within a matrix of forests and agricultural lands. While this sprawl connects urban habitats, it fragments natural areas and could negatively impact natural benefits such as water quality and wildlife resources. Significant urbanization along the Gulf Coast could inhibit the inland migration of coastal wetland habitats and species as sea levels rise (Feagin et al. 2010, Thorne et al. 2012, and Terando et al. 2014).

In addition to the direct impacts of a fragmented landscape, management actions will also be hindered in the urban/wildland interface. Perhaps the best example of this conflict is the use of prescribed fire, such as in longleaf pine ecosystems. Smoke management is just one factor affecting the use of fire near urban areas. Keeping people and property safe is the number one concern during a prescribed burn. Destruction of property from escaped fire or smoke causing an accident will make the public less accepting of prescribed fire as a management tool.

Studies have shown that when a population reaches 45 people per square mile (psm) the probability of a forest functioning properly decreases to 50%. At 150 psm the probability is 0. In Mississippi, parts of several counties reach or exceed this level already (Harrison, Jackson, Hinds, and Lee counties). The most rapid population growth in Mississippi is expected to be near major urban areas. Growth is expected to be highest around Jackson, the Desoto County/



Prescribed fire in pitcher plant bog.
Credit: Heather Sullivan

Memphis area, and from Hattiesburg south to the coast. The fragmentation caused by this growth will reduce biological diversity in these areas, and impact the sustainable production of wildlife by reducing the size of available forests and creating areas incapable of supporting diverse ecological communities.

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Energy Development

Since the discovery of gas and oil in 1903, Mississippi has produced significant quantities of hydrocarbon resources. In 2011, the U.S. Department of Energy ranked Mississippi as 14th in the nation in crude oil production with over 24 million barrels produced yearly. There are over 2,300 producing wells in Mississippi and over 34,000 wells on file. Although Mississippi is a natural gas-producing state, much more natural gas is consumed in Mississippi than is produced. However, Mississippi has more natural gas flowing both into and out of the state than any other state and is fourth in miles of interstate natural gas pipelines.

Alternative and more-renewable forms of energy are pursued as demands for energy increase. The ability to harness energy from alternative sources (e.g. sun, wind, water, biofuel, geothermal sources) can be appealing because it reduces reliance on limited fossil fuel resources. As landscapes become altered to meet changing energy strategies such as solar farms, habitats could become increasingly fragmented or lost. This is a cause for concern as habitat loss and fragmentation are commonly recognized as factors contributing to species declines.

In 2012, The Mississippi Alluvial Plain (MAP) ecoregion was ranked among the top five ecoregions in the United States with the greatest potential for energy development. The MAP was ranked fourth in potential for unconventional oil and gas, and fifth in potential for biofuels. While these forms of energy acquisition are not readily associated with direct mortality (as is the case with wind energy developments), they do still have implications for species conservation. Aside from the previously discussed consequences to habitat, impacts identified in a thorough literature review include: altered space-use patterns (e.g. avoidance, disrupted migration, etc.), decreased survival, altered reproduction, and decreased species richness, diversity, and abundance.

Although ecoregions in Mississippi were not ranked as having the greatest potential for geothermal and solar energy developments, these developments have been proposed or are underway since the first SWAP was published in 2005. Impacts from geothermal and solar energy developments have not been thoroughly assessed in scientific literature. Additional research is required to understand the potential risks they impose on wildlife.

Conservation Actions to Address Development

As the state's population continues to grow, it will be paramount that smart growth planning takes place to ensure the future of Mississippi's habitats and wildlife. The need to pursue more renewable forms of energy is recognized, but "green energy" has the potential to function as a wildlife stressor. As such, requirements to better understand and mitigate the impacts of future energy developments are needed.



Frecklebelly release. *Credit: Robbie Ellwanger*

Conservation Actions following Salafsky et al. (2008) that should be applied to address urban and energy development include:

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Work with existing and new partners and stakeholders (Joint Ventures, National Fish and Wildlife Foundation, non-government organizations, Audubon Society, etc.) to identify areas that should be protected from future development; encourage good land conservation practices, including Priority Conservation.
- Actions from specific habitats, at local levels.
- Encourage comprehensive planning that incorporates land use planning and clearly defines high- priority areas for conservation and restoration, along with areas for development. Encourage land use planners to incorporate wildlife friendly designs in new projects (i.e. wildlife under or overpasses along roadways, bat friendly bridges).
- Promote construction of renewable energy structures within landscapes of low value to wildlife (i.e. placing solar or wind farms on existing disturbed and/or developed lands).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Encourage the use of compatible biofuel production practices, including reduced chemical use, avoidance of monocultures and potentially invasive plant species, and ecologically-informed timing of harvest.

CONSERVATION ACTION 3 SPECIES MANAGEMENT

- Focus on enhancing or restoring populations in other areas to better withstand land use changes from development.
- Conduct studies to investigate and characterize the potential risks imposed on wildlife as a consequence of energy development (wind farm effects on bats and birds, effects of solar farms on the landscape).

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Enhancing knowledge and information exchange through the use of workshops, training courses, or manuals.
- Raise awareness of issues through media sources.

CONSERVATION ACTION 5 LAW AND POLICY

- Develop or help implement regulations or voluntary standards to protect habitats and wildlife.
- Participate in pre-development assessments in order to 1) outline the potential risks imposed on wildlife, and 2) present mitigation strategies to, and suggest best management practices for, energy development operations.
- Provide input into voluntary standards that govern private practice.

CONSERVATION ACTION 7 EXTERNAL CAPACITY BUILDING

- Forming and facilitating partnerships, alliances and networks with local, state and federal agencies, and through existing and new partners such as Joint Ventures, and non-government organizations.

Altered Fire Regime

Fire was an important ecological disturbance that historically shaped many of Mississippi's habitats. Systems such as longleaf pine forests and tallgrass prairies were likely driven by relatively frequent fires. Many other systems, except those prone to frequent flooding or substantial moisture retention, had varying incidences of fire events where topographic position, moisture regime and gradient, and subsequent plant community composition would have influenced fire behavior and effects during any given fire event. Historical evidence shows that fire was a common disturbance regime prior to human settlement, although the frequency and extent of naturally ignited fires varied across land regions. It is presumed that lightning strikes during relatively dry periods were the predominant source of ignition. As human settlement occurred, fire was influenced by anthropogenic forces. At first, human-ignited fires supplemented the incidences of natural fires. The earliest inhabitants utilized fire to manipulate local landscapes to increase or attract game they hunted and to clear areas for agricultural production for subsistence. European settlers continued to use fire to manipulate land and likely increased the scale of deliberate fires to shape land use for subsistence practices of the time.

Over time, changes in land use and management, human population growth and infrastructure development, societal perceptions, and changes in native vegetation composition have resulted in largely fire-excluded landscapes where fire once drove many important ecosystem processes. In modern landscapes, it is difficult to replicate the extent, timing, and frequency of natural fire regimes. As such, prescribed fire (fire set intentionally under prescribed conditions to meet particular management objectives) must be used as feasible to approximate natural fires and manage habitats for specific wildlife benefits. Altered fire regimes, including season and frequency of burns are a significant threat to many of Mississippi's terrestrial habitats.

Plant and Animal Response to Fire

Altered fire regimes lead to a change in habitat composition and structure. As a result, different wildlife species respond in a positive, neutral, or negative manner depending on their habitat requirements. Plants have adaptations to avoiding or promoting fire in the form of leaf litter characteristics (e.g. dry quickly), chemical composition (e.g. volatile oils), physiological traits (e.g. bark thickness, propensity to resprout), and reproductive characteristics (e.g. germination enhanced by exposure to heat or bare soil). Many plants that are adapted to promote fire show positive responses to fire events, although plants vary in their adaptation to the frequency, timing, and severity of fires. Large-scale fire exclusion has led to a shift in many plant communities toward more fire-avoiding plants and a reduction in fire-promoting plants. As a result, wildlife adapted to fire-maintained communities, particularly habitat specialists such as gopher tortoise, black pine snake, or harvester ants, often exhibit population declines or other negative responses as a result of changing plant community composition and structure associated with altered fire regime or fire exclusion. This is also a regional concern and is discussed in more detail in Chapter 2.

Potential Threats and Stresses Associated with Altered Fire Regime Fire Exclusion

Direct exclusion of fire from habitats that were historically fire-dependent results in changes in habitat composition and structure. In general, coverage of shrubs and trees becomes more prevalent, and the ground is heavily shaded and covered in leaf litter when fire is excluded. As a result, ground-layer herbaceous vegetation is often suppressed. Wildlife species that were adapted to habitats shaped by fire are subsequently affected in varying degrees relative to their dependence upon specialized habitat features created by fires. Certain plants may be eliminated or greatly reduced in distribution and abundance due to fire exclusion. Fire exclusion can increase fuel loads within these systems such that if fires are reintroduced after a long period of exclusion, fire intensity and severity may be much greater than if these sites burned more frequently. While periods of fire exclusion may have historically manifested itself in nature (sometimes resulting in massive stand replacement fires), it is difficult to recreate such conditions in the context of modern safety standards for the use of prescribed fire. Conversely, shifts in prevalent plant communities toward fire-avoiding vegetation may result in inability to reintroduce fire due to insufficient fuel without other means to significantly manipulate vegetation back to fire-promoting species. Reintroducing prescribed fire to previously fire-excluded habitats requires careful planning and implementation, and, if necessary, other methods, to develop suitable conditions for future fire management (e.g. mechanical or selective herbicide treatments).

Inappropriate Season and Frequency of Fire

Modern applications of prescribed fire have tended toward "dormant" season burning from late autumn to early spring (October through March). During this time, there is an abundance of dead, readily combustible surface fuels and relative humidity is often low, favoring rapid and efficient rate of fire spread. Soil and ground-layer (fuel) moisture levels are also typically high during this time, which may protect certain perennial plants from fire damage or completely exclude fire from some habitat types. Burning during this time of year avoids disturbance during prime reproductive seasons for many high profile wildlife species (e.g. nesting birds, deer fawns), but it might have negative effects on other wildlife (e.g. herpetofauna). Burning under these moist ground-layer conditions are generally favorable for fuel reduction treatments to slowly reduce heavy fuel loads that may lead to catastrophic fire or tree mortality in forested systems.

The use of prescribed fire during the "growing" season from late spring to early autumn (April through September) has seen increasing interest. Relative humidity and fuel moisture (outside of prolonged dry weather periods) are higher, thereby decreasing flame height and slowing the rate of fire spread and making fire containment potentially easier. The extent of fuel consumption also tends to be less complete, potentially adding to post-fire habitat diversity.



Unburned pitcher plant bog as a result of fire exclusion. *Credit: Heather Sullivan*

Perhaps the greatest disadvantages to growing season burning are higher ambient temperatures are more physically taxing on burn crews and increased smoke volume due to greater fuel moisture that might exacerbate smoke management problems in some areas. Although growing season burning presents certain challenges and disadvantages, applying fire outside of traditional seasons has some advantages. Some plants may be dependent on fire applied outside of winter and spring seasons to persist because of reproductive adaptations or suppression of other plant competitors. These fires may more closely mimic historic, natural fire regimes when natural ignition was more likely to occur and hence create specific habitat composition and structure to which many wildlife species were adapted. From a fire implementation standpoint, extending burn seasons also provides the advantage of a longer window in which to utilize more available days when burning can be conducted within regulatory requirements (e.g. weather parameters, smoke management).

Some researchers suggest fire frequency may supersede the season of fire in accomplishing particular objectives (e.g. suppression of brush, maintenance of desirable ground cover). Even in areas where fire is applied periodically, fire return intervals may be too long to achieve desired results relative to habitat composition and structure. Conversely, fire return intervals could be too frequent to achieve desired results. Although certain plants are adapted to fire, some may require a fire-free interval to reach maturity (e.g. fire-adapted oaks). This might be achieved in different ways, whether by complete or within-stand modifications to fire regime, as overall management objectives dictate.

Thus, in relation to both season and frequency, prescribed fire must be applied in a manner that produces the desired results for plant community and wildlife habitat management objectives. This requires planning, monitoring, and additional research to develop fire management strategies to accomplish objectives. Uniform prescriptions for fire application will not suffice; prescriptions must be tailored to individual site conditions and management objectives.

Firebreaks

Potential stressors associated with firebreaks include disking, pushing, or plowing firebreaks to expose mineral soil in order to contain prescribed fires or wildfires. On some sites, mechanical soil disturbance may introduce or promote establishment of invasive species. Additionally, artificially constructed firebreaks may be a source of soil erosion and sedimentation in down-slope drainages. Other considerations include negative effects on residual vegetation (e.g. soil compaction, root damage) and creation of abrupt edge transitions along firebreaks. These effects must be considered and mitigated as best as possible. Although firebreaks are essential for the application of prescribed fire, best management practices to mitigate these effects may include establishing water bars and non-invasive cover crops to stabilize firebreaks, monitoring and treating invasive species, planning burn units to utilize natural or existing firebreaks to minimize soil disturbance and utilizing other fire containment methods (e.g. wet lines) around sensitive areas.

Soil Effects

Fire effects on soil may be highly variable due to a combination of factors, but relatively low intensity fires in our region generally do not adversely affect soil chemical and physical properties. Potential negative effects on soil properties can be minimized by applying fire when there is adequate soil and surface litter moisture to prevent significant loss of soil humus. Nutrients such as potassium and phosphorus are recycled by burning plant materials, although some nitrogen may be lost to volatilization. Very intense fires may lead to modifications in soil structure that reduce soil porosity and impede infiltration of surface water. These negative impacts can be reduced by careful planning when reintroducing prescribed fires to previously fire- excluded habitats.

Water Quality

The effects of relatively low intensity fires on water quality are generally not adverse unless substantial erosion or nutrient leaching through run-off occurs. Potentially negative impacts can be reduced by careful planning when reintroducing prescribed fires to previously fire-excluded habitats. Other water quality concerns may be considered if fires remove vegetation that shades streams or pools, thereby increasing water temperature that could negatively or positively affect certain aquatic organisms. These may be considered sensitive habitats and warrant site-specific fire exclusion if necessary.

Air Quality

Smoke from fires is typically more of a human health, liability, or nuisance concern. As fire was a natural process in many systems, these effects should generally be neutral aside from human-related conflicts or exacerbations. Conducting prescribed burns within regulatory guidelines for smoke management can alleviate most air quality concerns.

Capacity Limitations

Application of prescribed fire is often dependent on the availability of qualified personnel to conduct prescribed burns. Furthermore, costs associated with prescribed burning may limit its use. These factors constrain private landowners in particular. There is a need to provide additional training to prescribed fire practitioners on application of prescribed fire for wildlife objectives. Furthermore, additional conservation funding should be considered for application of prescribed fire, particularly on private lands where prescribed burning is often conducted using independent contractors.

Conservation Actions to Address Fire Regimen

Much evidence exists indicating most systems in Mississippi had an incidence of fire history. It is difficult to replicate effects of natural fire processes, but wise use of prescribed fire can be used to approximate natural fires to manage plant communities and wildlife habitat. The exclusion of fire from fire-adapted systems is a habitat stressor, but other impacts associated with application of prescribed fire (e.g. establishing firebreaks, invasive species) may introduce other stressors. Research, planning, and monitoring are needed in determining suitable frequency and timing of fire in different habitat types. Application of prescribed fire must be balanced with safety and liability concerns and resource management objectives. All habitat patches cannot meet all the needs of all wildlife species, but microhabitat conditions within patches vary within fire-maintained habitat. Furthermore, microhabitat conditions can sometimes be planned and purposefully managed to meet critical resource needs if necessary (e.g. intentionally excluding fire from some areas for refugia).



Prescribed Fire in Longleaf Pine. *Credit: MMNS*

FIRE

And Why We Need It

The longleaf pine forest and ecosystem is an incredibly important habitat in Mississippi and the Southeast U.S.

In Mississippi, it is home to many threatened and endangered animals including reptiles, amphibians, birds, mammals, and many other taxa. The longleaf pine woodlands and the animals that use it heavily rely on fire and the effects of fire on a relatively frequent basis. Because many natural forests are bisected by roads and manmade fire breaks, prescribed fires are extremely important for the health of the forest. Historically, natural fires would occur from lightning strikes every one to three years. Frequent fire in longleaf pine forests helps maintain a low basal area (fewer trees) and an open grassy understory. The grassy understory is a key habitat component for a variety of species in decline including dusky gopher frog, gopher tortoise, black pinesnake, bobwhite quail, and many others. These species rely on prescribed burns to maintain foraging, dispersal, and shelter in their natural habitat as part of their recovery plan and management. Maintaining a one to three year prescribed fire regime is essential for these species to persist and thrive as they progress towards recovery and in some cases, delisting.

If frequent and regular fire regime is broken the habitat can degrade very quickly. Within a decade of no or suppressed fire, a forest can become unsuitable for animals within it that depend on frequent fire. Without fire, species such as oaks and yaupon that are fast growing will outcompete the grasses crucial to many of the species listed above. Fire suppression is also difficult to reverse. Hardwood trees such as oaks grow quickly and can become fire resistant in less than a decade. Thus, mechanical or chemical treatments are required for habitat restoration instead of or in addition to fire, which can be very expensive and time consuming. Prescribed fire in comparison is cheap, simple, and highly effective when used properly. Prescribed fires and a healthy burn regime are critical for the recovery of our threatened and endangered species as well as the still common species that call Mississippi home.

Conservation Actions following Salafsky et al. (2008) that should be applied to address altered fire regimes include:

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Resource and Habitat Protection: Coordinate with other agencies, NGOs, conservation organizations to establish priority areas for prescribed burns.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Encourage the increased use and acceptance of prescribed fire through increased communications and partnerships.
- Provide prescribed fire training opportunities for private landowners. Focus on training landowners to achieve fire capacity and application at a large scale.
- Educate landowners, school-aged children/youth, adjacent residents, developers, and the general public about the crucial role of prescribed burning in the management of longleaf pine and other ecosystems.

CONSERVATION ACTION 5 LAW AND POLICY

- Support and advocate for the establishment or strengthening of laws, policies, budgets and regulations required to promote and apply prescribed fire in the state.
- Reduce regulatory burden on agencies and private landowners to facilitate active burning.

CONSERVATION ACTION 6 LIVELIHOOD, ECONOMIC, AND OTHER INCENTIVES

- Identify sources of funding to assist landowners in implementing prescribed burns (e.g. Fire on the Forty, EQIP-Farm Bill Program).

CONSERVATION ACTION 7 EXTERNAL CAPACITY BUILDING

- Establish prescribed burning cooperatives to assist in alleviating capacity issues.
- Collaborate with Mississippi Prescribed Fire Council, Southern Fire Exchange, Joint Ventures, and other fire related councils and organizations to develop and disseminate prescribed fire information.
- Collaborate with non-profit organizations in the state (The Nature Conservancy, Audubon, Mississippi Forestry Association, etc.) with established fire programs.
- Increase interagency coordination to address impediments to burning, such as inability to burn across jurisdictional boundaries, inability for NGOs to assist with public burning, agencies not recognizing other certifications.

Climate Resilience

Shifting trends in long-term weather patterns, and the associated ecological consequences of these trends, could increase the challenges and complexities of wildlife conservation, according to the IPCC. In recognition of these challenges, the US House of Representatives mandates inclusion of climate change strategies into SWAP documents. An Executive Order (Executive Order No. 13653) further mandates that federal agencies, including the USFWS, plan and implement actions to enhance and improve the resilience of the nation's natural resources to changing environmental conditions. As such, conservation managers across the nation are tasked with 1) evaluating the current and projected climate-change-related threats to species, and 2) providing plans of action that would help monitor and potentially mitigate the risks of these threats. To address this, we enlisted the assistance of the USGS's Southeast Climate Adaptation Science Center to help describe the climate-related threats affecting Mississippi and how to best address what is possible at the state and local level or in partnership with other states and regional efforts. See Chapter 2 for an analysis of climate impacts. Below is a brief overview and presentation of conservation actions recommended at the state level.

Conservation Challenges: Ecological Consequences of Climate Change

Studies suggest that changes in climate can impact species and the habitats they use. For example, Schummer et. al. (2010) suggests that "In migratory birds, evidence suggests northward latitudinal shifts in distribution during winter for a variety of species in North America." Battaglia et al. (2012) have identified that, in Mississippi, coastal habitats could be under threat from rising sea levels and increasing intensification of tropical storms. Such a scenario could create higher storm surges and threaten the existence of barrier islands, according to the authors.

Changes in species composition, richness, and relative abundance—as well as shifts in distribution—could accompany such shifts in environmental conditions and habitat. Some species, particularly those with specialized habitat requirements (e.g. shorebirds like the Wilson's plover; wetland species like the mottled duck and the Mississippi gopher frog), may face extirpation if the unique habitats on which they rely disappear or become modified at a pace that surpasses the species' abilities to either disperse or adapt.

Altered environmental and seasonal conditions could also trigger a cascade of phenological changes, including changes in patterns and timing of species migrations, reproduction, and seasonally dependent species interactions (Walther et al. 2002; McGowan et al. 2011; Austin and Rehfisch 2005). In changing weather patterns, migration may increase the vulnerability of already at-risk species such as some shorebirds and waterfowl, which depend on weather cues for migration. Under these new stresses, SGCN could become more susceptible to extirpation or extinction as a result of further exposure to current conservation issues including habitat loss/fragmentation, invasive species, and disease.

Conservation Actions to Address Climate Resilience

While it is clear that shifts in climate would impact the flora and fauna of Mississippi, there is uncertainty surrounding the specific conservation issues that will result from climate shifts at the local, state, and regional levels. Due to these uncertainties, the Association of Fish and Wildlife Agencies (AFWA) suggests using adaptive management strategies to address conservation issues related to climate. Adaptive management strategies allow conservation efforts and associated decision-making processes to change through time based on best available knowledge (i.e. climate science data, continued monitoring, evaluation of success, etc.).

One way in which Mississippi can approach an adaptive climate strategy is to first identify a prioritized target for conservation action. Potential targets include specific species (e.g. endangered species or SGCN) but may also include particular communities or ecosystems (e.g. wetlands) and/or ecological processes (e.g. water cycles).

To begin identifying priorities for climate related action, an initial assessment of vulnerability should be undertaken. In other words, it should be determined whether species are likely to be either sensitive or resilient to the stressors likely to accompany or be exacerbated by changes in climate.

The International Union for the Conservation of Nature (IUCN) invited a group of experts from a broad range of taxonomic groups and regions to develop traits that make species susceptible to changes in climate (Foden et al. 2008). The list of over 90 traits was refined and put in five groups to evaluate species vulnerability:

- Does the species require a specialized habitat?
- Is the species only capable of tolerating narrow environmental thresholds, and are those thresholds likely to be exceeded as climate change progresses?
- Does the species rely on specific environmental cues for important phenological processes (i.e. rainfall or temp cues for migration, breeding, hibernation)?
- Does the species have a dependent interaction with another species which may be disrupted under climate change?
- What are the dispersal capabilities of the species?

Objectives of a vulnerability assessment include: 1) determining if a species or a particular group of species would be vulnerable to climate change, 2) describing how exposure to climate change might impact the species and/or its environment, and 3) evaluating the species' ability to adapt or respond to the pressures of climate change. Once targeted species and/or environments have been identified, actual plans of action would then focus on implementing specific methods that would promote and/or enable species and ecosystems to be resilient to change.

The Gulf of America Alliance, released a *Gulf Coast Vulnerability Assessment (GCVA)* in 2015 (Watson et al. 2015) with the USFWS. The goal of the GCVA is to enhance conservation and restoration planning and implementation by providing an understanding of the effects of changing climate, sea level rise, and land use change on Gulf coastal ecosystems and the species that depend on them. The GCVA chose to focus on four ecosystems in the Gulf of Mexico region: Mangroves, Tidal Emergent Marsh, Oyster Reefs, and Barrier Islands. Eleven species associated with these ecosystems were assessed for their vulnerability. Those 11 species are the Roseate Spoonbill, Blue Crab, Clapper Rail, **Mottled Duck**, Spotted Seatrout, Eastern Oyster, **American Oystercatcher**, Red Drum, **Black Skimmer**, **Kemp's Ridley**, and the **Wilson's Plover**. Five of those species (**in bold**) are listed as SGCN in Mississippi.

In Mississippi, tidal emergent marsh was ranked as highly vulnerable, mostly from inundation due to sea level rise, fragmentation, and constraints on range shifts due to urbanization. The Mottled Duck, found along Mississippi's Gulf Coast in emergent marshes was found to be moderately vulnerable. Oyster reefs were found to be moderately vulnerable along the Mississippi, Alabama, and Florida Panhandle coast. The American Oystercatcher was found to be highly vulnerable in Mississippi due to a lack of areas to shift to and the extent of hardened shoreline in the area. Barrier Islands across the entire Mississippi Coast are considered highly vulnerable. The rate of sea level rise and anthropogenic factors will decide the rate of fragmentation or loss. Interruption of the sediment supply will affect the rate of loss unless nourishment projects are undertaken to prevent the islands from disappearing. Black Skimmers, Kemp's Ridley sea turtles and Wilson's Plovers were all ranked as highly vulnerable to climate shifts. Collaborations such as this should be initiated to explore vulnerability of other habitats and SGCN in Mississippi.

National Fish, Wildlife and Plants Climate Adaptation Partnership

The National Fish, Wildlife & Plants Climate Adaptation Strategy (NFWPCAS), developed in 2012 details seven goals to help fish, wildlife, and plants adapt to a changing climate, along with practical actions that can be accomplished, or at least initiated over the next several years. Those goals are:

- Conserve habitat to support healthy wildlife populations and ecosystem functions.
- Manage species and habitats to protect ecosystem functions and provide sustainable use in a changing climate.
- Enhancing the capacity for effective management in a changing climate.
- Support adaptive management through integrated observation and monitoring.
- Increase knowledge and information on impacts and responses to a changing climate.
- Increase awareness and motivate action to safeguard species in a changing climate.
- Reduce non-climate stressors to help species and ecosystems adapt to a changing climate.

Conservation Actions following Salafsky et al. (2008) that should be applied to address climate change include:

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Using the methods outlined above, identify habitats and/or species that are 1) most vulnerable to climate change and 2) most resilient to change. Initiate vulnerability assessments on species and habitats across the state. As new data becomes available, update current vulnerability assessments.
- Working with tribal representatives and stakeholders such as local, state, or federal agencies, Joint Venture Partnerships, NGOs identify and conserve tracts of land that would maintain or restore habitat connectivity (i.e. corridors) and allow for the shifting range of habitats due to climate change.

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Continue implementing actions that address or mitigate non-climate related stressors (i.e. habitat fragmentation/alteration/destruction, invasive species, disease, etc.) that may further increase species' sensitivity to extinction or extirpation;

CONSERVATION ACTION 3 SPECIES MANAGEMENT

- Conduct status and trend monitoring projects to evaluate changes over time and space in wildlife and their associated habitats.
- Use vulnerability and risk assessments to identify species vulnerable to transition under climate change and develop management strategies for adaptation.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Increase awareness of potential impacts of climate change to garner support from landowners, conservation partners, and the general public.
- Inform stakeholders how species can adapt through effective conservation.

CONSERVATION ACTION 6 LIVELIHOOD, ECONOMIC, AND OTHER INCENTIVES

- Encourage the development of markets (i.e. mitigation, carbon trading) while facilitating adaptation.

CONSERVATION ACTION 7 EXTERNAL CAPACITY BUILDING

- Collaborate with other local, state and federal agencies, Joint Venture partnerships, and NGO's develop conservation goals and landscape scale plans to sustain species and ecosystems.
- Foster collaboration among private landowners, local experts, and specialists to share resources and expertise that would not be available to many small landowners.

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CHAPTER 7

Conservation Opportunity Areas

Introduction and Need for COAs

Identification of Conservation Opportunity Areas (COAs) is not a required element but is a recommended SWAP best practice. COAs are large, loosely defined, geographic areas in the state identified as priority areas for implementing conservation actions recommended in SWAP. They may contain priority SGCN habitats, represent areas that have unique habitats (e.g. prairies) within them, but they are composed of many different habitats, or may have been chosen because they have a wide range of SGCN, or include areas that are particularly important to one SGCN.

These priority areas should not be used to exclude conservation actions in other areas of the state. All SGCN and their habitats in Mississippi are important. The COAs were developed to provide direction when resources are limited. Conservation investments in COAs can potentially benefit a wider range of species or priority habitats. COAs can also guide organizations seeking to focus on key areas in Mississippi and are an opportunity to develop partnerships.

In the future iterations of the SWAP, as more information on SGCN and their habitats is known or as resources or priorities change, the COAs may be refined to further support conservation needs of the state's SGCN.

For the 2025 SWAP, the COAs were redrawn with the assistance and guidance of the USFWS staff and their Southeast Conservation Blueprint tool. Below is a description of the approach taken to develop the eight new COAs followed by a description of each COA, a list of threats and actions, SGCN within the COA and potential partners.

Identification of Conservation Opportunity Areas for the 2025 SWAP

The Mississippi COA development process explored multiple data sets to redefine focal areas for the 2025 SWAP. This process was driven by state species data (including SGCN). While influenced by other states' COA development processes in the region, it became a unique and innovative process to narrow in on the most important habitats in Mississippi. The SWAP Technical Committee wanted to account for landscape plans and connections, existing protected lands, habitat risk maps, COAs of neighboring states, and more as complementary data to support the species data. Through the evaluation, the team found the datasets which drive the Southeast Conservation Blueprint captured an overwhelming majority of the priorities which were desired to complement the species data. The data sets included the Mississippi Natural Heritage Database, the Southeast Blueprint and fisheries and mussel data from the MMNS's aquatic database.

Once the datasets were identified, a new process of determining proper data thresholds and filtering the data began. It was imperative to determine the highest priority species data and complementary (Blueprint) data. The team chose to weigh all SGCN species location data on a scale of 1 to 4 which was then summed by Hydrologic Unit Code (HUC). A HUC 12 is the smallest standard watershed unit in the U.S., representing a subwatershed with a 12-digit code within the National Watershed Boundary Dataset (WBD). This system, developed by the USGS and the NRCS, divides large areas into progressively smaller, nested hydrologic units for water resource management and planning. The HUC 12 system provides a detailed framework for understanding and managing the drainage and water quality of local water bodies).The Blueprint was also then broken down and classified on a scale of 0-4. Then the highest priority species HUCS were analyzed in conjunction with the highest priority landscape priorities (Blueprint) resulting in the hubs and connections COA mapping output below. This output is heavily driven by Mississippi SGCN data with only the top 17.1% of the Southeast Blueprint complementing the focal areas.

Eight Conservation Opportunity Areas in Mississippi

The following eight COAs resulted from the MS SWAP team's collaboration with the Southeast Blueprint team. COA descriptions include a map, short geographic description, lists of SGCN and priority habitat subtypes, summary of major regional threats and recommended conservation actions, and a list of potential conservation partners.

- The **Northeast COA** incorporates the Tennessee River, Tombigbee River and Pontotoc Ridge areas of Level 4 ecoregions 65i, 65j, the eastern portion of 65e, the eastern portion of 65b, and 65p (Tombigbee River).
- The **North/Central Hills COA** covers the Level 4 ecoregions 65d north of the 65r ecoregion, 65q, and the western portion of 65e.
- The **Prairie Grasslands COA** includes the Level 4 ecoregions of 65a, the western portion of 65b, and 65r.
- The **Mississippi Alluvial Plain COA** aligns with the Level 3 ecoregion 73.
- The **Loess Bluffs COA** is found in the Level 3 ecoregion 74.
- The **Piney Woods COA** covers the Level 4 ecoregions of 65d south of region 65r, 65f, and 65p (Pascagoula River and Pearl Rivers).
- The **Coastal Flatwoods COA** lies in the Level 3 ecoregion 75.
- The **Mississippi Sound and Barrier Islands COA** is the area from the mainland coastline to 3 nautical miles south of the barrier islands.

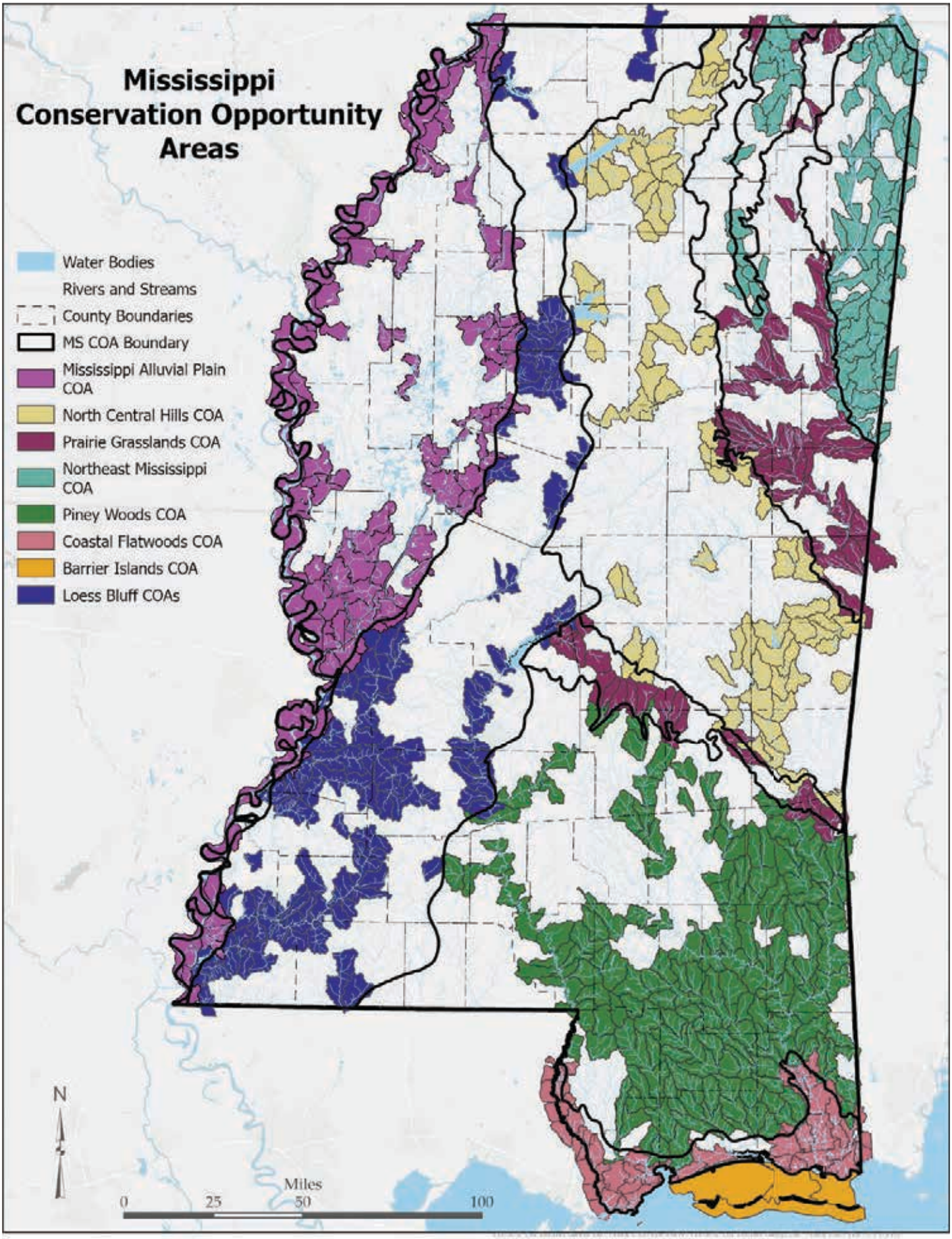


Figure 7.1. Conservation Opportunity Areas in Mississippi.

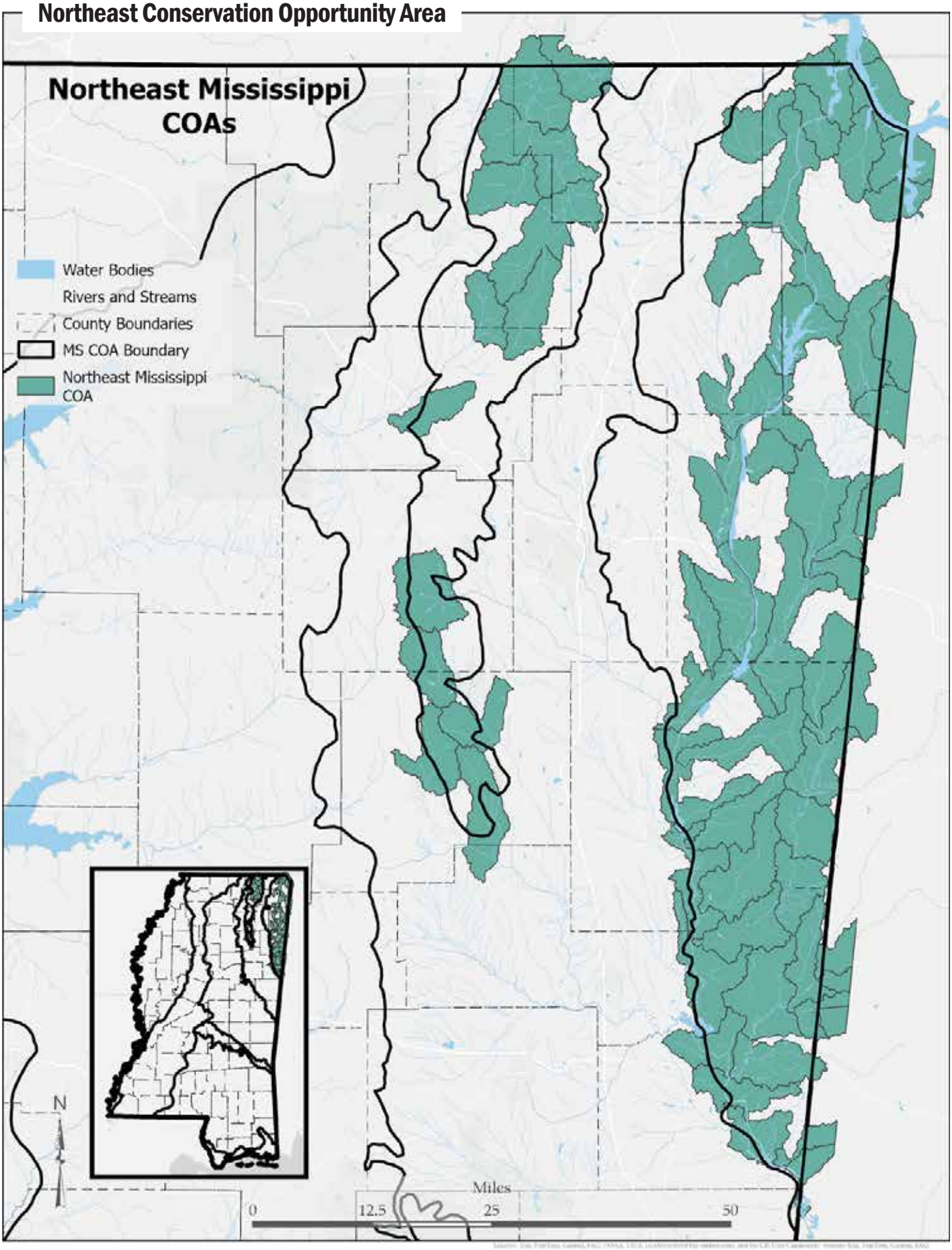


Figure 7.2. Northeast Conservation Opportunity Area



Aquatic survey in Bear Creek. *Credit: Robbie Ellwanger*

The Northeast COA incorporates areas around the Tennessee River and its tributaries, the Tombigbee River and its tributaries, as well as the flatwoods east of the Blackland Prairie ecoregion and the Pontotoc Ridge physiographic region. This COA incorporates all or parts of 17 counties. The Mississippi Forestry Commission's Forest Legacy Program (2020) lists the northeast portion of the state as a designated Forest Legacy Area, and the eastern portion of this FLA is found in the Northeast COA. Sixty-six HUCs in this COA are designated as important to the conservation of SGCN.

CONSERVATION SITES IN THE NORTHEAST COA

- Natchez Trace Parkway
- Tombigbee National Forest (Chickasaw Unit)
- Columbus Air Force Base
- J.P. Coleman State Park
- Tishomingo State Park
- Trace State Park
- Tombigbee State Park
- Lake Lowndes State Park
- Tuscumbia Wildlife Management Area
- Divide Section Wildlife Management Area
- John Bell Williams Wildlife Management Area
- Canal Section Wildlife Management Area
- Lake Monroe
- Elvis Presley Lake
- Lake Lamar Bruce
- Dumas Lake
- Bay Springs Lake
- Plymouth Bluff Nature and Cultural Study Center
- James Creek North and South Wildlife Management Areas
- Buttahatchie River Watershed

There are opportunities to protect land around these conservation sites. Additionally, Bear Creek, Cedar Creek, Cripple Deer Creek, Martin Creek, and their tributaries are of particular interest to SGCN and should be focused upon for conservation.

Table 7.1: Important Habitats in Northeast COA

	Habitat
1	Dry-mesic Upland Forests/Woodlands
2	Mesic Upland Forests
3	Rock Outcrops and Caves
4	Floodplain Forests
5	Swamp Forests
7	Bog and Seepages
8	Prairies and Glades
9	Herbaceous Freshwater Marshes
10	Natural Lakes and Ponds
12	Northeast Mississippi Drainages

Threats

Urban and suburban development, fragmentation, and forest conversion pose a threat to all of the habitats within this COA. Channel modifications and sand/gravel mining are impacting the streams and rivers, and the SGCN within them. Sedimentation in Bear Creek is particularly harmful to SGCN. Multiple invasive species are an issue in this COA, with two of the worst plant invaders being kudzu and Chinese privet. Others include wild hogs, fire ants, Asian carp, exotic mussels, and numerous aquatic invasives. For a more complete list of threats refer to specific habitats listed above in Chapter 5.

Priority Conservation Actions

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Encourage and improve agriculture/forestry/land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.
- Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs.
- Limit/discourage the introduction or propagation of exotic and invasive species (plant and animal).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Coordinate with other agencies, NGOs, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Educate landowners on the benefits of maintaining a diverse, healthy forest using sound practices.
- Develop informational materials promoting the optimal conditions and management needs of habitats.
- Encourage the increased use and acceptance of prescribed fire through increased communications and partnerships.
- Provide prescribed fire training opportunities for private landowners. Focus on training landowners to achieve fire capacity and application at a large scale.

Table 7.2. Northeast COA Species of Greatest Conservation Need.

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Crayfishes	*Cambarus girardianus*	Tanback Crayfish	p
2	Crayfishes	*Cambarus rusticiformis*	Depression Crayfish	p
3	Crayfishes	*Faxonius erichsonianus*	Reticulate Crayfish	p
4	Crayfishes	*Faxonius etnieri*	Ets Crayfish	p
2	Crayfishes	*Faxonius placidus*	Bigclaw Crayfish	p
2	Crayfishes	*Faxonius validus*	Powerful Crayfish	p
1	Crayfishes	*Faxonius wrighti*	Hardin Crayfish	p
2	Crayfishes	*Faxonius yanahlindus*	Spinywrist Crayfish	p
3	Crayfishes	*Lacunicambarus dalyae*	Jewel Mudbug	p
3	Crayfishes	*Procambarus ablusus*	Hatchie River Crayfish	p
3	Insects	*Aeshna umbrosa*	Shadow Darner	p
4	Insects	*Agarodes libalis*	Spring-loving Psiloneuran Caddisfly	?
4	Insects	*Allocapnia polemistis*	Black Warrior Snowfly	p
4	Insects	*Amblyscirtes alternata*	Least Florida Skipper	?
3	Insects	*Amphiagrion saucium*	Eastern Red Damsel	p
4	Insects	*Bagisara brouana*	A Noctuid Moth	p
2	Insects	*Bombus fraternus*	Southern Plains Bumble Bee	?
3	Insects	*Bombus pensylvanicus*	American Bumblebee	p
4	Insects	*Catocala delilah*	Delilah Underwing	?

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Insects	*Ceraclea spongillovorax*	A Caddisfly	?
4	Insects	*Cicindela marginipennis*	Cobblestone Tiger Beetle	p
3	Insects	*Cordulegaster bilineata*	Brown Spiketail	?
4	Insects	*Erynnis martialis*	Mottled Dusky Wing	p
4	Insects	*Hydroptila poirrieri*	A Caddisfly	p
1	Insects	*Neonympha mitchellii*	Mitchell's Satyr	p
3	Insects	*Neurocordulia yamaskanensis*	Stygian Shadowdragon	p
2	Insects	*Paracymus seclusus*	Seclusive Water Scavenger Beetle	p
3	Insects	*Somatochlora provocans*	Treetop Emerald	p
4	Insects	*Speyeria diana*	Diana	p
3	Insects	*Stylogomphus albistylus*	Eastern Least Clubtail	p
3	Insects	*Tachopteryx thoreyi*	Gray Petaltail	p
3	Mussels	*Utterbackiana hartfieldorum*	Cypress Floater	p
2	Mussels	*Arcidens confragosus*	Rock Pocketbook	p
2	Mussels	*Cyclonaias tuberculata*	Purple Wartyback	p
2	Mussels	*Ellipsaria lineolata*	Butterfly	p
1	Mussels	*Elliptio arca*	Alabama Spike	p
1	Mussels	*Elliptio arctata*	Delicate Spike	p
2	Mussels	*Eurynia dilatata*	Spike	p
1	Mussels	*Epioblasma brevidens*	Cumberlandian Combshell	p
1	Mussels	*Epioblasma penita*	Southern Combshell	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Mussels	*Epioblasma triquetra*	Snuffbox	e
1	Mussels	*Pleuronaia barnesiana*	Tennessee Pigtoe	e
2	Mussels	*Lampsilis fasciola*	Wavy-rayed Lampmussel	p
2	Mussels	*Lampsilis ovata*	Pocketbook	p
1	Mussels	*Hamiota perovalis*	Orange-nacre Mucket	p
2	Mussels	*Lasmigona alabamensis*	Alabama Heelsplitter	p
3	Mussels	*Lasmigona complanata*	White Heelsplitter	p
2	Mussels	*Lasmigona costata*	Flutedshell	p
1	Mussels	*Pleuronaia dolabelloides*	Slabside Pearlymussel	p
1	Mussels	*Ligumia recta*	Black Sandshell	p
1	Mussels	*Medionidus acutissimus*	Alabama Moccasinshell	p
2	Mussels	*Obovaria arkansasensis*	Southern Hickorynut	p
4	Mussels	*Pleurobema curtum*	Black Clubshell	e
1	Mussels	*Pleurobema perovatum*	Ovate Clubshell	p
4	Mussels	*Pleurobema taitianum*	Heavy Pigtoe	e
1	Mussels	*Pleurobema decisum*	Southern Clubshell	p
3	Mussels	*Potamilus alatus*	Pink Heelsplitter	p
1	Mussels	*Potamilus inflatus*	Inflated Heelsplitter	p
2	Mussels	*Ptychobranchus fasciolaris*	Kidneyshell	p
2	Mussels	*Quadrula rumphiana*	Ridged Mapleleaf	p
3	Mussels	*Quadrula nobilis*	Gulf Mapleleaf	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Mussels	*Theliderma metanevra*	Monkeyface	e
2	Mussels	*Strophitus undulatus*	Creeper	p
1	Mussels	*Strophitus radiatus*	Rayed Creekshell	p
1	Mussels	*Obovaria unicolor*	Alabama Hickorynut	p
1	Snails	*Lithasia lima*	Warty Rocksnail	p
3	Amphibians	*Ambystoma texanum*	Smallmouth Salamander	p
2	Amphibians	*Aneides aeneus*	Green Salamander	p
1	Amphibians	*Cryptobranchus alleganiensis*	Hellbender	p
2	Amphibians	*Eurycea longicauda longicauda*	Longtail Salamander	p
2	Amphibians	*Eurycea lucifuga*	Cave Salamander	p
2	Amphibians	*Gyrinophilus porphyriticus*	Spring Salamander	p
2	Amphibians	*Hemidactylium scutatum*	Four-toed Salamander	p
2	Amphibians	*Lithobates areolata*	Crawfish Frog	p
4	Amphibians	*Necturus maculosus*	Common Mudpuppy	p
2	Amphibians	*Plethodon ventralis*	Southern Zigzag Salamander	p
4	Amphibians	*Pseudacris collinsorum*	Collinses' Mountain Chorus Frog	p
3	Amphibians	*Pseudotriton ruber*	Red Salamander	p
2	Birds	*Accipiter striatus*	Sharp-shinned Hawk (breeding population)	p
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow	p
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow	p
3	Birds	*Anas acuta*	Northern Pintail	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow	p
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will	p
2	Birds	*Aquila chrysaetos*	Golden Eagle	p
3	Birds	*Asio flammeus*	Short-eared Owl	p
2	Birds	*Aythya affinis*	Lesser Scaup	p
2	Birds	*Botaurus lentiginosus*	American Bittern	p
3	Birds	*Calidris melanotos*	Pectoral Sandpiper	p
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper	p
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper	p
1	Birds	*Centronyx henslowii*	Henslow's Sparrow	p
2	Birds	*Chaetura pelagica*	Chimney Swift	p
3	Birds	*Chlidonias niger*	Black Tern	p
3	Birds	*Chordeiles minor*	Common Nighthawk	p
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo	p
2	Birds	*Colinus virginianus*	Northern Bobwhite	p
3	Birds	*Columbina passerina*	Common Ground Dove	p
2	Birds	*Coturnicops noveboracensis*	Yellow Rail	p
2	Birds	*Egretta caerulea*	Little Blue Heron	p
3	Birds	*Egretta tricolor*	Tricolored Heron	p
1	Birds	*Elanoides forficatus*	Swallow-tailed Kite	p
2	Birds	*Euphagus carolinus*	Rusty Blackbird	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Birds	*Geothlypis formosa*	Kentucky Warbler	p
2	Birds	*Helmitheros vermivorum*	Worm-eating Warbler	p
2	Birds	*Hylocichla mustelina*	Wood Thrush	p
2	Birds	*Ixobrychus exilis*	Least Bittern	p
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	p
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	p
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher	p
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler	p
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	p
1	Birds	*Mycteria americana*	Wood Stork	p
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron	p
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron	p
2	Birds	*Parkesia motacilla*	Louisiana Waterthrush	p
2	Birds	*Passerina ciris*	Painted Bunting	p
2	Birds	*Peucaea aestivalis*	Bachman's Sparrow	p
3	Birds	*Piranga olivacea*	Scarlet Tanager (breeding population)	p
1	Birds	*Platalea ajaja*	Roseate Spoonbill	p
3	Birds	*Pluvialis dominica*	American Golden-Plover	p
3	Birds	*Porphyrio martinicus*	Purple Gallinule	p
2	Birds	*Protonotaria citrea*	Prothonotary Warbler	p
3	Birds	*Quiscalus quiscula*	Common Grackle	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Birds	*Rallus elegans*	King Rail	p
3	Birds	*Scolopax minor*	American Woodcock	p
2	Birds	*Seiurus aurocapilla*	Ovenbird (breeding population)	p
2	Birds	*Setophaga cerulea*	Cerulean Warbler	p
2	Birds	*Setophaga discolor*	Prairie Warbler	p
3	Birds	*Sitta pusilla*	Brown-headed Nuthatch	p
3	Birds	*Spizella pusilla*	Field Sparrow	p
3	Birds	*Sturnella magna*	Eastern Meadowlark	p
1	Birds	*Thryomanes bewickii*	Bewick's Wren	p
3	Birds	*Tringa flavipes*	Lesser Yellowlegs	p
1	Birds	*Vermivora chrysoptera*	Golden-winged Warbler	p
2	Birds	*Vireo gilvus*	Warbling Vireo	p
3	Fishes	*Ichthyomyzon castaneus*	Chestnut Lamprey	p
2	Fishes	*Lethenteron appendix*	American Brook Lamprey	p
2	Fishes	*Acipenser fulvescens*	Lake Sturgeon	p
4	Fishes	*Scaphirhynchus suttkusi*	Alabama Sturgeon	e
4	Fishes	*Anguilla rostrata*	American Eel	p
1	Fishes	*Alosa alabamae*	Alabama Shad	e
4	Fishes	*Alosa chrysochloris*	Skipjack Herring	p
3	Fishes	*Hybopsis amnis*	Pallid Shiner	p
3	Fishes	*Miniellus boops*	Bigeye Shiner	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Fishes	*Alburnops candidus*	Silverside Shiner	p
1	Fishes	*Alburnops edwardraneyi*	Fluvial Shiner	p
3	Fishes	*Notropis micropteryx*	Highland Shiner	p
4	Fishes	*Phenacobius mirabilis*	Suckermouth Minnow	e
2	Fishes	*Chrosomus erythrogaster*	Southern Redbelly Dace	p
2	Fishes	*Rhinichthys obtusus*	Blacknose Dace	p
3	Fishes	*Cyprinella callistia*	Alabama Shiner	p
2	Fishes	*Cyprinella galactura*	Whitetail Shiner	p
3	Fishes	*Cyprinella spiloptera*	Spotfin Shiner	p
3	Fishes	*Cyprinella whipplei*	Steelcolor Shiner	p
3	Fishes	*Lythrurus fasciolaris*	Scarlet Shiner	p
4	Fishes	*Catostomus commersonii*	White Sucker	e
3	Fishes	*Cycleptus meridionalis*	Southeastern Blue Sucker	p
2	Fishes	*Moxostoma anisurum*	Silver Redhorse	p
3	Fishes	*Moxostoma carinatum*	River Redhorse	p
3	Fishes	*Moxostoma duquesnei*	Black Redhorse	p
2	Fishes	*Moxostoma breviceps*	Smallmouth Redhorse	p
3	Fishes	*Noturus munitus*	Frecklebelly Madtom	p
4	Fishes	*Noturus exilis*	Slender Madtom	p
1	Fishes	*Noturus gladiator*	Piebald Madtom	p
3	Fishes	*Fundulus dispar*	Northern Starhead Topminnow	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Fishes	*Fundulus blairae*	Western Starhead Topminnow	p
2	Fishes	*Ambloplites rupestris*	Rock Bass	p
3	Fishes	*Etheostoma blennioides*	Greenside Darter	p
3	Fishes	*Etheostoma duryi*	Black Darter	p
3	Fishes	*Etheostoma flabellare*	Fantail Darter	p
3	Fishes	*Etheostoma jessiae*	Blueside Darter	p
3	Fishes	*Etheostoma kennicotti*	Stripetail Darter	p
3	Fishes	*Nothonotus rufilineatus*	Redline Darter	p
3	Fishes	*Etheostoma rupestre*	Rock Darter	p
2	Fishes	*Etheostoma simoterum*	Snubnose Darter	p
2	Fishes	*Etheostoma zonifer*	Backwater Darter	p
2	Fishes	*Etheostoma nigripinne*	Blackfin Darter	p
3	Fishes	*Etheostoma lachneri*	Tombigbee Darter	p
2	Fishes	*Percina evides*	Gilt Darter	p
1	Fishes	*Percina lenticula*	Freckled Darter	p
2	Fishes	*Percina phoxocephala*	Slenderhead Darter	p
3	Fishes	*Percina kathae*	Mobile Logperch	p
3	Mammals	*Lasiurus cinereus*	Hoary Bat	p
2	Mammals	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	p
3	Mammals	*Lasionycteris noctivagans*	Silver-haired Bat	p
3	Mammals	*Myotis austroriparius*	Southeastern Myotis	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Mammals	*Myotis grisescens*	Gray Bat	p
1	Mammals	*Myotis septentrionalis*	Northern Long-eared Bat	p
1	Mammals	*Myotis sodalis*	Indiana Bat	p
3	Mammals	*Neogale frenata*	Long-tailed Weasel	p
2	Mammals	*Perimyotis subflavus*	Tricolored Bat	p
2	Mammals	*Sorex longirostris*	Southeastern Shrew	p
1	Mammals	*Spilogale putorius*	Eastern Spotted Skunk	p
2	Mammals	*Ursus americanus*	Black Bear	p
1	Mammals	*Ursus americanus lutelous*	Louisiana Black Bear	p
2	Mammals	*Zapus hudsonius*	Meadow Jumping Mouse	p
3	Reptiles	*Coluber flagellum flagellum*	Eastern Coachwhip	p
4	Reptiles	*Deirochelys reticularia reticularia*	Eastern Chicken Turtle	?
2	Reptiles	*Graptemys geographica*	Northern Map Turtle	p
3	Reptiles	*Graptemys nigrinoda*	Black-knobbed Map Turtle	p
1	Reptiles	*Graptemys pulchra*	Alabama Map Turtle	p
2	Reptiles	*Lampropeltis calligaster calligaster*	Prairie Kingsnake	p
2	Reptiles	*Lampropeltis triangulum*	Red Milk Snake	p
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle	p
2	Reptiles	*Ophisaurus attenuatus*	Slender Glass Lizard	p
4	Reptiles	*Pituophis melanoleucus melanoleucus*	Northern Pine Snake	e
2	Reptiles	*Regina septemvittata*	Queen Snake	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Nonvascular	*Anthoceros punctatus*	a hornwort	p
1	Plants - Nonvascular	*Cryphaea ravenelii*	Ravenel's Cryphaea Moss	p
2	Plants - Nonvascular	*Cylindrocolea rhizantha*	a liverwort	p
2	Plants - Nonvascular	*Fissidens amoenus*	Hall's Fissidens Moss	p
3	Plants - Nonvascular	*Orthotrichum exiguum*	Small Wood-bark Moss	p
1	Plants - Nonvascular	*Plagiochila virginica* var. *virginica*	a liverwort	p
1	Plants - Nonvascular	*Rhodobryum roseum*	Rose Moss	p
1	Plants - Nonvascular	*Sphaerosporoceros adscendens*	a hornwort	p
2	Plants - Vascular	*Actaea racemosa*	Black Bugbane	p
3	Plants - Vascular	*Aesculus glabra* var. *glabra*	Ohio Buckeye	p
3	Plants - Vascular	*Agalinis oligophylla*	Ridge-stem False-foxglove	p
2	Plants - Vascular	*Andropogon tracyi*	Tracy's Bluestem	p
2	Plants - Vascular	*Anemone quinquefolia*	Wood Anemone	p
1	Plants - Vascular	*Apios priceana*	Price's Potato-bean	p
1	Plants - Vascular	*Aplectrum hyemale*	Puttyroot	p
1	Plants - Vascular	*Aquilegia canadensis*	Wild Columbine	p
2	Plants - Vascular	*Aralia racemosa*	American Spikenard	p
2	Plants - Vascular	*Arnoglossum reniforme*	Great Indian-plantain	p
1	Plants - Vascular	*Asplenium pinnatifidum*	Lobed Spleenwort	p
1	Plants - Vascular	*Asplenium resiliens*	Black-stem Spleenwort	p
1	Plants - Vascular	*Asplenium rhizophyllum*	Walking-fern Spleenwort	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Asplenium trichomanes*	Maidenhair Spleenwort	p
1	Plants - Vascular	*Asplenium x kentuckiense*	Kentucky Spleenwort	p
2	Plants - Vascular	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch	p
3	Plants - Vascular	*Borodinia canadensis*	Sicklepod	p
2	Plants - Vascular	*Camassia scilloides*	Wild Hyacinth	p
3	Plants - Vascular	*Cardamine angustata*	Slender Toothwort	p
3	Plants - Vascular	*Cardamine diphylla*	Two-leaf Toothwort	p
1	Plants - Vascular	*Carex albursina*	White Bear Sedge	p
1	Plants - Vascular	*Carex bullata* var. *greenei*	Button Sedge	p
1	Plants - Vascular	*Carex communis*	Fibrous-root Sedge	p
3	Plants - Vascular	*Carex gravida*	Heavy-fruited Sedge	p
3	Plants - Vascular	*Carex grayi*	Asa Gray's Sedge	p
1	Plants - Vascular	*Carex grisea*	Inflated Narrowleaf Sedge	p
3	Plants - Vascular	*Carex jamesii*	Nebraska Sedge	p
1	Plants - Vascular	*Carex laxiflora*	Broad Loose-flower Sedge	p
3	Plants - Vascular	*Carex mitchelliana*	Mitchell's Sedge	p
1	Plants - Vascular	*Carex normalis*	Greater Straw Sedge	p
1	Plants - Vascular	*Carex oligocarpa*	Eastern Few-fruit Sedge	p
2	Plants - Vascular	*Carex prasina*	Drooping Sedge	p
3	Plants - Vascular	*Carex radiata*	Stellate Sedge	p
3	Plants - Vascular	*Carex reznicekii*	Reznicek's Sedge	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Carex seorsa*	Weak Stellate Sedge	p
2	Plants - Vascular	*Carex superata*	Limestone Forest Sedge	p
2	Plants - Vascular	*Carex torta*	Twisted Sedge	p
1	Plants - Vascular	*Carex virescens*	Ribbed Sedge	p
2	Plants - Vascular	*Carya laciniosa*	Big Shellbark Hickory	p
1	Plants - Vascular	*Castanea dentata (nut-bearing only)*	American Chestnut	p
1	Plants - Vascular	*Chelone lyonii*	Pink Turtlehead	p
4	Plants - Vascular	*Chelone obliqua* var. *obliqua*	Red Turtlehead	e
3	Plants - Vascular	*Chimaphila maculata*	Spotted Wintergreen	p
3	Plants - Vascular	*Cladrastis kentukea*	Yellowwood	p
1	Plants - Vascular	*Cleistesiopsis bifaria*	Appalachian Small Spreading Pogonia	p
3	Plants - Vascular	*Clematis subreticulata*	Alabama Leatherflower	p
1	Plants - Vascular	*Coelorachis cylindrica*	Pitted Jointgrass	p
1	Plants - Vascular	*Conopholis americana*	American Cancer-root	p
2	Plants - Vascular	*Convolvulus catesbyanus*	Catesby's Bindweed	p
1	Plants - Vascular	*Crataegus ashei*	Ashe's Hawthorn	p
2	Plants - Vascular	*Crataegus triflora*	Three-flowered Hawthorn	p
2	Plants - Vascular	*Cunila origanoides*	Common Dittany	p
1	Plants - Vascular	*Cyperus refractus*	Reflexed Flatsedge	p
3	Plants - Vascular	*Decodon verticillatus*	Hairy Swamp Loosestrife	p
3	Plants - Vascular	*Delphinium tricorne*	Dwarf Larkspur	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Deparia acrostichoides*	Silvery Spleenwort	p
1	Plants - Vascular	*Desmodium ochroleucum*	Creamflower Tick-trefoil	p
2	Plants - Vascular	*Dicentra cucullaria*	Dutchman's Breeches	p
2	Plants - Vascular	*Diphasiastrum digitatum*	Fan Club-moss	p
2	Plants - Vascular	*Dirca palustris*	Eastern Leatherwood	p
1	Plants - Vascular	*Echinodorus berteroi*	Upright Burhead	p
1	Plants - Vascular	*Eleocharis atropurpurea*	Purple Spikerush	p
1	Plants - Vascular	*Eleocharis coloradoensis*	Dwarf Spikerush	p
2	Plants - Vascular	*Eleocharis elliptica*	Slender Spikerush	p
1	Plants - Vascular	*Eleocharis parvula*	Small Spikerush	p
2	Plants - Vascular	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	p
1	Plants - Vascular	*Enemion biternatum*	False Rue-anemone	p
2	Plants - Vascular	*Erigenia bulbosa*	Harbinger-of-Spring	p
2	Plants - Vascular	*Erythronium albidum*	White Trout-lily	p
3	Plants - Vascular	*Erythronium americanum* ssp. *harperi*	Yellow Trout-lily	p
2	Plants - Vascular	*Fraxinus quadrangulata*	Blue Ash	p
1	Plants - Vascular	*Galearis spectabilis*	Showy Orchis	p
2	Plants - Vascular	*Goodyera pubescens*	Downy Rattlesnake-plantain	p
1	Plants - Vascular	*Gratiola floridana*	Florida Hedge-hyssop	p
3	Plants - Vascular	*Gymnocladus dioicus*	Kentucky Coffeetree	p
2	Plants - Vascular	*Helianthus decapetalus*	Thinleaf Sunflower	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Hepatica acutiloba*	Sharp-lobed Hepatica	p
2	Plants - Vascular	*Heuchera macrorhiza*	Giant Alumroot	p
1	Plants - Vascular	*Heuchera parviflora*	Little-flower Alumroot	p
3	Plants - Vascular	*Hexalectris spicata*	Crested Coralroot	p
2	Plants - Vascular	*Hexastylis harperi*	Large-flowered Heartleaf	p
1	Plants - Vascular	*Hydrophyllum appendiculatum*	Appendage Waterleaf	p
1	Plants - Vascular	*Hydrophyllum macrophyllum*	Large-leaf Water-leaf	p
3	Plants - Vascular	*Iris brevicaulis*	Lamance Iris	p
3	Plants - Vascular	*Isoetes appalachiana*	Appalachian Quillwort	p
2	Plants - Vascular	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort	p
2	Plants - Vascular	*Isoetes valida*	Strong Quillwort	p
2	Plants - Vascular	*Juglans cinerea*	Butternut	p
2	Plants - Vascular	*Ligusticum canadense*	Nondo Lovage	p
3	Plants - Vascular	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	p
1	Plants - Vascular	*Lilium michiganense*	Michigan Lily	p
3	Plants - Vascular	*Marshallia trinervia*	Broadleaf Barbara's-buttons	p
3	Plants - Vascular	*Matelea obliqua*	Climbing Milkweed	p
1	Plants - Vascular	*Mertensia virginica*	Virginia Bluebells	p
2	Plants - Vascular	*Mimulus ringens* var. *ringens*	Square-stem Monkeyflower	p
2	Plants - Vascular	*Mirabilis albida*	Pale Umbrella-wort	p
3	Plants - Vascular	*Muhlenbergia sylvatica*	Woodland Muhly	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Muhlenbergia tenuiflora*	Slender Muhly	p
2	Plants - Vascular	*Myriopteris lanosa*	Hairy Lipfern	p
2	Plants - Vascular	*Nabalus asper*	Rough Rattlesnake-root	p
1	Plants - Vascular	*Nabalus barbatus*	Barbed Rattlesnake-root	p
2	Plants - Vascular	*Nemastylis geminiflora*	Prairie Pleatleaf	p
1	Plants - Vascular	*Neviusia alabamensis*	Alabama Snow-wreath	p
3	Plants - Vascular	*Oenothera grandiflora*	Large-flowered Evening-primrose	p
4	Plants - Vascular	*Oenothera heterophylla* ssp. *orientalis*	Alabama Evening-primrose	p
3	Plants - Vascular	*Oenothera triloba*	Stemless Evening-primrose	p
2	Plants - Vascular	*Orthochilus ecristatus*	Giant Orchid	p
2	Plants - Vascular	*Packera aurea*	Golden Groundsel	p
3	Plants - Vascular	*Panax quinquefolius*	American Ginseng	p
2	Plants - Vascular	*Pellaea atropurpurea*	Purple-stem Cliff-brake	p
3	Plants - Vascular	*Penstemon canescens*	Gray Beardtongue	p
2	Plants - Vascular	*Perideridia americana*	Eastern Eulophus	p
2	Plants - Vascular	*Phacelia bipinnatifida*	Fernleaf Phacelia	p
2	Plants - Vascular	*Phacelia purshii*	Miami-mist	p
3	Plants - Vascular	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed	p
1	Plants - Vascular	*Philadelphus hirsutus*	Streambank Mock-orange	p
3	Plants - Vascular	*Philadelphus inodorus*	Scentless Mock Orange	p
3	Plants - Vascular	*Pinus virginiana*	Virginia Pine	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Platanthera integrilabia*	White Fringeless Orchid	p
3	Plants - Vascular	*Platanthera peramoena*	Purple Fringless Orchid	p
2	Plants - Vascular	*Senega ambigua*	Whorled Milkwort	p
2	Plants - Vascular	*Senega curtissii*	Curtiss' Milkwort	p
2	Plants - Vascular	*Polygonella americana*	Southern Jointweed	p
3	Plants - Vascular	*Ponthieva racemosa*	Shadow-witch Orchid	p
2	Plants - Vascular	*Primula meadia*	Shootingstar	p
3	Plants - Vascular	*Quercus austrina*	Bluff Oak	p
2	Plants - Vascular	*Ranunculus septentrionalis*	Carolina Buttercup	p
2	Plants - Vascular	*Rhododendron alabamense*	Alabama Rhododendron	p
2	Plants - Vascular	*Rhododendron arborescens*	Smooth Azalea	p
2	Plants - Vascular	*Rhododendron periclymenoides*	Pink Azalea	p
2	Plants - Vascular	*Rhynchosia latifolia*	Prairie Rhynchosia	p
3	Plants - Vascular	*Sabatia campestris*	Prairie Pink	p
2	Plants - Vascular	*Sabulina patula*	Pitcher's Stitchwort	p
2	Plants - Vascular	*Salix caroliniana*	Carolina Willow	p
2	Plants - Vascular	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	p
2	Plants - Vascular	*Schoenoplectiella purshiana*	Weakstalk Bulrush	p
2	Plants - Vascular	*Sedum ternatum*	Wood Stonecrop	p
2	Plants - Vascular	*Silene ovata*	Ovate Catchfly	p
2	Plants - Vascular	*Smilax pulverulenta*	Downy Carrion-flower	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Solidago flaccidifolia*	Appalachian Goldenrod	p
2	Plants - Vascular	*Solidago juncea*	Early Goldenrod	p
2	Plants - Vascular	*Solidago sphacelata*	Autumn Goldenrod	p
4	Plants - Vascular	*Spiraea tomentosa*	Steeplebush	p
2	Plants - Vascular	*Spiranthes lacera* var. *gracilis*	Southern Slender Ladies'-tresses	p
3	Plants - Vascular	*Spiranthes magnicamporum*	Great Plains Ladies'-tresses	p
3	Plants - Vascular	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	p
1	Plants - Vascular	*Stellaria corei*	Tennessee Chickweed	p
3	Plants - Vascular	*Stellaria pubera*	Giant Chickweed	p
2	Plants - Vascular	*Stenanthium gramineum*	Eastern Featherbells	p
1	Plants - Vascular	*Stewartia ovata*	Mountain Camellia	p
2	Plants - Vascular	*Stylisma pickeringii* spp. *pickeringii*	Pickering Morning-glory	p
2	Plants - Vascular	*Stylisma pickeringii* ssp. *pattersonii*	Pickering Morning-glory	p
2	Plants - Vascular	*Swida alternifolia*	Alternate-leaf Dogwood	p
3	Plants - Vascular	*Symphyotrichum ericoides* var. *ericoides*	White Heath Aster	p
1	Plants - Vascular	*Taenidia integerrima*	Yellow Pimpernel	p
1	Plants - Vascular	*Thalictrum dioicum*	Early Meadowrue	p
3	Plants - Vascular	*Tiarella cordifolia*	Heart-leaved Foam-flower	p
2	Plants - Vascular	*Tradescantia ernestiana*	Ernest's Spider-wort	p
2	Plants - Vascular	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort	p
1	Plants - Vascular	*Trautvetteria applanata*	Ozark Tassel-rue	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Plants - Vascular	*Trifolium reflexum*	Buffalo Clover	p
1	Plants - Vascular	*Trillium flexipes*	Drooping Trillium	p
2	Plants - Vascular	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia	p
3	Plants - Vascular	*Ulmus serotina*	September Elm	p
3	Plants - Vascular	*Vaccinium pallidum*	Early Lowbush Blueberry	p
1	Plants - Vascular	*Vandenboschia boschiana*	Appalachian Bristle Fern	p
3	Plants - Vascular	*Veronicastrum virginicum*	Culver's-root	p
1	Plants - Vascular	*Vittaria appalachiana*	Appalachian Vittaria	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Potential Conservation Partners for Northeast COA

- Audubon
- County and city governments and planning boards
- Department of War
- Land trusts
- Mississippi Association of Conservation Districts Migratory Bird Joint Ventures
- Mississippi Department of Environmental Quality Mississippi Department of Wildlife, Fisheries, and Parks Mississippi Forestry Commission
- Mississippi Forestry Association
- Mississippi Land Trust
- Mississippi Outdoor Stewardship Trust Fund Mississippi Prescribed Fire Council Mississippi Wildlife Federation
- Mississippi Land Trust
- National Fish and Wildlife Foundation National Park Service
- Private landowners Tennessee Valley Authority
- The Conservation Fund
- The Nature Conservancy
- Secretary of State
- The Trust for Public Land Tribal partners
- US Army Corps of Engineers
- US Environmental Protection Agency US Fish and Wildlife Service
- USDA Forest Service
- USDA Farm Services Agency
- USDA Natural Resources Conservation Service TIMOs and REITs
- Wildlife Mississippi

North-Central Hills Conservation Opportunity Area

The North-Central Hills COA covers the Level 4 ecoregions 65d north of the 65r ecoregion, 65q, and the western portion of 65e, and includes portions or 33 counties. This area consists of dissected plains and gently rolling low hills forested in mixed hardwoods and pines. The Mississippi Forestry Commission's Forest Legacy Program (2020) added Lafayette County to the North Forest Legacy Area, which is included in the North-Central Hills COA. Seventy-one HUCs are found in this COA that are designated as high priority for conservation of SGCN.

CONSERVATION SITES IN THE NORTH-CENTRAL HILLS COA

- Holly Springs National Forest
- Tombigbee National Forest
- Bienville National Forest
- Sam D. Hamilton Noxubee National Wildlife Refuge
- Camp McCain Joint Forces Training Center
- Naval Air Station Meridian
- Natchez Trace Parkway
- Mississippi Band of Choctaw Indians Tribal Lands
- Calhoun County Wildlife Management Area
- Hell Creek Wildlife Management Area
- Nanih Waiya Wildlife Management Area
- Okatibbee Wildlife Management Area
- Upper Sardis Wildlife Management Area
- Yockanookany Wildlife Management Area
- Clarkco State Park
- Golden Memorial State Park
- Hugh White State Park
- John Kyle State Park
- Legion Lake State Park
- Wall Doxey State Park
- Lake Tom Bailey
- Neshoba County Lake
- Kemper County Lake
- Tippah County Lake
- The Old Cove
- Sardis Reservoir
- Grenada Reservoir
- Enid Reservoir

There are opportunities to protect land around these conservation sites on public and private lands. Additionally, the lower Yockanookany River, Coldwater River, Chickasawhay River, and Chunky River, and their tributaries are of particular interest to SGCN and should be focused upon for conservation.

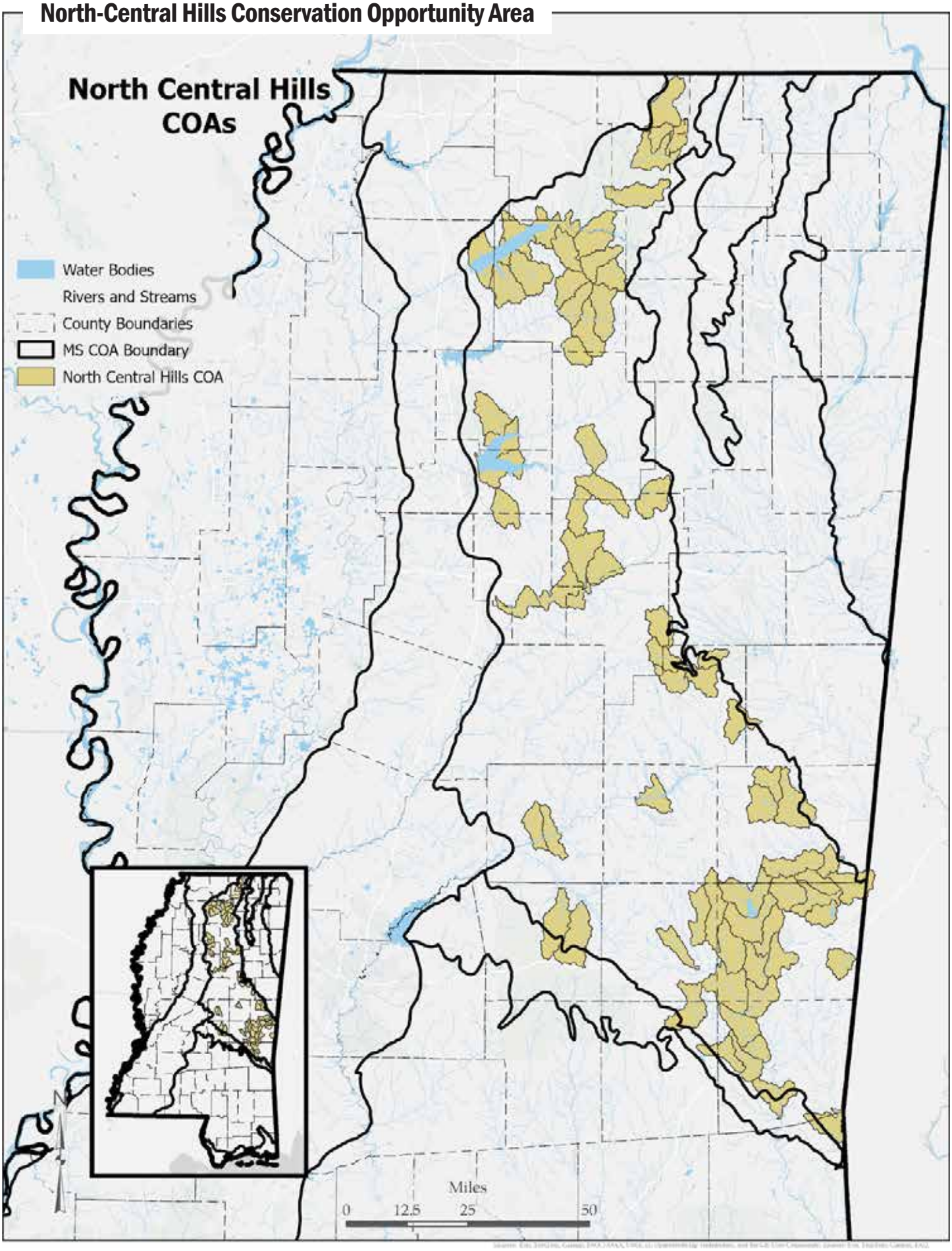


Figure 7.3. North-Central Hills Conservation Opportunity Area

Table 7.3: Important Habitats in North/Central Hills COA

	Habitat
1	Dry-mesic Upland Forests/Woodlands
2	Mesic Upland Forests
3	Rock Outcrops and Caves
4	Floodplain Forests
5	Swamp Forests
7	Bog and Seepages
9	Herbaceous Freshwater Marshes
10	Natural Lakes and Ponds
11	Mississippi River and Associated Drainages
12	Northeast Mississippi Drainages
13	Pearl River Drainages
14	Southeast Mississippi Drainages

Threats

Threats to the North/Central Hills COA are similar to other parts of the state. Urban and suburban development, fragmentation, and forest conversion pose a threat to all of the habitats within this COA. Channel modifications and sand/gravel mining are impacting the streams and rivers, and the SGCN within them. Multiple invasive species are an issue in this COA, with two of the worst plant invaders being kudzu and Chinese privet. Others include wild hogs, fire ants, Asian carp, exotic mussels, and numerous aquatic invasives. For a more complete list of threats refer to specific habitats listed above in Chapter 5.

Priority Conservation Actions

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Encourage and improve agriculture/forestry/land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.
- Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs.
- Limit/discourage the introduction or propagation of exotic and invasive species (plant and animal).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Coordinate with other agencies, NGOs, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Educate landowners on the benefits of maintaining a diverse, healthy forest using sound practices.
- Develop informational materials promoting the optimal conditions and management needs of habitats.
- Encourage the increased use and acceptance of prescribed fire through increased communications and partnerships.
- Provide prescribed fire training opportunities for private landowners. Focus on training landowners to achieve fire capacity and application at a large scale.

Table 7.4 - North/Central Hills COA Species of Greatest Conservation Need

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Crayfishes	*Faxonius etnieri*	Ets Crayfish	p
3	Crayfishes	*Faxonius jonesi*	Sucarnoochee River Crayfish	p
1	Crayfishes	*Hobbseus attenuatus*	Pearl Rivulet Crayfish	p
1	Crayfishes	*Hobbseus valleculus*	Choctaw Rivulet Crayfish	p
1	Crayfishes	*Hobbseus yalobushensis*	Yalobusha Rivulet Crayfish	p
1	Crayfishes	*Procambarus lagniappe*	Lagniappe Crayfish	p
2	Crayfishes	*Procambarus mancus*	Lame Crayfish	p
3	Crayfishes	*Procambarus viaeviridis*	Vernal Crayfish	p
3	Insects	*Aeshna umbrosa*	Shadow Darner	p
4	Insects	*Agarodes libalis*	Spring-loving Psiloneuran Caddisfly	?
3	Insects	*Amphiagrion saucium*	Eastern Red Damsel	p
3	Insects	*Bombus pensylvanicus*	American Bumblebee	p
4	Insects	*Catocala delilah*	Delilah Underwing	?
4	Insects	*Ceraclea spongillovorax*	A Caddisfly	?
3	Insects	*Cordulegaster bilineata*	Brown Spiketail	p
2	Insects	*Cordulegaster erronea*	Tiger Spiketail	p
4	Insects	*Erynnis martialis*	Mottled Dusky Wing	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Insects	*Euphyes dukesi dukesi*	Dukes' Skipper	p
3	Insects	*Gomphus dilatatus*	Blackwater Clubtail	p
4	Insects	*Hydroptila homochitta*	A Caddisfly	p
3	Insects	*Leuctra colemanorum*	Yalobusha Needlefly	p
3	Insects	*Macromia alleghaniensis*	Allegheny River Cruiser	p
3	Insects	*Nehalennia gracilis*	Sphagnum Sprite	p
3	Insects	*Neurocordulia yamaskanensis*	Stygian Shadowdragon	p
4	Insects	*Perlesta lagoi*	A Stonefly	p
2	Insects	*Pogonomyrmex badius*	Florida Harvester Ant	p
3	Insects	*Somatochlora provocans*	Treetop Emerald	p
3	Insects	*Stylogomphus albistylus*	Eastern Least Clubtail	p
3	Insects	*Tachopteryx thoreyi*	Gray Petaltail	p
3	Mussels	*Utterbackiana hartfieldorum*	Cypress Floater	p
2	Mussels	*Arcidens confragosus*	Rock Pocketbook	p
1	Mussels	*Elliptio arctata*	Delicate Spike	p
3	Mussels	*Lasmigona complanata*	White Heelsplitter	p
1	Mussels	*Obovaria subrotunda*	Round Hickorynut	p
1	Mussels	*Obovaria unicolor*	Alabama Hickorynut	p
2	Mussels	*Obovaria arkansasensis*	Southern Hickorynut	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Mussels	*Pleurobema beadleianum*	Mississippi Pigtoe	p
3	Mussels	*Quadrula nobilis*	Gulf Mapleleaf	p
2	Mussels	*Strophitus undulatus*	Creeper	p
1	Mussels	*Strophitus radiatus*	Rayed Creekshell	p
2	Mussels	*Strophitus pascagoulaensis*	Pascagoula Creekshell	p
3	Mussels	*Uniomerus declivis*	Tapered Pondhorn	p
4	Snails	*Pleurocera vestita*	Brook Hornsnail	p
3	Amphibians	*Ambystoma texanum*	Smallmouth Salamander	p
4	Amphibians	*Desmognathus valentinei*	Valentine's Southern Dusky Salamander	p
2	Amphibians	*Hemidactylium scutatum*	Four-toed Salamander	p
2	Amphibians	*Lithobates areolata*	Crawfish Frog	p
4	Amphibians	*Necturus maculosus*	Common Mudpuppy	p
2	Amphibians	*Plethodon websteri clade B*	Webster's Salamander Clade B	p
3	Amphibians	*Pseudotriton ruber*	Red Salamander	p
2	Birds	*Accipiter striatus*	Sharp-shinned Hawk (breeding population)	p
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow	p
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow	p
3	Birds	*Anas acuta*	Northern Pintail	p
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will	p
2	Birds	*Aquila chrysaetos*	Golden Eagle	p
3	Birds	*Asio flammeus*	Short-eared Owl	p
2	Birds	*Aythya affinis*	Lesser Scaup	p
2	Birds	*Botaurus lentiginosus*	American Bittern	p
3	Birds	*Calidris melanotos*	Pectoral Sandpiper	p
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper	p
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper	p
1	Birds	*Centronyx henslowii*	Henslow's Sparrow	p
2	Birds	*Chaetura pelagica*	Chimney Swift	p
3	Birds	*Chlidonias niger*	Black Tern	p
3	Birds	*Chordeiles minor*	Common Nighthawk	p
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo	p
2	Birds	*Colinus virginianus*	Northern Bobwhite	p
3	Birds	*Columbina passerina*	Common Ground Dove	p
2	Birds	*Coturnicops noveboracensis*	Yellow Rail	p
1	Birds	*Dryobates borealis*	Red-cockaded Woodpecker	p
2	Birds	*Egretta caerulea*	Little Blue Heron	p
3	Birds	*Egretta tricolor*	Tricolored Heron	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Elanoides forficatus*	Swallow-tailed Kite	p
2	Birds	*Euphagus carolinus*	Rusty Blackbird	p
1	Birds	*Falco sparverius paulus*	Southeastern American Kestrel	p
2	Birds	*Geothlypis formosa*	Kentucky Warbler	p
2	Birds	*Helmitheros vermivorum*	Worm-eating Warbler	p
2	Birds	*Hylocichla mustelina*	Wood Thrush	p
2	Birds	*Ixobrychus exilis*	Least Bittern	p
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	p
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	p
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher	p
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler	p
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	p
1	Birds	*Mycteria americana*	Wood Stork	p
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron	p
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron	p
2	Birds	*Parkesia motacilla*	Louisiana Waterthrush	p
2	Birds	*Passerina ciris*	Painted Bunting	p
2	Birds	*Peucaea aestivalis*	Bachman's Sparrow	p
3	Birds	*Piranga olivacea*	Scarlet Tanager (breeding population)	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Platalea ajaja*	Roseate Spoonbill	p
3	Birds	*Pluvialis dominica*	American Golden-Plover	p
3	Birds	*Porphyrio martinicus*	Purple Gallinule	p
2	Birds	*Protonotaria citrea*	Prothonotary Warbler	p
3	Birds	*Quiscalus quiscula*	Common Grackle	p
2	Birds	*Rallus elegans*	King Rail	p
3	Birds	*Scolopax minor*	American Woodcock	p
2	Birds	*Seiurus aurocapilla*	Ovenbird (breeding population)	p
2	Birds	*Setophaga cerulea*	Cerulean Warbler	p
2	Birds	*Setophaga discolor*	Prairie Warbler	p
3	Birds	*Sitta pusilla*	Brown-headed Nuthatch	p
3	Birds	*Spizella pusilla*	Field Sparrow	p
3	Birds	*Sturnella magna*	Eastern Meadowlark	p
1	Birds	*Thryomanes bewickii*	Bewick's Wren	p
3	Birds	*Tringa flavipes*	Lesser Yellowlegs	p
1	Birds	*Vermivora chrysoptera*	Golden-winged Warbler	p
2	Birds	*Vireo gilvus*	Warbling Vireo	p
3	Fishes	*Ichthyomyzon castaneus*	Chestnut Lamprey	p
4	Fishes	*Anguilla rostrata*	American Eel	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Fishes	*Alosa alabamae*	Alabama Shad	p
4	Fishes	*Alosa chrysochloris*	Skipjack Herring	p
3	Fishes	*Hybopsis amnis*	Pallid Shiner	p
1	Fishes	*Alburnops edwardraneyi*	Fluvial Shiner	p
2	Fishes	*Miniellus sabinae*	Sabine Shiner	p
3	Fishes	*Cyprinella whipplei*	Steelcolor Shiner	p
1	Fishes	*Noturus gladiator*	Piebald Madtom	p
3	Fishes	*Etheostoma asprigene*	Mud Darter	p
3	Fishes	*Etheostoma rupestre*	Rock Darter	p
1	Fishes	*Etheostoma faulkneri*	Yoknapatawpha Darter	p
3	Fishes	*Etheostoma lachneri*	Tombigbee Darter	p
1	Fishes	*Percina lenticula*	Freckled Darter	p
1	Fishes	*Percina aurora*	Pearl Darter	p
3	Mammals	*Lasiurus cinereus*	Hoary Bat	p
2	Mammals	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	p
3	Mammals	*Lasionycteris noctivagans*	Silver-haired Bat	p
3	Mammals	*Myotis austroriparius*	Southeastern Myotis	p
1	Mammals	*Myotis septentrionalis*	Northern Long-eared Bat	p
3	Mammals	*Neogale frenata*	Long-tailed Weasel	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Mammals	*Perimyotis subflavus*	Tricolored Bat	p
2	Mammals	*Peromyscus polionotus*	Oldfield Mouse	p
2	Mammals	*Sorex longirostris*	Southeastern Shrew	p
1	Mammals	*Spilogale putorius*	Eastern Spotted Skunk	p
2	Mammals	*Ursus americanus*	Black Bear	p
1	Mammals	*Ursus americanus lutelous*	Louisiana Black Bear	p
2	Mammals	*Zapus hudsonius*	Meadow Jumping Mouse	p
3	Reptiles	*Coluber flagellum flagellum*	Eastern Coachwhip	p
2	Reptiles	*Farancia erytrogramma*	Rainbow Snake	p
2	Reptiles	*Graptemys gibbonsi*	Pascagoula Map Turtle	p
2	Reptiles	*Graptemys oculifera*	Ringed Map Turtle	p
1	Reptiles	*Graptemys pearlensis*	Pearl River Map Turtle	p
2	Reptiles	*Lampropeltis calligaster rhombomaculata*	Mole Kingsnake	p
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle	p
2	Reptiles	*Ophisaurus attenuatus*	Slender Glass Lizard	p
2	Plants - Nonvascular	*Anthoceros punctatus*	a hornwort	p
2	Plants - Nonvascular	*Cylindrocolea rhizantha*	a liverwort	p
2	Plants - Nonvascular	*Fissidens amoenus*	Hall's Fissidens Moss	p
2	Plants - Nonvascular	*Lejeunea floridana*	a liverwort	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Nonvascular	*Orthotrichum exiguum*	Small Wood-bark Moss	p
1	Plants - Nonvascular	*Sphaerosporoceros adscendens*	a hornwort	p
2	Plants - Vascular	*Acer leucoderme*	Chalk Maple	p
3	Plants - Vascular	*Adiantum capillus-veneris*	Southern Maidenhair-fern	p
2	Plants - Vascular	*Andropogon tracyi*	Tracy's Bluestem	p
2	Plants - Vascular	*Anemone quinquefolia*	Wood Anemone	p
4	Plants - Vascular	*Arabidopsis lyrata* ssp. *lyrata*	Lyreleaf Rockcress	p
2	Plants - Vascular	*Aralia racemosa*	American Spikenard	p
2	Plants - Vascular	*Asclepias hirtella*	Green Milkweed	p
4	Plants - Vascular	*Bidens trichosperma*	Tickseed Sunflower	p
3	Plants - Vascular	*Borodinia canadensis*	Sicklepod	p
2	Plants - Vascular	*Bulbostylis ciliatifolia*	Capillary Hairsedge	p
2	Plants - Vascular	*Callirhoe triangulata*	Clustered Poppy-mallow	p
2	Plants - Vascular	*Camassia scilloides*	Wild Hyacinth	p
3	Plants - Vascular	*Cardamine angustata*	Slender Toothwort	p
3	Plants - Vascular	*Cardamine diphylla*	Two-leaf Toothwort	p
1	Plants - Vascular	*Carex dasycarpa*	Velvet Sedge	p
1	Plants - Vascular	*Carex fissa* var. *fissa*	Hammock Sedge	p
1	Plants - Vascular	*Carex impressinervia*	Impressed-nerved Sedge	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Carex mesochorea*	Midland Sedge	p
3	Plants - Vascular	*Carex mitchelliana*	Mitchell's Sedge	p
3	Plants - Vascular	*Carex molestiformis*	Ozark Plateau Sedge	p
3	Plants - Vascular	*Carex radiata*	Stellate Sedge	p
3	Plants - Vascular	*Carex reznicekii*	Reznicek's Sedge	p
2	Plants - Vascular	*Carex scoparia*	Broom Sedge	p
3	Plants - Vascular	*Carex stipata* var. *maxima*	Stalk-grain Sedge	p
3	Plants - Vascular	*Chimaphila maculata*	Spotted Wintergreen	p
3	Plants - Vascular	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia	p
3	Plants - Vascular	*Clematis glaucophylla*	White-leaved Leather-flower	p
1	Plants - Vascular	*Crataegus mendosa*	Albertville Hawthorn	p
2	Plants - Vascular	*Crataegus triflora*	Three-flowered Hawthorn	p
3	Plants - Vascular	*Cyperus bipartitus*	Shining Flatsedge	p
3	Plants - Vascular	*Cyperus flavicomus*	White-edged Flatsedge	p
3	Plants - Vascular	*Cyperus hystricinus*	Bristly Flatsedge	p
3	Plants - Vascular	*Cyperus neotropicalis*	American Lipocarpha	p
1	Plants - Vascular	*Cyperus refractus*	Reflexed Flatsedge	p
3	Plants - Vascular	*Decodon verticillatus*	Hairy Swamp Loosestrife	p
3	Plants - Vascular	*Delphinium tricorne*	Dwarf Larkspur	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Desmodium ochroleucum*	Creamflower Tick-trefoil	p
2	Plants - Vascular	*Dichanthelium curtifolium*	Shortleaf Witchgrass	p
3	Plants - Vascular	*Dichanthelium erectifolium*	Erect-leaf Witchgrass	p
4	Plants - Vascular	*Didiplis diandra*	Water-purslane	p
2	Plants - Vascular	*Diphasiastrum digitatum*	Fan Club-moss	p
2	Plants - Vascular	*Dirca palustris*	Eastern Leatherwood	p
2	Plants - Vascular	*Dryopteris ludoviciana*	Southern Shield Wood-fern	p
1	Plants - Vascular	*Eleocharis atropurpurea*	Purple Spikerush	p
1	Plants - Vascular	*Eleocharis lanceolata*	Lance-like Spikerush	p
2	Plants - Vascular	*Eleocharis ovata*	Ovate Spikerush	p
1	Plants - Vascular	*Eleocharis radicans*	Rooted Spikerush	p
4	Plants - Vascular	*Eleocharis tenuis* var. *pseudoptera*	Slender Spikerush	p
2	Plants - Vascular	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	p
2	Plants - Vascular	*Eleocharis wolfii*	Wolf's Spikerush	p
2	Plants - Vascular	*Elymus villosus*	Hairy Wild Rye	p
2	Plants - Vascular	*Erythronium albidum*	White Trout-lily	p
3	Plants - Vascular	*Erythronium americanum* ssp. *harperi*	Yellow Trout-lily	p
1	Plants - Vascular	*Euphorbia discoidalis*	Summer Spurge	p
3	Plants - Vascular	*Forestiera ligustrina*	Upland Swamp Privet	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Goodyera pubescens*	Downy Rattlesnake-plantain	p
2	Plants - Vascular	*Helianthus decapetalus*	Thinleaf Sunflower	p
3	Plants - Vascular	*Hepatica acutiloba*	Sharp-lobed Hepatica	p
3	Plants - Vascular	*Hexalectris spicata*	Crested Coralroot	p
1	Plants - Vascular	*Hieracium venosum*	Rattlesnake Hawkweed	p
2	Plants - Vascular	*Isoetes melanopoda spp. melanopoda*	Blackfoot Quillwort	p
2	Plants - Vascular	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort	p
2	Plants - Vascular	*Isoetes valida*	Strong Quillwort	p
2	Plants - Vascular	*Juglans cinerea*	Butternut	p
2	Plants - Vascular	*Ligusticum canadense*	Nondo Lovage	p
3	Plants - Vascular	*Marshallia trinervia*	Broadleaf Barbara's-buttons	p
3	Plants - Vascular	*Matelea obliqua*	Climbing Milkweed	p
2	Plants - Vascular	*Mimulus ringens* var. *ringens*	Square-stem Monkeyflower	p
3	Plants - Vascular	*Muhlenbergia sylvatica*	Woodland Muhly	p
2	Plants - Vascular	*Myriopteris lanosa*	Hairy Lipfern	p
2	Plants - Vascular	*Nestronia umbellula*	Nestronia	p
3	Plants - Vascular	*Oenothera grandiflora*	Large-flowered Evening-primrose	p
2	Plants - Vascular	*Oxalis grandis*	Great Yellow Woodsorrel	p
3	Plants - Vascular	*Oxalis macrantha*	Tufted Yellow Woodsorrel	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Panax quinquefolius*	American Ginseng	p
3	Plants - Vascular	*Philadelphus inodorus*	Scentless Mock Orange	p
2	Plants - Vascular	*Phlox amplifolia*	Largeleaf Phlox	p
2	Plants - Vascular	*Platanthera conspicua*	Large White-fringe Orchid	p
2	Plants - Vascular	*Platanthera lacera*	Green-fringed Orchid	p
3	Plants - Vascular	*Platanthera peramoena*	Purple Fringeless Orchid	p
2	Plants - Vascular	*Polytaenia nuttallii*	Prairie Parsley	p
2	Plants - Vascular	*Potamogeton pusillus*	Slender Pondweed	p
2	Plants - Vascular	*Pycnanthemum pilosum*	Whorled Mountainmint	p
3	Plants - Vascular	*Quercus austrina*	Bluff Oak	p
2	Plants - Vascular	*Rhododendron arborescens*	Smooth Azalea	p
2	Plants - Vascular	*Rhynchosia latifolia*	Prairie Rhynchosia	p
1	Plants - Vascular	*Rudbeckia grandiflora* var. *alismifolia*	Rough Coneflower	p
1	Plants - Vascular	*Rudbeckia subtomentosa*	Sweet Coneflower	p
3	Plants - Vascular	*Sabatia campestris*	Prairie Pink	p
3	Plants - Vascular	*Sceptridium lunarioides*	Winter Grape-fern	p
3	Plants - Vascular	*Schisandra glabra*	Bay Starvine	p
2	Plants - Vascular	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	p
2	Plants - Vascular	*Schoenoplectiella purshiana*	Weakstalk Bulrush	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Schoenoplectus deltarum*	Delta Bulrush	p
3	Plants - Vascular	*Scleria elliottii*	Broad-leaved Hairy Nutrush	p
2	Plants - Vascular	*Sedum ternatum*	Wood Stonecrop	p
2	Plants - Vascular	*Silene ovata*	Ovate Catchfly	p
2	Plants - Vascular	*Smilax pulverulenta*	Downy Carrion-flower	p
2	Plants - Vascular	*Solidago brachyphylla*	Dixie Goldenrod	p
2	Plants - Vascular	*Solidago flaccidifolia*	Appalachian Goldenrod	p
2	Plants - Vascular	*Spiranthes lacera* var. *gracilis*	Southern Slender Ladies'-tresses	p
3	Plants - Vascular	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	p
2	Plants - Vascular	*Swida alternifolia*	Alternate-leaf Dogwood	p
2	Plants - Vascular	*Symphyotrichum puniceum* var. *puniceum*	Purple-stem Aster	p
3	Plants - Vascular	*Tiarella cordifolia*	Heart-leaved Foam-flower	p
2	Plants - Vascular	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort	p
3	Plants - Vascular	*Tridens carolinianus*	Carolina Fluff Grass	p
1	Plants - Vascular	*Trifolium carolinianum*	Carolina Clover	p
4	Plants - Vascular	*Trifolium reflexum*	Buffalo Clover	p
2	Plants - Vascular	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia	p
3	Plants - Vascular	*Veronicastrum virginicum*	Culver's-root	p
1	Plants - Vascular	*Viburnum acerifolium*	Mapleleaf Viburnum	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Potential Conservation Partners

- Audubon
- County and city governments and planning boards
- Department of War
- Land trusts
- Mississippi Association of Conservation Districts
- Migratory bird joint ventures
- Mississippi Band of Choctaw Indians
- Mississippi Department of Wildlife, Fisheries, and Parks
- Mississippi Forestry Association
- Mississippi Forestry Commission
- Mississippi Land Trust
- Mississippi Outdoor Stewardship Trust Fund
- Mississippi Prescribed Fire Council
- Mississippi Wildlife Federation
- National Fish and Wildlife Foundation
  National Park Service
- Private landowners
- Secretary of State
- The Conservation Fund
- The Nature Conservancy
- The Trust for Public Land
- TIMOs and REITs
- Tribal Partners
- US Army Corps of Engineers
- US Fish and Wildlife Service
- USDA Farm Services Agency
- USDA Forest Service
- USDA Natural Resources Conservation Service
- Wildlife Mississippi

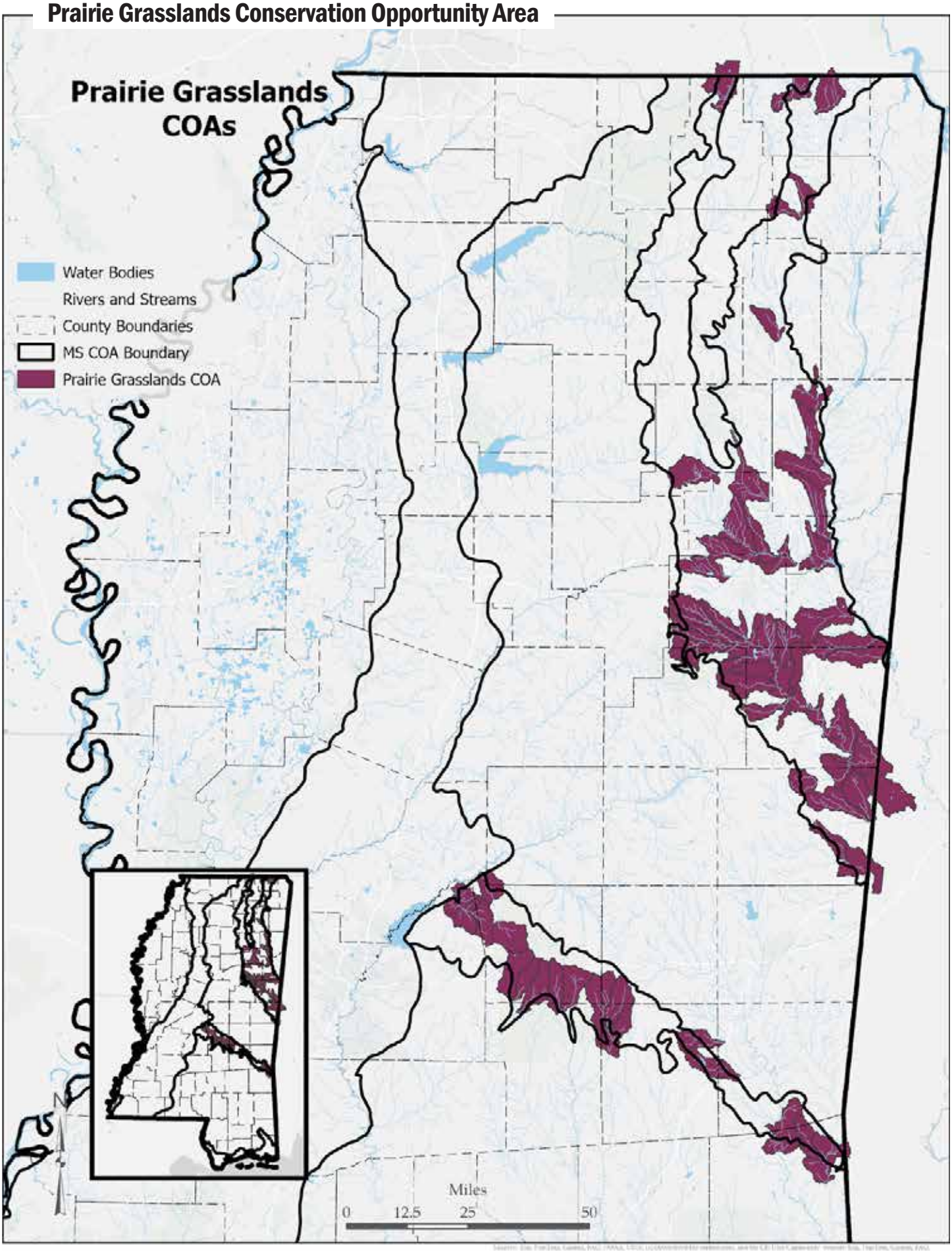


Figure 7.4. Prairie Grasslands Conservation Opportunity Area.

The Prairie Grasslands COA includes Level 4 ecoregions of 65a, 65r, and the western portion of 65b and covers 23 counties. Prairies are dominated by warm season perennial grasses, maintained by regular fires. These fires were historically set by Native American Indians or dry season lightning strikes. Today prescribed burns are used as a management tool. The Mississippi Forestry Commission's Forest Legacy Program (2020) North Forest Legacy Area covers some portion of this COA in the Blackland Prairie (65a) ecoregion and the Central Forest Legacy Area lies over the western portion of the Jackson Prairie (65r) ecoregion. Sixty-six HUCs are found in this COA that are designated as high priority for conservation of SGCN.

CONSERVATION SITES IN THE PRAIRIE GRASSLANDS COA

- Bienville National Forest
- Sam D. Hamilton Noxubee National Wildlife Refuge
- John W. Starr Wildlife Management Area
- Black Prairie Wildlife Management Area
- Tuscumbia Wildlife Management Area
- Trim Cane Wildlife Management Area
- Tombigbee National Forest (Chickasaw Unit)
- Trace State Park
- Natchez Trace Parkway
- Chickasaw Preserve
- Demoville Prairie
- Lake Claude Bennett
- Tippah County Lake
- Osborne Prairie (16th Section)

There are opportunities to protect land around these conservation sites. Prairie remnants around West Leesburg, Hollis Creek, Tibbee Creek, Houlka Creek, Noxubee River, Sucarnoochee River, and their tributaries are particularly important for SGCN.

Table 7.5. Important Habitats in Prairie Grassland COA

Habitat	
1	Dry-mesic Upland Forests/Woodlands
2	Mesic Upland Forests
3	Rock Outcrops and Caves
4	Floodplain Forests
5	Swamp Forests
7	Bogs and Seepages
8	Prairies and Glades
9	Herbaceous Freshwater Marshes
10	Natural Lakes and Ponds
13	Pearl River Drainages
14	Southeast Mississippi Drainages

THREATS

Historic threats to Prairie Grasslands were in the form of conversion, either to urban/suburban areas or to crop/pastureland. Current threats include lack of proper fire regimes, overgrazing and row-crop agriculture. Multiple invasive species are an issue in this COA, with two of the worst plant invaders being kudzu and Chinese privet. Others include wild hogs, fire ants, Asian carp, exotic mussels, and numerous aquatic invasives. For a more complete list of threats refer to specific habitats listed above in Chapter 5.



Cedars invade grassland prairies when fire is excluded. *Credit: Heather Sullivan.*

Priority Conservation Actions

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs.
- Limit/discourage the introduction or propagation of exotic and invasive species (plant and animal).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Coordinate with other agencies, NGOs, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Encourage the increased use and acceptance of prescribed fire through increased communications and partnerships.
- Provide prescribed fire training opportunities for private landowners. Focus on training landowners to achieve fire capacity and application at a large scale.
- Educate landowners, school-aged children/youth, adjacent residents, developers, and the general public about the crucial role of prescribed burning in the management of prairie ecosystems.

CONSERVATION ACTION 6 LIVELIHOOD, ECONOMIC AND OTHER INCENTIVES

- Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

Table 7.6 - Prairie Grassland Species of Greatest Conservation Need.

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Crayfishes	*Faxonius etnieri*	Ets Crayfish	p
3	Crayfishes	*Faxonius mississippiensis*	Mississippi Crayfish	p
1	Crayfishes	*Hobbseus cristatus*	Crested Rivulet Crayfish	p
1	Crayfishes	*Hobbseus orconectoides*	Oktibbeha Rivulet Crayfish	p
3	Crayfishes	*Hobbseus petilus*	Tombigbee Rivulet Crayfish	p
3	Crayfishes	*Hobbseus prominens*	Prominence Rivulet Crayfish	p
2	Crayfishes	*Procambarus barbiger*	Jackson Prairie Crayfish	p
3	Crayfishes	*Procambarus hagenianus hagenianus*	Southeastern Prairie Crayfish	p
3	Crayfishes	*Procambarus hagenianus vesticeps*	Egyptian Crayfish	p
1	Crayfishes	*Procambarus lagniappe*	Lagniappe Crayfish	p
2	Crayfishes	*Procambarus mancus*	Lame Crayfish	p
3	Crayfishes	*Procambarus viaeviridis*	Vernal Crayfish	p
3	Insects	*Amphiagrion saucium*	Eastern Red Damsel	p
3	Insects	*Arigomphus lentulus*	Stillwater Clubtail	?
3	Insects	*Arigomphus villosipes*	Unicorn Clubtail	p
4	Insects	*Bagisara brouana*	A Noctuid Moth	p
3	Insects	*Bombus pensylvanicus*	American Bumblebee	p
1	Insects	*Bombus variabilis*	Variable Cuckoo Bumble Bee	p
4	Insects	*Erynnis martialis*	Mottled Dusky Wing	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Insects	*Gryllotalpa major*	Prairie Mole Cricket	p
4	Insects	*Hesperia attalus*	Dotted Skipper	p
	Insects	*Hydroptila cretosa*	A Caddisfly	p
3	Insects	*Ischnura prognata*	Furtive Forktail	p
4	Insects	*Papaipema maritima*	Maritime Sunflower Borer	p
2	Insects	*Pseudopomala brachyptera*	Short-winged Toothpick Grasshopper	p
4	Insects	*Tetraloniella albata*	White-clothed Longhorn	p
2	Mussels	*Arcidens confragosus*	Rock Pocketbook	p
2	Mussels	*Ellipsaria lineolata*	Butterfly	p
1	Mussels	*Elliptio arca*	Alabama Spike	p
1	Mussels	*Epioblasma penita*	Southern Combshell	p
2	Mussels	*Lasmigona alabamensis*	Alabama Heelsplitter	p
1	Mussels	*Ligumia recta*	Black Sandshell	p
1	Mussels	*Obovaria unicolor*	Alabama Hickorynut	p
2	Mussels	*Obovaria arkansasensis*	Southern Hickorynut	p
2	Mussels	*Pleurobema beadleianum*	Mississippi Pigtoe	p
4	Mussels	*Pleurobema taitianum*	Heavy Pigtoe	e
1	Mussels	*Pleurobema decisum*	Southern Clubshell	p
2	Mussels	*Quadrula rumphiana*	Ridged Mapleleaf	p
4	Mussels	*Theliderma metanevra*	Monkeyface	e

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Mussels	*Strophitus pascagoulaensis*	Pascagoula Creekshell	p
1	Snails	*Elimia cylindracea*	Cylinder Elimia	p
4	Snails	*Pleurocera vestita*	Brook Hornsnail	p
3	Amphibians	*Ambystoma texanum*	Smallmouth Salamander	p
4	Amphibians	*Ambystoma tigrinum*	Tiger Salamander	p
2	Amphibians	*Lithobates areolata*	Crawfish Frog	p
2	Amphibians	*Pseudotriton montanus*	Mud Salamander	p
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow	p
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow	p
3	Birds	*Anas acuta*	Northern Pintail	p
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow	p
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will	p
2	Birds	*Aquila chrysaetos*	Golden Eagle	p
3	Birds	*Asio flammeus*	Short-eared Owl	p
2	Birds	*Aythya affinis*	Lesser Scaup	p
2	Birds	*Botaurus lentiginosus*	American Bittern	p
3	Birds	*Calidris melanotos*	Pectoral Sandpiper	p
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper	p
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper	p
1	Birds	*Centronyx henslowii*	Henslow's Sparrow	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Birds	*Chaetura pelagica*	Chimney Swift	p
3	Birds	*Chlidonias niger*	Black Tern	p
3	Birds	*Chordeiles minor*	Common Nighthawk	p
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo	p
2	Birds	*Colinus virginianus*	Northern Bobwhite	p
3	Birds	*Columbina passerina*	Common Ground Dove	p
2	Birds	*Coturnicops noveboracensis*	Yellow Rail	p
1	Birds	*Dryobates borealis*	Red-cockaded Woodpecker	p
2	Birds	*Egretta caerulea*	Little Blue Heron	p
3	Birds	*Egretta tricolor*	Tricolored Heron	p
1	Birds	*Elanoides forficatus*	Swallow-tailed Kite	p
2	Birds	*Euphagus carolinus*	Rusty Blackbird	p
1	Birds	*Falco sparverius paulus*	Southeastern American Kestrel	p
2	Birds	*Geothlypis formosa*	Kentucky Warbler	p
2	Birds	*Helmitheros vermivorum*	Worm-eating Warbler	p
2	Birds	*Hylocichla mustelina*	Wood Thrush	p
2	Birds	*Ixobrychus exilis*	Least Bittern	p
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	p
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	p
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler	p
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	p
1	Birds	*Mycteria americana*	Wood Stork	p
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron	p
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron	p
2	Birds	*Parkesia motacilla*	Louisiana Waterthrush	p
2	Birds	*Passerina ciris*	Painted Bunting	p
2	Birds	*Peucaea aestivalis*	Bachman's Sparrow	p
1	Birds	*Platalea ajaja*	Roseate Spoonbill	p
3	Birds	*Pluvialis dominica*	American Golden-Plover	p
3	Birds	*Porphyrio martinicus*	Purple Gallinule	p
2	Birds	*Protonotaria citrea*	Prothonotary Warbler	p
3	Birds	*Quiscalus quiscula*	Common Grackle	p
2	Birds	*Rallus elegans*	King Rail	p
3	Birds	*Scolopax minor*	American Woodcock	p
2	Birds	*Setophaga cerulea*	Cerulean Warbler	p
2	Birds	*Setophaga discolor*	Prairie Warbler	p
3	Birds	*Sitta pusilla*	Brown-headed Nuthatch	p
3	Birds	*Spizella pusilla*	Field Sparrow	p
3	Birds	*Sturnella magna*	Eastern Meadowlark	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Thryomanes bewickii*	Bewick's Wren	p
3	Birds	*Tringa flavipes*	Lesser Yellowlegs	p
1	Birds	*Vermivora chrysoptera*	Golden-winged Warbler	p
2	Birds	*Vireo gilvus*	Warbling Vireo	p
4	Fishes	*Anguilla rostrata*	American Eel	p
1	Fishes	*Alosa alabamae*	Alabama Shad	p
4	Fishes	*Alosa chrysochloris*	Skipjack Herring	p
3	Fishes	*Hybopsis amnis*	Pallid Shiner	p
2	Fishes	*Alburnops candidus*	Silverside Shiner	p
1	Fishes	*Alburnops edwardraneyi*	Fluvial Shiner	p
4	Fishes	*Phenacobius mirabilis*	Suckermouth Minnow	e
3	Fishes	*Cyprinella whipplei*	Steelcolor Shiner	p
3	Fishes	*Fundulus dispar*	Northern Starhead Topminnow	p
3	Fishes	*Etheostoma rupestre*	Rock Darter	p
2	Fishes	*Etheostoma zonifer*	Backwater Darter	p
3	Fishes	*Etheostoma lachneri*	Tombigbee Darter	p
1	Fishes	*Percina lenticula*	Freckled Darter	p
1	Fishes	*Percina aurora*	Pearl Darter	p
3	Fishes	*Percina kathae*	Mobile Logperch	p
3	Mammals	*Neogale frenata*	Long-tailed Weasel	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Mammals	*Peromyscus polionotus*	Oldfield Mouse	p
2	Mammals	*Sorex longirostris*	Southeastern Shrew	p
1	Mammals	*Spilogale putorius*	Eastern Spotted Skunk	p
2	Mammals	*Ursus americanus*	Black Bear	p
1	Mammals	*Ursus americanus lutelous*	Louisiana Black Bear	p
2	Mammals	*Zapus hudsonius*	Meadow Jumping Mouse	p
3	Reptiles	*Coluber flagellum flagellum*	Eastern Coachwhip	p
4	Reptiles	*Deirochelys reticularia reticularia*	Eastern Chicken Turtle	p
2	Reptiles	*Graptemys flavimaculata*	Yellow-blotched Map Turtle	p
2	Reptiles	*Graptemys gibbonsi*	Pascagoula Map Turtle	p
3	Reptiles	*Graptemys nigrinoda*	Black-knobbed Map Turtle	p
1	Reptiles	*Graptemys pulchra*	Alabama Map Turtle	p
2	Reptiles	*Lampropeltis calligaster calligaster*	Prairie Kingsnake	p
2	Reptiles	*Lampropeltis triangulum*	Red Milk Snake	p
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle	p
2	Reptiles	*Ophisaurus attenuatus*	Slender Glass Lizard	p
2	Plants - Nonvascular	*Anthoceros punctatus*	a hornwort	p
2	Plants - Nonvascular	*Cylindrocolea rhizantha*	a liverwort	p
2	Plants - Nonvascular	*Fissidens amoenus*	Hall's Fissidens Moss	p
1	Plants - Nonvascular	*Macromitrium richardii*	Richard's Macromitrium Moss	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Acer leucoderme*	Chalk Maple	p
3	Plants - Vascular	*Adiantum capillus-veneris*	Southern Maidenhair-fern	p
3	Plants - Vascular	*Aesculus glabra* var. *glabra*	Ohio Buckeye	p
1	Plants - Vascular	*Agalinis auriculata*	Earleaf False Foxglove	p
3	Plants - Vascular	*Agalinis oligophylla*	Ridge-stem False-foxglove	p
1	Plants - Vascular	*Agalinis skinneriana*	Pale False Foxglove	p
1	Plants - Vascular	*Alisma subcordatum*	Broad-leaved Water-plantain	p
1	Plants - Vascular	*Amphiachyris dracunculoides*	Broom-snakeroot	p
2	Plants - Vascular	*Andropogon tracyi*	Tracy's Bluestem	p
2	Plants - Vascular	*Anemone caroliniana*	Carolina Anemone	p
2	Plants - Vascular	*Anemone quinquefolia*	Wood Anemone	p
1	Plants - Vascular	*Aphyllon uniflorum*	One-flowered Broomrape	p
1	Plants - Vascular	*Apios priceana*	Price's Potato-bean	p
1	Plants - Vascular	*Aplectrum hyemale*	Puttyroot	p
1	Plants - Vascular	*Arabis patens*	Spreading Rockcress	p
2	Plants - Vascular	*Arnoglossum reniforme*	Great Indian-plantain	p
2	Plants - Vascular	*Asclepias hirtella*	Green Milkweed	p
1	Plants - Vascular	*Asplenium rhizophyllum*	Walking-fern Spleenwort	p
2	Plants - Vascular	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch	p
3	Plants - Vascular	*Borodinia canadensis*	Sicklepod	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Camassia scilloides*	Wild Hyacinth	p
3	Plants - Vascular	*Cardamine angustata*	Slender Toothwort	p
1	Plants - Vascular	*Carex crawei*	Crawe's Sedge	p
1	Plants - Vascular	*Carex frankii*	Frank's Sedge	p
3	Plants - Vascular	*Carex gracilescens*	Slender Sedge	p
3	Plants - Vascular	*Carex gravida*	Heavy-fruited Sedge	p
3	Plants - Vascular	*Carex grayi*	Asa Gray's Sedge	p
1	Plants - Vascular	*Carex grisea*	Inflated Narrowleaf Sedge	p
3	Plants - Vascular	*Carex jamesii*	Nebraska Sedge	p
3	Plants - Vascular	*Carex mitchelliana*	Mitchell's Sedge	p
1	Plants - Vascular	*Carex normalis*	Greater Straw Sedge	p
3	Plants - Vascular	*Carex oxylepis* var. *pubescens*	Sharp-scale Sedge	p
3	Plants - Vascular	*Carex radiata*	Stellate Sedge	p
3	Plants - Vascular	*Carex stipata* var. *maxima*	Stalk-grain Sedge	p
2	Plants - Vascular	*Carya laciniosa*	Big Shellbark Hickory	p
2	Plants - Vascular	*Castilleja coccinea*	Scarlet Indian-paintbrush	p
1	Plants - Vascular	*Ceratophyllum echinatum*	Prickly Hornwort	p
3	Plants - Vascular	*Cladrastis kentukea*	Yellowwood	p
3	Plants - Vascular	*Clematis glaucophylla*	White-leaved Leather-flower	p
3	Plants - Vascular	*Clematis subreticulata*	Alabama Leatherflower	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Clinopodium arkansanum*	Low Calamint	p
1	Plants - Vascular	*Crataegus ashei*	Ashe's Hawthorn	p
1	Plants - Vascular	*Crataegus mendosa*	Albertville Hawthorn	p
1	Plants - Vascular	*Crataegus mohrii*	Mohr's Hawthorn	p
1	Plants - Vascular	*Crataegus mollis* var. *meridionalis*	Gallion Hawthorn	p
2	Plants - Vascular	*Crataegus triflora*	Three-flowered Hawthorn	p
2	Plants - Vascular	*Cuphea viscosissima*	Blue Waxweed	p
4	Plants - Vascular	*Cuscuta glomerata*	Clustered Dodder	p
3	Plants - Vascular	*Cyperus bipartitus*	Shining Flatsedge	p
3	Plants - Vascular	*Cyperus hystricinus*	Bristly Flatsedge	p
3	Plants - Vascular	*Delphinium tricorne*	Dwarf Larkspur	p
2	Plants - Vascular	*Deparia acrostichoides*	Silvery Spleenwort	p
1	Plants - Vascular	*Desmodium ochroleucum*	Creamflower Tick-trefoil	p
3	Plants - Vascular	*Diaperia prolifera* var. *prolifera*	Big-head Evax	p
2	Plants - Vascular	*Dirca palustris*	Eastern Leatherwood	p
2	Plants - Vascular	*Eleocharis compressa*	Flat-stem Spikerush	p
2	Plants - Vascular	*Eleocharis elliptica*	Slender Spikerush	p
2	Plants - Vascular	*Eleocharis erythropoda*	Bald Spikerush	p
3	Plants - Vascular	*Eleocharis macrostachya*	Creeping Spikerush	p
1	Plants - Vascular	*Eleocharis parvula*	Small Spikerush	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	p
2	Plants - Vascular	*Eleocharis wolfii*	Wolf's Spikerush	p
2	Plants - Vascular	*Elymus villosus*	Hairy Wild Rye	p
2	Plants - Vascular	*Endotropis lanceolata*	Lance-leaved Buckthorn	p
2	Plants - Vascular	*Erythronium albidum*	White Trout-lily	p
3	Plants - Vascular	*Forestiera ligustrina*	Upland Swamp Privet	p
2	Plants - Vascular	*Fraxinus quadrangulata*	Blue Ash	p
1	Plants - Vascular	*Galearis spectabilis*	Showy Orchis	p
1	Plants - Vascular	*Gentianella occidentalis*	Stiff Gentian	p
2	Plants - Vascular	*Goodyera pubescens*	Downy Rattlesnake-plantain	p
2	Plants - Vascular	*Hedeoma drummondii* var. *drummondii*	Drummond Pennyroyal	p
3	Plants - Vascular	*Hexalectris spicata*	Crested Coralroot	p
2	Plants - Vascular	*Hexastylis harperi*	Large-flowered Heartleaf	p
2	Plants - Vascular	*Hottonia inflata*	Featherfoil	p
1	Plants - Vascular	*Hydrastis canadensis*	Golden-seal	p
1	Plants - Vascular	*Hydrophyllum appendiculatum*	Appendage Waterleaf	p
2	Plants - Vascular	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort	p
2	Plants - Vascular	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort	p
2	Plants - Vascular	*Juglans cinerea*	Butternut	p
3	Plants - Vascular	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Lilium michiganense*	Michigan Lily	p
2	Plants - Vascular	*Lithospermum latifolium*	American Gromwell	p
3	Plants - Vascular	*Ludwigia alata*	Winged Seedbox	p
3	Plants - Vascular	*Marshallia trinervia*	Broadleaf Barbara's-buttons	p
1	Plants - Vascular	*Matelea baldwyniana*	Baldwin's Milkvine	p
3	Plants - Vascular	*Matelea obliqua*	Climbing Milkweed	p
2	Plants - Vascular	*Mirabilis albida*	Pale Umbrella-wort	p
2	Plants - Vascular	*Mirabilis linearis*	Narrowleaf Four-o'clock	p
2	Plants - Vascular	*Muhlenbergia glabrifloris*	Inland Muhly	p
3	Plants - Vascular	*Muhlenbergia sylvatica*	Woodland Muhly	p
2	Plants - Vascular	*Nabalus asper*	Rough Rattlesnake-root	p
1	Plants - Vascular	*Nabalus barbatus*	Barbed Rattlesnake-root	p
2	Plants - Vascular	*Nemastylis geminiflora*	Prairie Pleatleaf	p
3	Plants - Vascular	*Oenothera capillifolia* ssp. *capillifolia*	Berlandier's Sundrops	p
3	Plants - Vascular	*Oenothera grandiflora*	Large-flowered Evening-primrose	p
3	Plants - Vascular	*Oenothera triloba*	Stemless Evening-primrose	p
2	Plants - Vascular	*Packera aurea*	Golden Groundsel	p
2	Plants - Vascular	*Packera paupercula* var. *paupercula*	Balsam Ragwort	p
2	Plants - Vascular	*Palafoxia callosa*	Small Palafoxia	p
3	Plants - Vascular	*Panax quinquefolius*	American Ginseng	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Penstemon canescens*	Gray Beardtongue	p
2	Plants - Vascular	*Penstemon pallidus*	Pale Beardtongue	p
2	Plants - Vascular	*Perideridia americana*	Eastern Eulophus	p
3	Plants - Vascular	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed	p
3	Plants - Vascular	*Philadelphus inodorus*	Scentless Mock Orange	p
1	Plants - Vascular	*Physaria gracilis* ssp. *gracilis*	Spreading Bladder-pod	p
3	Plants - Vascular	*Platanthera peramoena*	Purple Fringeless Orchid	p
2	Plants - Vascular	*Plantago cordata*	Heartleaf Plantain	p
2	Plants - Vascular	*Polytaenia nuttallii*	Prairie Parsley	p
3	Plants - Vascular	*Ponthieva racemosa*	Shadow-witch Orchid	p
2	Plants - Vascular	*Potamogeton pusillus*	Slender Pondweed	p
2	Plants - Vascular	*Primula meadia*	Shootingstar	p
2	Plants - Vascular	*Ptilimnium costatum*	Eastern Bishopweed	p
3	Plants - Vascular	*Quercus austrina*	Bluff Oak	p
2	Plants - Vascular	*Quercus macrocarpa* var. *macrocarpa*	Bur Oak	p
2	Plants - Vascular	*Quercus oglethorpensis*	Oglethorpe's Oak	p
2	Plants - Vascular	*Ranunculus septentrionalis*	Carolina Buttercup	p
2	Plants - Vascular	*Rhynchosia latifolia*	Prairie Rhynchosia	p
2	Plants - Vascular	*Rorippa aquatica*	Lake-cress	p
2	Plants - Vascular	*Sabulina patula*	Pitcher's Stitchwort	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Salix caroliniana*	Carolina Willow	p
2	Plants - Vascular	*Sceptridium jenmanii*	Alabama Grapefern	p
3	Plants - Vascular	*Sceptridium lunarioides*	Winter Grape-fern	p
3	Plants - Vascular	*Schisandra glabra*	Bay Starvine	p
2	Plants - Vascular	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	p
3	Plants - Vascular	*Scirpus divaricatus*	Spreading Bulrush	p
3	Plants - Vascular	*Scirpus lineatus*	Drooping Bulrush	p
1	Plants - Vascular	*Sedum pulchellum*	Rock Stonecrop	e
2	Plants - Vascular	*Silene ovata*	Ovate Catchfly	p
2	Plants - Vascular	*Silphium confertifolium*	Black Belt Rosinweed	p
3	Plants - Vascular	*Silphium integrifolium* var. *gattingeri*	Gattinger's Rosinweed	p
2	Plants - Vascular	*Silphium pinnatifidum*	Tansy Rosinweed	p
3	Plants - Vascular	*Silphium terebinthinaceum* var. *luciae-brauniae*	Lucy Braun's Prairie Dock	p
2	Plants - Vascular	*Smilax pulverulenta*	Downy Carrion-flower	p
2	Plants - Vascular	*Solanum pseudogracile*	Glowing Nightshade	p
2	Plants - Vascular	*Solidago juncea*	Early Goldenrod	p
3	Plants - Vascular	*Solidago rigidiuscula*	Showy Goldenrod	p
2	Plants - Vascular	*Spiranthes lacera* var. *gracilis*	Southern Slender Ladies'-tresses	p
3	Plants - Vascular	*Spiranthes magnicamporum*	Great Plains Ladies'-tresses	p
3	Plants - Vascular	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Sporobolus ozarkanus*	Ozark Dropseed	p
3	Plants - Vascular	*Stellaria pubera*	Giant Chickweed	p
2	Plants - Vascular	*Swida alternifolia*	Alternate-leaf Dogwood	p
3	Plants - Vascular	*Symphyotrichum ericoides* var. *ericoides*	White Heath Aster	p
4	Plants - Vascular	*Symphyotrichum oblongifolium*	Aromatic Aster	p
2	Plants - Vascular	*Symphyotrichum pratense*	Barrens Silky Aster	p
2	Plants - Vascular	*Symphyotrichum puniceum* var. *puniceum*	Purple-stem Aster	p
1	Plants - Vascular	*Taenidia integerrima*	Yellow Pimpernel	p
2	Plants - Vascular	*Thalictrum debile*	Southern Meadowrue	p
2	Plants - Vascular	*Thelesperma filifolium*	Stiff Greenthread	p
3	Plants - Vascular	*Tiarella cordifolia*	Heart-leaved Foam-flower	p
3	Plants - Vascular	*Tomostima cuneifolia*	Wedgeleaf Whitlow-grass	p
3	Plants - Vascular	*Tomostima reptans*	Carolina Whitlow-grass	p
2	Plants - Vascular	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort	p
3	Plants - Vascular	*Tridens carolinianus*	Carolina Fluff Grass	p
1	Plants - Vascular	*Trifolium carolinianum*	Carolina Clover	p
4	Plants - Vascular	*Trifolium reflexum*	Buffalo Clover	p
2	Plants - Vascular	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia	p
3	Plants - Vascular	*Ulmus serotina*	September Elm	p
2	Plants - Vascular	*Uvularia floridana*	Florida Bellwort	p
3	Plants - Vascular	*Veronicastrum virginicum*	Culver's-root	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Potential Conservation Partners

- Audubon
- County and city governments and planning boards
- Land trusts
- Migratory bird joint ventures
- Mississippi Association of Conservation Districts
- Mississippi Department of Environmental Quality
- Mississippi Department of Wildlife, Fisheries, and Parks
- Mississippi Outdoor Stewardship Trust Fund
- Mississippi Forestry Association
- Mississippi Forestry Commission
- Mississippi Land Trust
- Mississippi State University
- Mississippi Wildlife Federation
- Natural Resources Conservation Service
- National Fish and Wildlife Foundation
- Private landowners
- Secretary of State
- The Conservation Fund
- The Nature Conservancy
- The Trust for Public Land
- TIMOs and REITs Tribal Partners
- US Fish and Wildlife Service
- USDA Farm Services Agency
- USDA Forest Service
- USDA Natural Resources Conservation Service
- Wildlife Mississippi

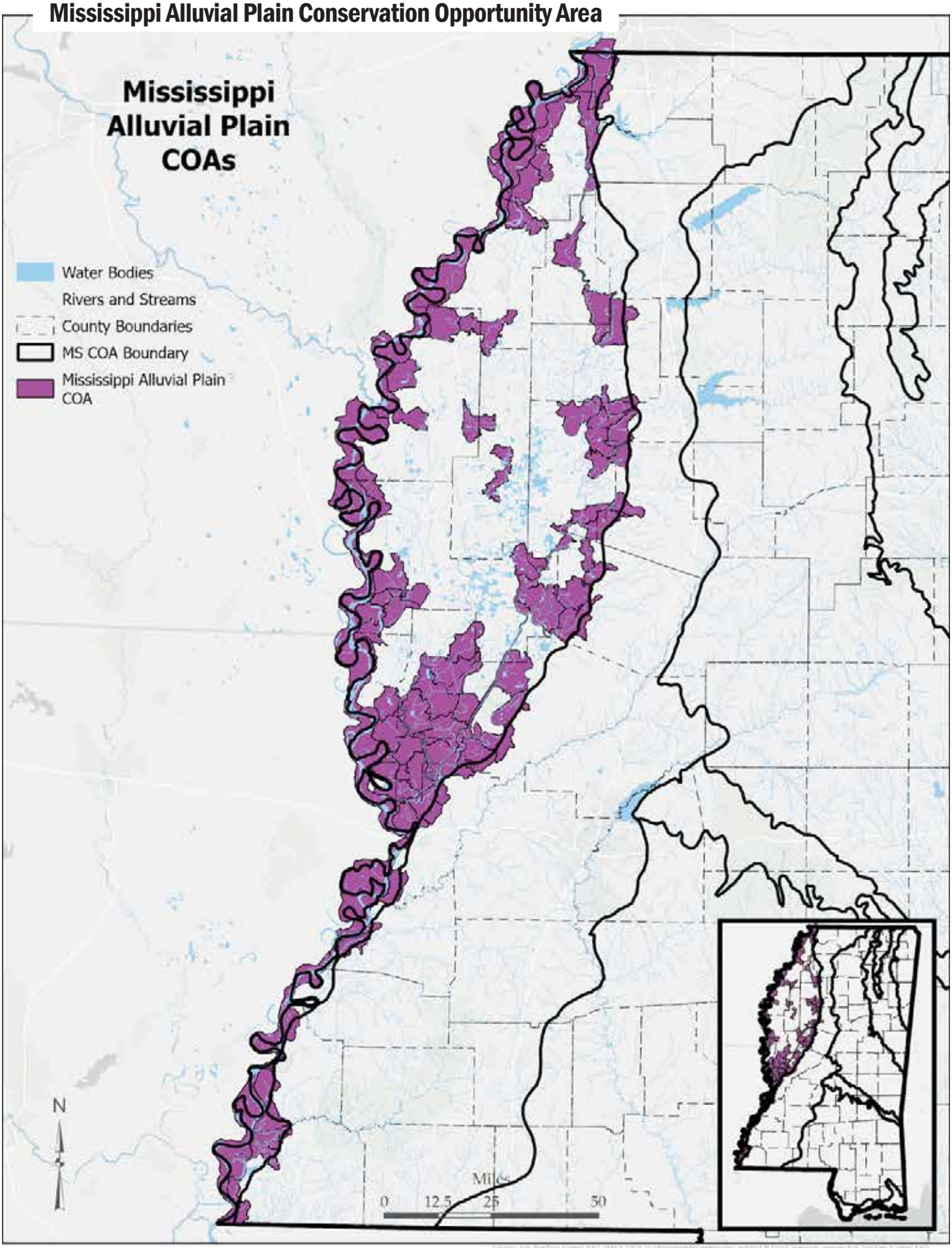


Figure 7.5. Mississippi Alluvial Plain Conservation Opportunity Area.



Paddlers enjoying a day on the Big Sunflower River. *Credit: Robbie Ellwanger*

The Mississippi Alluvial Plain COA aligns with the Level 3 ecoregion 73. It covers all or parts of 33 counties. It is a region of broad, flat alluvial plain with river terraces, swales, and levees as the main elevations. Historically, the predominant habitat in the South Delta region was forests, primarily hardwoods. Today, the major land use is private cropland and grasslands. Main crops are cotton, soybeans, milo, and corn. Catfish and crawfish are produced commercially on farm ponds in this COA. Seventy-seven HUCs are found in this COA that are designated as high priority for conservation of SGCN.

CONSERVATION SITES IN THE MISSISSIPPI ALLUVIAL PLAIN COA

- Delta National Forest
- Dahomey National Wildlife Refuge
- Hillside National Wildlife Refuge
- Holt Collier National Wildlife Refuge
- Mathews Brake National Wildlife Refuge
- Morgan Brake National Wildlife Refuge
- Panther Swamp National Wildlife Refuge
- St. Catherine Creek National Wildlife Refuge
- Tallahatchie National Wildlife Refuge
- Theodore Roosevelt National Wildlife Refuge
- Coldwater River NWR
- Yazoo National Wildlife Refuge
- Vicksburg National Military Park
- Canemount Wildlife Management Area
- Charles Ray Nix Wildlife Management Area
- Charlie Capps Wildlife Management Area
- Howard Miller Wildlife Management Area
- Lake George Wildlife Management Area
- Mahannah Wildlife Management Area
- Malmaison Wildlife Management Area
- Muscadine Farms Wildlife Management Area
- O'Keefe Wildlife Management Area
- Phil Bryant Wildlife Management Area
- Riverfront Wildlife Management Area
- Shipland Wildlife Management Area
- Sky Lake Wildlife Management Area
- Stoneville Wildlife Management Area
- William (Billy) C. Deviney Wildlife Management Area
- Florewood River Plantation State Park
- Great River Road State Park
- Leroy Percy State Park and Wildlife Management Area
- Winterville Mounds State Park
- Eagle Lake

There are opportunities to protect land around these conservation sites.

Table 7.7. Important Habitats in Mississippi Alluvial Plain COA

Habitat	
4	Floodplain Forests
5	Swamp Forests
9	Herbaceous Freshwater Marshes
10	Natural Lakes and Ponds
11	Mississippi River and Associated Drainages
15	Southwest Mississippi Drainages

Threats

Many of the threats in the Mississippi Alluvial Plain COA are associated with the historic loss of hardwood forest and inappropriate agricultural practices. Nutrient runoff from fields, increased sedimentation, and bank destabilization all contribute to low water quality in the area. The inappropriate use of dams/water control structures has significantly altered the hydrology in the area, causing headcutting and barriers to fish migration. For a more complete list of threats refer to specific habitats listed above in Chapter 5.

Priority Conservation Actions

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs.
- Limit/discourage the introduction or propagation of exotic and invasive species (plant and animal).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Coordinate with other agencies, NGOs, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.
- Maintain/improve/restore hydrologic (depth, hydroperiod, flow) and geomorphic (channel sinuosity, floodplain, microtopography) integrity.
- Encourage buffers and improve land use practices adjacent to streams (Streamside Management Zones) and other aquatic/wetland habitats.
- Encourage protection of large diameter trees and snags with visible cavities for use as dens/roosting sites for bear, squirrel, bats, and cavity nesting birds.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Provide public education about the conservation of SGCN and/or their habitats.

CONSERVATION ACTION 5 LAW AND POLICY

- Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites.

CONSERVATION ACTION 6 LIVELIHOOD, ECONOMIC AND OTHER INCENTIVES

- Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

Table 7.8. Mississippi Alluvial Plain Species of Greatest Conservation Need.

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Crayfishes	*Procambarus viaeviridis*	Vernal Crayfish	p
3	Insects	*Bombus pensylvanicus*	American Bumblebee	p
4	Insects	*Catocala atocala*	Brou's Underwing	p
4	Insects	*Ceraclea spongillovorax*	A Caddisfly	?
2	Insects	*Epitheca spinosa*	Robust Baskettail	?
4	Insects	*Eumorpha intermedia*	Intermediate Sphinx	p
4	Insects	*Euphyes dukesi dukesi*	Dukes' Skipper	p
2	Insects	*Hydroperla fugitans*	Austin Springfly	p
3	Insects	*Ischnura prognata*	Furtive Forktail	p
2	Insects	*Paracymus seclusus*	Seclusive Water Scavenger Beetle	p
2	Insects	*Spinalis simplex*	Wallace's Deepwater Mayfly	p
2	Mussels	*Actinonaias ligamentina*	Mucket	p
2	Mussels	*Arcidens confragosus*	Rock Pocketbook	p
4	Mussels	*Cyprogenia aberti*	Western Fanshell	e
2	Mussels	*Ellipsaria lineolata*	Butterfly	p
2	Mussels	*Eurynia dilatata*	Spike	p
2	Mussels	*Lampsilis hydiana*	Louisiana Fatmucket	p
3	Mussels	*Lasmigona complanata*	White Heelsplitter	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Mussels	*Plethobasus cyphyus*	Sheepnose	p
1	Mussels	*Pleurobema sintoxia*	Round Pigtoe	p
3	Mussels	*Potamilus alatus*	Pink Heelsplitter	p
1	Mussels	*Potamilus capax*	Fat Pocketbook	p
2	Mussels	*Strophitus undulatus*	Creeper	p
3	Mussels	*Uniomerus declivis*	Tapered Pondhorn	p
2	Snails	*Lithasia armigera*	Armored Rocksnail	p
2	Snails	*Lithasia verrucosa*	Varicose Rocksnail	p
3	Amphibians	*Ambystoma texanum*	Smallmouth Salamander	p
4	Amphibians	*Necturus maculosus*	Common Mudpuppy	p
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow	p
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow	p
3	Birds	*Anas acuta*	Northern Pintail	p
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow	p
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will	p
2	Birds	*Aquila chrysaetos*	Golden Eagle	p
3	Birds	*Asio flammeus*	Short-eared Owl	p
2	Birds	*Aythya affinis*	Lesser Scaup	p
2	Birds	*Botaurus lentiginosus*	American Bittern	p
3	Birds	*Calidris melanotos*	Pectoral Sandpiper	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper	p
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper	p
1	Birds	*Centronyx henslowii*	Henslow's Sparrow	p
2	Birds	*Chaetura pelagica*	Chimney Swift	p
3	Birds	*Chlidonias niger*	Black Tern	p
3	Birds	*Chordeiles minor*	Common Nighthawk	p
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo	p
2	Birds	*Colinus virginianus*	Northern Bobwhite	p
3	Birds	*Columbina passerina*	Common Ground Dove	p
2	Birds	*Coturnicops noveboracensis*	Yellow Rail	p
2	Birds	*Egretta caerulea*	Little Blue Heron	p
3	Birds	*Egretta tricolor*	Tricolored Heron	p
1	Birds	*Elanoides forficatus*	Swallow-tailed Kite	p
2	Birds	*Euphagus carolinus*	Rusty Blackbird	p
2	Birds	*Geothlypis formosa*	Kentucky Warbler	p
2	Birds	*Helmitheros vermivorum*	Worm-eating Warbler	p
2	Birds	*Hylocichla mustelina*	Wood Thrush	p
2	Birds	*Ixobrychus exilis*	Least Bittern	p
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	p
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher	p
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler	p
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	p
1	Birds	*Mycteria americana*	Wood Stork	p
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron	p
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron	p
2	Birds	*Parkesia motacilla*	Louisiana Waterthrush	p
2	Birds	*Passerina ciris*	Painted Bunting	p
1	Birds	*Platalea ajaja*	Roseate Spoonbill	p
3	Birds	*Pluvialis dominica*	American Golden-Plover	p
3	Birds	*Porphyrio martinicus*	Purple Gallinule	p
2	Birds	*Protonotaria citrea*	Prothonotary Warbler	p
3	Birds	*Quiscalus quiscula*	Common Grackle	p
2	Birds	*Rallus elegans*	King Rail	p
2	Birds	*Riparia riparia*	Bank Swallow (breeding population)	p
3	Birds	*Scolopax minor*	American Woodcock	p
2	Birds	*Setophaga cerulea*	Cerulean Warbler	p
2	Birds	*Setophaga discolor*	Prairie Warbler	p
3	Birds	*Spizella pusilla*	Field Sparrow	p
2	Birds	*Sternula antillarum athalassos*	Interior Least Tern	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Sturnella magna*	Eastern Meadowlark	p
1	Birds	*Thryomanes bewickii*	Bewick's Wren	p
3	Birds	*Tringa flavipes*	Lesser Yellowlegs	p
1	Birds	*Vermivora chrysoptera*	Golden-winged Warbler	p
2	Birds	*Vireo gilvus*	Warbling Vireo	p
3	Fishes	*Ichthyomyzon castaneus*	Chestnut Lamprey	p
2	Fishes	*Ichthyomyzon unicuspis*	Silver Lamprey	p
1	Fishes	*Scaphirhynchus albus*	Pallid Sturgeon	p
3	Fishes	*Scaphirhynchus platorynchus*	Shovelnose Sturgeon	p
3	Fishes	*Polyodon spathula*	Paddlefish	p
2	Fishes	*Atractosteus spatula*	Alligator Gar	p
4	Fishes	*Anguilla rostrata*	American Eel	p
4	Fishes	*Alosa chrysochloris*	Skipjack Herring	p
3	Fishes	*Hybopsis amnis*	Pallid Shiner	p
2	Fishes	*Miniellus sabinae*	Sabine Shiner	p
2	Fishes	*Chrosomus erythrogaster*	Southern Redbelly Dace	p
3	Fishes	*Cyprinella whipplei*	Steelcolor Shiner	p
1	Fishes	*Macrhybopsis meeki*	Sicklefin Chub	p
4	Fishes	*Platygobio gracilis*	Flathead Chub	e
3	Fishes	*Cycleptus elongatus*	Blue Sucker	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Fishes	*Noturus flavus*	Stonecat	p
3	Fishes	*Fundulus dispar*	Northern Starhead Topminnow	p
3	Fishes	*Fundulus blairae*	Western Starhead Topminnow	p
3	Fishes	*Etheostoma asprigene*	Mud Darter	p
3	Mammals	*Lasiurus cinereus*	Hoary Bat	p
2	Mammals	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	p
3	Mammals	*Lasiurus intermedius*	Northern Yellow Bat	p
3	Mammals	*Myotis austroriparius*	Southeastern Myotis	p
1	Mammals	*Myotis septentrionalis*	Northern Long-eared Bat	p
2	Mammals	*Perimyotis subflavus*	Tricolored Bat	p
2	Mammals	*Sorex longirostris*	Southeastern Shrew	p
1	Mammals	*Spilogale putorius*	Eastern Spotted Skunk	p
2	Mammals	*Ursus americanus*	Black Bear	p
1	Mammals	*Ursus americanus lutelous*	Louisiana Black Bear	p
1	Reptiles	*Deirochelys reticularia miaria*	Western Chicken Turtle	E
2	Reptiles	*Lampropeltis triangulum*	Red Milk Snake	p
2	Reptiles	*Liodytes rigida deltae*	Delta Crayfish Snake	p
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle	p
2	Plants - Nonvascular	*Anthoceros punctatus*	a hornwort	p
1	Plants - Vascular	*Agalinis homalantha*	San Antonio False-foxglove	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Alisma subcordatum*	Broad-leaved Water-plantain	p
2	Plants - Vascular	*Asclepias incarnata*	Swamp Milkweed	p
4	Plants - Vascular	*Asclepias purpurascens*	Purple Milkweed	p
2	Plants - Vascular	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch	p
2	Plants - Vascular	*Carex comosa*	Bristly Sedge	p
3	Plants - Vascular	*Carex gracilescens*	Slender Sedge	p
3	Plants - Vascular	*Carex grayi*	Asa Gray's Sedge	p
3	Plants - Vascular	*Carex hyalina*	Tissue Sedge	p
2	Plants - Vascular	*Carya laciniosa*	Big Shellbark Hickory	p
1	Plants - Vascular	*Ceratopteris pteridoides*	Floating Antler Fern	p
3	Plants - Vascular	*Cladrastis kentukea*	Yellowwood	p
1	Plants - Vascular	*Crataegus brachyacantha*	Blueberry Hawthorn	p
1	Plants - Vascular	*Cyperus refractus*	Reflexed Flatsedge	p
3	Plants - Vascular	*Decodon verticillatus*	Hairy Swamp Loosestrife	p
2	Plants - Vascular	*Dryopteris australis*	Southern Woodfern	p
1	Plants - Vascular	*Echinodorus berteroi*	Upright Burhead	p
3	Plants - Vascular	*Eleocharis macrostachya*	Creeping Spikerush	p
1	Plants - Vascular	*Eleocharis parvula*	Small Spikerush	p
1	Plants - Vascular	*Equisetum arvense*	Field Horsetail	p
1	Plants - Vascular	*Eryngium hookeri*	Hooker's Coyote-thistle	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Euploca convolvulacea*	Bindweed Heliotrope	p
3	Plants - Vascular	*Gymnocladus dioicus*	Kentucky Coffeetree	p
2	Plants - Vascular	*Hackelia virginiana*	Virginia Stickseed	p
3	Plants - Vascular	*Herbertia lahue*	Herbertia	p
3	Plants - Vascular	*Hexalectris spicata*	Crested Coralroot	p
2	Plants - Vascular	*Hottonia inflata*	Featherfoil	p
1	Plants - Vascular	*Hydrastis canadensis*	Golden-seal	p
2	Plants - Vascular	*Hymenocallis occidentalis* var. *eulae*	Woodland Spider-lily	p
2	Plants - Vascular	*Juncus interior*	Inland Rush	p
1	Plants - Vascular	*Lindera melissifolia*	Pondberry	p
2	Plants - Vascular	*Marsilea vestita*	Marsilea vestita	p
3	Plants - Vascular	*Muhlenbergia sylvatica*	Woodland Muhly	p
3	Plants - Vascular	*Muhlenbergia tenuiflora*	Slender Muhly	p
2	Plants - Vascular	*Opuntia macrorhiza*	Twisted-spine Prickly-pear	p
3	Plants - Vascular	*Panax quinquefolius*	American Ginseng	p
3	Plants - Vascular	*Penstemon tenuis*	Sharp-sepal Beardtongue	p
1	Plants - Vascular	*Phacelia hirsuta*	Hairy Scorpionweed	p
1	Plants - Vascular	*Phacelia ranunculacea*	Blue Scorpionweed	p
2	Plants - Vascular	*Ptilimnium costatum*	Eastern Bishopweed	p
2	Plants - Vascular	*Ranunculus flabellaris*	Yellow Water-crowfoot	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Rhynchosia latifolia*	Prairie Rhynchosia	p
2	Plants - Vascular	*Rorippa aquatica*	Lake-cress	p
3	Plants - Vascular	*Schisandra glabra*	Bay Starvine	p
3	Plants - Vascular	*Scirpus lineatus*	Drooping Bulrush	p
2	Plants - Vascular	*Sideroxylon reclinatum* ssp. *reclinatum*	Florida Bumelia	p
2	Plants - Vascular	*Smilax pulverulenta*	Downy Carrion-flower	p
3	Plants - Vascular	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	p
1	Plants - Vascular	*Thalia dealbata*	Powdery Thalia	p
3	Plants - Vascular	*Trillium foetidissimum*	Fetid Trillium	p
3	Plants - Vascular	*Verbena xutha*	Gulf Vervain	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Potential Conservation Partners

- Audubon
- BEaR Group of Mississippi
- Black Bear Conservation Committee
- Delta FARM
- Delta Waterfowl
- Delta Wildlife
- Delta Wind Birds
- Ducks Unlimited
- Land trusts
- Lower Delta Partnership Migratory bird joint ventures
- Mississippi Association of Conservation Districts
- Mississippi Department of Environmental Quality
- Mississippi Department of Wildlife, Fisheries and Parks
- Mississippi Farm Bureau Federation
- Mississippi Forestry Association
- Mississippi Forestry Commission Mississippi Land Trust
- Mississippi Outdoor Stewardship Trust Fund
- Mississippi State University
- Mississippi State University Extension Service
- Mississippi Wildlife Federation
- National Wild Turkey Federation
- National Fish and Wildlife Foundation Private Landowners
- Secretary of State
- The Conservation Fund The Nature Conservancy
- The Trust for Public Land
- TIMOs and REITs
- Tribal partners
- US Army Corps of Engineers
- US Fish and Wildlife Service
- USDA Forest Service
- USDA Farm Services Agency
- USDA Natural Resources Conservation Service Wildlife Mississippi

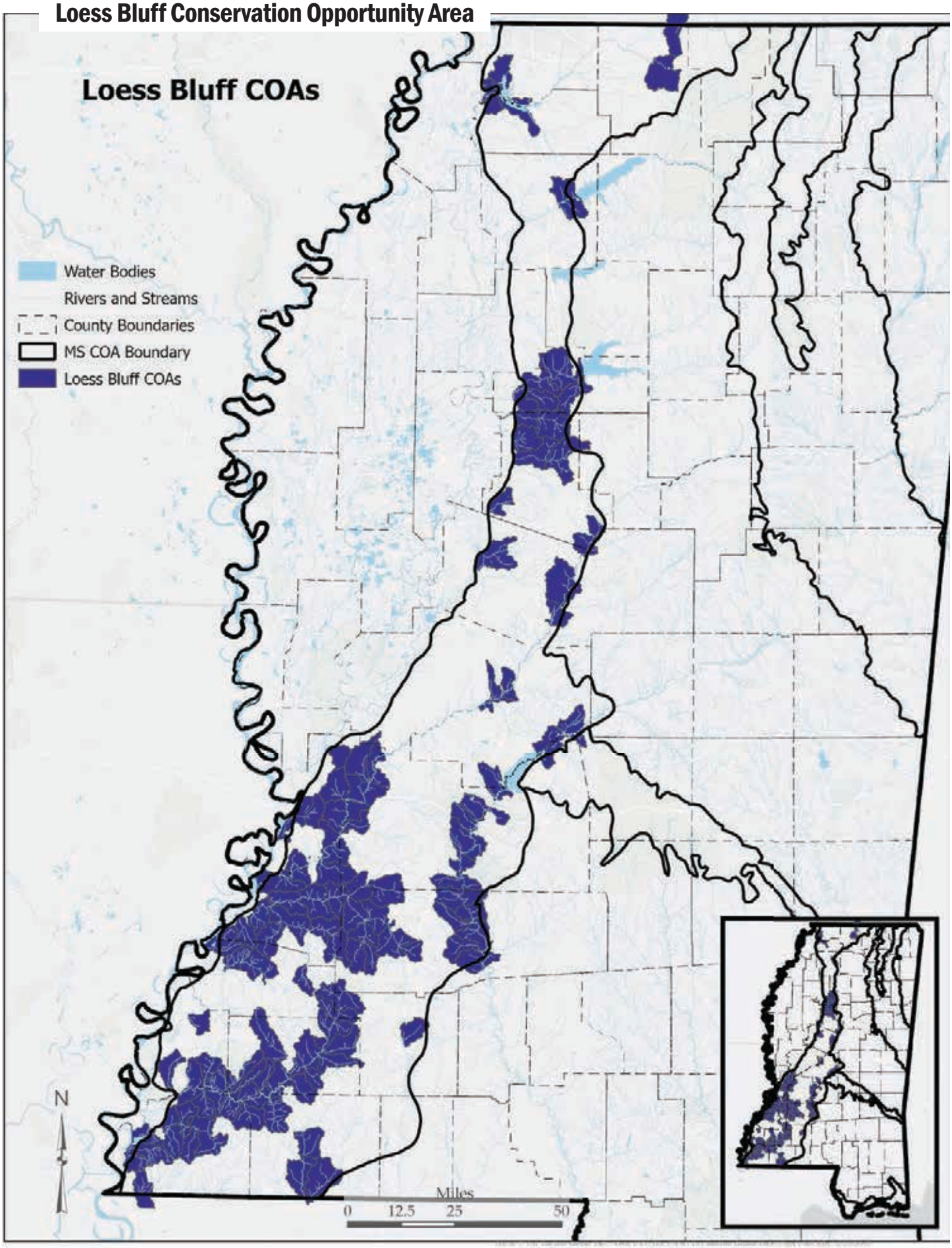
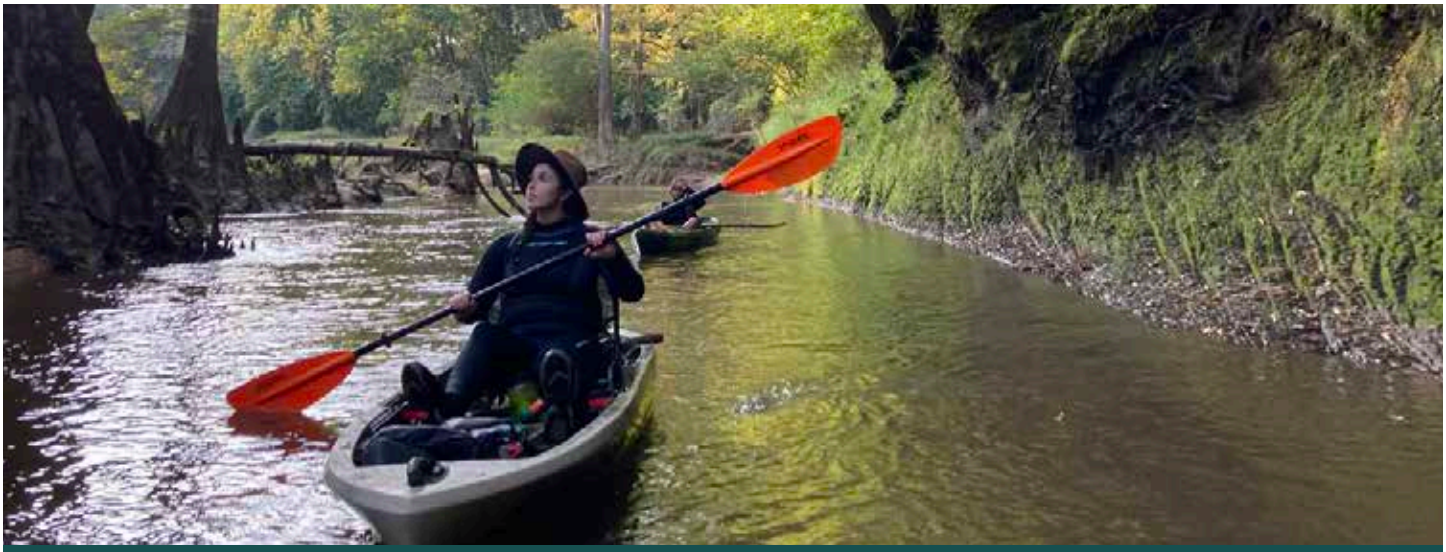


Figure 7.6. Loess Bluff Conservation Opportunity Area.



Kayaking the Yockanookany River *Credit: Robbie Ellwanger*

The Loess Bluff COA is found in Level 3 ecoregion 74. This area spans the state from the Tennessee border to the Louisiana border, and includes irregular plains, gently rolling hills, bluffs and ravines in portions of 35 counties. The majority of the Mississippi Forestry Commission's Forest Legacy Program (2020) Central Forest Legacy Area lies in this COA. One hundred and seven HUCs are found in this COA that are designated as high priority for conservation of SGCN.

CONSERVATION SITES IN THE LOESS BLUFF COA

- Holly Springs National Forest
- Homochitto National Forest
- Natchez Trace Parkway
- Hillside National Wildlife Refuge
- Morgan Brake National Wildlife Refuge
- St. Catherine's Creek National Wildlife Refuge
- Tallahatchie National Wildlife Refuge
- Vicksburg National Military Park
- Canemount Wildlife Management Area
- Charles Ray Nix Wildlife Management Area
- Copiah County Wildlife Management Area
- Pearl River Wildlife Management Area
- Clark Creek Natural Area
- George P. Cossar State Park
- Holmes County State Park
- Hugh White State Park
- LeFleur's Bluff State Park
- Natchez State Park and Wildlife Management Area
- Percy Quinn State Park
- Calling Panther Lake and Wildlife Management Area
- Arkabutla Reservoir
- Grenada Reservoir

There are opportunities to protect land around these conservation sites. Additionally, Bayou Pierre, White Oak Creek, Big Black River, upper Yalobusha, Amite River, Yockanookany River, Clark Creek, and their tributaries have been highlighted as targets for conservation.

Table 7.9. Important Habitats in Loess Bluff COA.

Habitat	
1	Dry-Mesic Upland Forests/Woodlands
2	Mesic Upland Forests
3	Rock Outcrops and Caves
4	Floodplain Forests
5	Swamp Forests
7	Bogs and Seepages
8	Prairie and Glades
9	Herbaceous Freshwater Marshes
10	Natural Lakes and Ponds
11	Mississippi River and Associated Drainages
12	Northeast Mississippi Drainages
13	Pearl River Drainages
15	Southwest Mississippi Drainages

Threats

Threats to the Loess Bluffs COA are similar to other parts of the state. Urban and suburban development, fragmentation, and forest conversion pose a threat to all of the habitats within this COA. Channel modifications that cause erosion and headcutting and sand/gravel mining are impacting the streams and rivers, and the SGCN within them. Multiple invasive species are an issue in this COA, with two of the worst plant invaders being kudzu and Chinese privet. Others include Cherokee rose, wild hogs, fire ants, Asian carp, exotic mussels, and numerous aquatic invasives. For a more complete list of threats refer to specific habitats listed above in Chapter 5.

Priority Conservation Actions

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Encourage and improve agriculture/forestry/land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.
- Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs.
- Limit/discourage the introduction or propagation of exotic and invasive species (plant and animal).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Coordinate with other agencies, NGOs, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Educate landowners on the benefits of maintaining a diverse, healthy forest using sound practices.
- Develop informational materials promoting the optimal conditions and management needs of habitats.
- Encourage the increased use and acceptance of prescribed fire through increased communications and partnerships.
- Provide prescribed fire training opportunities for private landowners. Focus on training landowners to achieve fire capacity and application at a large scale.

Table 7.10. Loess Bluff COA Species of Greatest Conservation Need.

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Crayfishes	*Faxonius etnieri*	Ets Crayfish	p
1	Crayfishes	*Faxonius hartfieldi*	Yazoo Crayfish	p
2	Crayfishes	*Procambarus lylei*	Shutispear Crayfish	p
3	Crayfishes	*Procambarus penni*	Pearl Blackwater Crayfish	p
3	Crayfishes	*Procambarus planirostris*	Flatnose Crayfish	p
3	Crayfishes	*Procambarus viaeviridis*	Vernal Crayfish	p
4	Insects	*Agarodes libalis*	Spring-loving Psiloneuran Caddisfly	p
3	Insects	*Amphiagrion saucium*	Eastern Red Damsel	p
3	Insects	*Arigomphus villosipes*	Unicorn Clubtail	p
3	Insects	*Bombus pensylvanicus*	American Bumblebee	p
4	Insects	*Ceraclea spongillovorax*	A Caddisfly	?
4	Insects	*Ceratophaga vicinella*	Gopher Tortoise Shell Moth	p
3	Insects	*Cordulegaster bilineata*	Brown Spiketail	p
2	Insects	*Epitheca spinosa*	Robust Baskettail	p
4	Insects	*Erynnis martialis*	Mottled Dusky Wing	p
4	Insects	*Eumorpha intermedia*	Intermediate Sphinx	p
2	Insects	*Haploperla chukcho*	Chukcho Stonefly	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Insects	*Homoeoneuria cahabensis*	Cahaba Sand-filtering Mayfly	p
4	Insects	*Hydroptila tusculum*	A Caddisfly	p
4	Insects	*Nemocapnia carolina*	Southern Snowfly	p
4	Insects	*Neoperla coxi*	A Stonefly	p
4	Insects	*Papaipema sp. 5*	Rare Cane Borer Moth	p
2	Insects	*Paracymus seclusus*	Seclusive Water Scavenger Beetle	p
4	Insects	*Setodes dixiensis*	A Caddisfly	p
3	Insects	*Somatochlora provocans*	Treetop Emerald	p
3	Mussels	*Utterbackiana hartfieldorum*	Cypress Floater	p
2	Mussels	*Arcidens confragosus*	Rock Pocketbook	p
2	Mussels	*Ellipsaria lineolata*	Butterfly	p
3	Mussels	*Lasmigona complanata*	White Heelsplitter	p
1	Mussels	*Obovaria subrotunda*	Round Hickorynut	p
2	Mussels	*Obovaria arkansasensis*	Southern Hickorynut	p
2	Mussels	*Pleurobema beadleianum*	Mississippi Pigtoe	p
1	Mussels	*Pleurobema riddellii*	Louisiana Pigtoe	p
1	Mussels	*Pleurobema sintoxia*	Round Pigtoe	p
1	Mussels	*Potamilus inflatus*	Inflated Heelsplitter	p
3	Mussels	*Quadrula nobilis*	Gulf Mapleleaf	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Mussels	*Strophitus undulatus*	Creeper	p
2	Mussels	*Strophitus pascagoulaensis*	Pascagoula Creekshell	p
3	Mussels	*Uniomerus declivis*	Tapered Pondhorn	p
1	Mussels	*Obovaria c.f. unicolor*	Undescribed Hickorynut	p
1	Snails	*Lithasia hubrichti*	Big Black Rocksnail	p
3	Amphibians	*Ambystoma texanum*	Smallmouth Salamander	p
4	Amphibians	*Ambystoma tigrinum*	Tiger Salamander	?
4	Amphibians	*Desmognathus valentinei*	Valentine's Southern Dusky Salamander	p
2	Amphibians	*Hemidactylium scutatum*	Four-toed Salamander	p
2	Amphibians	*Lithobates areolata*	Crawfish Frog	p
2	Amphibians	*Plethodon websteri clade A*	Webster's Salamander Clade A	p
3	Amphibians	*Pseudotriton ruber*	Red Salamander	p
2	Birds	*Accipiter striatus*	Sharp-shinned Hawk (breeding population)	p
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow	p
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow	p
3	Birds	*Anas acuta*	Northern Pintail	p
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow	p
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will	p
2	Birds	*Aquila chrysaetos*	Golden Eagle	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Asio flammeus*	Short-eared Owl	p
2	Birds	*Aythya affinis*	Lesser Scaup	p
2	Birds	*Botaurus lentiginosus*	American Bittern	p
3	Birds	*Calidris melanotos*	Pectoral Sandpiper	p
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper	p
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper	p
1	Birds	*Centronyx henslowii*	Henslow's Sparrow	p
2	Birds	*Chaetura pelagica*	Chimney Swift	p
3	Birds	*Chlidonias niger*	Black Tern	p
3	Birds	*Chordeiles minor*	Common Nighthawk	p
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo	p
2	Birds	*Colinus virginianus*	Northern Bobwhite	p
3	Birds	*Columbina passerina*	Common Ground Dove	p
2	Birds	*Coturnicops noveboracensis*	Yellow Rail	p
1	Birds	*Dryobates borealis*	Red-cockaded Woodpecker	p
2	Birds	*Egretta caerulea*	Little Blue Heron	p
3	Birds	*Egretta tricolor*	Tricolored Heron	p
1	Birds	*Elanoides forficatus*	Swallow-tailed Kite	p
2	Birds	*Euphagus carolinus*	Rusty Blackbird	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Falco sparverius paulus*	Southeastern American Kestrel	p
2	Birds	*Geothlypis formosa*	Kentucky Warbler	p
2	Birds	*Helmitheros vermivorum*	Worm-eating Warbler	p
2	Birds	*Hylocichla mustelina*	Wood Thrush	p
2	Birds	*Ixobrychus exilis*	Least Bittern	p
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	p
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	p
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher	p
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler	p
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	p
1	Birds	*Mycteria americana*	Wood Stork	p
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron	p
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron	p
2	Birds	*Parkesia motacilla*	Louisiana Waterthrush	p
2	Birds	*Passerina ciris*	Painted Bunting	p
2	Birds	*Peucaea aestivalis*	Bachman's Sparrow	p
3	Birds	*Piranga olivacea*	Scarlet Tanager (breeding population)	p
1	Birds	*Platalea ajaja*	Roseate Spoonbill	p
3	Birds	*Pluvialis dominica*	American Golden-Plover	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Porphyrio martinicus*	Purple Gallinule	p
2	Birds	*Protonotaria citrea*	Prothonotary Warbler	p
3	Birds	*Quiscalus quiscula*	Common Grackle	p
2	Birds	*Rallus elegans*	King Rail	p
3	Birds	*Scolopax minor*	American Woodcock	p
2	Birds	*Seiurus aurocapilla*	Ovenbird (breeding population)	p
2	Birds	*Setophaga cerulea*	Cerulean Warbler	p
2	Birds	*Setophaga discolor*	Prairie Warbler	p
3	Birds	*Sitta pusilla*	Brown-headed Nuthatch	p
3	Birds	*Spizella pusilla*	Field Sparrow	p
3	Birds	*Sturnella magna*	Eastern Meadowlark	p
1	Birds	*Thryomanes bewickii*	Bewick's Wren	p
3	Birds	*Tringa flavipes*	Lesser Yellowlegs	p
1	Birds	*Vermivora chrysoptera*	Golden-winged Warbler	p
2	Birds	*Vireo gilvus*	Warbling Vireo	p
3	Fishes	*Ichthyomyzon castaneus*	Chestnut Lamprey	p
1	Fishes	*Acipenser desotoi*	Gulf Sturgeon	p
3	Fishes	*Scaphirhynchus platorynchus*	Shovelnose Sturgeon	p
4	Fishes	*Anguilla rostrata*	American Eel	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Fishes	*Alosa alabamae*	Alabama Shad	e
4	Fishes	*Alosa chrysochloris*	Skipjack Herring	p
3	Fishes	*Hybopsis amnis*	Pallid Shiner	p
2	Fishes	*Miniellus sabinae*	Sabine Shiner	p
2	Fishes	*Chrosomus erythrogaster*	Southern Redbelly Dace	p
3	Fishes	*Cyprinella whipplei*	Steelcolor Shiner	p
3	Fishes	*Cycleptus elongatus*	Blue Sucker	p
3	Fishes	*Cycleptus meridionalis*	Southeastern Blue Sucker	p
3	Fishes	*Moxostoma carinatum*	River Redhorse	p
3	Fishes	*Noturus munitus*	Frecklebelly Madtom	p
1	Fishes	*Noturus gladiator*	Piebald Madtom	p
3	Fishes	*Fundulus dispar*	Northern Starhead Topminnow	p
2	Fishes	*Fundulus euryzonus*	Broadstripe Topminnow	p
3	Fishes	*Fundulus blairae*	Western Starhead Topminnow	p
3	Fishes	*Enneacanthus gloriosus*	Bluespotted Sunfish	p
4	Fishes	*Ammocrypta clara*	Western Sand Darter	p
3	Fishes	*Etheostoma asprigene*	Mud Darter	p
1	Fishes	*Nothonotus rubrus*	Bayou Darter	p
2	Fishes	*Percina phoxocephala*	Slenderhead Darter	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Fishes	*Percina aurora*	Pearl Darter	e
3	Mammals	*Lasiurus cinereus*	Hoary Bat	p
2	Mammals	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	p
3	Mammals	*Lasionycteris noctivagans*	Silver-haired Bat	p
3	Mammals	*Myotis austroriparius*	Southeastern Myotis	p
1	Mammals	*Myotis septentrionalis*	Northern Long-eared Bat	p
3	Mammals	*Neogale frenata*	Long-tailed Weasel	p
2	Mammals	*Perimyotis subflavus*	Tricolored Bat	p
2	Mammals	*Sorex longirostris*	Southeastern Shrew	p
1	Mammals	*Spilogale putorius*	Eastern Spotted Skunk	p
2	Mammals	*Ursus americanus*	Black Bear	p
1	Mammals	*Ursus americanus lutelous*	Louisiana Black Bear	p
3	Reptiles	*Coluber flagellum flagellum*	Eastern Coachwhip	p
2	Reptiles	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	p
2	Reptiles	*Graptemys oculifera*	Ringed Map Turtle	p
1	Reptiles	*Graptemys pearlensis*	Pearl River Map Turtle	p
2	Reptiles	*Lampropeltis calligaster calligaster*	Prairie Kingsnake	p
2	Reptiles	*Lampropeltis calligaster rhombomaculata*	Mole Kingsnake	p
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Reptiles	*Micrurus fulvius*	Eastern Coral Snake	p
2	Reptiles	*Ophisaurus attenuatus*	Slender Glass Lizard	p
2	Reptiles	*Plestiodon anthracinus*	Coal Skink	p
2	Reptiles	*Regina septemvittata*	Queen Snake	p
2	Reptiles	*Rhadinaea flavilata*	Pine Woods Snake	p
2	Plants - Nonvascular	*Anthoceros punctatus*	a hornwort	p
3	Plants - Nonvascular	*Lejeunea cladogyna*	a liverwort	p
2	Plants - Nonvascular	*Lejeunea floridana*	a liverwort	p
2	Plants - Nonvascular	*Plagiochila floridana*	Florida Leafy Liverwort	p
1	Plants - Nonvascular	*Tortula porteri*	Porter's Screw Moss	p
1	Plants - Nonvascular	*Trachyxiphium hypnaceum*	Trachyxiphium Moss	p
3	Plants - Vascular	*Adiantum capillus-veneris*	Southern Maidenhair-fern	p
2	Plants - Vascular	*Agastache nepetoides*	Yellow Giant-hyssop	p
2	Plants - Vascular	*Aralia racemosa*	American Spikenard	p
2	Plants - Vascular	*Asclepias hirtella*	Green Milkweed	p
1	Plants - Vascular	*Aspidogyne querceticola*	Low Erythrodes	p
1	Plants - Vascular	*Baptisia nuttalliana*	Nuttall's Wild Indigo	p
3	Plants - Vascular	*Borodinia canadensis*	Sicklepod	p
1	Plants - Vascular	*Calliphysalis carpenteri*	Carpenter's Ground-cherry	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Camassia scilloides*	Wild Hyacinth	p
2	Plants - Vascular	*Carex alata*	Broadwing Sedge	p
1	Plants - Vascular	*Carex fissa* var. *aristata*	Hammock Sedge	p
3	Plants - Vascular	*Carex gracilescens*	Slender Sedge	p
1	Plants - Vascular	*Carex grisea*	Inflated Narrowleaf Sedge	p
1	Plants - Vascular	*Carex impressinervia*	Impressed-nerved Sedge	p
3	Plants - Vascular	*Carex jamesii*	Nebraska Sedge	p
3	Plants - Vascular	*Carex oxylepis* var. *pubescens*	Sharp-scale Sedge	p
2	Plants - Vascular	*Carex prasina*	Drooping Sedge	p
3	Plants - Vascular	*Carex radiata*	Stellate Sedge	p
2	Plants - Vascular	*Carya laciniosa*	Big Shellbark Hickory	p
1	Plants - Vascular	*Ceratophyllum echinatum*	Prickly Hornwort	p
3	Plants - Vascular	*Cladrastis kentukea*	Yellowwood	p
3	Plants - Vascular	*Cyperus bipartitus*	Shining Flatsedge	p
2	Plants - Vascular	*Cyperus thyrsiflorus*	Southcentral Flatsedge	p
2	Plants - Vascular	*Deparia acrostichoides*	Silvery Spleenwort	p
4	Plants - Vascular	*Didiplis diandra*	Water-purslane	p
2	Plants - Vascular	*Didymoglossum petersii*	Dwarf Filmy-fern	p
2	Plants - Vascular	*Diphasiastrum digitatum*	Fan Club-moss	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Dryopteris australis*	Southern Woodfern	p
2	Plants - Vascular	*Dryopteris ludoviciana*	Southern Shield Wood-fern	p
1	Plants - Vascular	*Echinodorus berteroi*	Upright Burhead	p
2	Plants - Vascular	*Eleocharis compressa*	Flat-stem Spikerush	p
2	Plants - Vascular	*Eleocharis erythropoda*	Bald Spikerush	p
3	Plants - Vascular	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	p
1	Plants - Vascular	*Eleocharis parvula*	Small Spikerush	p
2	Plants - Vascular	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	p
1	Plants - Vascular	*Equisetum arvense*	Field Horsetail	p
1	Plants - Vascular	*Gratiola floridana*	Florida Hedge-hyssop	p
2	Plants - Vascular	*Hackelia virginiana*	Virginia Stickseed	p
1	Plants - Vascular	*Helianthus verticillatus*	Whorled Sunflower	p
3	Plants - Vascular	*Herbertia lahue*	Herbertia	p
3	Plants - Vascular	*Heteranthera missouriensis*	Missouri Mud-plantain	p
3	Plants - Vascular	*Hexalectris spicata*	Crested Coralroot	p
1	Plants - Vascular	*Hydrastis canadensis*	Golden-seal	p
2	Plants - Vascular	*Hymenocallis occidentalis* var. *eulae*	Woodland Spider-lily	p
3	Plants - Vascular	*Iris brevicaulis*	Lamance Iris	p
1	Plants - Vascular	*Iris giganticaerulea*	Giant Blue Iris	p
2	Plants - Vascular	*Juglans cinerea*	Butternut	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	p
1	Plants - Vascular	*Magnolia tripetala*	Umbrella Magnolia	p
2	Plants - Vascular	*Malus ioensis*	Iowa Crabapple	p
2	Plants - Vascular	*Marsilea vestita*	Marsilea vestita	p
3	Plants - Vascular	*Matelea obliqua*	Climbing Milkweed	p
1	Plants - Vascular	*Myriopteris alabamensis*	Alabama Lipfern	p
2	Plants - Vascular	*Opuntia macrorhiza*	Twisted-spine Prickly-pear	p
2	Plants - Vascular	*Packera tomentosa*	Woolly Groundsel	p
3	Plants - Vascular	*Panax quinquefolius*	American Ginseng	p
3	Plants - Vascular	*Platanthera peramoena*	Purple Fringeless Orchid	p
3	Plants - Vascular	*Ponthieva racemosa*	Shadow-witch Orchid	p
2	Plants - Vascular	*Potamogeton pusillus*	Slender Pondweed	p
2	Plants - Vascular	*Pycnanthemum pilosum*	Whorled Mountainmint	p
3	Plants - Vascular	*Quercus austrina*	Bluff Oak	p
2	Plants - Vascular	*Quercus oglethorpensis*	Oglethorpe's Oak	p
2	Plants - Vascular	*Quercus palustris*	Pin Oak	p
2	Plants - Vascular	*Rhynchosia latifolia*	Prairie Rhynchosia	p
1	Plants - Vascular	*Rudbeckia grandiflora* var. *alismifolia*	Rough Coneflower	p
3	Plants - Vascular	*Sabatia campestris*	Prairie Pink	p
3	Plants - Vascular	*Schisandra glabra*	Bay Starvine	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	p
3	Plants - Vascular	*Scirpus divaricatus*	Spreading Bulrush	p
3	Plants - Vascular	*Scirpus lineatus*	Drooping Bulrush	p
2	Plants - Vascular	*Silene ovata*	Ovate Catchfly	p
2	Plants - Vascular	*Smilax pulverulenta*	Downy Carrion-flower	p
2	Plants - Vascular	*Solidago auriculata*	Eared Goldenrod	p
2	Plants - Vascular	*Solidago flaccidifolia*	Appalachian Goldenrod	p
2	Plants - Vascular	*Sphenopholis penysylvanica*	Swamp Wedgescale	p
2	Plants - Vascular	*Spiranthes lacera* var. *gracilis*	Southern Slender Ladies'-tresses	p
3	Plants - Vascular	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	p
4	Plants - Vascular	*Symphyotrichum oblongifolium*	Aromatic Aster	p
2	Plants - Vascular	*Symphyotrichum oolentangiense*	Sky Blue Aster	p
1	Plants - Vascular	*Trifolium carolinianum*	Carolina Clover	p
4	Plants - Vascular	*Trifolium reflexum*	Buffalo Clover	p
3	Plants - Vascular	*Trillium foetidissimum*	Fetid Trillium	p
3	Plants - Vascular	*Trillium ludovicianum*	Louisiana Trillium	p
3	Plants - Vascular	*Ulmus serotina*	September Elm	p
2	Plants - Vascular	*Utricularia olivacea*	Piedmont Bladderwort	p
3	Plants - Vascular	*Verbena xutha*	Gulf Vervain	p
3	Plants - Vascular	*Veronicastrum virginicum*	Culver's-root	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Potential Conservation Partners

- Audubon
- County and city governments and planning boards
- Migratory bird joint ventures
- Mississippi Association of Conservation Districts
- Mississippi Department of Wildlife, Fisheries, and Parks
- Mississippi Forestry Association
- Mississippi Forestry Commission
- Mississippi Land Trust
- Mississippi Outdoor Stewardship Trust Fund
- Mississippi Prescribed Fire Council
- Mississippi Wildlife Federation
- National Park Service
- National Fish and Wildlife Foundation
- Private landowners
- Secretary of State
- The Conservation Fund
- The Nature Conservancy
- The Trust for Public Land
- TIMOs and REITs
- Tribal Partners
- US Army Corps of Engineers
- US Fish and Wildlife Service
- USDA Farm Services Agency
- USDA Forest Service
- USDA Natural Resources Conservation Service
- Wildlife Mississippi

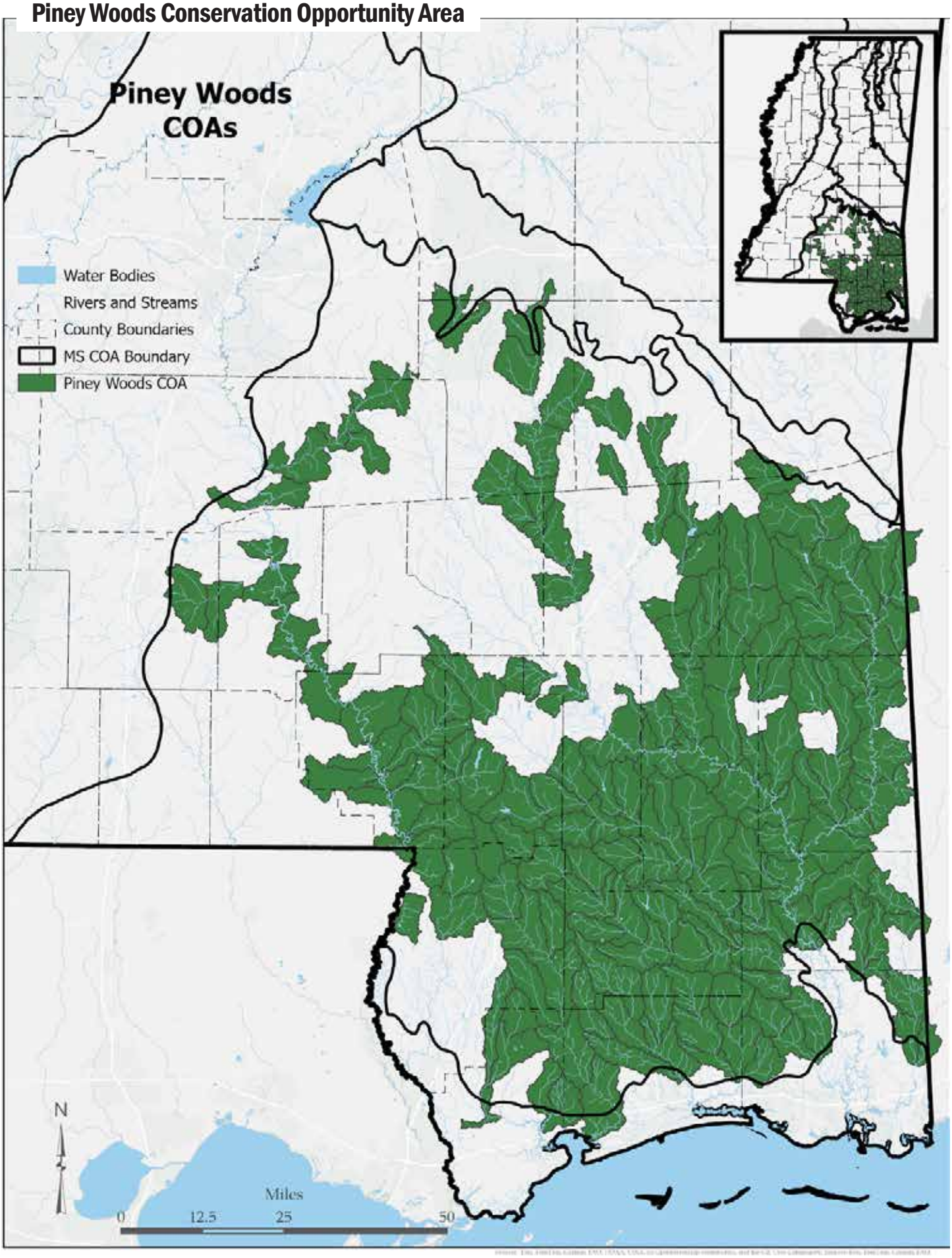


Figure 7.7. Piney Woods Conservation Opportunity Area

The Piney Woods COA includes the lower Pascagoula River and Pearl River Basins and covers all or parts of 33 counties. It extends south from the Jackson Prairie ecoregion 65r and east of the Southern Rolling Plains ecoregion 74c. The Piney Woods COA is heavily forested throughout, primarily of pine with scattered hardwoods. The topography consists primarily of gently rolling hills and broad, flat floodplains. The Pascagoula River supplies a large portion of the freshwater entering the sound. In so doing, it replenishes nutrients and sediments that play a critical role in maintaining the productivity of the coastal waters. The Pearl River is one of the most intact river systems in the Southeast U.S. with a great diversity of wildlife species and habitats (TNC 2001). A relatively natural, unlevied system, it supports a large number of SGCN. Wetland systems within this COA provide invaluable ecosystem functions such as controlling erosion, absorbing excess nutrients and helping to reduce flooding. The lower Pearl River supports one of the healthiest marsh complexes in the Southeast (TNC 2004) with high quality examples of fresh, intermediate and brackish marshes.

The Mississippi Forestry Commission's Forest Legacy Program (2020) also lists southeast Mississippi as a Forest Legacy Area, focusing on thirteen southernmost counties. The southeast portion of the Central Forest Legacy Area of the MFC Forest Legacy Program falls in this COA. One hundred sixty-four HUCs are found in this COA that are designated as high priority for conservation of SGCN.

In the Land Trust for the Mississippi Coastal Plain's (LTMCP) Conservation Strategy for the Mississippi Gulf Coast (2012) a map of potential conservation lands was developed for the Mississippi Gulf Coast. The map identifies and ranks potential lands for conservation, reflecting environmental/ecological value, cultural and historical value, and proximity to development and existing conservation lands, among other factors. Many of the high priority lands indicated in this strategy lie within the Piney Woods COA.

Conservation Sites in the Piney Woods COA

- De Soto National Forest (De Soto and Chickasawhay Districts)
- Bienville National Forest (southern portion)
- Bogue Chitto Wilderness Area
- Mississippi Sandhill Crane National Wildlife Refuge
- Camp Shelby Joint Forces Training Center
- Mississippi Band of Choctaw Indians Tribal Lands
- Lake Lincoln State Park
- Paul B. Johnson State Park
- Roosevelt State Park
- Marion County Wildlife Management Area
- Old River Wildlife Management Area
- Wolf River Wildlife Management Area
- Red Creek Wildlife Management Area
- Pascagoula Wildlife Management Area
- Theodore Mars Wildlife Management Area
- McHenry Range (MDWFP)
- Logtown
- Lake Walthall
- Lake Mary Crawford
- Lake Jeff Davis
- Lake Mike Conner
- Prentiss Walker Lake
- Lake Bogue Homa
- Lake Perry
- Simpson County Lake
- Lake Claude Bennett
- State Line Bog Natural Area
- Kathy Shelton "Sunshine Bog" Natural Area
- Caesar Longleaf Site (16th Section)
- Wolf River Coastal Research and Education Forest (MSU)
- CC Savanna (16th Section)
- Sixteenth Section Savanna (16th Section)
- Camp Tiak (Boy Scouts of America)
- Cat's Den Cave Preserve (TNC)
- Charles M. Deaton Nature Preserve (TNC)
- Harvell and Pellerree Jackson Sandhills (TNC)
- Herman Murrah Preserve (TNC)
- Red Creek Consolidated Mitigation Bank (TNC)
- Sweetbay Bogs Preserve (TNC)
- Willie Farrell Brown Preserve (TNC)
- Hillside Bog (The Crosby Arboretum)
- Dead Tiger Creek Hammock and Savanna (The Crosby Arboretum)
- Red Bluff (The Crosby Arboretum)
- Talowah (The Crosby Arboretum)
- Mill Creek (The Crosby Arboretum)
- Steep Hollow (The Crosby Arboretum)

Additionally, areas around Red Creek, Black Creek, Pearl River, Pascagoula River, and their tributaries are of high priority for conservation. The Devil's Backbone is an area of conservation interest along the border of Marion/Pearl River Counties east of Hwy 43. Ragland Hills north of Highway 98 near Ragland, MS is an area of beech-magnolia bluff forest and is utilized by SGCN.



Erosion on the Pearl River. *Credit: Robbie Ellwanger*

Table 7.11. Important Habitats in Piney Woods COA

Habitat	
1	Dry-mesic Upland Forests/Woodlands
2	Mesic Upland Forests
3	Rock Outcrops and Caves
4	Floodplain Forests
5	Swamp Forests
6	Wet Pine Savannas and Flatwoods
7	Bogs and Seepages
9	Herbaceous Freshwater Marshes
10	Natural Lakes and Ponds
13	Pearl River Drainage
14	Pascagoula River Drainage

Threats

Threats to the Piney Woods COA include significant urban and suburban sprawl from coastal urban development and the City of Hattiesburg, fragmentation, forest conversion, and significant impacts from decades of fire exclusion. Channel modifications and sand/gravel mining are affecting the streams and rivers, and the SGCN within them. Multiple invasive species are an issue in this COA, with two of the worst plant invaders being Cogongrass and Chinese tallow. Others include wild hogs, fire ants, Asian carp, exotic mussels, and numerous aquatic invasives. For a more complete list of threats refer to specific habitats listed above in Chapter 5.

Threats to the Pearl and Strong River COA include sand and gravel mining operations, incompatible operations of dams and reservoirs and low water sills. These can cause sedimentation and substrate destabilization, altered hydrology, nutrient loading, and create barriers to movement. Upland threats include urban and suburban development, especially around the Jackson area, incompatible forestry practices and invasive species. For a more complete list of threats refer to specific habitats listed above in Chapter 5.

Priority Conservation Actions

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Encourage and improve agriculture/forestry/land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.
- Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs.
- Limit/discourage the introduction or propagation of exotic and invasive species (plant and animal).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Coordinate with other agencies, NGOs, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Educate landowners on the benefits of maintaining a diverse, healthy forest using sound practices.
- Develop informational materials promoting the optimal conditions and management needs of habitats.
- Encourage the increased use and acceptance of prescribed fire through increased communications and partnerships.
- Provide prescribed fire training opportunities for private landowners. Focus on training landowners to achieve fire capacity and application at a large scale.
- Educate landowners, school-aged children/youth, adjacent residents, developers, and the general public about the crucial role of prescribed burning in the management of longleaf pine and other ecosystems.

CONSERVATION ACTION 6 LIVELIHOOD, ECONOMIC AND OTHER INCENTIVES

- Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

CONSERVATION ACTION 7 EXTERNAL CAPACITY BUILDING

- Facilitate and support the development of a conservation alliance for the Lower Pearl as a network to deliver information and cultivate understanding and appreciation of the Pearl River.
- Partner with aggregate industry and regulatory agencies to promote BMPs for sand and gravel mining practices by sharing expertise and through workshops.

Table 7.12. Piney Woods COA Species of Greatest Conservation Need.

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Crayfishes	*Creaserinus burrisi*	Burris' Burrowing Crayfish	p
1	Crayfishes	*Creaserinus danielae*	Speckled Burrowing Crayfish	p
1	Crayfishes	*Creaserinus gordoni*	Camp Shelby Burrowing Crayfish	p
2	Crayfishes	*Lacunicambarus mobilensis*	Lonesome Gravedigger	p
1	Crayfishes	*Procambarus fitzpatricki*	Spinytail Crayfish	p
3	Crayfishes	*Procambarus lecontei*	Mobile Crayfish	p
3	Crayfishes	*Procambarus penni*	Pearl Blackwater Crayfish	p
3	Crayfishes	*Procambarus planirostris*	Flatnose Crayfish	p
2	Crayfishes	*Procambarus shermani*	Gulf Crayfish	p
4	Insects	*Acentrella alachua*	A Mayfly	p
4	Insects	*Agarodes libalis*	Spring-loving Psiloneuran Caddisfly	p
4	Insects	*Allocapnia aurora*	Aurora Snowfly	?
4	Insects	*Allocapnia polemistis*	Black Warrior Snowfly	?
4	Insects	*Amblyscirtes alternata*	Least Florida Skipper	p
3	Insects	*Amblyscirtes reversa*	Reversed Roadside Skipper	?
2	Insects	*Aphodius troglodytes*	Aphodius Tortoise Commensal Scarab Beetle	p
3	Insects	*Atrytone arogos arogos*	Arogos Skipper	?

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Insects	*Atrytonopsis loammi*	Loammi Skipper	p
4	Insects	*Attaneuria ruralis*	Giant Stone	p
4	Insects	*Baetisca escambiensis*	A Mayfly	p
4	Insects	*Bagisara brouana*	A Noctuid Moth	p
3	Insects	*Bombus pensylvanicus*	American Bumblebee	p
4	Insects	*Catocala delilah*	Delilah Underwing	?
4	Insects	*Catocala miranda*	A Noctuid Moth	p
4	Insects	*Caupolicana electa*	A Plasterer Bee	p
3	Insects	*Celithemis amanda*	Amanda's Pennant	p
4	Insects	*Ceratophaga vicinella*	Gopher Tortoise Shell Moth	?
2	Insects	*Chelyoxenus xerobatis*	Gopher Tortoise Hister Beetle	p
4	Insects	*Cheumatopsyche petersi*	Peters' Cheumatopsyche Caddisfly	?
4	Insects	*Chimarra falculata*	A Caddisfly	?
3	Insects	*Cicindela nigrior*	Autumn Tiger Beetle	p
3	Insects	*Cordulegaster bilineata*	Brown Spiketail	p
2	Insects	*Cordulegaster erronea*	Tiger Spiketail	?
3	Insects	*Enallagma concisum*	Cherry Bluet	p
3	Insects	*Enallagma davisi*	Sandhill Bluet	p
4	Insects	*Erynnis martialis*	Mottled Dusky Wing	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Insects	*Eutrichota gopheri*	Gopher Tortoise Burrow Fly	p
2	Insects	*Gomphus australis*	Clearlake Clubtail	p
3	Insects	*Gomphus dilatatus*	Blackwater Clubtail	p
2	Insects	*Gomphus geminatus*	Twin-striped Clubtail	p
2	Insects	*Gomphus hodgesi*	Hodges' Clubtail	p
2	Insects	*Gymnocthebius maureenae*	Maureen's Gymnocthebius Minute Moss Beetle	p
2	Insects	*Haploperla chukcho*	Chukcho Stonefly	p
4	Insects	*Helopicus bogaloosa*	Masked Springfly	p
4	Insects	*Hydroptila cretosa*	A Caddisfly	p
4	Insects	*Hydroptila holzenthali*	A Caddisfly	p
4	Insects	*Hydroptila homochitta*	A Caddisfly	p
4	Insects	*Hydroptila molsonae*	Molson's Microcaddisfly	p
4	Insects	*Hydroptila poirrieri*	A Caddisfly	p
4	Insects	*Hydroptila tusculum*	A Caddisfly	p
3	Insects	*Ischnura prognata*	Furtive Forktail	p
4	Insects	*Isogenoides varians*	A Stonefly	p
4	Insects	*Isonychia berneri*	A Mayfly	p
4	Insects	*Lapara phaeobrachycerous*	Gulf Pine Sphinx	p
4	Insects	*Lepidostoma morsei*	Morse's Little Plain Brown Sedge	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
4	Insects	*Leuctra hicksi*	Cypress Needlefly	p
2	Insects	*Machimus polyphemi*	Gopher Tortoise Robber Fly	p
3	Insects	*Macromia alleghaniensis*	Allegheny River Cruiser	p
3	Insects	*Nannothemis bella*	Elfin Skimmer	p
4	Insects	*Neonympha helicta*	Helicta Satyr	p
3	Insects	*Neurocordulia yamaskanensis*	Stygian Shadowdragon	p
4	Insects	*Oecetis daytona*	A Caddisfly	p
2	Insects	*Onthophagus polyphemi*	Onthophagus Tortoise Commensal Scarab Beetle	p
1	Insects	*Ophiogomphus australis*	Southern Snaketail	p
4	Insects	*Orthotrichia dentata*	Dentate Orthotrichian Microcaddisfly	p
4	Insects	*Papaipema sp. 5*	Rare Cane Borer Moth	p
2	Insects	*Paracymus seclusus*	Seclusive Water Scavenger Beetle	p
2	Insects	*Philonthus testudo*	Western Gopher Tortoise Rove Beetle	p
2	Insects	*Pogonomyrmex badius*	Florida Harvester Ant	p
2	Insects	*Pseudopomala brachyptera*	Short-winged Toothpick Grasshopper	p
4	Insects	*Setodes dixiensis*	A Caddisfly	p
3	Insects	*Somatochlora georgiana*	Coppery Emerald	p
3	Insects	*Somatochlora provocans*	Treetop Emerald	p
1	Insects	*Stylurus potulentus*	Yellow-sided Clubtail	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Insects	*Stylurus townesi*	Townes' Clubtail	p
3	Mussels	*Utterbackiana hartfieldorum*	Cypress Floater	p
2	Mussels	*Arcidens confragosus*	Rock Pocketbook	p
1	Mussels	*Elliptio arctata*	Delicate Spike	p
3	Mussels	*Lasmigona complanata*	White Heelsplitter	p
1	Mussels	*Ligumia recta*	Black Sandshell	e
2	Mussels	*Obovaria arkansasensis*	Southern Hickorynut	p
2	Mussels	*Pleurobema beadleianum*	Mississippi Pigtoe	p
1	Mussels	*Pleurobema riddellii*	Louisiana Pigtoe	p
3	Mussels	*Quadrula nobilis*	Gulf Mapleleaf	p
2	Mussels	*Strophitus pascagoulaensis*	Pascagoula Creekshell	p
3	Mussels	*Uniomerus declivis*	Tapered Pondhorn	p
1	Mussels	*Obovaria c.f. unicolor*	Undescribed Hickorynut	p
4	Snails	*Pleurocera vestita*	Brook Hornsnail	p
3	Amphibians	*Ambystoma texanum*	Smallmouth Salamander	p
1	Amphibians	*Amphiuma pholeter*	One-toed Amphiuma	p
4	Amphibians	*Desmognathus pascagoula*	Pascagoula Dusky Salamander	p
4	Amphibians	*Desmognathus valentinei*	Valentine's Southern Dusky Salamander	p
4	Amphibians	*Eurycea sphagnicola*	Bog Dwarf Salamander	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Amphibians	*Hemidactylium scutatum*	Four-toed Salamander	p
2	Amphibians	*Lithobates areolata*	Crawfish Frog	p
1	Amphibians	*Lithobates heckscheri*	River Frog	?
1	Amphibians	*Lithobates sevosa*	Dusky Gopher Frog	p
2	Amphibians	*Plethodon websteri clade B*	Webster's Salamander Clade B	p
1	Amphibians	*Pseudacris ornata*	Ornate Chorus Frog	p
2	Amphibians	*Pseudotriton montanus*	Mud Salamander	p
3	Amphibians	*Pseudotriton ruber*	Red Salamander	p
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow	p
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow	p
3	Birds	*Anas acuta*	Northern Pintail	p
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow	p
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will	p
2	Birds	*Aquila chrysaetos*	Golden Eagle	p
3	Birds	*Asio flammeus*	Short-eared Owl	p
2	Birds	*Aythya affinis*	Lesser Scaup	p
2	Birds	*Botaurus lentiginosus*	American Bittern	p
3	Birds	*Calidris melanotos*	Pectoral Sandpiper	p
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper	p
1	Birds	*Centronyx henslowii*	Henslow's Sparrow	p
2	Birds	*Chaetura pelagica*	Chimney Swift	p
3	Birds	*Chlidonias niger*	Black Tern	p
3	Birds	*Chordeiles minor*	Common Nighthawk	p
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo	p
2	Birds	*Colinus virginianus*	Northern Bobwhite	p
3	Birds	*Columbina passerina*	Common Ground Dove	p
2	Birds	*Coturnicops noveboracensis*	Yellow Rail	p
1	Birds	*Dryobates borealis*	Red-cockaded Woodpecker	p
2	Birds	*Egretta caerulea*	Little Blue Heron	p
3	Birds	*Egretta tricolor*	Tricolored Heron	p
1	Birds	*Elanoides forficatus*	Swallow-tailed Kite	p
2	Birds	*Euphagus carolinus*	Rusty Blackbird	p
1	Birds	*Falco sparverius paulus*	Southeastern American Kestrel	p
2	Birds	*Geothlypis formosa*	Kentucky Warbler	p
2	Birds	*Helmitheros vermivorum*	Worm-eating Warbler	p
2	Birds	*Hylocichla mustelina*	Wood Thrush	p
2	Birds	*Ixobrychus exilis*	Least Bittern	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	p
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	p
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher	p
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler	p
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	p
1	Birds	*Mycteria americana*	Wood Stork	p
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron	p
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron	p
2	Birds	*Parkesia motacilla*	Louisiana Waterthrush	p
2	Birds	*Passerina ciris*	Painted Bunting	p
2	Birds	*Peucaea aestivalis*	Bachman's Sparrow	p
1	Birds	*Platalea ajaja*	Roseate Spoonbill	p
3	Birds	*Pluvialis dominica*	American Golden-Plover	p
3	Birds	*Porphyrio martinicus*	Purple Gallinule	p
2	Birds	*Protonotaria citrea*	Prothonotary Warbler	p
3	Birds	*Quiscalus quiscula*	Common Grackle	p
2	Birds	*Rallus elegans*	King Rail	p
3	Birds	*Scolopax minor*	American Woodcock	p
2	Birds	*Setophaga cerulea*	Cerulean Warbler	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Birds	*Setophaga discolor*	Prairie Warbler	p
3	Birds	*Sitta pusilla*	Brown-headed Nuthatch	p
3	Birds	*Spizella pusilla*	Field Sparrow	p
3	Birds	*Sturnella magna*	Eastern Meadowlark	p
1	Birds	*Thryomanes bewickii*	Bewick's Wren	p
3	Birds	*Tringa flavipes*	Lesser Yellowlegs	p
1	Birds	*Vermivora chrysoptera*	Golden-winged Warbler	p
2	Birds	*Vireo gilvus*	Warbling Vireo	p
3	Fishes	*Ichthyomyzon castaneus*	Chestnut Lamprey	p
1	Fishes	*Acipenser desotoi*	Gulf Sturgeon	p
3	Fishes	*Polyodon spathula*	Paddlefish	p
4	Fishes	*Anguilla rostrata*	American Eel	p
1	Fishes	*Alosa alabamae*	Alabama Shad	p
4	Fishes	*Alosa chrysochloris*	Skipjack Herring	p
2	Fishes	*Alburnops chalybaeus*	Ironcolor Shiner	p
1	Fishes	*Miniellus melanostomus*	Blackmouth Shiner	p
2	Fishes	*Pteronotropis welaka*	Bluenose Shiner	p
3	Fishes	*Cycleptus meridionalis*	Southeastern Blue Sucker	p
3	Fishes	*Moxostoma carinatum*	River Redhorse	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Fishes	*Noturus munitus*	Frecklebelly Madtom	p
3	Fishes	*Fundulus dispar*	Northern Starhead Topminnow	p
3	Fishes	*Fundulus blairae*	Western Starhead Topminnow	p
3	Fishes	*Heterandria formosa*	Least Killifish	p
3	Fishes	*Enneacanthus gloriosus*	Bluespotted Sunfish	p
1	Fishes	*Percina lenticula*	Freckled Darter	p
1	Fishes	*Percina aurora*	Pearl Darter	p
3	Mammals	*Lasiurus cinereus*	Hoary Bat	p
2	Mammals	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	p
3	Mammals	*Lasiurus intermedius*	Northern Yellow Bat	p
3	Mammals	*Lasionycteris noctivagans*	Silver-haired Bat	p
3	Mammals	*Myotis austroriparius*	Southeastern Myotis	p
1	Mammals	*Myotis septentrionalis*	Northern Long-eared Bat	p
3	Mammals	*Neogale frenata*	Long-tailed Weasel	p
2	Mammals	*Perimyotis subflavus*	Tricolored Bat	p
2	Mammals	*Sorex longirostris*	Southeastern Shrew	p
1	Mammals	*Spilogale putorius*	Eastern Spotted Skunk	p
2	Mammals	*Ursus americanus*	Black Bear	p
1	Mammals	*Ursus americanus lutelous*	Louisiana Black Bear	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Reptiles	*Coluber flagellum flagellum*	Eastern Coachwhip	p
2	Reptiles	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	p
4	Reptiles	*Deirochelys reticularia reticularia*	Eastern Chicken Turtle	p
2	Reptiles	*Farancia erytrogramma*	Rainbow Snake	p
1	Reptiles	*Gopherus polyphemus*	Gopher Tortoise	p
2	Reptiles	*Graptemys flavimaculata*	Yellow-blotched Map Turtle	p
2	Reptiles	*Graptemys gibbonsi*	Pascagoula Map Turtle	p
2	Reptiles	*Graptemys oculifera*	Ringed Map Turtle	p
1	Reptiles	*Graptemys pearlensis*	Pearl River Map Turtle	p
4	Reptiles	*Heterodon simus*	Southern Hognose Snake	?
2	Reptiles	*Lampropeltis calligaster rhombomaculata*	Mole Kingsnake	p
3	Reptiles	*Liodytes rigida sinicola*	Gulf Crayfish Snake	p
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle	p
2	Reptiles	*Micrurus fulvius*	Eastern Coral Snake	p
2	Reptiles	*Ophisaurus attenuatus*	Slender Glass Lizard	p
4	Reptiles	*Ophisaurus mimicus*	Mimic Glass Lizard	?
1	Reptiles	*Pituophis melanoleucus lodingi*	Black Pine Snake	p
2	Reptiles	*Plestiodon anthracinus*	Coal Skink	p
2	Reptiles	*Regina septemvittata*	Queen Snake	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Reptiles	*Rhadinaea flavilata*	Pine Woods Snake	p
2	Plants - Nonvascular	*Anthoceros punctatus*	a hornwort	p
3	Plants - Nonvascular	*Bruchia ravenelii*	Ravenel's Bruchia Moss	p
1	Plants - Nonvascular	*Callicladium haldanianum*	Beautiful Branch Moss	p
1	Plants - Nonvascular	*Campylopus angustiretis*	Campylopus Moss	p
1	Plants - Nonvascular	*Cololejeunea setiloba*	a liverwort	p
1	Plants - Nonvascular	*Drepanolejeunea mosenii*	a liverwort	p
1	Plants - Nonvascular	*Frullania donnellii*	a liverwort	p
1	Plants - Nonvascular	*Lejeunea bermudiana*	a liverwort	p
3	Plants - Nonvascular	*Lejeunea cladogyna*	a liverwort	p
2	Plants - Nonvascular	*Lejeunea floridana*	a liverwort	p
2	Plants - Nonvascular	*Lejeunea laetivirens*	a liverwort	p
1	Plants - Nonvascular	*Macromitrium richardii*	Richard's Macromitrium Moss	p
3	Plants - Nonvascular	*Metzgeria uncigera*	a liverwort	p
2	Plants - Nonvascular	*Plagiochila floridana*	Florida Leafy Liverwort	p
1	Plants - Nonvascular	*Plagiochila invisa*	a liverwort	p
3	Plants - Nonvascular	*Radula sullivantii*	a liverwort	p
1	Plants - Nonvascular	*Riccia warnstorfii*	a liverwort	p
2	Plants - Nonvascular	*Sphaerocarpos donnellii*	a liverwort	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Nonvascular	*Sphagnum carolinianum*	Carolina Peatmoss	p
3	Plants - Nonvascular	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss	p
2	Plants - Vascular	*Acer leucoderme*	Chalk Maple	p
3	Plants - Vascular	*Adiantum capillus-veneris*	Southern Maidenhair-fern	p
3	Plants - Vascular	*Agalinis filicaulis*	Thread-stem False Foxglove	p
2	Plants - Vascular	*Agalinis linifolia*	Flaxleaf False Foxglove	p
3	Plants - Vascular	*Agalinis oligophylla*	Ridge-stem False-foxglove	p
1	Plants - Vascular	*Agalinis skinneriana*	Pale False Foxglove	p
3	Plants - Vascular	*Agrimonia incisa*	Incised Groovebur	p
1	Plants - Vascular	*Alophia drummondii*	Purple Pleat-leaf	p
3	Plants - Vascular	*Andropogon dealbatus*	Wetland White Bluestem	p
3	Plants - Vascular	*Andropogon perangustatus*	Narrow-leaved Bluestem	p
2	Plants - Vascular	*Andropogon tracyi*	Tracy's Bluestem	p
3	Plants - Vascular	*Aristida beyrichiana*	Southern Wiregrass	p
1	Plants - Vascular	*Aristida mohrii*	Mohr's Three-awn Grass	p
3	Plants - Vascular	*Aristida simpliciflora*	Southern Three-awn Grass	p
3	Plants - Vascular	*Aristida tenuispica*	Southern Arrowfeather	p
2	Plants - Vascular	*Asclepias hirtella*	Green Milkweed	p
1	Plants - Vascular	*Asplenium resiliens*	Black-stem Spleenwort	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Astragalus distortus* var. *engelmannii*	Engelmann's Bent Milk-vetch	p
2	Plants - Vascular	*Balduina angustifolia*	Coastal Plain Honeycomb-head	p
2	Plants - Vascular	*Baptisia sphaerocarpa*	Green Wild Indigo	p
3	Plants - Vascular	*Borodinia canadensis*	Sicklepod	p
2	Plants - Vascular	*Bulbostylis ciliatifolia*	Capillary Hairsedge	p
2	Plants - Vascular	*Burmannia biflora*	Northern Burmannia	p
1	Plants - Vascular	*Calliphysalis carpenteri*	Carpenter's Ground-cherry	p
2	Plants - Vascular	*Calopogon barbatus*	Bearded Grass-pink	p
1	Plants - Vascular	*Calopogon multiflorus*	Many-flowered Grass-pink	p
1	Plants - Vascular	*Calopogon oklahomensis*	Oklahoma Grass-pink	p
1	Plants - Vascular	*Carex baltzellii*	Baltzell's Sedge	p
4	Plants - Vascular	*Carex elliottii*	Elliott's Sedge	p
2	Plants - Vascular	*Carex exilis*	Coast Sedge	p
1	Plants - Vascular	*Carex fissa* var. *aristata*	Hammock Sedge	p
3	Plants - Vascular	*Carex gracilescens*	Slender Sedge	p
1	Plants - Vascular	*Carex impressinervia*	Impressed-nerved Sedge	p
3	Plants - Vascular	*Carex mitchelliana*	Mitchell's Sedge	p
3	Plants - Vascular	*Carex radiata*	Stellate Sedge	p
2	Plants - Vascular	*Carex scoparia*	Broom Sedge	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Carex seorsa*	Weak Stellate Sedge	p
2	Plants - Vascular	*Carex verrucosa*	Warty Sedge	p
2	Plants - Vascular	*Carya laciniosa*	Big Shellbark Hickory	p
1	Plants - Vascular	*Ceratophyllum echinatum*	Prickly Hornwort	p
2	Plants - Vascular	*Chamaecyparis thyoides*	Atlantic White Cedar	p
3	Plants - Vascular	*Cirsium lecontei*	Leconte's Thistle	p
2	Plants - Vascular	*Cladium mariscoides*	Twig Rush	p
3	Plants - Vascular	*Cladrastis kentukea*	Yellowwood	p
3	Plants - Vascular	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia	p
3	Plants - Vascular	*Clematis glaucophylla*	White-leaved Leather-flower	p
1	Plants - Vascular	*Coelorachis cylindrica*	Pitted Jointgrass	p
2	Plants - Vascular	*Collinsonia anisata*	Anise Horsebalm	p
2	Plants - Vascular	*Collinsonia punctata*	Spotted-leaf Horse-balm	p
2	Plants - Vascular	*Convolvulus catesbyanus*	Catesby's Bindweed	p
1	Plants - Vascular	*Crataegus ashei*	Ashe's Hawthorn	p
1	Plants - Vascular	*Crataegus brachyacantha*	Blueberry Hawthorn	p
1	Plants - Vascular	*Crataegus mendosa*	Albertville Hawthorn	p
2	Plants - Vascular	*Crataegus triflora*	Three-flowered Hawthorn	p
2	Plants - Vascular	*Crocanthemum arenicola*	Coastal-sand Frostweed	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Cyperus engelmannii*	Slender Sand Flatsedge	p
3	Plants - Vascular	*Cyperus hystricinus*	Bristly Flatsedge	p
3	Plants - Vascular	*Cyperus neotropicalis*	American Lipocarpha	p
3	Plants - Vascular	*Dalea mountjoyae*	White-tassels	p
3	Plants - Vascular	*Desmodium tenuifolium*	Slim-leaf Tick-trefoil	p
2	Plants - Vascular	*Dichanthelium cryptanthum*	Hidden-flower Witchgrass	p
2	Plants - Vascular	*Dichanthelium curtifolium*	Shortleaf Witchgrass	p
3	Plants - Vascular	*Dichanthelium erectifolium*	Erect-leaf Witchgrass	p
3	Plants - Vascular	*Dichanthelium nudicaule*	Naked-stemmed Panic Grass	p
2	Plants - Vascular	*Dichanthelium wrightianum*	Wright's Witchgrass	p
4	Plants - Vascular	*Didiplis diandra*	Water-purslane	p
2	Plants - Vascular	*Didymoglossum petersii*	Dwarf Filmy-fern	p
2	Plants - Vascular	*Dirca palustris*	Eastern Leatherwood	p
2	Plants - Vascular	*Dryopteris australis*	Southern Woodfern	p
1	Plants - Vascular	*Dryopteris celsa*	Log Fern	p
2	Plants - Vascular	*Dryopteris ludoviciana*	Southern Shield Wood-fern	p
3	Plants - Vascular	*Eleocharis cellulosa*	Carolina Spikerush	p
2	Plants - Vascular	*Eleocharis elongata*	Slim Spikerush	p
2	Plants - Vascular	*Eleocharis geniculata*	Capitate Spikerush	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Eleocharis melanocarpa*	Black-fruit Spikerush	p
3	Plants - Vascular	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	p
1	Plants - Vascular	*Eleocharis parvula*	Small Spikerush	p
3	Plants - Vascular	*Eleocharis robbinsii*	Robbins Spikerush	p
2	Plants - Vascular	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	p
1	Plants - Vascular	*Eleocharis tricostata*	Three-angle Spikerush	p
3	Plants - Vascular	*Eriocaulon decangulare* var. *latifolium*	Panhandle Pipewort	p
3	Plants - Vascular	*Eriocaulon texense*	Texas Pipewort	p
3	Plants - Vascular	*Eryngium species 1*	Mocassin-master	p
1	Plants - Vascular	*Euphorbia discoidalis*	Summer Spurge	p
2	Plants - Vascular	*Euphorbia inundata* var. *inundata*	Florida Pine Spurge	p
2	Plants - Vascular	*Gaillardia aestivalis* var. *flavovirens*	Lanceleaf Blanket Flower	p
3	Plants - Vascular	*Galactia floridana*	Florida Milkpea	?
2	Plants - Vascular	*Galium bermudense*	Coastal Bedstraw	p
1	Plants - Vascular	*Gentiana catesbaei*	Elliott's Gentian	p
1	Plants - Vascular	*Gratiola floridana*	Florida Hedge-hyssop	p
1	Plants - Vascular	*Gratiola ramosa*	Branched Hedge-hyssop	p
4	Plants - Vascular	*Habenaria quinqueseta*	Michaux's Orchid	p
2	Plants - Vascular	*Hamamelis ovalis*	Running Witch-hazel	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Helanthium tenellum*	Dwarf Burhead	p
3	Plants - Vascular	*Helenium brevifolium*	Shortleaf Sneezeweed	p
4	Plants - Vascular	*Helianthus debilis* ssp. *tardiflorus*	Gulf Coast Beach Sunflower	p
3	Plants - Vascular	*Herbertia lahue*	Herbertia	p
3	Plants - Vascular	*Hexalectris spicata*	Crested Coralroot	p
2	Plants - Vascular	*Hypericum canadense*	Canadian St. John's-wort	p
2	Plants - Vascular	*Hypericum myrtifolium*	Myrtle-leaved St. Johnswort	p
1	Plants - Vascular	*Hypoxis curtissii*	Curtiss' Yellow Star-grass	p
2	Plants - Vascular	*Ilex cassine*	Dahoon Holly	p
1	Plants - Vascular	*Ipomoea macrorhiza*	Large-stem Morning-glory	p
1	Plants - Vascular	*Iresine diffusa*	Felicidad	p
3	Plants - Vascular	*Iris brevicaulis*	Lamance Iris	p
2	Plants - Vascular	*Isoetes louisianensis*	Louisiana Quillwort	p
2	Plants - Vascular	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort	p
2	Plants - Vascular	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort	p
2	Plants - Vascular	*Isoetes valida*	Strong Quillwort	p
2	Plants - Vascular	*Juglans cinerea*	Butternut	p
2	Plants - Vascular	*Liatris elegantula*	Blazing-Star	p
2	Plants - Vascular	*Lilium iridollae*	Panhandle Lily	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Lindera subcoriacea*	Bog Spicebush	p
3	Plants - Vascular	*Linum floridanum* var. *chrysocarpum*	Yellow-fruited Flax	p
1	Plants - Vascular	*Linum macrocarpum*	Spring Hill Flax	p
2	Plants - Vascular	*Lithospermum caroliniense*	Golden Puccoon	p
1	Plants - Vascular	*Lobelia boykinii*	Boykin's Lobelia	p
2	Plants - Vascular	*Lupinus perennis* ssp. *gracilis*	Sundail Lupine	p
3	Plants - Vascular	*Luziola bahiensis*	Brazilian Loziola	p
3	Plants - Vascular	*Lycopodioides ludovicianum*	Gulf Spike-moss	p
3	Plants - Vascular	*Lycopus amplectens*	Sessile-leaved Bugleweed	p
3	Plants - Vascular	*Macranthera flammea*	Flame Flower	p
1	Plants - Vascular	*Magnolia tripetala*	Umbrella Magnolia	p
2	Plants - Vascular	*Malus ioensis*	Iowa Crabapple	p
3	Plants - Vascular	*Marshallia trinervia*	Broadleaf Barbara's-buttons	p
3	Plants - Vascular	*Matelea obliqua*	Climbing Milkweed	p
2	Plants - Vascular	*Mitreola angustifolia*	Narrowleaf Miterwort	p
2	Plants - Vascular	*Myriophyllum laxum*	Loose Water-milfoil	p
2	Plants - Vascular	*Nabalus asper*	Rough Rattlesnake-root	p
4	Plants - Vascular	*Nymphaea mexicana*	Banana Water-lily	p
3	Plants - Vascular	*Nymphoides aquatica*	Big Floating-heart	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Nymphoides cordata*	Floating-heart	p
4	Plants - Vascular	*Oenothera patriciae*	Plains Gaura	p
2	Plants - Vascular	*Orthochilus ecristatus*	Giant Orchid	p
3	Plants - Vascular	*Panax quinquefolius*	American Ginseng	p
2	Plants - Vascular	*Parnassia grandifolia*	Largeleaf Grass-of-parnassus	p
2	Plants - Vascular	*Paronychia baldwinii* ssp. *riparia*	Perennial Dune Whitlow-wort	p
2	Plants - Vascular	*Paronychia patula*	Pineland Nailwort	p
3	Plants - Vascular	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed	p
4	Plants - Vascular	*Phaseolus sinuatus*	Sandhill Bean	p
3	Plants - Vascular	*Philadelphus inodorus*	Scentless Mock Orange	p
2	Plants - Vascular	*Pieris phillyreifolia*	Climbing Fetter-bush	p
3	Plants - Vascular	*Pinguicula planifolia*	Chapman's Butterwort	p
2	Plants - Vascular	*Pinguicula pumila*	Dwarf Butterwort	p
4	Plants - Vascular	*Pityopsis pinifolia*	Taylor County Silk-grass	p
2	Plants - Vascular	*Platanthera conspicua*	Large White-fringe Orchid	p
3	Plants - Vascular	*Platanthera integra*	Yellow Fringeless Orchid	p
2	Plants - Vascular	*Platanthera lacera*	Green-fringed Orchid	p
3	Plants - Vascular	*Platanthera nivea*	Snowy Orchid	p
2	Plants - Vascular	*Senega appendiculata*	Swamp Milkwort	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Senega hookeri*	Hooker's Milkwort	p
2	Plants - Vascular	*Senega leptostachys*	Georgia Milkwort	p
3	Plants - Vascular	*Ponthieva racemosa*	Shadow-witch Orchid	p
2	Plants - Vascular	*Potamogeton epihydrus*	Nuttall's Pondweed	p
2	Plants - Vascular	*Potamogeton pusillus*	Slender Pondweed	p
4	Plants - Vascular	*Quercus arkansana*	Arkansas Oak	p
3	Plants - Vascular	*Quercus austrina*	Bluff Oak	p
2	Plants - Vascular	*Quercus minima*	Dwarf Live Oak	p
2	Plants - Vascular	*Quercus myrtifolia*	Myrtle-leaf Oak	p
2	Plants - Vascular	*Quercus oglethorpensis*	Oglethorpe's Oak	p
2	Plants - Vascular	*Rhododendron arborescens*	Smooth Azalea	p
3	Plants - Vascular	*Rhododendron austrinum*	Orange Azalea	p
2	Plants - Vascular	*Rhododendron periclymenoides*	Pink Azalea	p
3	Plants - Vascular	*Rhynchospora baldwinii*	Baldwin's Beakrush	p
2	Plants - Vascular	*Rhynchospora careyana*	Broad-fruit Horned Beakrush	p
1	Plants - Vascular	*Rhynchospora cephalantha* var. *attenuata*	Small-bunched Beaksedge	p
2	Plants - Vascular	*Rhynchospora crinipes*	Hairy-peduncled Beakrush	p
3	Plants - Vascular	*Rhynchospora distans*	Fasciculate Beakrush	p
1	Plants - Vascular	*Rhynchospora fernaldii*	Fernald's Beakrush	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Rhynchospora galeana*	Short-bristle Baldrush	p
2	Plants - Vascular	*Rhynchospora harveyi*	Harvey's Beakrush	p
2	Plants - Vascular	*Rhynchospora leptocarpa*	Slender-fruit Beaksedge	p
1	Plants - Vascular	*Rhynchospora marliniana*	Marlin's Beaksedge	p
2	Plants - Vascular	*Rhynchospora perplexa*	Pineland Beakrush	p
3	Plants - Vascular	*Rhynchospora pinetorum*	Small's Beakrush	p
2	Plants - Vascular	*Rhynchospora wrightiana*	Wright's Beakrush	p
2	Plants - Vascular	*Ruellia noctiflora*	Night-flowering Wild-petunia	p
3	Plants - Vascular	*Ruellia pinetorum*	Pine Barren Ruellia	p
3	Plants - Vascular	*Sabatia campestris*	Prairie Pink	p
2	Plants - Vascular	*Sabatia decandra*	Bartram's Rose-gentian	p
2	Plants - Vascular	*Sagittaria chapmanii*	Chapman's Arrowhead	p
1	Plants - Vascular	*Sagittaria isoetiformis*	Slender Arrow-head	p
1	Plants - Vascular	*Salvia chapmanii*	Chapman's Sage	e
1	Plants - Vascular	*Sarracenia alabamensis* ssp. *wherryi*	Wherry's Sweet Pitcher-plant	p
2	Plants - Vascular	*Sarracenia leucophylla*	Whitetop Pitcherplant	p
1	Plants - Vascular	*Sarracenia rosea*	Purple Pitcherplant	p
2	Plants - Vascular	*Sceptridium jenmanii*	Alabama Grapefern	p
3	Plants - Vascular	*Sceptridium lunarioides*	Winter Grape-fern	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Schisandra glabra*	Bay Starvine	p
2	Plants - Vascular	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	p
2	Plants - Vascular	*Schizachyrium stoloniferum*	Creeping Bluestem	p
4	Plants - Vascular	*Schwalbea americana*	Chaffseed	e
3	Plants - Vascular	*Scirpus lineatus*	Drooping Bulrush	p
3	Plants - Vascular	*Scleria elliottii*	Broad-leaved Hairy Nutrush	p
3	Plants - Vascular	*Scleria georgiana*	Georgia Nutrush	p
3	Plants - Vascular	*Scleria nitida*	Shining Nutrush	p
3	Plants - Vascular	*Scleria verticillata*	Low Nutrush	p
1	Plants - Vascular	*Sclerolepis uniflora*	Pink Bogbutton	p
1	Plants - Vascular	*Scutellaria glabriuscula*	Georgia Skullcap	p
2	Plants - Vascular	*Silene ovata*	Ovate Catchfly	p
4	Plants - Vascular	*Silene regia*	Royal Catchfly	e
2	Plants - Vascular	*Silphium simpsonii*	Simpson's Rosinweed	p
2	Plants - Vascular	*Solanum pseudogracile*	Glowing Nightshade	p
2	Plants - Vascular	*Solidago brachyphylla*	Dixie Goldenrod	p
2	Plants - Vascular	*Sophronanthe hispida*	Pineland Hedge-Hyssop	p
1	Plants - Vascular	*Spiranthes brevilabris*	Texas Ladies'-tresses	p
1	Plants - Vascular	*Spiranthes eatonii*	Eaton's Ladies'-tresses	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Spiranthes floridana*	Florida Ladies'-tresses	p
2	Plants - Vascular	*Spiranthes lacera* var. *gracilis*	Southern Slender Ladies'-tresses	p
2	Plants - Vascular	*Spiranthes longilabris*	Giant Spiral Ladies'-tresses	p
3	Plants - Vascular	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	p
3	Plants - Vascular	*Stellaria pubera*	Giant Chickweed	p
2	Plants - Vascular	*Stenanthium texanum*	Pine Barren Deathcamas	p
1	Plants - Vascular	*Stylisma aquatica*	Water Southern Morning-glory	p
2	Plants - Vascular	*Stylisma pickeringii* spp. *pickeringii*	Pickering Morning-glory	p
2	Plants - Vascular	*Stylisma pickeringii* ssp. *pattersonii*	Pickering Morning-glory	p
2	Plants - Vascular	*Swida alternifolia*	Alternate-leaf Dogwood	p
2	Plants - Vascular	*Syngonanthus flavidulus*	Yellow Pipewort	p
2	Plants - Vascular	*Thalictrum debile*	Southern Meadowrue	p
2	Plants - Vascular	*Thalictrum macrostylum*	Small-leaf Meadowrue	p
2	Plants - Vascular	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort	p
3	Plants - Vascular	*Tridens carolinianus*	Carolina Fluff Grass	p
3	Plants - Vascular	*Tridens chapmanii*	Chapman's Redtop	p
1	Plants - Vascular	*Trifolium carolinianum*	Carolina Clover	p
4	Plants - Vascular	*Trifolium reflexum*	Buffalo Clover	p
3	Plants - Vascular	*Trillium foetidissimum*	Fetid Trillium	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Trillium ludovicianum*	Louisiana Trillium	p
1	Plants - Vascular	*Trillium pusillum* var. *ozarkanum*	Ozark Least Trillium	p
2	Plants - Vascular	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia	p
3	Plants - Vascular	*Ulmus serotina*	September Elm	p
2	Plants - Vascular	*Utricularia olivacea*	Piedmont Bladderwort	p
3	Plants - Vascular	*Utricularia purpurea*	Purple Bladderwort	p
2	Plants - Vascular	*Uvularia floridana*	Florida Bellwort	p
3	Plants - Vascular	*Vaccinium tenellum*	Small Black Blueberry	p
3	Plants - Vascular	*Verbena xutha*	Gulf Vervain	p
3	Plants - Vascular	*Xyris chapmanii*	Chapman's Yellow-eyed-grass	p
3	Plants - Vascular	*Xyris drummondii*	Drummond's Yellow-eyed-grass	p
2	Plants - Vascular	*Xyris flabelliformis*	Savannah Yellow-eyed-grass	p
2	Plants - Vascular	*Xyris louisianica*	Kral's Yellow-eyed Grass	p
3	Plants - Vascular	*Xyris scabrifolia*	Harper's Yellow-eyed Grass	p
3	Plants - Vascular	*Xyris serotina*	Acid-swamp Yellow-eyed-grass	p
2	Plants - Vascular	*Yeatesia viridiflora*	Green-flower Yeatesia	p
2	Plants - Vascular	*Zephyranthes simpsonii*	Rainlily	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Potential Conservation Partners

- Audubon
- County and city governments and planning boards
- Department of War
- Deepwater Horizon Natural Resources Damage Assessment (NRDA) Trustees Grand Bay NERR
- Land trusts
- Land Trust for the Mississippi Coastal Plain Migratory bird joint ventures
- Mississippi Association of Conservation Districts
- Mississippi Coast Audubon Society
- Mississippi Army National Guard
- Mississippi Department of Environmental Quality
- Mississippi Department of Marine Resources
- Mississippi Department of Transportation
- Mississippi Department of Wildlife, Fisheries, and Parks
- Mississippi Forestry Association
- Mississippi Forestry Commission
- Mississippi Land Trust
- Mississippi Longleaf Implementation Team
- Mississippi Outdoor Stewardship Trust Fund
- Mississippi State University
- Mississippi Prescribed Fire Council
- Mississippi Wildlife Federation
- Mississippi Land Trust
- National Park Service
- National Fish and Wildlife Foundation
- North American Wetlands Conservation Council
- Partnership for Gulf Coast Land Conservation
- Pascagoula River Audubon Center
- Pascagoula River Basin Alliance
- Pearl River Basin Coalition
- Private landowners
- RESTORE Council
- Sandhill Crane National Wildlife Refuge
- Secretary of State
- The Conservation Fund
- The Nature Conservancy
- The Trust for Public Land Tribal Partners
- TIMOs and REITs
- University of Southern Mississippi
- US Army Corps of Engineers
- US Fish and Wildlife Service
- USDA Farm Services Agency
- USDA Forest Service
- USDA Natural Resources Conservation Service
- USM Gulf Coast Research Laboratory
- Wildlife Mississippi

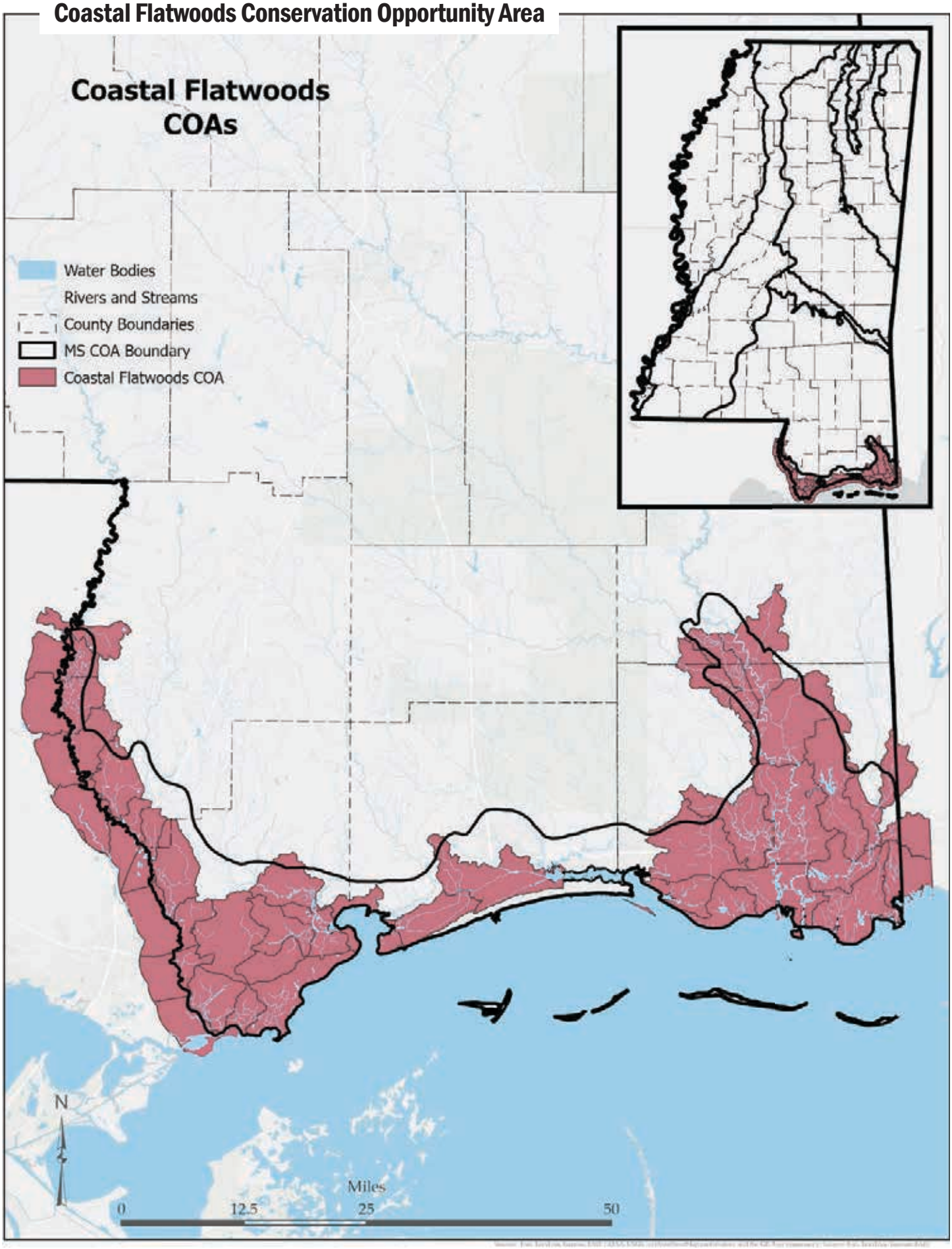


Figure 7.8. Coastal Flatwoods Conservation Opportunity Area

The Coastal Flatwoods COA is the Level III ecoregion 75 on the mainland of Mississippi and covers three coastal counties. An important aspect of this COA is the role it plays in maintaining the health and diversity of the Mississippi Sound. Near the Gulf Coast, drainage areas are low-lying flatlands, forested wetlands, and marshlands. This COA is found in the Mississippi Forestry Commission's Forest Legacy Program (2020) Southeast Mississippi Forest Legacy Area. Thirty-eight HUCs are found in this COA that are designated as high priority for conservation of SGCN.

Conservation Sites in the Coastal Flatwoods COA

- John C. Stennis Space Center
- Keesler Air Force Base
- Mississippi Sandhill Crane National Wildlife Refuge
- Bogue Chitto National Wildlife Refuge
- Grand Bay National Wildlife Refuge/National Estuarine Research Reserve
- Mississippi Band of Choctaw Indians Tribal Lands
- Pascagoula Wildlife Management Area
- Ward Bayou Wildlife Management Area
- Buccaneer State Park
- Shepard State Park
- Gulf Islands National Seashore (Davis Bayou)
- Hancock County Marsh Coastal Preserve
- Jourdan River Coastal Preserve
- Bayou LaCroix Coastal Preserve
- Grand Bayou Coastal Preserve
- Wolf River Coastal Preserve
- Bayou Portage Coastal Preserve
- Biloxi River Coastal Preserve
- Old Fort Bayou Coastal Preserve
- Davis Bayou Coastal Preserve
- Bellefontaine Point Coastal Preserve
- Graveline Bay Coastal Preserve
- Pascagoula River Coastal Preserve
- Grand Bay Coastal Preserve
- Escatawpa River Coastal Preserve
- Lakeshore Savanna Preserve (TNC)
- Robbie Doak Fisher Preserve (TNC)
- Old Fort Bayou Mitigation Bank (TNC)

The Pascagoula River, Pearl River, and their tributaries are of particular importance for conservation. The Coastal Preserves – Priority Acquisition Boundary highlights the areas of conservation interest (https://dmr.ms.gov/coastal-preserves-2/), which often border their coastal preserves.

Table 7.13. Important Habitats in Coastal Flatwoods COA

	Habitat
1	Dry-mesic Upland Forests/Woodlands
4	Floodplain Forests
5	Swamp Forests
6	Wet Pine Savannas and Flatwoods
7	Bogs and Seepages
9	Herbaceous Freshwater Marshes
10	Natural Lakes and Ponds
13	Pearl River Drainage
14	Southeast Mississippi Drainages

Threats

Threats to the Coastal Flatwoods COA include significant urban and suburban sprawl from coastal urban development, fragmentation, forest conversion, and significant impacts from decades of fire exclusion. Channel modifications and sand/gravel mining are affecting the streams and rivers, and the SGCN within them. Multiple invasive species are an issue in this COA, with two of the worst plant invaders being Cogongrass and Chinese tallow. Others include wild hogs, fire ants, Asian carp, exotic mussels, and numerous aquatic invasives. For a more complete list of threats refer to specific habitats listed above in Chapter 5.



Prescribed fire is a priority conservation action in the Coastal Flatwoods. *Credit: Heather Sullivan*

Priority Conservation Actions

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Encourage and improve agriculture/forestry/land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.
- Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs.
- Limit/discourage the introduction or propagation of exotic and invasive species (plant and animal).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Coordinate with other agencies, NGOs, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Educate landowners on the benefits of maintaining a diverse, healthy forest using sound practices.
- Develop informational materials promoting the optimal conditions and management needs of habitats.
- Encourage the increased use and acceptance of prescribed fire through increased communications and partnerships.
- Provide prescribed fire training opportunities for private landowners. Focus on training landowners to achieve fire capacity and application at a large scale.
- Educate landowners, school-aged children/youth, adjacent residents, developers, and the general public about the crucial role of prescribed burning in the management of longleaf pine and other ecosystems.

CONSERVATION ACTION 6 LIVELIHOOD, ECONOMIC AND OTHER INCENTIVES

- Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

Table 7.14. Coastal Flatwoods COA Species of Greatest Conservation Need.

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Crayfishes	*Cambarellus diminutus*	Least Crayfish	p
2	Crayfishes	*Cambarellus lesliei*	Angular Dwarf Crayfish	p
1	Crayfishes	*Creaserinus danielae*	Speckled Burrowing Crayfish	p
1	Crayfishes	*Lacunicambarus freudensteini*	Banded Mudbug	p
2	Crayfishes	*Lacunicambarus mobilensis*	Lonesome Gravedigger	p
2	Crayfishes	*Procambarus bivittatus*	Ribbon Crayfish	p
1	Crayfishes	*Procambarus fitzpatricki*	Spinytail Crayfish	p
3	Crayfishes	*Procambarus lecontei*	Mobile Crayfish	p
2	Crayfishes	*Procambarus shermani*	Gulf Crayfish	p
4	Insects	*Acentrella alachua*	A Mayfly	p
3	Insects	*Amblyscirtes reversa*	Reversed Roadside Skipper	?
3	Insects	*Atrytone arogos arogos*	Arogos Skipper	?
4	Insects	*Automeris louisiana*	Louisiana Eyed Silkmoth	p
4	Insects	*Bagisara brouana*	A Noctuid Moth	p
3	Insects	*Bombus pensylvanicus*	American Bumblebee	p
3	Insects	*Enallagma concisum*	Cherry Bluet	p
3	Insects	*Enallagma pallidum*	Pale Bluet	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Insects	*Enallagma pollutum*	Florida Bluet	p
3	Insects	*Erythrodiplax umbrata*	Band-winged Dragonlet	p
4	Insects	*Euphyes arpa*	Palmetto Skipper	p
2	Insects	*Euphyes bayensis*	Bay St. Louis Skipper	p
3	Insects	*Euphyes pilatka*	Palatka Skipper	p
2	Insects	*Gomphus australis*	Clearlake Clubtail	p
3	Insects	*Gomphus dilatatus*	Blackwater Clubtail	p
4	Insects	*Hesperapis oraria*	Gulf Coast Solitary Bee	p
4	Insects	*Lapara phaeobrachycerous*	Gulf Pine Sphinx	p
4	Insects	*Neonympha helicta*	Helicta Satyr	p
4	Insects	*Orthotrichia dentata*	Dentate Orthotrichian Microcaddisfly	p
2	Insects	*Pogonomyrmex badius*	Florida Harvester Ant	p
1	Insects	*Stylurus potulentus*	Yellow-sided Clubtail	p
2	Insects	*Stylurus townesi*	Townes' Clubtail	p
3	Mussels	*Utterbackiana hartfieldorum*	Cypress Floater	p
2	Mussels	*Arcidens confragosus*	Rock Pocketbook	p
3	Mussels	*Lasmigona complanata*	White Heelsplitter	p
2	Mussels	*Pleurobema beadleianum*	Mississippi Pigtoe	p
3	Mussels	*Quadrula nobilis*	Gulf Mapleleaf	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Mussels	*Uniomerus declivis*	Tapered Pondhorn	p
1	Mussels	*Obovaria c.f. unicolor*	Undescribed Hickorynut	p
1	Amphibians	*Amphiuma pholeter*	One-toed Amphiuma	p
4	Amphibians	*Desmognathus pascagoula*	Pascagoula Dusky Salamander	p
4	Amphibians	*Desmognathus valentinei*	Valentine's Southern Dusky Salamander	p
1	Amphibians	*Lithobates heckscheri*	River Frog	?
1	Amphibians	*Lithobates sevosa*	Dusky Gopher Frog	p
1	Amphibians	*Pseudacris ornata*	Ornate Chorus Frog	p
2	Amphibians	*Pseudotriton montanus*	Mud Salamander	p
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow	p
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow	p
1	Birds	*Ammospiza maritima*	Seaside Sparrow	p
1	Birds	*Ammospiza nelsoni*	Nelson's Sparrow	p
3	Birds	*Anas acuta*	Northern Pintail	p
1	Birds	*Anas fulvigula*	Mottled Duck	p
1	Birds	*Antigone canadensis pulla*	Mississippi Sandhill Crane	p
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow	p
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will	p
2	Birds	*Aquila chrysaetos*	Golden Eagle	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Asio flammeus*	Short-eared Owl	p
2	Birds	*Aythya affinis*	Lesser Scaup	p
2	Birds	*Botaurus lentiginosus*	American Bittern	p
1	Birds	*Calidris canutus*	Red Knot	p
3	Birds	*Calidris melanotos*	Pectoral Sandpiper	p
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper	p
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper	p
1	Birds	*Centronyx henslowii*	Henslow's Sparrow	p
2	Birds	*Chaetura pelagica*	Chimney Swift	p
1	Birds	*Charadrius melodus*	Piping Plover	p
1	Birds	*Charadrius nivosus*	Snowy Plover	p
1	Birds	*Charadrius wilsonia*	Wilson's Plover	p
3	Birds	*Chlidonias niger*	Black Tern	p
3	Birds	*Chordeiles minor*	Common Nighthawk	p
2	Birds	*Cistothorus palustris marianae*	Marian's Marsh Wren	p
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo	p
2	Birds	*Colinus virginianus*	Northern Bobwhite	p
3	Birds	*Columbina passerina*	Common Ground Dove	p
2	Birds	*Coturnicops noveboracensis*	Yellow Rail	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Dryobates borealis*	Red-cockaded Woodpecker	p
2	Birds	*Egretta caerulea*	Little Blue Heron	p
2	Birds	*Egretta rufescens*	Reddish Egret	p
3	Birds	*Egretta tricolor*	Tricolored Heron	p
1	Birds	*Elanoides forficatus*	Swallow-tailed Kite	p
2	Birds	*Euphagus carolinus*	Rusty Blackbird	p
1	Birds	*Falco sparverius paulus*	Southeastern American Kestrel	p
1	Birds	*Gelochelidon nilotica*	Gull-billed Tern	p
2	Birds	*Geothlypis formosa*	Kentucky Warbler	p
1	Birds	*Haematopus palliatus*	American Oystercatcher	p
2	Birds	*Helmitheros vermivorum*	Worm-eating Warbler	p
2	Birds	*Hylocichla mustelina*	Wood Thrush	p
2	Birds	*Ixobrychus exilis*	Least Bittern	p
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	p
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	p
1	Birds	*Laterallus jamaicensis*	Black Rail	p
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher	p
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler	p
2	Birds	*Limosa fedoa*	Marbled Godwit	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	p
1	Birds	*Mycteria americana*	Wood Stork	p
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron	p
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron	p
2	Birds	*Parkesia motacilla*	Louisiana Waterthrush	p
2	Birds	*Passerina ciris*	Painted Bunting	p
2	Birds	*Peucaea aestivalis*	Bachman's Sparrow	p
3	Birds	*Piranga olivacea*	Scarlet Tanager (breeding population)	p
1	Birds	*Platalea ajaja*	Roseate Spoonbill	p
3	Birds	*Pluvialis dominica*	American Golden-Plover	p
3	Birds	*Porphyrio martinicus*	Purple Gallinule	p
2	Birds	*Protonotaria citrea*	Prothonotary Warbler	p
3	Birds	*Quiscalus quiscula*	Common Grackle	p
2	Birds	*Rallus elegans*	King Rail	p
2	Birds	*Riparia riparia*	Bank Swallow (breeding population)	p
1	Birds	*Rynchops niger*	Black Skimmer	p
3	Birds	*Scolopax minor*	American Woodcock	p
2	Birds	*Seiurus aurocapilla*	Ovenbird (breeding population)	p
2	Birds	*Setophaga cerulea*	Cerulean Warbler	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Birds	*Setophaga discolor*	Prairie Warbler	p
3	Birds	*Sitta pusilla*	Brown-headed Nuthatch	p
3	Birds	*Spizella pusilla*	Field Sparrow	p
1	Birds	*Sterna hirundo*	Common Tern (breeding population)	p
1	Birds	*Sternula antillarum antillarum*	Coastal Least Tern	p
3	Birds	*Sturnella magna*	Eastern Meadowlark	p
2	Birds	*Thalasseus maximus*	Royal Tern	p
1	Birds	*Thalasseus sandvicensis*	Sandwich Tern	p
1	Birds	*Thryomanes bewickii*	Bewick's Wren	p
3	Birds	*Tringa flavipes*	Lesser Yellowlegs	p
3	Birds	*Tringa semipalmata*	Willet	p
1	Birds	*Vermivora chrysoptera*	Golden-winged Warbler	p
2	Birds	*Vireo gilvus*	Warbling Vireo	p
1	Fishes	*Acipenser desotoi*	Gulf Sturgeon	p
2	Fishes	*Atractosteus spatula*	Alligator Gar	p
4	Fishes	*Anguilla rostrata*	American Eel	p
1	Fishes	*Alosa alabamae*	Alabama Shad	p
4	Fishes	*Alosa chrysochloris*	Skipjack Herring	p
2	Fishes	*Alburnops chalybaeus*	Ironcolor Shiner	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Fishes	*Miniellus melanostomus*	Blackmouth Shiner	p
3	Fishes	*Cycleptus meridionalis*	Southeastern Blue Sucker	p
3	Fishes	*Moxostoma carinatum*	River Redhorse	p
3	Fishes	*Noturus munitus*	Frecklebelly Madtom	p
2	Fishes	*Fundulus jenkinsi*	Saltmarsh Topminnow	p
3	Fishes	*Fundulus dispar*	Northern Starhead Topminnow	p
3	Fishes	*Fundulus blairae*	Western Starhead Topminnow	p
3	Fishes	*Heterandria formosa*	Least Killifish	p
3	Fishes	*Enneacanthus gloriosus*	Bluespotted Sunfish	p
1	Fishes	*Percina lenticula*	Freckled Darter	p
1	Fishes	*Percina aurora*	Pearl Darter	p
3	Mammals	*Lasiurus cinereus*	Hoary Bat	p
2	Mammals	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	p
3	Mammals	*Lasiurus intermedius*	Northern Yellow Bat	p
3	Mammals	*Lasionycteris noctivagans*	Silver-haired Bat	p
3	Mammals	*Myotis austroriparius*	Southeastern Myotis	p
3	Mammals	*Neogale frenata*	Long-tailed Weasel	p
2	Mammals	*Sorex longirostris*	Southeastern Shrew	p
1	Mammals	*Ursus americanus lutelous*	Louisiana Black Bear	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Reptiles	*Coluber flagellum flagellum*	Eastern Coachwhip	p
4	Reptiles	*Deirochelys reticularia reticularia*	Eastern Chicken Turtle	p
2	Reptiles	*Farancia erytrogramma*	Rainbow Snake	p
1	Reptiles	*Gopherus polyphemus*	Gopher Tortoise	p
2	Reptiles	*Graptemys flavimaculata*	Yellow-blotched Map Turtle	p
2	Reptiles	*Graptemys gibbonsi*	Pascagoula Map Turtle	p
4	Reptiles	*Drymarchon couperi*	Eastern Indigo Snake	E
4	Reptiles	*Heterodon simus*	Southern Hognose Snake	?
3	Reptiles	*Liodytes rigida sinicola*	Gulf Crayfish Snake	p
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle	p
1	Reptiles	*Malaclemys terrapin pileata*	Mississippi Diamondback Terrapin	p
2	Reptiles	*Micrurus fulvius*	Eastern Coral Snake	p
2	Reptiles	*Nerodia clarkii clarkii*	Gulf Salt Marsh Snake	p
2	Reptiles	*Ophisaurus attenuatus*	Slender Glass Lizard	p
1	Reptiles	*Pseudemys alabamensis*	Alabama Red-bellied Turtle	p
2	Reptiles	*Rhadinaea flavilata*	Pine Woods Snake	p
2	Plants - Nonvascular	*Anthoceros punctatus*	a hornwort	p
1	Plants - Nonvascular	*Archidium hallii*	Hall's Archidium Moss	p
1	Plants - Nonvascular	*Campylopus angustiretis*	Campylopus Moss	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Nonvascular	*Cololejeunea setiloba*	a liverwort	p
1	Plants - Nonvascular	*Drepanolejeunea mosenii*	a liverwort	p
1	Plants - Nonvascular	*Frullania donnellii*	a liverwort	p
1	Plants - Nonvascular	*Lejeunea bermudiana*	a liverwort	p
3	Plants - Nonvascular	*Lejeunea cladogyna*	a liverwort	p
2	Plants - Nonvascular	*Lejeunea floridana*	a liverwort	p
2	Plants - Nonvascular	*Lejeunea laetivirens*	a liverwort	p
3	Plants - Nonvascular	*Metzgeria uncigera*	a liverwort	p
2	Plants - Nonvascular	*Plagiochila floridana*	Florida Leafy Liverwort	p
3	Plants - Nonvascular	*Radula sullivantii*	a liverwort	p
3	Plants - Nonvascular	*Sphagnum carolinianum*	Carolina Peatmoss	p
3	Plants - Nonvascular	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss	p
1	Plants - Nonvascular	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss	p
3	Plants - Vascular	*Agalinis filicaulis*	Thread-stem False Foxglove	p
2	Plants - Vascular	*Agalinis linifolia*	Flaxleaf False Foxglove	p
3	Plants - Vascular	*Agalinis oligophylla*	Ridge-stem False-foxglove	p
3	Plants - Vascular	*Agrimonia incisa*	Incised Groovebur	p
3	Plants - Vascular	*Amaranthus australis*	Southern Amaranth	p
3	Plants - Vascular	*Andropogon dealbatus*	Wetland White Bluestem	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Andropogon perangustatus*	Narrow-leaved Bluestem	p
2	Plants - Vascular	*Andropogon tracyi*	Tracy's Bluestem	p
3	Plants - Vascular	*Aristida beyrichiana*	Southern Wiregrass	p
3	Plants - Vascular	*Aristida simpliciflora*	Southern Three-awn Grass	p
3	Plants - Vascular	*Aristida spiciformis*	Pine Barren Three-awn Grass	p
3	Plants - Vascular	*Aristida tenuispica*	Southern Arrowfeather	p
1	Plants - Vascular	*Astragalus obcordatus*	Florida Milkvetch	p
2	Plants - Vascular	*Balduina angustifolia*	Coastal Plain Honeycomb-head	p
2	Plants - Vascular	*Baptisia sphaerocarpa*	Green Wild Indigo	p
1	Plants - Vascular	*Boltonia apalachicolensis*	Apalachicola Doll's-Daisy	p
2	Plants - Vascular	*Burmannia biflora*	Northern Burmannia	p
2	Plants - Vascular	*Calopogon barbatus*	Bearded Grass-pink	p
1	Plants - Vascular	*Calopogon multiflorus*	Many-flowered Grass-pink	p
1	Plants - Vascular	*Canna flaccida*	Bandana-of-the-Everglades	p
2	Plants - Vascular	*Carex exilis*	Coast Sedge	p
1	Plants - Vascular	*Carex fissa* var. *aristata*	Hammock Sedge	p
1	Plants - Vascular	*Carex striata* var. *striata*	Southern Peatland Sedge	p
2	Plants - Vascular	*Carex verrucosa*	Warty Sedge	p
2	Plants - Vascular	*Chamaecyparis thyoides*	Atlantic White Cedar	p

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Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Chasmanthium nitidum*	Shiny Spikegrass	p
3	Plants - Vascular	*Cirsium lecontei*	Leconte's Thistle	p
2	Plants - Vascular	*Cladium mariscoides*	Twig Rush	p
3	Plants - Vascular	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia	p
2	Plants - Vascular	*Collinsonia anisata*	Anise Horsebalm	p
2	Plants - Vascular	*Collinsonia punctata*	Spotted-leaf Horse-balm	p
2	Plants - Vascular	*Coreopsis nudata*	Georgia Tickseed	p
1	Plants - Vascular	*Crataegus brachyacantha*	Blueberry Hawthorn	p
2	Plants - Vascular	*Cyperus articulatus*	Jointed Flatsedge	p
3	Plants - Vascular	*Cyperus drummondii*	Green Flatsedge	p
2	Plants - Vascular	*Cyperus elegans*	Sticky Flatsedge	p
2	Plants - Vascular	*Cyperus lecontei*	Le Conte's Flatsedge	p
1	Plants - Vascular	*Cyperus ochraceus*	Pond Flatsedge	p
3	Plants - Vascular	*Dalea mountjoyae*	White-tassels	p
3	Plants - Vascular	*Desmodium tenuifolium*	Slim-leaf Tick-trefoil	p
2	Plants - Vascular	*Dichanthelium curtifolium*	Shortleaf Witchgrass	p
3	Plants - Vascular	*Dichanthelium erectifolium*	Erect-leaf Witchgrass	p
3	Plants - Vascular	*Dichanthelium nudicaule*	Naked-stemmed Panic Grass	p
2	Plants - Vascular	*Dichanthelium wrightianum*	Wright's Witchgrass	p

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Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Eleocharis albida*	White Spikerush	p
1	Plants - Vascular	*Eleocharis ambigens*	Obscure Spikerush	p
4	Plants - Vascular	*Eleocharis bicolor*	Small Spikerush	p
3	Plants - Vascular	*Eleocharis cellulosa*	Carolina Spikerush	p
2	Plants - Vascular	*Eleocharis elongata*	Slim Spikerush	p
2	Plants - Vascular	*Eleocharis geniculata*	Capitate Spikerush	p
1	Plants - Vascular	*Eleocharis intermedia*	Matted Spikerush	p
4	Plants - Vascular	*Eleocharis palustris*	Creeping Spikerush	p
1	Plants - Vascular	*Eleocharis parvula*	Small Spikerush	p
3	Plants - Vascular	*Eleocharis rostellata*	Beaked Spikerush	p
4	Plants - Vascular	*Elionurus tripsacoides*	Pan-american Balsamscale	p
3	Plants - Vascular	*Eriocaulon decangulare* var. *latifolium*	Panhandle Pipewort	p
3	Plants - Vascular	*Eriocaulon texense*	Texas Pipewort	p
3	Plants - Vascular	*Eryngium aquaticum*	Marsh Rattlesnake-master	p
2	Plants - Vascular	*Euphorbia inundata* var. *inundata*	Florida Pine Spurge	p
2	Plants - Vascular	*Eustachys glauca*	Saltmarsh Finger-grass	p
2	Plants - Vascular	*Eustoma exaltatum*	Tall Prairie-gentian	p
2	Plants - Vascular	*Fuirena longa*	Coastal-plain Umbrella-sedge	p
2	Plants - Vascular	*Gaillardia aestivalis* var. *flavovirens*	Lanceleaf Blanket Flower	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Gentiana catesbaei*	Elliott's Gentian	p
1	Plants - Vascular	*Gratiola ramosa*	Branched Hedge-hyssop	p
3	Plants - Vascular	*Helenium brevifolium*	Shortleaf Sneezeweed	p
4	Plants - Vascular	*Helianthus debilis* ssp. *tardiflorus*	Gulf Coast Beach Sunflower	p
3	Plants - Vascular	*Herbertia lahue*	Herbertia	p
2	Plants - Vascular	*Heteranthera dubia*	Grassleaf Mud-plaintain	p
3	Plants - Vascular	*Hibiscus coccineus*	Brilliant Hibiscus	p
3	Plants - Vascular	*Hymenocallis choctawensis*	Florida Panhandle Spider-lily	p
2	Plants - Vascular	*Hypericum myrtifolium*	Myrtle-leaved St. Johnswort	p
1	Plants - Vascular	*Hypoxis curtissii*	Curtiss' Yellow Star-grass	p
2	Plants - Vascular	*Ilex cassine*	Dahoon Holly	p
1	Plants - Vascular	*Ipomoea macrorhiza*	Large-stem Morning-glory	p
1	Plants - Vascular	*Iresine diffusa*	Felicidad	p
1	Plants - Vascular	*Iris giganticaerulea*	Giant Blue Iris	p
2	Plants - Vascular	*Isoetes louisianensis*	Louisiana Quillwort	p
1	Plants - Vascular	*Isoetes mississippiensis*	Mississippi Quillwort	p
2	Plants - Vascular	*Juniperus silicicola*	Southern Red Cedar	p
3	Plants - Vascular	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	p
3	Plants - Vascular	*Linum floridanum* var. *chrysocarpum*	Yellow-fruited Flax	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Lobelia boykinii*	Boykin's Lobelia	p
3	Plants - Vascular	*Ludwigia alata*	Winged Seedbox	p
2	Plants - Vascular	*Lupinus perennis* ssp. *gracilis*	Sundail Lupine	p
3	Plants - Vascular	*Luziola bahiensis*	Brazilian Loziola	p
3	Plants - Vascular	*Macranthera flammea*	Flame Flower	p
1	Plants - Vascular	*Magnolia tripetala*	Umbrella Magnolia	p
3	Plants - Vascular	*Marshallia angustifolia*	Slim-leaf Barbara's-buttons	p
2	Plants - Vascular	*Mitreola angustifolia*	Narrowleaf Miterwort	p
2	Plants - Vascular	*Nuphar lutea* ssp. *ulvacea*	West Florida Cow-Lily	p
4	Plants - Vascular	*Nymphaea mexicana*	Banana Water-lily	p
3	Plants - Vascular	*Nymphoides aquatica*	Big Floating-heart	p
2	Plants - Vascular	*Orthochilus ecristatus*	Giant Orchid	p
2	Plants - Vascular	*Palafoxia callosa*	Small Palafoxia	p
3	Plants - Vascular	*Palhinhaea cernua*	Nodding Clubmoss	p
3	Plants - Vascular	*Paronychia erecta* var. *corymbosa*	Beach Sand-squares	p
3	Plants - Vascular	*Paronychia erecta* var. *erecta*	Beach Sand-squares	p
4	Plants - Vascular	*Persicaria hirsuta*	Hairy Smartweed	p
4	Plants - Vascular	*Phaseolus sinuatus*	Sandhill Bean	p
4	Plants - Vascular	*Physalis arenicola*	Cypress-head Ground-cherry	p

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Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Pieris phillyreifolia*	Climbing Fetter-bush	p
3	Plants - Vascular	*Pinguicula planifolia*	Chapman's Butterwort	p
2	Plants - Vascular	*Pinguicula pumila*	Dwarf Butterwort	p
1	Plants - Vascular	*Pinus clausa*	Sand Pine	p
2	Plants - Vascular	*Platanthera conspicua*	Large White-fringe Orchid	p
3	Plants - Vascular	*Platanthera integra*	Yellow Fringeless Orchid	p
3	Plants - Vascular	*Platanthera nivea*	Snowy Orchid	p
2	Plants - Vascular	*Senega ambigua*	Whorled Milkwort	p
2	Plants - Vascular	*Senega appendiculata*	Swamp Milkwort	p
2	Plants - Vascular	*Senega balduinii*	White Milkwort	p
2	Plants - Vascular	*Senega curtissii*	Curtiss' Milkwort	p
2	Plants - Vascular	*Senega hookeri*	Hooker's Milkwort	p
2	Plants - Vascular	*Senega leptostachys*	Georgia Milkwort	p
2	Plants - Vascular	*Potamogeton epihydrus*	Nuttall's Pondweed	p
2	Plants - Vascular	*Potamogeton pusillus*	Slender Pondweed	p
2	Plants - Vascular	*Pycnanthemum flexuosum*	Narrowleaf Mountainmint	p
4	Plants - Vascular	*Quercus arkansana*	Arkansas Oak	p
2	Plants - Vascular	*Quercus minima*	Dwarf Live Oak	p
3	Plants - Vascular	*Rhododendron austrinum*	Orange Azalea	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Rhynchospora baldwinii*	Baldwin's Beakrush	p
1	Plants - Vascular	*Rhynchospora brachychaeta*	West Indies Beakrush	p
2	Plants - Vascular	*Rhynchospora careyana*	Broad-fruit Horned Beakrush	p
1	Plants - Vascular	*Rhynchospora cephalantha* var. *attenuata*	Small-bunched Beaksedge	p
2	Plants - Vascular	*Rhynchospora crinipes*	Hairy-peduncled Beakrush	p
2	Plants - Vascular	*Rhynchospora curtissii*	Curtiss' Beakrush	p
1	Plants - Vascular	*Rhynchospora decurrens*	Swamp-forest Beakrush	p
3	Plants - Vascular	*Rhynchospora distans*	Fasciculate Beakrush	p
1	Plants - Vascular	*Rhynchospora divergens*	White-seeded Beakrush	p
2	Plants - Vascular	*Rhynchospora galeana*	Short-bristle Baldrush	p
1	Plants - Vascular	*Rhynchospora harperi*	Harper's Beakrush	p
2	Plants - Vascular	*Rhynchospora harveyi*	Harvey's Beakrush	p
1	Plants - Vascular	*Rhynchospora marliniana*	Marlin's Beaksedge	p
2	Plants - Vascular	*Rhynchospora perplexa*	Pineland Beakrush	p
3	Plants - Vascular	*Rhynchospora pinetorum*	Small's Beakrush	p
1	Plants - Vascular	*Rhynchospora pleiantha*	Brown Beakrush	p
1	Plants - Vascular	*Rhynchospora torreyana*	Torrey's Beakrush	p
1	Plants - Vascular	*Rhynchospora tracyi*	Tracy Beakrush	p
2	Plants - Vascular	*Rhynchospora wrightiana*	Wright's Beakrush	p

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Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Ruellia noctiflora*	Night-flowering Wild-petunia	p
3	Plants - Vascular	*Ruellia pinetorum*	Pine Barren Ruellia	p
2	Plants - Vascular	*Sabatia decandra*	Bartram's Rose-gentian	p
3	Plants - Vascular	*Sageretia minutiflora*	Tiny-leaved Buckthorn	p
2	Plants - Vascular	*Sagittaria chapmanii*	Chapman's Arrowhead	p
2	Plants - Vascular	*Sapindus marginatus*	Florida Soapberry	p
2	Plants - Vascular	*Sarracenia leucophylla*	Whitetop Pitcherplant	p
1	Plants - Vascular	*Sarracenia rosea*	Purple Pitcherplant	p
3	Plants - Vascular	*Schizachyrium maritimum*	Gulf Bluestem	p
2	Plants - Vascular	*Schoenoplectus americanus*	Three-square Bulrush	p
1	Plants - Vascular	*Schoenoplectus subterminalis*	Swaying Rush	p
4	Plants - Vascular	*Schwalbea americana*	Chaffseed	p
3	Plants - Vascular	*Scleria elliottii*	Broad-leaved Hairy Nutrush	p
3	Plants - Vascular	*Scleria georgiana*	Georgia Nutrush	p
3	Plants - Vascular	*Scleria nitida*	Shining Nutrush	p
3	Plants - Vascular	*Scleria verticillata*	Low Nutrush	p
1	Plants - Vascular	*Scutellaria leonardii*	Shale-barren Skullcap	p
2	Plants - Vascular	*Setaria corrugata*	Coast Bristle Grass	p
1	Plants - Vascular	*Spiranthes eatonii*	Eaton's Ladies'-tresses	p

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Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Plants - Vascular	*Spiranthes floridana*	Florida Ladies'-tresses	p
2	Plants - Vascular	*Spiranthes longilabris*	Giant Spiral Ladies'-tresses	p
2	Plants - Vascular	*Stenanthium texanum*	Pine Barren Deathcamas	p
1	Plants - Vascular	*Stylisma aquatica*	Water Southern Morning-glory	p
2	Plants - Vascular	*Syngonanthus flavidulus*	Yellow Pipewort	p
2	Plants - Vascular	*Syringodium filiforme*	Manatee-grass	p
3	Plants - Vascular	*Tridens carolinianus*	Carolina Fluff Grass	p
1	Plants - Vascular	*Trifolium carolinianum*	Carolina Clover	p
2	Plants - Vascular	*Triglochin striata*	Arrow-grass	p
3	Plants - Vascular	*Trillium foetidissimum*	Fetid Trillium	p
3	Plants - Vascular	*Utricularia purpurea*	Purple Bladderwort	p
3	Plants - Vascular	*Verbena xutha*	Gulf Vervain	p
3	Plants - Vascular	*Xyris chapmanii*	Chapman's Yellow-eyed-grass	p
3	Plants - Vascular	*Xyris drummondii*	Drummond's Yellow-eyed-grass	p
3	Plants - Vascular	*Xyris scabrifolia*	Harper's Yellow-eyed Grass	p
3	Plants - Vascular	*Xyris serotina*	Acid-swamp Yellow-eyed-grass	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Potential Conservation Partners

- Audubon
- County and city governments and planning boards
- Department of War
- Deepwater Horizon Natural Resources Damage Assessment (NRDA) Trustees
- Grand Bay NERR
- Gulf of America Alliance
- Land trusts
- Land Trust for the Mississippi Coastal Plain
- Migratory bird joint ventures
- Mississippi Association of Conservation Districts
- Mississippi Coast Audubon Society
- Mississippi Department of Environmental Quality
- Mississippi Department of Marine Resources
- Mississippi Department of Wildlife, Fisheries, and Parks
- Mississippi Forestry Association
- Mississippi Forestry Commission
- Mississippi Land Trust
- Mississippi Prescribed Fire Council
- Mississippi Outdoor Stewardship Trust Fund
- Mississippi Wildlife Federation
- Mississippi Longleaf Implementation Team
- National Fish and Wildlife Foundation
- National Aeronautics and Space Administration
- National Oceanic and Atmospheric Administration
- National Park Service
- Partnership for Gulf Coast Land Conservation
- Pascagoula River Audubon Center
- Pascagoula River Basin Alliance
- Private landowners
- RESTORE Council
- Sandhill Crane National Wildlife Refuge
- Secretary of State
- The Conservation Fund
- The Nature Conservancy
- The Trust for Public Land
- TIMOs and REITs
- Tribal Partners
- US Army Corps of Engineers
- US Fish and Wildlife Service
- USDA Farm Services Agency
- USDA Natural Resources Conservation Service
- USDA Forest Service
- USM Gulf Coast Research Laboratory
- Wildlife Mississippi



Swallow-Tailed Kite:

Working with Landowners for recovery



The Swallow-tailed Kite (*Elanoides forficatus*) is a medium-sized raptor with a four-foot wingspan, striking black and white plumage, and a long forked tail.

They historically occurred in up to 21 U.S. states, but with widespread clearing of forests, conversion of prairies and wetlands to agriculture, and shooting, their range contracted and the species can only be reliably found in a handful of states today. Within Mississippi, their range likely included the entire state but declined to floodplain forests and adjacent uplands primarily along the southern portions of the Pearl and Pascagoula river systems. The Swallow-Tailed Kite is a migratory species, spending the spring and summer months in Mississippi, and migrating to South America for the non-breeding season.

Their diet consists of large insects and small vertebrates that they glean from treetops, such as nestling birds, lizards, and snakes. Found along major river systems in areas of patchy habitat, mixed with open fields, and upland and lowland forests, they migrate through Mississippi only during the spring and summer months. Swallow-tailed Kites are very social and often nest in relatively close proximity to other Swallow-tailed Kites in "nesting neighborhoods". They also gather in communal pre-migration roosts after the nesting season, probably to help increase foraging efficiency to build energy reserves for the upcoming long migration to South America for the non-breeding season. This gregarious behavior has resulted in the species being slow to reoccupy vacant portions of its former range.



Illustration of Swallow-tailed Kite.
Credit: Sam Biebers

Because of their social nature, it is important to find pioneering Swallow-tailed Kites nesting in new areas. Recommended conservation actions include working with landowners to protect those nests in hopes that they will help speed the reoccupying of their former range within the state. MDWFP has been monitoring Swallow-tailed Kite activity centers for over 35 years, and much of this work has been funded with SWG. This has included more intensive efforts in central Mississippi over the past 15 years to follow up on reports of pioneering individuals reoccupying former portions of their range. We have recently received somewhat consistent reports from other parts of the state that may warrant further investigation.

With the help of SWG, MDWFP and partners will continue to monitor areas of the state with consistent activity centers, locate nests and pre-migration roosts, and work with willing landowners to protect nest and pre-migration roost sites.

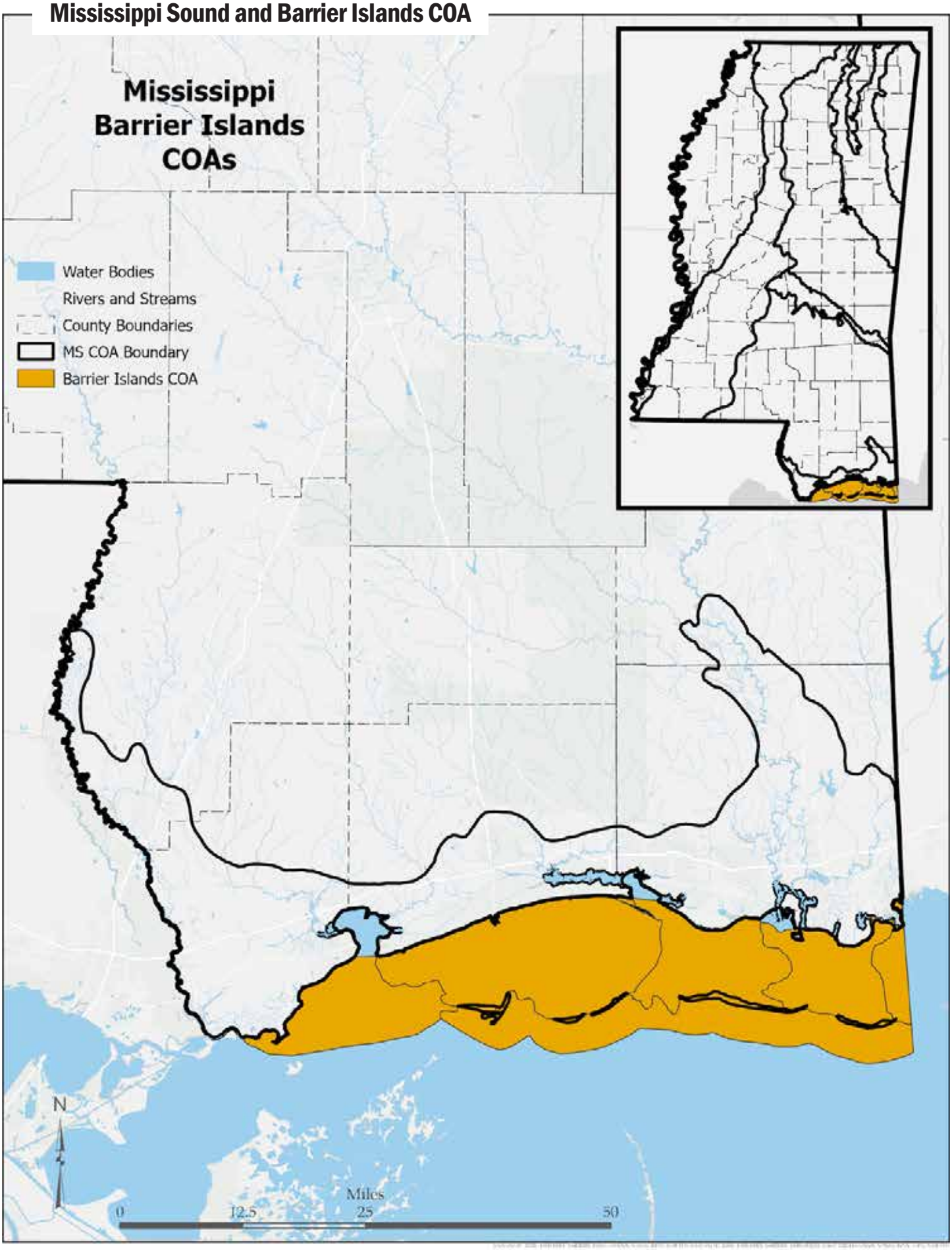


Figure 7.9. Mississippi Sound and Barrier Islands COA



Cat Island marshes and passes. *Credit: Holley Muraco*

The area south of the mainland shoreline encompassing the Mississippi Sound and three nautical miles south of the barrier islands comprise this COA. The sound is an estuary that is largely a product of the rivers that feed it, with the western area having higher freshwater inflows than the central and eastern regions. The barrier islands form the boundary between the marine and estuarine systems of Mississippi's coastal wetlands. Ship, Horn, Petit Bois, and portions of Cat Islands are included in the Gulf Islands National Seashore and are wilderness areas in good condition. Fourteen HUCs found in this COA are designated as high priority for conservation of SGCN.

CONSERVATION SITES IN THE MISSISSIPPI SOUND AND BARRIER ISLANDS COA

- Deer Island Coastal Preserve
- Cat Island Coastal Preserve
- Round Island Coastal Preserve
- Gulf Islands National Seashore

Table 7.15. Important Habitats in Mississippi Sound and Barrier Islands COA

Habitat	
1	Dry-mesic Upland Forests/Woodlands
6	Wet Pine Savannas and Flatwoods
16	Maritime and Estuarine Fringe
17	Estuary and Mississippi Sound (Inside or Associated with Barrier Islands)
18	Marine Habitats (Outside Barrier Islands)

Threats

Threats to the Mississippi Sound and Barrier Islands COA include oil and gas drilling, over exploitation or incidental capture of several turtle and fish species, household sewage and urban waste water runoff, industrial and military effluents runoff, garbage and solid wastes from marine litter and overboard discharge, habitat shifting and alteration by sea level rise, channel modification altering salinity regime, maintenance dredging disrupting longshore sand transport, recreational activities disturbing bird nesting areas. Multiple invasive species are an issue in this COA, with two of the worst plant invaders being Cogongrass and Chinese tallow. Others include nutria, torpedo grass, tilapia, alligator weed, parrot feather milfoil, and fire ants. For a more complete list of threats refer to specific habitats listed above in Chapter 5.



Diamond-Backed Terrapin

Challenges

The Diamond-Backed Terrapin (*Malaclemys terrapin*) is a medium-sized turtle with concentric, very conspicuous carapacial growth rings.

The carapace of adults is typically dark and unpatterned and with a yellow or orange trip on the slightly upturned rim of the marginal scutes. Most individuals of both sexes have polka-dots on the head and neck, and there is often a dark 'moustache' on the upper jaw. The Diamond-Backed Terrapins range extends along most of the Atlantic and Gulf Coasts between Massachusetts and Texas. The subspecies occurring in Mississippi, the Mississippi Diamond-backed Terrapin, ranges from the western panhandle of Florida to southwestern Texas. Terrapins occur in most of the salt marshes along Mississippi's mainland coast and in marshes on inshore and offshore islands. Adults may also be found in the Mississippi Sound, too. They forage primarily upon snails and crustaceans but unfortunately will avail themselves of the bait used in crab traps.

Terrapins require sandy nesting beaches immediately adjacent to salt marshes, however, most of Mississippi's mainland beach is manmade and does not adjoin saltmarsh. Hatchling terrapins do not live in salt water and occupy high marsh upslope of saltwater channels and in storm deposited freshwater in swales between nesting beaches and the lower marsh. Mississippi has less extensive saltmarsh habitat than other states on the Gulf Coast.

Incidental capture within crab traps, both commercial and recreational, is a major problem for terrapins. Unless fitted with properly maintained bycatch reduction devices intended to prevent entry by most adult turtles, a crab trap can trap and drown adult turtles. Although one survey of bycatch and the incidence of terrapin capture was low, terrapin populations in Mississippi are doubtless depleted by decades of unmeasured incidental capture. Many of the bays and bayous in salt marshes are very shallow, and difficult to conveniently access by commercial fishermen at low tide, which may explain the persistence of terrapins at many sites.

Coastal erosion is a challenge, particularly on smaller fringing beaches flanking the Rigolets and Heron Bayou. But terrapins nest on many of these eroding sand faces, and emerging young will move inland into the marsh perimeter. Living shorelines have been placed in several areas to address the erosion issue. Despite this, if these result in thick revegetation of sandy scarps they may be diminishing the extent of terrapin nesting habitat. Anthropogenic factors contributing to degradation of natural, marsh-rim, fringing beaches, particularly channel dredging and its impact on longshore sand transport, should be modified where possible. Future surveys should focus on terrapin populations at established living shoreline sites, and these data should be compared with that of historic surveys.

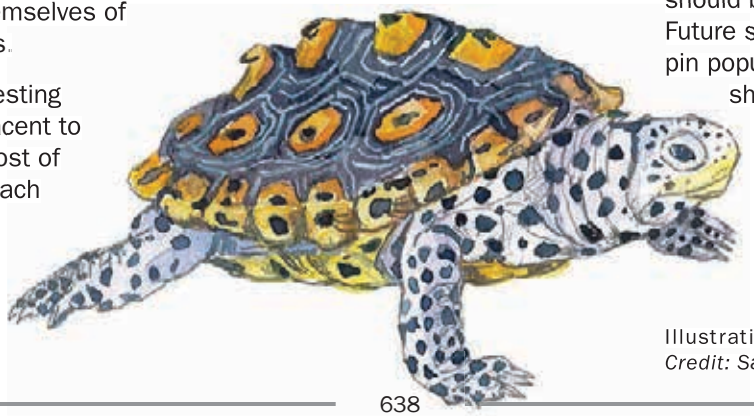


Illustration of Diamond-Backed Terrapin
Credit: Sam Biebers

Priority Conservation Actions

CONSERVATION ACTION 1 LAND/WATER PROTECTION

- Encourage and improve agriculture/forestry/land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues.
- Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs.
- Limit/discourage the introduction or propagation of exotic and invasive species (plant and animal).

CONSERVATION ACTION 2 LAND/WATER MANAGEMENT

- Coordinate with other agencies, NGOs, conservation groups to establish best practices for monitoring and controlling invasive species: establish monitoring protocols, prioritization of control efforts.
- Discourage/limit human access in highly critical areas and special habitats, when possible, and discourage incompatible recreational uses.

CONSERVATION ACTION 4 EDUCATION AND AWARENESS

- Develop informational materials promoting the optimal conditions and management needs of habitats.
- Encourage appreciation of SGCN and their habitats by providing public access and compatible recreation activities.

CONSERVATION ACTION 6 LIVELIHOOD, ECONOMIC AND OTHER INCENTIVES

- Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats.

Table 7.16. Mississippi Sound and Barrier Islands COA Species of Greatest Conservation Need.

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Insects	*Aeshna umbrosa*	Shadow Darner	p
4	Insects	*Amblyscirtes alternata*	Least Florida Skipper	p
4	Insects	*Hesperapis oraria*	Gulf Coast Solitary Bee	p
4	Insects	*Papaipema maritima*	Maritime Sunflower Borer	p
2	Birds	*Ammodramus savannarum*	Grasshopper Sparrow	p
2	Birds	*Ammospiza leconteii*	LeConte's Sparrow	p
1	Birds	*Ammospiza maritima*	Seaside Sparrow	p
1	Birds	*Ammospiza nelsoni*	Nelson's Sparrow	p
3	Birds	*Anas acuta*	Northern Pintail	p
1	Birds	*Anas fulvigula*	Mottled Duck	p
3	Birds	*Antrostomus carolinensis*	Chuck-will's-widow	p
1	Birds	*Antrostomus vociferus*	Eastern Whip-poor-will	p
3	Birds	*Asio flammeus*	Short-eared Owl	p
2	Birds	*Aythya affinis*	Lesser Scaup	p
2	Birds	*Botaurus lentiginosus*	American Bittern	p
1	Birds	*Calidris canutus*	Red Knot	p
3	Birds	*Calidris melanotos*	Pectoral Sandpiper	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Birds	*Calidris pusilla*	Semipalmated Sandpiper	p
2	Birds	*Calidris subruficollis*	Buff-breasted Sandpiper	p
1	Birds	*Centronyx henslowii*	Henslow's Sparrow	p
2	Birds	*Chaetura pelagica*	Chimney Swift	p
1	Birds	*Charadrius melodus*	Piping Plover	p
1	Birds	*Charadrius nivosus*	Snowy Plover	p
1	Birds	*Charadrius wilsonia*	Wilson's Plover	p
3	Birds	*Chlidonias niger*	Black Tern	p
3	Birds	*Chordeiles minor*	Common Nighthawk	p
2	Birds	*Cistothorus palustris marianae*	Marian's Marsh Wren	p
3	Birds	*Coccyzus americanus*	Yellow-billed Cuckoo	p
3	Birds	*Columbina passerina*	Common Ground Dove	p
2	Birds	*Coturnicops noveboracensis*	Yellow Rail	p
2	Birds	*Egretta caerulea*	Little Blue Heron	p
2	Birds	*Egretta rufescens*	Reddish Egret	p
3	Birds	*Egretta tricolor*	Tricolored Heron	p
1	Birds	*Elanoides forficatus*	Swallow-tailed Kite	p
2	Birds	*Euphagus carolinus*	Rusty Blackbird	p
1	Birds	*Falco sparverius paulus*	Southeastern American Kestrel	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Gelochelidon nilotica*	Gull-billed Tern	p
2	Birds	*Geothlypis formosa*	Kentucky Warbler	p
1	Birds	*Haematopus palliatus*	American Oystercatcher	p
2	Birds	*Helmitheros vermivorum*	Worm-eating Warbler	p
2	Birds	*Hylocichla mustelina*	Wood Thrush	p
2	Birds	*Ixobrychus exilis*	Least Bittern	p
2	Birds	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	p
3	Birds	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	p
1	Birds	*Laterallus jamaicensis*	Black Rail	p
3	Birds	*Limnodromus griseus*	Short-billed Dowitcher	p
2	Birds	*Limnothlypis swainsonii*	Swainson's Warbler	p
2	Birds	*Limosa fedoa*	Marbled Godwit	p
3	Birds	*Melanerpes erythrocephalus*	Red-headed Woodpecker	p
1	Birds	*Mycteria americana*	Wood Stork	p
3	Birds	*Nyctanassa violacea*	Yellow-crowned Night-Heron	p
3	Birds	*Nycticorax nycticorax*	Black-crowned Night-Heron	p
2	Birds	*Parkesia motacilla*	Louisiana Waterthrush	p
2	Birds	*Passerina ciris*	Painted Bunting	p
3	Birds	*Piranga olivacea*	Scarlet Tanager (breeding population)	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Platalea ajaja*	Roseate Spoonbill	p
3	Birds	*Pluvialis dominica*	American Golden-Plover	p
3	Birds	*Porphyrio martinicus*	Purple Gallinule	p
2	Birds	*Protonotaria citrea*	Prothonotary Warbler	p
3	Birds	*Quiscalus quiscula*	Common Grackle	p
2	Birds	*Rallus elegans*	King Rail	p
2	Birds	*Riparia riparia*	Bank Swallow (breeding population)	p
1	Birds	*Rynchops niger*	Black Skimmer	p
3	Birds	*Scolopax minor*	American Woodcock	p
2	Birds	*Seiurus aurocapilla*	Ovenbird (breeding population)	p
2	Birds	*Setophaga cerulea*	Cerulean Warbler	p
2	Birds	*Setophaga discolor*	Prairie Warbler	p
3	Birds	*Sitta pusilla*	Brown-headed Nuthatch	p
3	Birds	*Spizella pusilla*	Field Sparrow	p
1	Birds	*Sterna hirundo*	Common Tern (breeding population)	p
1	Birds	*Sternula antillarum antillarum*	Coastal Least Tern	p
3	Birds	*Sturnella magna*	Eastern Meadowlark	p
2	Birds	*Thalasseus maximus*	Royal Tern	p
1	Birds	*Thalasseus sandvicensis*	Sandwich Tern	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
1	Birds	*Thryomanes bewickii*	Bewick's Wren	p
3	Birds	*Tringa flavipes*	Lesser Yellowlegs	p
3	Birds	*Tringa semipalmata*	Willet	p
1	Birds	*Vermivora chrysoptera*	Golden-winged Warbler	p
2	Birds	*Vireo gilvus*	Warbling Vireo	p
2	Fishes	*Atractosteus spatula*	Alligator Gar	p
4	Fishes	*Anguilla rostrata*	American Eel	p
1	Fishes	*Alosa alabamae*	Alabama Shad	p
2	Fishes	*Fundulus jenkinsi*	Saltmarsh Topminnow	p
4	Fishes-Marine	*Megalops atlanticus*	Tarpon	p
4	Fishes-Marine	*Hippocampus erectus*	Lined Seahorse	p
4	Fishes-Marine	*Archosargus rhomboidalis*	Western Atlantic Seabream	p
4	Fishes-Marine	*Epinephelus itajara*	Atlantic Goliath Grouper	p
4	Fishes-Marine	*Carcharias taurus*	Sand Tiger Shark	p
4	Fishes-Marine	*Isurus oxyrinchus*	Shortfin Mako Shark	p
3	Fishes-Marine	*Carcharhinus acronotus*	Blacknose Shark	p
2	Fishes-Marine	*Carcharhinus plumbeus*	Sandbar Shark	p
4	Fishes-Marine	*Carcharhinus porosus*	Smalltail Shark	p
2	Fishes-Marine	*Negaprion brevirostris*	Lemon Shark	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Fishes-Marine	*Sphyrna lewini*	Scalloped Hammerhead	p
2	Fishes-Marine	*Sphyrna mokarran*	Great Hammerhead	p
1	Fishes-Marine	*Pristis pectinata*	Smalltooth Sawfish	p
4	Fishes-Marine	*Pristis pristis*	Largetooth Sawfish	p
2	Fishes-Marine	*Narcine bancroftii*	Caribbean Electric Ray	p
2	Fishes-Marine	*Aetobatus narinari*	Whitespotted Eagle Ray	p
3	Fishes-Marine	*Rhinoptera brasiliensis*	Brazilian Cownose Ray	p
4	Fishes-Marine	*Manta birostris*	Giant Manta Ray	p
4	Fishes-Marine	*Mobula hypostoma*	Atlantic Pygmy Devil Ray	p
4	Fishes-Marine	*Mobula tarapacana*	Sicklefin Devil Ray	p
1	Mammals-Marine	*Trichechus manatus*	West Indian Manatee	p
3	Reptiles	*Coluber flagellum flagellum*	Eastern Coachwhip	p
2	Reptiles	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	p
1	Reptiles	*Macrochelys temminckii*	Alligator Snapping Turtle	p
1	Reptiles	*Malaclemys terrapin pileata*	Mississippi Diamondback Terrapin	p
2	Reptiles	*Nerodia clarkii clarkii*	Gulf Salt Marsh Snake	p
1	Reptiles	*Pseudemys alabamensis*	Alabama Red-bellied Turtle	p
2	Reptiles- Marine	*Caretta caretta*	Loggerhead Sea Turtle	p
3	Reptiles- Marine	*Chelonia mydas*	Green Sea Turtle	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Reptiles- Marine	*Dermochelys coriacea*	Atlantic Leatherback Sea Turtle	p
4	Reptiles- Marine	*Eretmochelys imbricata*	Hawksbill Sea Turtle	p
1	Reptiles- Marine	*Lepidochelys kempii*	Kemp's Ridley Sea Turtle	p
1	Plants - Nonvascular	*Drepanolejeunea mosenii*	a liverwort	p
3	Plants - Vascular	*Amaranthus australis*	Southern Amaranth	p
3	Plants - Vascular	*Andropogon dealbatus*	Wetland White Bluestem	p
3	Plants - Vascular	*Aristida spiciformis*	Pine Barren Three-awn Grass	p
3	Plants - Vascular	*Aristida tenuispica*	Southern Arrowfeather	p
1	Plants - Vascular	*Avicennia germinans*	Black Mangrove	p
2	Plants - Vascular	*Balduina angustifolia*	Coastal Plain Honeycomb-head	p
2	Plants - Vascular	*Baptisia sphaerocarpa*	Green Wild Indigo	p
1	Plants - Vascular	*Chamaecrista horizontalis*	Florida Senna	p
1	Plants - Vascular	*Conradina canescens*	Blue-sage	e
2	Plants - Vascular	*Crocanthemum arenicola*	Coastal-sand Frostweed	p
2	Plants - Vascular	*Cyperus articulatus*	Jointed Flatsedge	p
2	Plants - Vascular	*Cyperus lecontei*	Le Conte's Flatsedge	p
3	Plants - Vascular	*Desmodium tenuifolium*	Slim-leaf Tick-trefoil	p
3	Plants - Vascular	*Dichanthelium erectifolium*	Erect-leaf Witchgrass	p
1	Plants - Vascular	*Eleocharis albida*	White Spikerush	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
3	Plants - Vascular	*Eleocharis cellulosa*	Carolina Spikerush	p
2	Plants - Vascular	*Eleocharis geniculata*	Capitate Spikerush	p
1	Plants - Vascular	*Eleocharis parvula*	Small Spikerush	p
3	Plants - Vascular	*Eleocharis rostellata*	Beaked Spikerush	p
4	Plants - Vascular	*Elionurus tripsacoides*	Pan-american Balsamscale	p
3	Plants - Vascular	*Galactia floridana*	Florida Milkpea	p
2	Plants - Vascular	*Halodule wrightii*	Shoal-grass	p
2	Plants - Vascular	*Halophila engelmannii*	Engelmann's Sea-grass	p
1	Plants - Vascular	*Hypoxis curtissii*	Curtiss' Yellow Star-grass	p
2	Plants - Vascular	*Ipomoea brasiliensis*	Railroad Morning-glory	p
1	Plants - Vascular	*Ipomoea macrorhiza*	Large-stem Morning-glory	p
2	Plants - Vascular	*Juniperus silicicola*	Southern Red Cedar	p
3	Plants - Vascular	*Ludwigia alata*	Winged Seedbox	p
2	Plants - Vascular	*Lycium carolinianum*	Carolina Wolf-berry	p
3	Plants - Vascular	*Paronychia erecta* var. *corymbosa*	Beach Sand-squares	p
3	Plants - Vascular	*Paronychia erecta* var. *erecta*	Beach Sand-squares	p
2	Plants - Vascular	*Paspalum monostachyum*	Gulfdune Paspalum	p
4	Plants - Vascular	*Physalis arenicola*	Cypress-head Ground-cherry	p
1	Plants - Vascular	*Pinus clausa*	Sand Pine	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Tier	Taxa Group (Class)	Scientific Name	Common Name	Status
2	Plants - Vascular	*Polanisia tenuifolia*	Slenderleaf Clammy-weed	p
2	Plants - Vascular	*Quercus minima*	Dwarf Live Oak	p
2	Plants - Vascular	*Quercus myrtifolia*	Myrtle-leaf Oak	p
2	Plants - Vascular	*Rhynchospora harveyi*	Harvey's Beakrush	p
3	Plants - Vascular	*Rhynchospora pinetorum*	Small's Beakrush	p
2	Plants - Vascular	*Ruellia noctiflora*	Night-flowering Wild-petunia	p
2	Plants - Vascular	*Sapindus marginatus*	Florida Soapberry	p
3	Plants - Vascular	*Schizachyrium maritimum*	Gulf Bluestem	p
2	Plants - Vascular	*Schoenoplectus americanus*	Three-square Bulrush	p
3	Plants - Vascular	*Scleria elliottii*	Broad-leaved Hairy Nutrush	p
3	Plants - Vascular	*Scleria georgiana*	Georgia Nutrush	p
3	Plants - Vascular	*Scleria nitida*	Shining Nutrush	p
3	Plants - Vascular	*Scleria verticillata*	Low Nutrush	p
2	Plants - Vascular	*Setaria corrugata*	Coast Bristle Grass	p
2	Plants - Vascular	*Syngonanthus flavidulus*	Yellow Pipewort	p
2	Plants - Vascular	*Thalassia testudina*	Turtle-grass	p
2	Plants - Vascular	*Xyris flabelliformis*	Savannah Yellow-eyed-grass	p

Status: **p**=present | **e**=extirpated | **?**=suspected but unconfirmed

Potential Conservation Partners

- Audubon
- County and city governments and planning boards
- Deepwater Horizon Natural Resources Damage Assessment (NRDA) Trustees Grand Bay NERR
- Land trusts
- Land Trust for the Mississippi Coastal Plain
- Migratory bird joint ventures
- Mississippi Coast Audubon Society
- Mississippi Department of Environmental Quality
- Mississippi Department of Marine Resources
- Mississippi Department of Wildlife, Fisheries, and Parks
- Mississippi Forestry Commission
- Mississippi Land Trust
- Mississippi Prescribed Fire Council
- Mississippi Wildlife Federation
- Mississippi State University
- National Park Service
- National Oceanic and Atmospheric Administration
- National Fish and Wildlife Foundation
- Partnership for Gulf Coast Land Conservation
- Pascagoula River Audubon Center
- Pascagoula River Basin Alliance
- Private landowners
- RESTORE Council
- Sandhill Crane National Wildlife Refuge
- Secretary of State
- The Conservation Fund
- The Nature Conservancy
- The Trust for Public Land
- TIMOs and REITs
- Tribal Partners
- University of Southern Mississippi
- US Army Corps of Engineers
- US Fish and Wildlife Service
- USDA Forest Service
- USM Gulf Coast Research Laboratory
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CHAPTER 8

Research, Survey, and Monitoring Needs

Surveys, research, and monitoring are tools that act synergistically to produce informed, effective and efficient actions geared toward the conservation of species. The nature of each of these tools is largely determined by how complete the knowledge base is for a particular species. For example, biologists know how to monitor presence, population density, demographic structure, health status, habitat condition, and how to calculate sustainable harvest for white-tailed deer. Conservation actions are taken in the form of adaptive management measures that are informed by feedback from regular monitoring. The result generally has been balanced populations that serve both the needs of the ecosystems they dwell in, and the needs of human consumers and economies benefiting from them.

Conversely, conservation actions directed towards SGCN must often address a relative lack of fundamental biological knowledge pertaining to these species. In some cases, relationships between groups of some non-game animals lack understanding to the point that it is not possible to determine whether they represent a population, multiple populations or even different species. The fact that conservation actions benefitting one species may negatively impact another emphasizes the importance of a comprehensive understanding of needs at the species, as well as community levels. Ensuring completion of objectives and implementation of quality control measures represent monitoring that is essential to producing timely and accurate information that fills these knowledge voids.

Monitoring and Adaptive Management

METHODOLOGY – BEST PRACTICES FOR STATE WILDLIFE ACTION PLANS

Evaluating the effectiveness of Mississippi's SWAP will be accomplished through an approach which incorporates short-term performance measures of actions implemented, progress toward goals and additional planning, and long-term monitoring status of SGCN populations, their habitats and key biological communities. The extent to which the SWAP is implemented and actions performed should provide initial indications of effectiveness of the SWAP. Examples of initial indicators may include acres or stream miles enhanced or protected, conservation plans completed and basic research and survey projects initiated or completed. Due to limited baseline information and the strategic scope of this document, performance measures are necessarily broad and must realistically remain adaptive as new information becomes available and methods improve. Over the next ten years as more data become available and the SWAP is "stepped down" into more detailed species, habitat or community specific conservation plans, target performance benchmarks should be developed and pursued.

Significant changes in status of SGCN, habitat and biological communities are generally evident only through longer-term monitoring. However, baseline information must be established to most effectively assess changes over time. Substantial baseline information is currently available for some SGCN and key communities. Information available for others is limited and must be acquired before changes may be adequately tracked. This need for additional baseline information must be addressed early in the implementation of the SWAP. A list of identified survey and research needs is included at the end of this chapter.

The USFWS lists monitoring of conservation actions as one of the eight elements required in State Wildlife Action Plans. Monitoring the implementation and impact of conservation actions, regardless of what stage they are implemented, informs subsequent actions so that they better achieve the ultimate objective. This process is known as adaptive management.

MONITORING SPECIES

The State Wildlife Action Plan prioritizes habitats in part based on the numbers of SGCN found in different habitats. An important factor in making this determination is understanding a species' distribution within the state. The known ranges of some SGCN are not completely understood in Mississippi. Knowing where animals occur on both a fine scale (habitats occupied) and a broad scale (geographical distribution) is very important for making management decisions. SGCN may be considered vulnerable because of limited distribution within the state, or a species may be rather wide-ranging, but rarely encountered. Surveys not only tell us about an organism's distribution and habitat use but can also tell us whether changes have occurred over time. These changes in faunal composition may reflect a degradation, or improvement in habitats for a species or assemblage of species.

The Mississippi Natural Heritage Program (MNHP) maintains a database of species occurrence records that is used to track species population trends over time. All records are maintained in Biotics 5 under the guidance of NatureServe, the international heritage program parent organization. The MNHP database serves as a primary centralized repository for information related to Species of Concern and is used for acquiring, managing and disseminating information relative to monitoring SGCN under the SWAP. Information related to species status is collected through agency sponsored species surveys and inventories and MDWFP Scientific Collection Permit reports and incorporated into the MNHP database annually. Additional information available through other sources such as scientific literature, governmental agency technical reports, conservation organizations and academic experts will be solicited and added into the database when possible.



Night survey of Webster's Salamander using silt fence on Natchez Trace. *Credit: Tom Mann*

Monitoring status of individual species is necessary but may be relatively costly and time consuming. Methodologies that monitor species guilds and/or use indicator species can be less extensive and more cost- effective to perform. These are recommended when monitoring individual species is less feasible. Alternative monitoring tools discussed in this section will be used for monitoring species in situations limited by the need for additional information. The utility of maintaining species occurrence records through time was recently illustrated by a management proposal involving several Mississippi species. The US Fish and Wildlife Service was petitioned by a private conservation group to list 17 species of crayfish occurring in Mississippi as threatened or endangered under the US Department of Interior's Endangered Species Act. Ten of these species are endemic to Mississippi and the other seven are found only in Mississippi and one bordering state (six shared with Alabama, one shared with Tennessee). The only published scientific information for many of these species was the type description, which usually contained only limited information on the biology of the species. The US Fish and Wildlife Service asked the Mississippi Department of Wildlife, Fisheries, and Parks to review the available information about the habitat and range of the species in Mississippi as well as any relevant taxonomic information that might be pertinent. The Mississippi Department of Wildlife, Fisheries, and Parks, through its Museum of Natural Science, maintains an extensive collection of crayfish from Mississippi and the southeastern United States. Combining the information from specimen records in the agency's collection with specimen records from other museums and information from the scientific literature, the agency produced a document that indicated that 16 of the 17 petitioned species were likely not suitable for listing under the US Endangered Species Act.



Lonesome Gravedigger & Banded Mudbug

New Species Named!

Mississippi is home to an amazing amount of aquatic diversity and the number of species we formally recognize continues to grow.

In 2020, a genetic and morphological evaluation of the Rusty Gravedigger (Lacunicambarus miltus) supported the elevation of two new species, the Banded Mudbug (Lacunicambarus freudensteini) and the Lonesome Gravedigger (Lacunicambarus mobilensis). Based on the findings from a published study, both species occur only in Mississippi and Alabama and were thought to be confined between the Pascagoula and Mobile Rivers. The reported range of both species is currently less than 1,000 km2 and are among the most-narrow ranged species within the state of Mississippi. With only five known localities for each species in the state, further efforts to determine the status and complete distribution were needed.

In 2024, a SWG funded burrowing crayfish survey took place in southeastern Mississippi targeting novel locations to better understand the range, habitat, and threats to both species. In total, 104 sites were surveyed and 22 species were captured including both target species. Banded Mudbugs were captured at 11 sites within its known range. Lonesome Gravediggers were found at 16 sites, including areas further north and west than previously reported. Findings from the study now completely describe the distribution of both species of concern in the state. Because we now understand where the species occurs, conservation managers are better able to understand which habitats are critical to the species long-term survival.



Illustration of Banded Mudbug
Credit: Sam Biebers

Monitoring Habitat

Mississippi's SWAP recognizes the importance of dedicating resources to conservation of individual species with unique requirements for long-term survival. However, traditional conservation methods that focus on single species may fail to capture important information related to complex interactions between target and non-target species and their environments. To facilitate greater return on investments, a primary goal of this strategy is to identify common threats and apply conservation actions to benefit biological communities with greater numbers and higher priority SGCN. Assessing the success of these actions will require monitoring changes at the level of community, habitat or guild. Monitoring changes to the quantity of areas affected by actions may be the most feasible short-term method of monitoring actions related to communities and habitats. Upon implementation of the SWAP, estimates of stream miles and acres of key habitat improved, restored, placed in conservation programs or otherwise protected will be the primary indicators of success.

Effectively monitoring changes in condition or quality of habitat can be problematic due to the need for a better understanding of our biological systems and improved more cost-effective methodologies to assess them. Monitoring programs such as those performed by the Mississippi Department of Environmental Quality (MDEQ) contribute significantly to our ability to monitor land, air, and water quality. Successful implementation of SWAP should be reflected in environmental and community data collected by agencies and organizations such as MDEQ, the Mississippi Forestry Commission (MFC), The Nature Conservancy (TNC), the US Geological Survey (USGS), the US Environmental Protection Agency (EPA), the US Fish and Wildlife Service (USFWS), the USDA Natural Resources Conservation Service (NRCS), the USDA Forest Service (USFS) and others. Land cover assessments and geographic information system (GIS) programs are important for monitoring key habitats. Information available from the Mississippi GAP Analysis Program, Aquatic GAP, the Mississippi Automated Resource Information Center (MARIS), USGS, the Mississippi Department of Marine Resource's Coastal Resource Management Program (CRMP), NatureServe, the Southeast Conservation Blueprint, Southeast Conservation Adaptation Strategy (SECAS), and others can be used to track landscape changes over time. These programs are especially valuable for remotely assessing the status of private lands. Although programs provide a strong foundation for tracking habitats, further refinement to mapping and GIS capabilities is needed to meet SWAP long-term goals. Land cover information must be updated periodically to be useful in tracking long-term changes.

Because the SWAP is a statewide strategy developed to provide guidance to facilitate conservation on all public and private lands. Inclusion of monitoring activities performed by all public and private individuals and entities is essential. Information from the Landowner Incentive Program (LIP), Farm Bill conservation programs such as the Conservation Reserve Program (CRP), Agricultural Land Easement Program (ALE), the Wetland Reserve Easement Program (WRE) and the Wildlife Habitat Incentives Program (WHIP), Ducks Unlimited (DU) and the Joint Ventures partnerships, the Forest Legacy Program and others such as The Nature Conservancy's Conservation Area Partnerships that facilitate conservation practices should provide indications of success action on private lands. Organizations and agencies such as the NRCS and the USDA Farm Services Agency (FSA), Mississippi Forestry Commission (MFC), the Mississippi Soil and Water Conservation Commission (MSWCC) and Wildlife Mississippi work closely with landowners and can be valuable resources for assessing accomplishments on private lands. Several lands trusts have also been established in the state and can provide information related to private lands.

Existing Monitoring

Capturing necessary information to effectively monitor the SWAP will depend on a coordinated effort of all stakeholders. It is critical for success to further strengthen partnerships established through the SWAP Advisory Committee and pursue new cooperative efforts to monitor success. A system for acquiring data from partners and compiling and disseminating this information to stakeholders and the public must be developed.

Although many existing monitoring programs have been identified, further work to incorporate these will be needed during the implementation of the SWAP. A database of conservation actions and monitoring activities performed by partners is needed to document progress and identify gaps. If possible protocols for standard data collection and monitoring should be adopted or developed.

Protocols for monitoring certain taxonomic groups have been developed by various organizations such as Partners in Flight (PIF), Partners in Amphibian and Reptile Conservation (PARC), The American Fisheries Society (AFS) and others. The SWAP recommends the continued development and adoption of recognized standardized monitoring protocols.

Monitoring Actions

Significant changes in status of species and condition of habitat potentially resulting from conservation actions may become evident only through long-term monitoring. Until these can be adequately assessed, monitoring the number and extent of actions performed will be the most effective method to determine successful implementation of the SWAP.

Performance indicators useful for tracking actions have been identified, and information based on these indicators will be compiled annually for use in reporting and for adaptive management. Continuing dialogue with stakeholders, resource managers, and outside partners is necessary to continue effective adaptive management. Within three to five years this information will be evaluated to determine whether the SWAP has been effectively implemented, and priority objectives are being addressed.

Although overlap occurs, recommended conservation actions have been generally categorized into four types: **1)** applied research, status surveys, inventories; **2)** habitat and species management and protection; **3)** education and outreach; **4)** planning and policy. Potential performance indicators which may be enumerated for each of these categories are summarized on the following page.



Surveying and protecting cave habitat on private lands.
Credit: Katelin Cross

Potential Performance Indicators

1. **Research, Status Survey and Inventories**
   Research projects initiated or completed Status surveys initiated or completed
   Populations, species, guilds or areas or monitored
   New or verified NHP element records occurrences
   Air, water, soil quality assessments performed
2. **Habitat and Species Management and Protection**
   Acres or stream miles protected
   Acres or stream miles restored
   Acres or stream miles enhanced
   Acres placed under conservation agreements
   Threats removed
   Species or individuals added to area
3. **Education and Outreach**
   Educational events held Individuals reached
   Educational tools/publications produced
   Websites developed or updated
   Reports and publications completed
   Public/stakeholder surveys performed
4. **Planning and Policy**
   Species added to or removed from SGCN list
   Planning events
   Plans completed or revised
   Sampling protocols/data standards established
   Projects funded
   Partnerships/cooperative agreements established
   Information exchanges performed
   Threats assessed/updated
   Population or habitat goals developed or reached
   Mapping updates completed
   Permits issued, reviewed, commented on
   Technical guidance provided

Reporting – Wildlife TRACS

MDWFP will continue to use the Wildlife Tracking and Reporting Actions for the Conservation of Species system, also known as Wildlife TRACS, for documentation of its monitoring efforts, completion of conservation actions, and resulting adaptive management. Wildlife TRACS is developed and maintained by the USFWS as a service to entities employing SWG funds towards species conservation and to the general public. Input of information into the Wildlife TRACS reporting systems follows a standard format and incorporates effectiveness measures approved by the AFWA. By standardizing the reporting process, a more accurate record of conservation progress across participants is generated. Ultimately this provides accountability and transparency while demonstrating the benefits of SWG dollars to the United States Congress and taxpayers.

Survey and Research Needs

Major survey and research needs were identified by the Expert Team by addressing the survey and research needs identified in the 2015 version of the SWAP. Research addressing these species and needs was compiled and new survey and research needs were identified by the Expert Team, stakeholder, and public input for the 2025 SWAP update (Appendix 12).



Mussel survey in the Chickasawhay River.
Credit: Robbie Ellwanger

CHAPTER 9

Implementation, Review and Revision of Mississippi's SWAP

When Congress passed the original enabling legislation that mandated each state and territory develop a SWAP, they included a requirement for each lead wildlife agency to establish procedures to review and revise their state SWAP at intervals not to exceed ten years (Required Element 6). All SWAPs must coordinate "…the development, implementation, review, and revision of the plan with Federal, State, and local agencies and Indian tribes that manage significant land and water areas within the State or administer programs that significantly affect the conservation of identified species and habitats" (AFWA 2022). The following is a description of how MDWFP has and will continue to review and revise this SWAP.

In 2015, MDWFP proposed to complete a comprehensive revision of SWAP within 10 years. This 2025 document fulfills that obligation. Going forward, MDWFP plans to complete a comprehensive revision every ten years as originally proposed, and will make other modifications in accordance with the Association of Fish and Wildlife Agencies' *Recommended Best Practices for State Wildlife Action Plans* or other guidance from the USFWS in the interim period in collaboration with partners, expert advisors and public input.

The next comprehensive update of Mississippi SWAP will be completed by September 2035 with an interim five-year review for certain species and habitats identified by the MDWFP SWAP Technical Committee and input from expert advisors, stakeholders and the public that are deemed as likely to benefit from or require a shorter review period. In addition, we recognize that for this SWAP to meet its intended goal to improve biodiversity in Mississippi we must consider Mississippi's SWAP "a living document" and process, and we must continually update, refine and revise the data and recommendations herein. Thus, it is our intention to review, evaluate and update sections annually where necessary and possible through our MNHP housed in MDWFP's Mississippi Museum of Natural Science. We anticipate changes to species' rankings and will address those in the interim period as well as any additional state or federal listings or delistings.

In order to accomplish these planned updates, MDWFP will continue to enlist the assistance of SWAP stakeholders and expert advisors in the review process. The continued engagement of outside advisors and experts will allow the MDWFP SWAP Technical Committee to collaborate with its many existing and potential conservation partners and interested stakeholders in both the ongoing implementation of SWAP recommendations and refinement of the SWAP that should result in better implementation of conservation actions, and ultimately improved health of species of concern and their habitats. This implementation and review process will be synchronized with MDWFP's annual budget planning cycle. MDWFP will also use its existing annual performance reports for Federal Aid projects and State Wildlife Grants (SWG) funds to document progress on SWAP-related activities. Reporting is accomplished through Wildlife TRACS (Tracking and Reporting Actions for the Conservation of Species). TRACS has an online open access area where the public can view limited, state selected data that has been submitted.

New data on species and habitats will continue to be incorporated by MDWFP's MNHP database (Biotics) regularly and any changes in status of species and their habitats will be entered annually in this database. MDWFP's SWG Coordinator and Technical Committee will be responsible for implementing the annual review and evaluation of the SWAP and will report annually to the MDWFP Executive Director as part of the regular operations of the SWG program.

The SWG Coordinator and SWAP Technical Committee will conduct an annual, five and ten year assessment using the original eight elements, along with other guidance and criteria provided by the USFWS. MDWFP's SWG Coordinator will oversee the review and revision process with the agency's administrative staff and will ensure that the SWAP continues to follow the eight elements. The following is a proposed calendar for review and revision of Mississippi's SWAP for the next cycle due in 2035.

Table 9.1. Mississippi SWAP Review and Revision Calendar 2025-2035

Federal Fiscal Year	Proposed Mississippi SWAP Activity
FY 2025	Approval of comprehensive revision of MS SWAP by USFWS and Congress. Post final approved version on MDWFP website for public use.
FY 2026	Annual review by Technical Committee.
FY 2027	Annual review by Technical Committee.
FY 2028	Annual review by Technical Committee.
FY 2029	Five Year Review by Technical Committee with input from experts and advisors.
FY 2030	Annual review by Technical Committee.
FY 2031	Annual review by Technical Committee.
FY 2032	Annual review by Technical Committee. Frame process for comprehensive update due in 2025.
FY 2033	Technical Committee to begin Ten Year Comprehensive Revision with input from advisors and experts.
FY 2034	Ten year update underway.
September 30, 2035	Complete and submit Third Version of SWAP.

Plans for Implementation

Required Elements 7 and 8 speak to implementation of Mississippi's SWAP through a variety of partnerships. In carrying out Mississippi's initial SWAP during the past 20 years, multiple state, tribal, and federal agencies, NGOs, research universities and private landowners operating within the State joined with MDWFP to guide, enable, or directly carry out conservation actions. For example, SWG dollars were broadly applied, from funding SGCN-focused research at each of Mississippi's major universities to on-the-ground habitat rehabilitation on public and private lands in the State. The MNHP utilized the SWAP to provide technical guidance on thousands of public and private projects occurring within Mississippi during 2005-2025. These existing and new partnerships will certainly play a role addressing conservation concerns and actions raised in the newly updated 2025 SWAP, but they will also evolve to incorporate emerging, broad-based regional partnerships. Below are just a few of the many regional partnerships that will be important in ongoing implementation of the SWAP recommendations.



MDWFP has a long history of partnerships for species protection and recovery. *Credit: Calvin Rezac*

Working with partners across the region

Multiple regional partnerships include the State of Mississippi within their conservation planning focus. Below, we describe just a few of the opportunities for Mississippi to work with tribal nations and rally regional conservation partners to shared areas of interest and on-going collaborations across state boundaries.

Additional partnership opportunities are listed in *Chapter 7: Conservation Opportunity Areas* and an overview of coordination with other agencies, partners, and stakeholders is described in Appendix 1.

Tribal Nations

As sovereign conservation partners, Tribes should be included in SWAP revisions and implementation, particularly for any decision-making that affects their interests (Schmidt *et al.,* 2023). Meaningful engagement with Tribes requires demonstrated respect for their individual Tribal sovereignty, as well as their history, culture, and governmental structure.

The Native American Fish & Wildlife Society (NAFWS) is a national Native American non-profit organization that serves as an informative communication network between Tribal, federal, and state fish and wildlife management entities. NAFWS maintains a database of Tribal Natural Resource Departments staff.

According to the Bureau of Indian Affairs, the Mississippi Band of Choctaw Indians (MBCI) are the only federally recognized tribe to reside currently within Mississippi. Other federally recognized Native American Tribes with cultural interests in Mississippi (may not be federally recognized, but may currently or ancestrally hold lands within the boundaries of the State) and are historical sovereign nations that include the Alabama-Coushatta Tribes of Texas, Cherokee Nation of Oklahoma, Chickasaw Nation, Choctaw Nation of Oklahoma, Jena Band of Choctaw Indians, Muscogee (Creek) Nation, Quapaw Tribe of Oklahoma, and Tunica-Biloxi Tribe. The Mississippi Department of Archives and History (MDAH) hosts a monthly "Mississippi Conversations" online meeting with tribes with cultural interest in the state, and has hosted SWAP Technical Committee members to participate when they have items or projects of interest to the tribal representatives. Although the historical sovereign nations no longer reside in Mississippi, they should be included in future SWAP revisions and implementation.

The Mississippi Band of Choctaw Indians

The Choctaw have lived for centuries in the Southeastern U.S., largely in the area that was to become the modern-day state of Mississippi. The Mississippi Band of Choctaw Indians (MBCI) are the descendants of those who refused to leave their homeland during the Trail of Tears. The Tribe is the only federally recognized Native American tribe in the State. It is a sovereign nation with more than 11,000 Tribal members, and more than 35,000 acres of Tribal land across Mississippi and Tennessee.

During the development of this 2025 SWAP update, MDWFP coordinated with representatives of the MBCI and representatives of other federally recognized Tribes with cultural interests in Mississippi to discuss identification of SGCN that are also culturally significant species. In these discussions, we learned that conservation priorities for Tribal Nations may differ from those determined to SGCN for the purposes of the SWAP. Culturally significant species may be defined as species that have been or are still currently utilized by a tribe, either for subsistence (food or income), medicinal uses, and cultural preservation (arts and ceremony). In a step toward incorporating culturally significant species into the SWAP we are including the following list of culturally significant species that are available for public knowledge (provided by the MCBI and the NAFWS representatives). We acknowledge that some culturally significant species are some tribal knowledge has been lost. Thus, the following list is not a comprehensive list, but rather a starting point. Over the next ten years we wish to increase collaboration with the Tribes to help them develop a SWAP for their conservation priorities, such as a stand-alone document or for incorporation into the next iteration of Mississippi's SWAP. We also commit to seeking opportunities for continued collaboration on conservation efforts such as prescribed fire, continuation of bioassessments on tribal lands and restoration of culturally significant species such as Swampcane and Switchcane.

Table 9.2. - Examples of Culturally Significant Species in Mississippi identified by Tribal Representatives that are Public Knowledge

Family	Scientific Name	Common Name
Poaceae	*Arundinaria gigantea*	Swampcane
Poaceae	*Arundinaria sp.*	Switchcane
Nyssaceae	*Nyssa sp.*	Black gum
Juglandaceae	*Carya* spp.	Hickory
Juglandaceae	*Carya tomentosa*	Mockernut Hickory
Cupressaceae	*Taxodium distichum*	Cypress
Arecaceae	*Sabal minor*	Dwarf palmetto
Cupressaceae	*Juniperus virginiana*	Cedar
Fagaceae	*Quercus* spp.	Oak
Alliaceae	*Allium* spp.	Wild Onion
Alliaceae	*Allium* spp.	Garlic
Viburnaceae	*Sambucus canadensis*	Elderberries
Ericaceae	*Vaccinium* spp.	Blueberries
Rosaceae	*Rubus* spp.	Blackberries
Salicaeae	*Salix nigra*	Black Willow
Aquifoliaceae	*Ilex vomitoria*	Yaupon Holly
Aquifoliaceae	*Ilex cassine*	Dahoon Holly
Pinaceae	*Pinus* spp.	Pine
Cervidae	*Odocoileus virginianus*	White-tailed Deer
Leporidae	*Sylvilagus aquaticus*	Swamp Rabbit
Leporidae	*Sylvilagus floridanus*	Eastern Cottontail
Sciuridae	*Sciurus carolinensis*	Eastern Gray Squirrel
Sciuridae	*Sciurus niger*	Fox Squirrel
Centrarchidae	*Lepomis* spp.	Sunfish
Centrarchidae	*Micropterus* spp.	Bass
Ictaluridae	*Ictalurus* spp., *Ameirus* spp., *Pylodictis olivaris*	Catfish
Amiidae	*Amia* spp.	Bowfin

Migratory Bird Joint Ventures

Migratory Bird joint ventures are collaborative, regional partnerships of government agencies, non-profit organizations, corporations, tribes, and individuals that conserve habitat for the benefit of priority bird species, other wildlife, and people. Joint ventures bring these diverse partners together under the guidance of national and international bird conservation plans to design and implement landscape-scale conservation efforts in support of the *North American Waterfowl Management Plan* and the other bird management plans.

East Gulf Coastal Plain Joint Venture

The East Gulf Coastal Plain Joint Venture (EGCPJV) is a self-directed partnership of 14 state, federal, private, and academic organizations working together to coordinate bird conservation efforts in the coastal plain of six southeastern states. The EGCPJV covers 63 million acres of diverse habitats including longleaf pine forests, native prairies and grasslands, and forested and coastal wetlands. By conserving key habitats, the EGCPJV advances the mission of protecting and restoring bird populations.

Lower Mississippi Valley Joint Venture

The Lower Mississippi Valley Joint Venture (LMVJV) is a self-directed, non-regulatory private, state, and federal conservation partnership that exists for the purpose of sustaining bird populations and their habitats within the Lower Mississippi Valley and West Gulf Coastal Plain/Ouachita regions through implementing and communicating the goals and objectives of relevant national and international bird conservation plans. The focus for the LMVJV is protection, restoration, and management of birds and their habitats, guided by a 5-year plan with goals and strategies to ensure a partnership dedicated to bird habitat conservation using the best available science. Harnessing the power of partnership, the LMVJV strives to be welcoming, transparent, and effective in their mission.

Gulf Coast Joint Venture

The Gulf Coast Joint Venture (GCJV) is a partnership among Federal and State Agencies, non-profit organizations, and private landowners dedicated to the conservation of priority bird habitat along the U.S. Gulf of America coast. Habitat projects are developed and implemented by 6 regional Initiative Teams of biologists and managers of public and private lands. GCJV partners include numerous other organizations and hundreds of individuals that are involved in specific collaborative habitat, planning or evaluation projects.

The Gulf Coast Joint Venture is divided geographically into six initiative areas, each with a different mix of habitats, management opportunities, and species priorities. Goals, objectives, and conservation strategies have been identified for every initiative area. In turn, each initiative area has an Initiative Team that plans, designs, and implements projects that are driven by conservation plans for that initiative area. Team membership is open to anyone who wants to discuss bird habitat conservation project ideas within a partnership forum of field-level biologists.

Southeast Aquatic Resources Partnership

The Southeast Aquatic Resources Partnership (SARP) is a regional collaboration of natural resource and science agencies, conservation organizations and private interests developed to strengthen the management and conservation of aquatic resources in the southeastern United States. SARP is an official subcommittee of SEAFWA that aims to support and facilitate on-the-ground and in-the-water science-based action to improve and protect aquatic habitats and resources.

To reverse the unprecedented decline in Southeastern aquatic resources, SARP utilizes science-based programs to coordinate conservation and restoration activities. SARP programs cover a range of aquatic resource interests including coastal restoration, native Black Bass and other native fish conservation areas, flow alterations, and aquatic connectivity. SARP works to coordinate biologists, practitioners, recreational paddlers, and myriad other interested parties by establishing Aquatic Connectivity Teams (ACTs) across the Southeast. ACTs are state-based teams that are developed upon request from interested state partners. Teams make barrier removal projects a reality by combining effort across organizations and jurisdictions and working collaboratively to identify, prioritize, and implement projects. SARP provides technical support to each of these teams on barrier identification, prioritization, and by making additions to the inventory when team members identify undocumented barriers.

North American Bat Monitoring Program

The North American Bat Monitoring Program (NABat) is a multi-national, multi-agency coordinated bat monitoring program across North America. This collaborative bat monitoring program is made up of an extensive community of partners across the continent who use standardized protocols to gather data that allow for population status and trends, inform responses to stressors, and sustain viable populations. NABat is a coordinated program to monitor bats at local to range wide scales that provides reliable data to promote effective conservation decision-making and the long-term viability of bat populations across the continent.



Tricolored Bat: *Protecting Caves*

The Tricolored Bat (*Perimyotis subflavus*) is the smallest bat species that occurs in Mississippi. This species is currently proposed to be listed as endangered under the Endangered Species Act.

Since the introduction in North America in 2006 of *Pseudogymnoascus destructans (Pd)*, the fungus that causes white-nose syndrome, the population has declined over 90 percent. The tricolored bat utilizes subterranean structures such as caves, mines, and culverts in the winter. They enter in short periods of torpor to survive the winter; however, this makes them susceptible to white-nose syndrome. To protect these hibernacula, USFWS and MDWFP have installed gates at two caves located on private property. The Mississippi Band of Choctaw Indians (MBCI) have also protected their cave with a gate. After installation of the first gate, the tricolored bat numbers more than tripled in response to the safe haven created for these bats during their critical time of rest. This cave is also used in the summer months by Southeastern myotis (Myotis austroriparius) as a maternal roost for over 9,000 individuals.

Annual winter surveys for this species have been funded since 2013 by the White-nose Syndrome grant. Summer surveys have been funded by Section 6 grants and SWG. MDWFP will continue to monitor the spread of *Pd* in the state and intervene with approved management practices as white-nose syndrome progresses. MDWFP and USFWS will continue to search for new hibernacula to provide protection, as well as continue to conduct summer surveys to find out the status of reproductive success in the state to monitor the population year-round.



Illustration of
Tri-Colored Bat
Credit: Sam Biebers

Gulf Restoration

This document will also provide guidance to the Gulf of America Alliance, which has been chosen to administer the Gulf of Mexico Research Initiative, a Gulf-wide voluntary research program, and to the ongoing Gulf restoration efforts related to the Deepwater Horizon Oil Disaster through the Natural Resource Damage Assessment Trustees (NRDA), the RESTORE Council, the National Fish and Wildlife Foundation Gulf Environmental Benefit Fund, and its Trustees in Mississippi (the Mississippi Department of Environmental Quality) and many restoration partners across the region.

These regional coalitions above incorporate information from multiple SWAPs and provide states with recommendations for carrying out coordinated conservation actions from a regional perspective. Therefore, implementation of this document over the next decade will address state-wide conservation priorities with greater cognizance of issues occurring throughout the Southeastern US and affecting Mississippi's natural resources. See the Conservation Opportunity Areas in Chapter 7 for lists of additional potential partners with interests in particular geographies or species.

References

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APPENDIX 1

Mississippi SWAP Technical Committee, Experts, Stakeholders, Tribal and Agency Coordination

In developing, implementing, reviewing and revising their SWAP, each state lead agency is required by Congress to coordinate with "Federal, State and local agencies and Indian Tribes that manage significant areas of land or water within the State, or administer programs that significantly affect the conservation of species or their habitats" (Required Element 7). The following is a description of the MDWFP's ongoing approach to this requirement from the first iteration to this third version in 2025. The primary responsibility for developing the original SWAP in 2005 and both updates in 2015 and 2015 was given to the MMNS and the Conservation Biology Section where MDWFP's non-game program is housed and continues today through an inhouse Technical Committee.

For the SWAP ten-year update, our stakeholder and public outreach efforts included many approaches. For the 2025 update, MDWFP invited input from almost 300 experts, stakeholders, tribal representatives and interested individuals beginning in 2023 to review and update the SGCN list, threats, actions, habitat descriptions and to identify research, survey and monitoring needs where needed. MDWFP invited a broad cross section of experts and stakeholders to help us update the plan through email, SWAP webpage, online and in-person meetings and presentations. Representatives from natural resources agencies, conservation organizations, tribal representatives, agriculture and forest products industries, technical experts, conservation educators and academics as well as individuals and MDWFP district and other staff were invited via email or personal contact to participate during the original plan development and subsequent ten year updates. Our Technical Committee worked with other scientists around the state and region with expertise on SGCN and their habitats to help compile and synthesize the data for review and input. A Core Committee of MDWFP managers ensured the process followed Congressional guidelines and met the eight required elements. Plan updates were posted on the MDWFP website for public review and input over a three year period (2023 - 2025) for continued stakeholder and public input and refinement as plan elements were updated.

During the 2025 revision process, stakeholders communicated primarily via email, and through individual and small group or professional meetings and submitted comments through the SWAP page on the MDWFP website. Public and stakeholder input was gathered through:

- A Mississippi SWAP page on the MDWFP website (www.mdwfp.com).
- Media alerts announcing the SWAP update and changes as updates sections were released on the agency website and social media platforms.
- Multiple invitations to stakeholders to comment on SWAP elements as they were drafted.
- Presentations at professional conferences, tribal and science meetings.
- Individual meetings in person and online.

The first SWAP was developed in 2005 with coordination with committees (Technical, Steering and Advisory Committees) and a team of Expert Advisors. Since the first SWAP was approved, Mississippi's SWAP Technical Committee and experts continued to work together through meetings and informally to build on the original body of work for the 2015 and 2025 SWAP updates. The following are lists of the committee members instrumental in the 2025 update.

2025 MS SWAP Core Team — Aaron Holbrook, Emily Rezac, Heather Sullivan, Quentin Fairchild and Liz Barber served to organize the feedback, write, edit and compile the 2025 update and organize meetings and input from the inhouse Technical Committee and outside experts and stakeholders.

2025 MS SWAP Technical Committee — Mississippi's SWAP Technical Committee (below) was composed of MDWFP wildlife, fisheries, and museum biologists responsible for gathering and analyzing new information on Mississippi's SGCN, updating habitat descriptions and refining stressor and conservation action recommendations. The Technical Committee members coordinated with outside experts, stakeholders, NGO representatives, and tribal representatives through in person and online meetings, individual requests for data and input and through participation in professional conferences to gain input on updating the SGCN, habitats, COAs and other revisions.

Emily Rezac, *SWAP Coordinator**

Aaron Holbrook, *SWAP Coordinator*

Heather Sullivan*

Quentin Fairchild*

Liz Barber *(SWAP contractor)**

Jack Creely

Nick Winstead

Scott Peyton

Robert Ellwanger

Katelin Cross

Calvin Rezac

Tom Mann

Brady Dunaway

Cory Hillard

John Gruchy

Charles Knight (retired)

Jennifer Frey (previous staff)

Nicole Hodges (previous staff)

(any others)

*MISSISSIPPI SWAP CORE TEAM

2015 SWAP Expert Advisors and Stakeholders – Scientists, tribal representatives, wildlife managers and agency or organization representatives in the state and region with expertise on SGCN advised the MDWFP Technical Committee on needed changes and updates for the 2 025 SWAP. Over the past 20 years, they provided additional input on species, habitats, stressors/threats and conservation actions and aided greatly in refining the SWAP.

The 2025 update was accomplished in coordination with several public wildlife agencies, universities, conservation organizations and land managers in Mississippi and in the Southeast U.S. This coordination was ensured by inclusion of representatives of these agencies and organizations serving as advisors and taxa experts, through individual briefings and presentations, distribution of SWAP elements to them for review and input, through meetings and professional conferences, and by contact with the members of the MDWFP Technical Committee. Conservation planning documents and tools provided by other agencies were gathered and incorporated into the SWAP where possible. Other interested parties also contributed to the process through comments via the MDWFP website.

For the update of the Conservation Opportunity Areas (COAs), habitat maps and our new regional chapter (Chapter 2) in this 2025 SWAP, we received significant assistance from the USFWS Science Applications. The Southeastern Association of Fish and Wildlife Agencies' (SEAFWA) Southeast Conservation Adaptation Strategy (SECAS) and the USGS Climate Adaptation Science Center also aided in developing the regional chapter and provided technical help on the climate adaptation discussion. The USDA Natural Resources Conservation Service (NRCS) State Conservationists and his team provided maps and data to help us update the descriptions of agricultural landscapes in Mississippi, and the Mississippi Department of Marine Resources (MDMR) provided input on adding marine and estuarine species and provided spatial data on mollusks reefs and coastal preserves. Scientists from the University of Southern Mississippi (USM) and NOAA aided greatly in improving the list of marine SGCN.

The following representatives of agencies and organizations provided input, data and resources for this SWAP update:

- Alabama Department of Conservation and Natural Resources
- Auburn University
- Audubon Delta
- Ducks Unlimited
- Jacksonville State University
- Louisiana Department of Wildlife and Fisheries
- Lower MS Valley Joint Venture
- Mississippi Department of Marine Resources
- Mississippi Department of Wildlife, Fisheries and Parks
- Millsaps College
- Mississippi Band of Choctaw Indians - Office of Environmental Protection
- Mississippi State University
- MSU Coastal Research and Extension Center
- Native American Fish and Wildlife Society
- National Oceanic and Atmospheric Administration
- Southeast Beaver Alliance
- Southeast Conservation Adaptation Strategy/ Southeast Conservation Blueprint
- The Nature Conservancy
- Troy University
- University of Mississippi
- US Navy
- US Army Corps of Engineers
- USDA APHIS
- USDA Forest Service
- USDA Natural Resources Conservation Service
- US Fish and Wildlife Service
- US Geological Survey
- University of Southern Mississippi
- Wildlife Mississippi

Other collaboration with bordering states and other SWAP coordinators occurred primarily during national and regional meetings hosted by the Association of Fish and Wildlife Agencies (AFWA) and through the development and update of the Regional SGCN list. The addition of the plants for the first time in this 2025 SWAP was done in coordination with the Southeastern Association of Fish and Wildlife Agencies' development of Regional SGCN of Southeastern Plants.

Tribal Coordination

There is one Native American tribe listed on the federal register in Mississippi – the Mississippi Band of Choctaw Indians (MBCI). They own and manage over 35,000 acres of fee and trust lands in several counties primarily in east-central Mississippi. Tribal representatives participated in activities related to the revisions, in person and online meetings, and email correspondence. Members of the Technical Committee met with tribal representatives between 2023 and 2025 to invite help and gather information and recommendations. Members of Mississippi's SWAP Technical Team and the Core Committee also presented an overview of the SWAP at the Mississippi Tribal Summit in September 2023 hosted by the Mississippi Department of Archives and History (MDAH) to introduce the SWAP and invite input. MDAH also invited MDWFP SWAP Core Committee members to present during their monthly "Mississippi Conversations" online meeting with representatives of MBCI and tribes with cultural interests in Mississippi during June 2023. The tribal representatives and a representative of the Native American Fish and Wildlife Society, and a member of the Technical Team worked together on a short list of *Species of Cultural Significance* (See Chapter 9 for the list and more details). MDWFP continues to collaborate with the MBCI on rapid bioassessment surveys on tribal lands in the state, application of prescribed fire, and rivercane restoration.

APPENDIX 2

Public Participation and Stakeholder Outreach

The eighth required element for SWAP involves providing "necessary public participation in the development, revision, and implementation of the Plan." MDWFP described public participation in the development of the original SWAP in 2005 and the 2015 update. For this new 2025 iteration, MDWFP created a SWAP page on its agency website where invitations and updates of components of the SWAP were posted beginning in 2023 and continuing until September 2025 when the final draft of the SWAP was compiled for submission to the USFWS for review.

MDWFP's Mississippi Museum of Natural Science SWAP Web Page
https://www.mdwfp.com/museum-natural-science/state-wildlife-action-plan

From 2023 to 2025, MDWFP invited comments from experts, stakeholders, tribal representatives, and the public through a variety of means including in person meetings, online meetings, email invitations to review different elements, MDWFP's website, social media posts, and media releases. The following is a summary of the comment periods and meetings where SWAP elements were presented, or where MDWFP's Technical Team invited input. Updates and invitations to participate in the SWAP update were also announced at other professional meetings, conferences, and public events from 2023 to 2025 that are not recorded below.

See Appendix 1 for more information on agency, partner, stakeholder, and tribal engagement.

Table A2.1. Summary of Public and Stakeholder Opportunities for Input on the 2025 Mississippi SWAP Update.

Date	Description of Public and Stakeholder Input Opportunity	Deadline
2022-2023	MS SWAP Technical Committee members began contacting experts and stakeholders individually to invite input on SGCN, habitats and improvements to 2015 SWAP. New list of experts, stakeholders and interested parties developed from past lists and new inquiries.	
2022 – 2025	Technical Committee member Heather Sullivan collaborated with SWAP leaders and regional partners interested in updating a Regional SGCN list to include plant species.	
3/22/23	Coordination and input from Native American Fish and Wildlife Society representative on culturally significant species.	
4/5/23	Online meeting with marine experts from the University of Southern Mississippi and NOAA to review RSGCN list and gather input on updating and adding aquatic marine and freshwater SGCN for MS.	
5/9/23	First draft SGCN list distributed to expert and stakeholder list for comment and input.	6/15/23
6/1/23	SWAP 2015 and invitation for public input on ways to improve on prior plans posted on MS Museum of Natural Science (MMNS) webpage.	No deadline. The web page was updated as eight elements were revised.
6/2/23	SWAP 2015 for public input on ways to improve on prior SWAP posted on MMNS Facebook page with link to SWAP.	No deadline. Social media posts updated as eight elements were revised.
6/21/23	Presentation by SWAP Core Team to MS Conversations Online Monthly meeting of tribal representatives with cultural interest in the state. Meeting hosted by MS Department of Archives and History.	
8/24/23	Coordination calls and emails with USDA NRCS in Mississippi on sharing data on crop acres and conservation investments by ecoregion.	
9/7/23	Liz Barber presented the SWAP update to MS Chapter of The Wildlife Society (TWS) at the annual meeting.	
9/13/23	Liz Barber (MDWFP Technical Committee) presented SWAP to MS Secretary of State Conservation Task Force at their semi-annual meeting. The Task Force is a gathering of leaders of state and federal natural resource agencies, state legislators, NGOs, and others convened by the SOS (as the state lands officer) to discuss conservation issues relevant to Mississippi.	
9/13/23	Katelin Cross (MDWFP Technical Committee) presented to the MS Tribal Summit hosted by the MS Department of Archives and History; Liz Barber and Aaron Holbrook participated in a coordination session and summit on 9/12-9/13.	No deadline.
9/22/23	Liz Barber presented a SWAP update to MS Environment Focus Group (coalition of Mississippi conservation and environmental NGOs) and invited input.	

Date	Description of Public and Stakeholder Input Opportunity	Deadline
10/12/23	Second draft of SGCN (after incorporation of expert and stakeholder input) and habitat list posted for public comment and email announcement sent to stakeholder list.	12/1/23
10/12/23	Updated SGCN list and habitats sent to MEFG with invitation to review and comment.	12/1/23
10/12/23	Updated SGCN list sent to MS Chapter of The Wildlife Society (TWS) and invited input.	12/1/23
September and October 2023	Coordination with USDA NRCS in MS and USFWS/SECAS on gathering information/data on USDA conservation programs and agriculture land statistics for incorporation into habitat descriptions and maps.	
1/24/24	Presentation by Calvin R. Rezac at Mississippi Crayfish Working Group Meeting at Grand Bay National Estuarine Research Reserve with SWAP update and new species list.	
2/15/24	Two presentations at the MS American Fisheries Society 50th Annual Meeting on SWAP and mussels and freshwater fisheries.	
10/10/24	SGCN, habitats, maps and first proposed COAs shared with SueChamberlain, CPLO, Meridian Naval Air Station as they began development of a proposal for Sentinel landscapes.	
12/13/24	Post final SGCN, and updated habitats descriptions, new ecoregional framework and ecoregion maps on website. Email invitation sent to stakeholder list.	2/7/25
1/17/25	Liz Barber conference call with MS Environment Focus Group. Gave update. Sent request for input on updated items on MDWFP website.	2/7/25
1/13/25	Heather Sullivan (MDWFP Technical Committee) met with USFWS to coordinate on White Fringeless Orchid SSA (Species Status Assessment).	
1/21/25	Heather Sullivan and Liz Barber participated in a TN SWAP presentation (virtually) on rivercane restoration.	
1/14/25	Heather Sullivan participated in the NatureServe Ex Situ tree report presentation.	
2/18/25	Draft Research, Survey and Monitoring chapter posted for public input and stakeholder input. Email invitation sent to stakeholder list to invite comment.	3/21/25
4/3/25	Presentation on SWAP and invitation to comment at EGCPJV waterbird conservation plan rollout meeting in Biloxi MS.	
7/15/25	Updated draft SWAP elements, new COAs, posted on website and invitation sent to stakeholders to comment	8/15/25
8/15/25	Invitation re-sent to USFWS to review certain elements (items where links were broken on the agency website).	8/29/25
10/1/25	Final draft SWAP (text and maps only, not final design) submitted for USFWS review.	

APPENDIX 3

Species of Greatest Conservation by Ecoregion
Table A3.1: MS SGCN by Ecoregion

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Accipiter striatus	Sharp-shinned Hawk (breeding population)			p								
Acentrella alachua	A Mayfly											
Acer leucoderme	Chalk Maple											
Acipenser desotoi	Gulf Sturgeon											
Acipenser fulvescens	Lake Sturgeon											
Actaea racemosa	Black Bugbane											
Actinonaias ligamentina	Mucket											
Adiantum capillus-veneris	Southern Maidenhair-fern				p				p			
Aesculus glabra var. *glabra*	Ohio Buckeye	p		p								
Aeshna umbrosa	Shadow Darner											
Aetobatus narinari	Whitespotted Eagle Ray											
Agalinis auriculata	Earleaf False Foxglove	p										
Agalinis filicaulis	Thread-stem False Foxglove											
Agalinis homalantha	San Antonio False-foxglove											
Agalinis linifolia	Flaxleaf False Foxglove											
Agalinis oligophylla	Ridge-stem False-foxglove							p				
Agalinis skinneriana	Pale False Foxglove	p										
Agarodes libalis	Spring-loving Psiloneuran Caddisfly											
Agarodes stannardi	Stannard's Agarodes Caddisfly											
Agastache nepetoides	Yellow Giant-hyssop						p	p			p	
Agrimonia incisa	Incised Groovebur							p				p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Alburnops candidus	Silverside Shiner											
Alburnops chalybaeus	Ironcolor Shiner											
Alburnops edwardraneyi	Fluvial Shiner											
Alisma subcordatum	Broad-leaved Water-plantain											
Allocapnia aurora	Aurora Snowfly											
Allocapnia polemistis	Black Warrior Snowfly											
Alloperla natchez	Natchez Stonefly											
Alophia drummondii	Purple Pleat-leaf							p				
Alosa alabamae	Alabama Shad											
Alosa chrysochloris	Skipjack Herring											
Amaranthus australis	Southern Amaranth											
Ambloplites rupestris	Rock Bass											
Amblyomma tuberculatum	Gopher Tortoise Tick		p	p	p							
Amblyscirtes alternata	Least Florida Skipper				p							
Amblyscirtes reversa	Reversed Roadside Skipper											
Ambystoma texanum	Smallmouth Salamander											
Ambystoma tigrinum	Tiger Salamander											
Ammocrypta clara	Western Sand Darter											
Ammodramus savannarum	Grasshopper Sparrow											
Ammospiza leconteii	LeConte's Sparrow				p							
Ammospiza maritima	Seaside Sparrow											
Ammospiza nelsoni	Nelson's Sparrow											
Amphiachyris dracunculoides	Broom-snakeroot											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Amphiagrion saucium	Eastern Red Damsel											
Amphinemura alabama	Alabama Forestfly											
Amphiuma pholeter	One-toed Amphiuma											
Amsonia ludoviciana	Louisiana Bluestar											
Anas acuta	Northern Pintail											
Anas fulvigula	Mottled Duck											
Andropogon dealbatus	Wetland White Bluestem											
Andropogon perangustatus	Narrow-leaved Bluestem							p				
Andropogon tracyi	Tracy's Bluestem	p						p				p
Aneides aeneus	Green Salamander											
Anemone caroliniana	Carolina Anemone	p										
Anemone quinquefolia	Wood Anemone			p								
Anguilla rostrata	American Eel											
Anthoceros punctatus	a hornwort											
Antigone canadensis pulla	Mississippi Sandhill Crane											
Antrostomus carolinensis	Chuck-will's-widow	p	p	p	p		p					p
Antrostomus vociferus	Eastern Whip-poor-will	p		p		p	p				p	p
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle		p	p	p							
Aphyllon uniflorum	One-flowered Broomrape			p								
Apios priceana	Price's Potato-bean	p										
Aplectrum hyemale	Puttyroot			p	p							
Aquila chrysaetos	Golden Eagle	p	p	p	p	p	p	p	p	p	p	p
Aquilegia canadensis	Wild Columbine	p										

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Arabidopsis lyrata ssp. *lyrata*	Lyreleaf Rockcress	p										
Arabis patens	Spreading Rockcress	p		p								
Aralia racemosa	American Spikenard			p	p				p			
Archidium hallii	Hall's Archidium Moss											
Archosargus rhomboidalis	Western Atlantic Seabream											
Arcidens confragosus	Rock Pocketbook											
Arctosa sanctaerosae	Santa Rosa Wolf Spider											
Arigomphus lentulus	Stillwater Clubtail											
Arigomphus villosipes	Unicorn Clubtail											
Aristida beyrichiana	Southern Wiregrass							p				p
Aristida mohrii	Mohr's Three-awn Grass		p									p
Aristida simpliciflora	Southern Three-awn Grass							p				
Aristida spiciformis	Pine Barren Three-awn Grass											
Aristida tenuispica	Southern Arrowfeather							p				
Arnoglossum reniforme	Great Indian-plantain											p
Asclepias hirtella	Green Milkweed			p								p
Asclepias incarnata	Swamp Milkweed											
Asclepias purpurascens	Purple Milkweed											
Asio flammeus	Short-eared Owl											
Aspidogyne querceticola	Low Erythrodes								p		p	
Asplenium pinnatifidum	Lobed Spleenwort			p								
Asplenium resiliens	Black-stem Spleenwort			p	p							
Asplenium rhizophyllum	Walking-fern Spleenwort			p								

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Asplenium trichomanes	Maidenhair Spleenwort			p								
Asplenium x kentuckiense	Kentucky Spleenwort			p								
Astragalus canadensis var. *canadensis*	Canadian Milkvetch	p		p								
Astragalus distortus var. *engelmannii*	Engelmann's Bent Milk-vetch			p						p		
Astragalus obcordatus	Florida Milkvetch		p									p
Atractosteus spatula	Alligator Gar											
Atrytone arogos arogos	Arogos Skipper				p							
Atrytonopsis loammi	Loammi Skipper				p							
Attaneuria ruralis	Giant Stone											
Automeris louisiana	Louisiana Eyed Silkmoth											
Avicennia germinans	Black Mangrove											
Aythya affinis	Lesser Scaup											
Baetisca escambiensis	A Mayfly											
Bagisara brouana	A Noctuid Moth											
Balduina angustifolia	Coastal Plain Honeycomb-head											p
Baptisia nuttalliana	Nuttall's Wild Indigo			p			p			p	p	
Baptisia sphaerocarpa	Green Wild Indigo							p				
Bidens trichosperma	Tickseed Sunflower											
Boltonia apalachicolensis	Apalachicola Doll's-Daisy											
Bombus fraternus	Southern Plains Bumble Bee				p							
Bombus pensylvanicus	American Bumblebee				p							
Bombus variabilis	Variable Cuckoo Bumble Bee											
Borodinia canadensis	Sicklepod	p	p	p					p		p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Botaurus lentiginosus	American Bittern											
Bruchia ravenelii	Ravenel's Bruchia Moss		p									p
Bulbostylis ciliatifolia	Capillary Hairsedge	p	p									p
Burmannia biflora	Northern Burmannia							p				
Calidris canutus	Red Knot											
Calidris melanotos	Pectoral Sandpiper											
Calidris pusilla	Semipalmated Sandpiper											
Calidris subruficollis	Buff-breasted Sandpiper											
Callicladium haldanianum	Beautiful Branch Moss											
Calliphysalis carpenteri	Carpenter's Ground-cherry				p	p			p		p	
Callirhoe triangulata	Clustered Poppy-mallow	p	p									p
Calopogon barbatus	Bearded Grass-pink											
Calopogon multiflorus	Many-flowered Grass-pink							p				
Calopogon oklahomensis	Oklahoma Grass-pink							p				p
Camassia scilloides	Wild Hyacinth			p								
Cambarellus diminutus	Least Crayfish											
Cambarellus lesliei	Angular Dwarf Crayfish											
Cambarus girardianus	Tanback Crayfish											
Cambarus rusticiformis	Depression Crayfish											
Cambarus striatus	Ambiguous Crayfish											
Campephilus principalis	Ivory-billed Woodpecker											
Campylopus angustiretis	Campylopus Moss											
Canis rufus	Red Wolf											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Canna flaccida	Bandana-of-the-Everglades											
Carcharhinus acronotus	Blacknose Shark											
Carcharhinus plumbeus	Sandbar Shark											
Carcharhinus porosus	Smalltail Shark											
Carcharias taurus	Sand Tiger Shark											
Cardamine angustata	Slender Toothwort			p	p							
Cardamine diphylla	Two-leaf Toothwort			p								
Caretta caretta	Loggerhead Sea Turtle											
Carex alata	Broadwing Sedge										p	
Carex albursina	White Bear Sedge			p								
Carex baltzellii	Baltzell's Sedge					p						
Carex bullata var. *greenei*	Button Sedge											
Carex communis	Fibrous-root Sedge			p	p							
Carex comosa	Bristly Sedge											
Carex crawei	Crawe's Sedge	p										
Carex dasycarpa	Velvet Sedge	p	p								p	p
Carex elliottii	Elliott's Sedge											
Carex exilis	Coast Sedge							p				
Carex fissa var. *aristata*	Hammock Sedge											
Carex fissa var. *fissa*	Hammock Sedge											
Carex frankii	Frank's Sedge											
Carex gracilescens	Slender Sedge			p	p				p			
Carex gravida	Heavy-fruited Sedge	p										

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Carex grayi	Asa Gray's Sedge											
Carex grisea	Inflated Narrowleaf Sedge			p								
Carex hyalina	Tissue Sedge											
Carex impressinervia	Impressed-nerved Sedge				p	p					p	
Carex jamesii	Nebraska Sedge			p					p			
Carex laxiflora	Broad Loose-flower Sedge			p								
Carex mesochorea	Midland Sedge			p								
Carex mitchelliana	Mitchell's Sedge										p	
Carex molestiformis	Ozark Plateau Sedge			p								
Carex normalis	Greater Straw Sedge			p								
Carex oligocarpa	Eastern Few-fruit Sedge			p								
Carex oxylepis var. *pubescens*	Sharp-scale Sedge			p					p			
Carex prasina	Drooping Sedge				p							
Carex radiata	Stellate Sedge			p							p	
Carex reznicekii	Reznicek's Sedge			p								
Carex scoparia	Broom Sedge											
Carex seorsa	Weak Stellate Sedge											
Carex stipata var. *maxima*	Stalk-grain Sedge											
Carex striata var. *striata*	Southern Peatland Sedge											
Carex superata	Limestone Forest Sedge			p								
Carex torta	Twisted Sedge											
Carex verrucosa	Warty Sedge											
Carex virescens	Ribbed Sedge			p							p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Carya laciniosa	Big Shellbark Hickory	p		p					p		p	
Castanea dentata (nut-bearing only)	American Chestnut	p	p	p						p		
Castilleja coccinea	Scarlet Indian-paintbrush	p										
Catocala atocala	Brou's Underwing											
Catocala delilah	Delilah Underwing	p	p									
Catocala miranda	A Noctuid Moth	p	p									
Catostomus commersonii	White Sucker											
Caupolicana electa	A Plasterer Bee		p		p							
Celithemis amanda	Amanda's Pennant											
Centronyx henslowii	Henslow's Sparrow				p							
Ceraclea spongillovorax	A Caddisfly											
Ceratophaga vicinella	Gopher Tortoise Shell Moth		p	p	p							
Ceratophyllum echinatum	Prickly Hornwort											
Ceratopteris pteridoides	Floating Antler Fern											
Chaetura pelagica	Chimney Swift											
Chamaecrista horizontalis	Florida Senna											
Chamaecyparis thyoides	Atlantic White Cedar											
Charadrius melodus	Piping Plover											
Charadrius nivosus	Snowy Plover											
Charadrius wilsonia	Wilson's Plover											
Chasmanthium nitidum	Shiny Spikegrass											
Chelone lyonii	Pink Turtlehead											
Chelone obliqua var. *obliqua*	Red Turtlehead											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Chelonia mydas	Green Sea Turtle											
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle		p	p	p							
Cheumatopsyche petersi	Peters' Cheumatopsyche Caddisfly											
Chimaphila maculata	Spotted Wintergreen	p		p								
Chimarra falculata	A Caddisfly											
Chlidonias niger	Black Tern											
Chordeiles minor	Common Nighthawk											
Chrosomus erythrogaster	Southern Redbelly Dace							p				
Cicindela marginipennis	Cobblestone Tiger Beetle											
Cicindela nigrior	Autumn Tiger Beetle				p							
Cicuta maculata var. *bolanderi*	Bolander's Water-hemlock										p	p
Cirsium lecontei	Leconte's Thistle											
Cirsium muticum	Swamp Thistle							p				
Cistothorus palustris marianae	Marian's Marsh Wren											
Cladium mariscoides	Twig Rush											
Cladrastis kentukea	Yellowwood	p		p					p			
Cleistesiopsis bifaria	Appalachian Small Spreading Pogonia											
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia							p				
Clematis glaucophylla	White-leaved Leather-flower										p	
Clematis subreticulata	Alabama Leatherflower			p								p
Clinopodium arkansanum	Low Calamint	p										
Clinostomus funduloides	Rosyside Dace											
Coccyzus americanus	Yellow-billed Cuckoo	p	p	p	p	p	p	p	p	p	p	p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Coelorachis cylindrica	Pitted Jointgrass			p								
Colinus virginianus	Northern Bobwhite		p	p	p							
Collinsonia anisata	Anise Horsebalm					p					p	
Collinsonia punctata	Spotted-leaf Horse-balm					p					p	
Cololejeunea setiloba	a liverwort				p	p						
Coluber flagellum flagellum	Eastern Coachwhip	p	p	p	p							p
Columbina passerina	Common Ground Dove				p							
Conopholis americana	American Cancer-root			p								
Conradina canescens	Blue-sage											
Convolvulus catesbyanus	Catesby's Bindweed	p										
Cordulegaster bilineata	Brown Spiketail											
Cordulegaster erronea	Tiger Spiketail											
Coreopsis nudata	Georgia Tickseed											
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	p	p	p	p	p		p	p	p	p	p
Cottus carolinae	Banded Sculpin											
Coturnicops noveboracensis	Yellow Rail				p							
Crataegus ashei	Ashe's Hawthorn	p										
Crataegus brachyacantha	Blueberry Hawthorn			p					p			
Crataegus mendosa	Albertville Hawthorn			p		p						
Crataegus mohrii	Mohr's Hawthorn											p
Crataegus mollis var. *meridionalis*	Gallion Hawthorn	p										
Crataegus triflora	Three-flowered Hawthorn	p										
Creaserinus burrisi	Burris' Burrowing Crayfish											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Creaserinus danielae	Speckled Burrowing Crayfish											
Creaserinus fodiens	Digger Crayfish											
Creaserinus gordoni	Camp Shelby Burrowing Crayfish											
Crocanthemum arenicola	Coastal-sand Frostweed		p									p
Crotalus adamanteus	Eastern Diamondback Rattlesnake		p	p	p							
Cryphaea ravenelii	Ravenel's Cryphaea Moss											p
Cryptobranchus alleganiensis	Hellbender											
Crystallaria asprella	Crystal Darter											
Cunila origanoides	Common Dittany	p		p								
Cuphea viscosissima	Blue Waxweed	p										
Cuscuta glomerata	Clustered Dodder											
Cycleptus elongatus	Blue Sucker											
Cycleptus meridionalis	Southeastern Blue Sucker											
Cyclonaias tuberculata	Purple Wartyback											
Cylindrocolea rhizantha	a liverwort											p
Cyperus articulatus	Jointed Flatsedge											
Cyperus bipartitus	Shining Flatsedge											
Cyperus drummondii	Green Flatsedge							p				
Cyperus elegans	Sticky Flatsedge											
Cyperus engelmannii	Slender Sand Flatsedge											
Cyperus flavicomus	White-edged Flatsedge											
Cyperus hystricinus	Bristly Flatsedge	p	p		p							
Cyperus lecontei	Le Conte's Flatsedge				P							

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Cyperus neotropicalis	American Lipocarpha											
Cyperus ochraceus	Pond Flatsedge											
Cyperus refractus	Reflexed Flatsedge			p								
Cyperus thyrsiflorus	Southcentral Flatsedge					p			p		p	
Cyprinella callistia	Alabama Shiner											
Cyprinella galactura	Whitetail Shiner											
Cyprinella spiloptera	Spotfin Shiner											
Cyprinella whipplei	Steelcolor Shiner											
Cypripedium kentuckiense	Kentucky Yellow Lady's-slipper			p								
Cyprogenia aberti	Western Fanshell											
Dalea mountjoyae	White-tassels		p	p	p			p				p
Decodon verticillatus	Hairy Swamp Loosestrife											
Deirochelys reticularia miaria	Western Chicken Turtle											
Deirochelys reticularia reticularia	Eastern Chicken Turtle											
Delphinium tricorne	Dwarf Larkspur	p										
Deparia acrostichoides	Silvery Spleenwort				p				p			
Dermochelys coriacea	Atlantic Leatherback Sea Turtle											
Desmodium ochroleucum	Creamflower Tick-trefoil	p			p							
Desmodium tenuifolium	Slim-leaf Tick-trefoil											
Desmognathus pascagoula	Pascagoula Dusky Salamander											
Desmognathus valentinei	Valentine's Southern Dusky Salamander											
Diaperia prolifera var. *prolifera*	Big-head Evax	p										
Dicentra cucullaria	Dutchman's Breeches	p		p	p							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Dichanthelium cryptanthum	Hidden-flower Witchgrass											
Dichanthelium curtifolium	Shortleaf Witchgrass											
Dichanthelium erectifolium	Erect-leaf Witchgrass							p				
Dichanthelium nudicaule	Naked-stemmed Panic Grass											
Dichanthelium wrightianum	Wright's Witchgrass							p				
Didiplis diandra	Water-purslane											
Didymoglossum membranaceum	Scale-edge Bristle Fern											
Didymoglossum petersii	Dwarf Filmy-fern										p	
Diphasiastrum digitatum	Fan Club-moss	p		p								p
Dirca palustris	Eastern Leatherwood	p			p	p					p	
Drepanolejeunea mosenii	a liverwort										p	
Drymarchon couperi	Eastern Indigo Snake											
Dryobates borealis	Red-cockaded Woodpecker			p	p							
Dryopteris australis	Southern Woodfern								p		p	
Dryopteris celsa	Log Fern										p	
Dryopteris ludoviciana	Southern Shield Wood-fern										p	
Echinodorus berteroi	Upright Burhead											
Egretta caerulea	Little Blue Heron											
Egretta rufescens	Reddish Egret											
Egretta tricolor	Tricolored Heron											
Elanoides forficatus	Swallow-tailed Kite											
Eleocharis albida	White Spikerush											
Eleocharis ambigens	Obscure Spikerush											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Eleocharis atropurpurea	Purple Spikerush											
Eleocharis bicolor	Small Spikerush							p				
Eleocharis cellulosa	Carolina Spikerush											
Eleocharis coloradoensis	Dwarf Spikerush											
Eleocharis compressa	Flat-stem Spikerush											
Eleocharis elliptica	Slender Spikerush	p										
Eleocharis elongata	Slim Spikerush							p				
Eleocharis erythropoda	Bald Spikerush	p							p			
Eleocharis geniculata	Capitate Spikerush											
Eleocharis intermedia	Matted Spikerush											
Eleocharis lanceolata	Lance-like Spikerush			p								
Eleocharis macrostachya	Creeping Spikerush											
Eleocharis melanocarpa	Black-fruit Spikerush		p									
Eleocharis microcarpa var. *microcarpa*	Small-fruit Spikerush							p				
Eleocharis ovata	Ovate Spikerush											
Eleocharis palustris	Creeping Spikerush											
Eleocharis parvula	Small Spikerush											
Eleocharis radicans	Rooted Spikerush											
Eleocharis robbinsii	Robbins Spikerush											
Eleocharis rostellata	Beaked Spikerush											
Eleocharis tenuis var. *pseudoptera*	Slender Spikerush											
Eleocharis tenuis var. *tenuis*	Slender Spikerush											
Eleocharis tricostata	Three-angle Spikerush											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Eleocharis wolfii	Wolf's Spikerush			p								
Elimia cylindracea	Cylinder Elimia											
Elionurus tripsacoides	Pan-american Balsamscale							p				
Ellipsaria lineolata	Butterfly											
Elliptio arca	Alabama Spike											
Elliptio arctata	Delicate Spike											
Elymus villosus	Hairy Wild Rye	p										
Enallagma concisum	Cherry Bluet											
Enallagma davisi	Sandhill Bluet											
Enallagma pallidum	Pale Bluet											
Enallagma pollutum	Florida Bluet											
Endotropis lanceolata	Lance-leaved Buckthorn	p										
Enemion biternatum	False Rue-anemone			p								
Enneacanthus gloriosus	Bluespotted Sunfish											
Epinephelus itajara	Atlantic Goliath Grouper											
Epioblasma brevidens	Cumberlandian Combshell											
Epioblasma penita	Southern Combshell											
Epioblasma triquetra	Snuffbox											
Epitheca spinosa	Robust Baskettail											
Equisetum arvense	Field Horsetail								p			
Eretmochelys imbricata	Hawksbill Sea Turtle											
Erigenia bulbosa	Harbinger-of-Spring											p
Eriocaulon decangulare var. *latifolium*	Panhandle Pipewort											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Eriocaulon texense	Texas Pipewort							p				
Eryngium aquaticum	Marsh Rattlesnake-master											
Eryngium hookeri	Hooker's Coyote-thistle											
Eryngium species 1	Mocassin-master							p				
Erynnis martialis	Mottled Dusky Wing	p	p	p		p				p		
Erythrodiplax umbrata	Band-winged Dragonlet											
Erythronium albidum	White Trout-lily	p		p								
Erythronium americanum ssp. *harperi*	Yellow Trout-lily			p								
Etheostoma asprigene	Mud Darter											
Etheostoma blennioides	Greenside Darter											
Etheostoma duryi	Black Darter											
Etheostoma faulkneri	Yoknapatawpha Darter											
Etheostoma flabellare	Fantail Darter											
Etheostoma jessiae	Blueside Darter											
Etheostoma kennicotti	Stripetail Darter											
Etheostoma lachneri	Tombigbee Darter											
Etheostoma nigripinne	Blackfin Darter											
Etheostoma raneyi	Yazoo Darter											
Etheostoma rupestre	Rock Darter											
Etheostoma simoterum	Snubnose Darter											
Etheostoma zonifer	Backwater Darter											
Eumorpha intermedia	Intermediate Sphinx											
Eupatorium lancifolium	Lanceleaf Thoroughwort	p										

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Euphagus carolinus	Rusty Blackbird										p	
Euphorbia discoidalis	Summer Spurge	p										p
Euphorbia inundata var. *inundata*	Florida Pine Spurge											
Euphyes arpa	Palmetto Skipper											
Euphyes bayensis	Bay St. Louis Skipper											
Euphyes dukesi dukesi	Dukes' Skipper											
Euphyes pilatka	Palatka Skipper											
Euploca convolvulacea	Bindweed Heliotrope											
Eurycea longicauda longicauda	Longtail Salamander											
Eurycea lucifuga	Cave Salamander											
Eurycea sphagnicola	Bog Dwarf Salamander											
Eurynia dilatata	Spike											
Eustachys glauca	Saltmarsh Finger-grass											
Eustoma exaltatum	Tall Prairie-gentian											
Eutrichota gopheri	Gopher Tortoise Burrow Fly		p	p	p							
Falco sparverius paulus	Southeastern American Kestrel			p	p							p
Farancia erytrogramma	Rainbow Snake											
Faxonius erichsonianus	Reticulate Crayfish											
Faxonius etnieri	Ets Crayfish											
Faxonius hartfieldi	Yazoo Crayfish											
Faxonius jonesi	Sucarnoochee River Crayfish											
Faxonius mississippiensis	Mississippi Crayfish											
Faxonius palmeri	Gray-Speckled Crayfish											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Faxonius placidus	Bigclaw Crayfish											
Faxonius validus	Powerful Crayfish											
Faxonius wrighti	Hardin Crayfish											
Faxonius yanahlindus	Spinywrist Crayfish											
Fissidens amoenus	Hall's Fissidens Moss											
Forestiera ligustrina	Upland Swamp Privet	p										
Fraxinus quadrangulata	Blue Ash	p										
Frullania donnellii	a liverwort					p					p	
Fuirena longa	Coastal-plain Umbrella-sedge											
Fundulus blairae	Western Starhead Topminnow											
Fundulus dispar	Northern Starhead Topminnow											
Fundulus euryzonus	Broadstripe Topminnow											
Fundulus jenkinsi	Saltmarsh Topminnow											
Gaillardia aestivalis var. *flavovirens*	Lanceleaf Blanket Flower							p			p	p
Galactia floridana	Florida Milkpea				?							
Galearis spectabilis	Showy Orchis			p	p							
Galium bermudense	Coastal Bedstraw		p									p
Gelochelidon nilotica	Gull-billed Tern											
Gentiana catesbaei	Elliott's Gentian							p			p	
Gentianella occidentalis	Stiff Gentian	p										
Geothlypis formosa	Kentucky Warbler			p		p		p	p	p	p	p
Gomphus australis	Clearlake Clubtail											
Gomphus dilatatus	Blackwater Clubtail											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Gomphus geminatus	Twin-striped Clubtail											
Gomphus hodgesi	Hodges' Clubtail											
Goodyera pubescens	Downy Rattlesnake-plantain			p								
Gopherus polyphemus	Gopher Tortoise		p	p	p							
Graptemys flavimaculata	Yellow-blotched Map Turtle											
Graptemys geographica	Common Map Turtle											
Graptemys gibbonsi	Pascagoula Map Turtle											
Graptemys nigrinoda	Black-knobbed Map Turtle											
Graptemys oculifera	Ringed Map Turtle											
Graptemys pearlensis	Pearl River Map Turtle											
Graptemys pulchra	Alabama Map Turtle											
Gratiola floridana	Florida Hedge-hyssop										p	
Gratiola ramosa	Branched Hedge-hyssop											
Gryllotalpa major	Prairie Mole Cricket											
Gymnocladus dioicus	Kentucky Coffeetree											
Gymnocthebius maureenae	Maureen's Gymnocthebius Minute Moss Beetle											
Gyrinophilus porphyriticus	Spring Salamander											
Habenaria quinqueseta	Michaux's Orchid											
Hackelia virginiana	Virginia Stickseed			p					p			
Haematopus palliatus	American Oystercatcher											
Halodule wrightii	Shoal-grass											
Halophila engelmannii	Engelmann's Sea-grass											
Hamamelis ovalis	Running Witch-hazel									p	p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Hamiota perovalis	Orange-nacre Mucket											
Haploperla chukcho	Chukcho Stonefly											
Hedeoma drummondii var. *drummondii*	Drummond Pennyroyal											
Helanthium tenellum	Dwarf Burhead											
Helenium brevifolium	Shortleaf Sneezeweed							p				
Helianthus debilis ssp. *tardiflorus*	Gulf Coast Beach Sunflower											p
Helianthus decapetalus	Thinleaf Sunflower			p	p				p			p
Helianthus verticillatus	Whorled Sunflower								p			
Helmitheros vermivorum	Worm-eating Warbler	p	p	p		p	p	p	p	p		p
Helopicus bogaloosa	Masked Springfly											
Hemidactylium scutatum	Four-toed Salamander							p			p	
Hepatica acutiloba	Sharp-lobed Hepatica			p								
Herbertia lahue	Herbertia										p	
Hesperapis oraria	Gulf Coast Solitary Bee											
Hesperia attalus	Dotted Skipper											
Heterandria formosa	Least Killifish											
Heteranthera dubia	Grassleaf Mud-plaintain											
Heteranthera missouriensis	Missouri Mud-plantain											
Heterodon simus	Southern Hognose Snake				p							
Heuchera macrorhiza	Giant Alumroot	p										
Heuchera parviflora	Little-flower Alumroot	p										
Hexalectris spicata	Crested Coralroot	p		p	p		p		p		p	
Hexastylis harperi	Large-flowered Heartleaf											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Hibiscus coccineus	Brilliant Hibiscus											
Hieracium venosum	Rattlesnake Hawkweed	p		p								
Hippocampus erectus	Lined Seahorse											
Hobbseus attenuatus	Pearl Rivulet Crayfish											
Hobbseus cristatus	Crested Rivulet Crayfish											
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish											
Hobbseus petilus	Tombigbee Rivulet Crayfish											
Hobbseus prominens	Prominence Rivulet Crayfish											
Hobbseus valleculus	Choctaw Rivulet Crayfish											
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish											
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly											
Hottonia inflata	Featherfoil											
Hybopsis amnis	Pallid Shiner											
Hydrastis canadensis	Golden-seal			p					p			
Hydroperla fugitans	Austin Springfly											
Hydrophyllum appendiculatum	Appendage Waterleaf											
Hydrophyllum macrophyllum	Large-leaf Water-leaf											
Hydroptila cretosa	A Caddisfly											
Hydroptila holzenthali	A Caddisfly											
Hydroptila homochitta	A Caddisfly											
Hydroptila molsonae	Molson's Microcaddisfly											
Hydroptila poirrieri	A Caddisfly											
Hydroptila tusculum	A Caddisfly											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Hylocichla mustelina	Wood Thrush	p	p	p		p	p	p	p	p	p	p
Hymenocallis choctawensis	Florida Panhandle Spider-lily											
Hymenocallis occidentalis var. *eulae*	Woodland Spider-lily											
Hypericum canadense	Canadian St. John's-wort							p				
Hypericum myrtifolium	Myrtle-leaved St. Johnswort											
Hypoxis curtissii	Curtiss' Yellow Star-grass											
Ichthyomyzon castaneus	Chestnut Lamprey											
Ichthyomyzon unicuspis	Silver Lamprey											
Ictiobus niger	Black Buffalo											
Ilex cassine	Dahoon Holly											
Ipomoea brasiliensis	Railroad Morning-glory											
Ipomoea macrorhiza	Large-stem Morning-glory							p				p
Iresine diffusa	Felicidad											
Iris brevicaulis	Lamance Iris										p	
Iris giganticaerulea	Giant Blue Iris											
Ischnura prognata	Furtive Forktail											
Isoetes appalachiana	Appalachian Quillwort											
Isoetes louisianensis	Louisiana Quillwort											
Isoetes melanopoda spp. *melanopoda*	Blackfoot Quillwort										p	
Isoetes melanopoda spp. *silvatica*	Eastern Blackfoot Quillwort										p	
Isoetes mississippiensis	Mississippi Quillwort											
Isoetes valida	Strong Quillwort											
Isogenoides varians	A Stonefly											

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Isonychia berneri	A Mayfly											
Isurus oxyrinchus	Shortfin Mako Shark											
Ixobrychus exilis	Least Bittern											
Juglans cinerea	Butternut								p			
Juncus interior	Inland Rush											
Juniperus silicicola	Southern Red Cedar											
Lacunicambarus dalyae	Jewel Mudbug											
Lacunicambarus freudensteini	Banded Mudbug											
Lacunicambarus mobilensis	Lonesome Gravedigger											
Lacunicambarus polychromatus	Paintedhand Mudbug											
Lampropeltis calligaster calligaster	Prairie Kingsnake	p				p		p			p	p
Lampropeltis calligaster rhombomaculata	Mole Kingsnake	p	p	p	p	p				p	p	p
Lampropeltis triangulum	Red Milk Snake					p					p	p
Lampsilis fasciola	Wavy-rayed Lampmussel											
Lampsilis hydiana	Louisiana Fatmucket											
Lampsilis ovata	Pocketbook											
Lanius ludovicianus ludovicianus	Loggerhead Shrike				p							
Lanius ludovicianus migrans	Migrant Loggerhead Shrike				p							
Lapara phaeobrachycerous	Gulf Pine Sphinx				p							
Lasionycteris noctivagans	Silver-haired Bat	p	p	p	p	p		p	p	p	p	p
Lasiurus cinereus	Hoary Bat	p	p	p	p	p	p	p	p	p	p	p
Lasiurus intermedius	Northern Yellow Bat		p	p	p					p		
Lasmigona alabamensis	Alabama Heelsplitter											

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Lasmigona complanata	White Heelslpitter											
Lasmigona costata	Flutedshell											
Laterallus jamaicensis	Black Rail											
Lejeunea bermudiana	a liverwort					p					p	
Lejeunea cladogyna	a liverwort				p	p			p		p	
Lejeunea floridana	a liverwort				p	p		p			p	
Lejeunea laetivirens	a liverwort										p	
Lepidochelys kempii	Kemp's Ridley Sea Turtle											
Lepidostoma morsei	Morse's Little Plain Brown Sedge											
Leptolucania ommata	Pygmy Killifish											
Lethenteron appendix	American Brook Lamprey											
Leuctra colemanorum	Yalobusha Needlefly											
Leuctra hicksi	Cypress Needlefly											
Liatris elegantula	Blazing-Star		p					p				p
Ligumia recta	Black Sandshell											
Ligusticum canadense	Nondo Lovage			p								
Lilaeopsis carolinensis	Carolina Lilaeopsis											
Lilium iridollae	Panhangle Lily			p							p	
Lilium michiganense	Michigan Lily			p								
Limnodromus griseus	Short-billed Dowitcher											
Limnothlypis swainsonii	Swainson's Warbler							p	p		p	
Limosa fedoa	Marbled Godwit											
Lindera melissifolia	Pondberry											

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Lindera subcoriacea	Bog Spicebush							p			p	
Linum floridanum var. *chrysocarpum*	Yellow-fruited Flax							p				
Linum macrocarpum	Spring Hill Flax											
Liodytes rigida deltae	Delta Crayfish Snake											
Liodytes rigida sinicola	Gulf Crayfish Snake											
Lithasia armigera	Armored Rocksnail											
Lithasia hubrichti	Big Black Rocksnail											
Lithasia lima	Warty Rocksnail											
Lithasia verrucosa	Varicose Rocksnail											
Lithobates areolatus	Crawfish Frog										p	
Lithobates heckscheri	River Frog											
Lithobates sevosus	Dusky Gopher Frog		p	p	p							
Lithospermum caroliniense	Golden Puccoon		p									p
Lithospermum latifolium	American Gromwell	p		p								
Lobelia boykinii	Boykin's Lobelia											
Ludwigia alata	Winged Seedbox											
Lupinus perennis ssp. *gracilis*	Sundail Lupine		p									p
Luziola bahiensis	Brazilian Loziola											
Lycium carolinianum	Carolina Wolf-berry											
Lycopodioides ludovicianum	Gulf Spike-moss					p			p		p	
Lycopus amplectens	Sessile-leaved Bugleweed											
Lythrurus fasciolaris	Scarlet Shiner											
Machimus polyphemi	Gopher Tortoise Robber Fly		p	p	p							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Macranthera flammea	Flame Flower											
Macrhybopsis meeki	Sicklefin Chub											
Macrochelys temminckii	Alligator Snapping Turtle											
Macromia alleghaniensis	Allegheny River Cruiser											
Macromitrium richardii	Richard's Macromitrium Moss			p	p	p					p	
Magnolia tripetala	Umbrella Magnolia				p	p			p			
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin											
Malus ioensis	Iowa Crabapple		p	p							p	p
Manta birostris	Giant Manta Ray											
Marshallia angustifolia	Slim-leaf Barbara's-buttons											
Marshallia trinervia	Broadleaf Barbara's-buttons			p				p			p	p
Marsilea vestita	Marsilea vestita											
Matelea baldwyniana	Baldwin's Milkvine	p										
Matelea decipiens	Old-field Milkvine			p								p
Matelea obliqua	Climbing Milkweed			p								p
Medionidus acutissimus	Alabama Moccasinshell											
Megalops atlanticus	Tarpon											
Melanerpes erythrocephalus	Red-headed Woodpecker	p	p	p	p	p	p	p	p	p	p	p
Mertensia virginica	Virginia Bluebells											p
Metzgeria uncigera	a liverwort										p	
Micrurus fulvius	Eastern Coral Snake		p	p	p							
Mimulus ringens var. *ringens*	Square-stem Monkeyflower											
Miniellus boops	Bigeye Shiner											

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Miniellus melanostomus	Blackmouth Shiner											
Miniellus sabinae	Sabine Shiner											
Mirabilis albida	Pale Umbrella-wort	p										
Mirabilis linearis	Narrowleaf Four-o'clock	p										
Mitreola angustifolia	Narrowleaf Miterwort											
Mobula hypostoma	Atlantic Pygmy Devil Ray											
Mobula tarapacana	Sicklefin Devil Ray											
Moxostoma anisurum	Silver Redhorse											
Moxostoma breviceps	Smallmouth Redhorse											
Moxostoma carinatum	River Redhorse											
Moxostoma duquesnei	Black Redhorse											
Muhlenbergia glabrifloris	Inland Muhly			p								
Muhlenbergia sylvatica	Woodland Muhly											
Muhlenbergia tenuiflora	Slender Muhly											
Mycteria americana	Wood Stork											
Myotis austroriparius	Southeastern Myotis	p	p	p	p	p	p	p	p	p	p	p
Myotis grisescens	Gray Bat	p		p		p					p	p
Myotis septentrionalis	Northern Long-eared Bat	p	p	p	p	p	p	p	p	p	p	p
Myotis sodalis	Indiana Bat	p		p		p	p				p	p
Myriophyllum laxum	Loose Water-milfoil											
Myriopteris alabamensis	Alabama Lipfern								p			
Myriopteris lanosa	Hairy Lipfern	p		p								p
Nabalus asper	Rough Rattlesnake-root	p		p								

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Nabalus barbatus	Barbed Rattlesnake-root	p		p								
Nannothemis bella	Elfin Skimmer											
Narcine bancroftii	Caribbean Electric Ray											
Necturus maculosus	Common Mudpuppy											
Negaprion brevirostris	Lemon Shark											
Nehalennia gracilis	Sphagnum Sprite											
Nemastylis geminiflora	Prairie Pleatleaf											
Nemocapnia carolina	Southern Snowfly											
Neogale frenata	Long-tailed Weasel	p	p	p	p	p	p	p	p	p	p	p
Neonympha helicta	Helicta Satyr											
Neonympha mitchellii	Mitchell's Satyr											
Neoperla coxi	A Stonefly											
Neotrichia alabamensis	A Caddisfly											
Nerodia clarkii clarkii	Gulf Salt Marsh Snake											
Nestronia umbellula	Nestronia	p		p								p
Neurocordulia yamaskanensis	Stygian Shadowdragon											
Neviusia alabamensis	Alabama Snow-wreath	p										
Nicrophorus americanus	American Burying Beetle											
Nothonotus rubrus	Bayou Darter											
Nothonotus rufilineatus	Redline Darter											
Notropis micropteryx	Highland Shiner											
Noturus exilis	Slender Madtom											
Noturus flavus	Stonecat											

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Noturus gladiator	Piebald Madtom											
Noturus munitus	Frecklebelly Madtom											
Nuphar lutea ssp. *ulvacea*	West Florida Cow-Lily											
Nyctanassa violacea	Yellow-crowned Night-Heron											
Nycticorax nycticorax	Black-crowned Night-Heron											
Nymphaea mexicana	Banana Water-lily											
Nymphoides aquatica	Big Floating-heart											
Nymphoides cordata	Floating-heart											
Obovaria arkansasensis	Southern Hickorynut											
Obovaria c.f. unicolor	Undescribed Hickorynut											
Obovaria subrotunda	Round Hickorynut											
Obovaria unicolor	Alabama Hickorynut											
Oecetis daytona	A Caddisfly											
Oenothera capillifolia ssp. *capillifolia*	Berlandier's Sundrops	p										
Oenothera grandiflora	Large-flowered Evening-primrose	p										
Oenothera heterophylla ssp. *orientalis*	Alabama Evening-primrose	p										
Oenothera patriciae	Plains Gaura											p
Oenothera triloba	Stemless Evening-primrose	p										
Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle		p	p	p							
Ophiogomphus australis	Southern Snaketail											
Ophisaurus attenuatus	Slender Glass Lizard	p	p	p	p	p				p		p
Ophisaurus mimicus	Mimic Glass Lizard		p	p	p							
Opuntia macrorhiza	Twisted-spine Prickly-pear						p					

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Orthochilus ecristatus	Giant Orchid	p		p				p				p
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly											
Orthotrichum exiguum	Small Wood-bark Moss											
Oxalis grandis	Great Yellow Woodsorrel			p								
Oxalis macrantha	Tufted Yellow Woodsorrel	p		p	p							
Packera aurea	Golden Groundsel			p								
Packera paupercula var. *paupercula*	Balsam Ragwort	p										
Packera tomentosa	Woolly Groundsel	p		p			p					
Palafoxia callosa	Small Palafoxia											
Palhinhaea cernua	Nodding Clubmoss							p				
Panax quinquefolius	American Ginseng				p	p			p		p	
Papaipema maritima	Maritime Sunflower Borer											
Papaipema sp. *5*	Rare Cane Borer Moth											
Paracymus seclusus	Seclusive Water Scavenger Beetle											
Parkesia motacilla	Louisiana Waterthrush					p		p	p	p	p	
Parnassia grandifolia	Largeleaf Grass-of-parnassus							p				
Paronychia baldwinii ssp. *riparia*	Perennial Dune Whitlow-wort											p
Paronychia erecta var. *corymbosa*	Beach Sand-squares											
Paronychia erecta var. *erecta*	Beach Sand-squares											
Paronychia patula	Pineland Nailwort							p				p
Paspalum monostachyum	Gulfdune Paspalum											
Passerina ciris	Painted Bunting											
Pellaea atropurpurea	Purple-stem Cliff-brake	p		p								

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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Penstemon canescens	Gray Beardtongue	p										
Penstemon pallidus	Pale Beardtongue	p										
Penstemon tenuis	Sharp-sepal Beardtongue											
Percina aurora	Pearl Darter											
Percina evides	Gilt Darter											
Percina kathae	Mobile Logperch											
Percina lenticula	Freckled Darter											
Percina phoxocephala	Slenderhead Darter											
Percina uranidea	Stargazing Darter											
Perideridia americana	Eastern Eulophus			p								
Perimyotis subflavus	Tricolored Bat	p	p	p	p	p	p	p	p	p	p	p
Perlesta lagoi	A Stonefly											
Peromyscus polionotus	Oldfield Mouse	p	p	p	p							
Persicaria hirsuta	Hairy Smartweed											
Peucaea aestivalis	Bachman's Sparrow			p	p							
Phacelia bipinnatifida	Fernleaf Phacelia	p		p								
Phacelia hirsuta	Hairy Scorpionweed								p			
Phacelia purshii	Miami-mist			p								
Phacelia ranunculacea	Blue Scorpionweed								p			
Phacelia strictiflora var. *robbinsii*	Prairie Scorpion-weed	p						p				
Phaseolus sinuatus	Sandhill Bean											p
Phenacobius mirabilis	Suckermouth Minnow											
Philadelphus hirsutus	Streambank Mock-orange	p		p								p

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Philadelphus inodorus	Scentless Mock Orange	p	p	p								
Philonthus testudo	Western Gopher Tortoise Rove Beetle		p	p	p							
Phlox amplifolia	Largeleaf Phlox			p								
Physalis arenicola	Cypress-head Ground-cherry											
Physaria gracilis ssp. *gracilis*	Spreading Bladder-pod											
Pieris phillyreifolia	Climbing Fetter-bush											
Pinguicula planifolia	Chapman's Butterwort											
Pinguicula pumila	Dwarf Butterwort											
Pinus clausa	Sand Pine		p		p							p
Pinus virginiana	Virginia Pine	p		p								p
Piranga olivacea	Scarlet Tanager (breeding population)	p	p	p		p	p	p	p	p	p	p
Pituophis melanoleucus lodingi	Black Pine Snake		p	p	p							
Pituophis melanoleucus melanoleucus	Northern Pine Snake	p		p								
Pityopsis pinifolia	Taylor County Silk-grass		p									p
Plagiochila floridana	Florida Leafy Liverwort		p			p			p		p	
Plagiochila invisa	a liverwort										p	
Plagiochila virginica var. *virginica*	a liverwort			p								p
Plantago cordata	Heartleaf Plantain											
Platalea ajaja	Roseate Spoonbill											
Platanthera conspicua	Large White-fringe Orchid			p				p				
Platanthera integra	Yellow Fringeless Orchid											
Platanthera integrilabia	White Fringeless Orchid											
Platanthera lacera	Green-fringed Orchid			p							p	

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Platanthera nivea	Snowy Orchid											
Platanthera peramoena	Purple Fringeless Orchid										p	
Platygobio gracilis	Flathead Chub											
Plestiodon anthracinus	Coal Skink			p		p		p		p	p	p
Plethobasus cyphyus	Sheepnose											
Plethodon ventralis	Southern Zigzag Salamander					P					P	P
Plethodon websteri clade A	Webster's Salamander Clade A			p		p		p		p	p	p
Plethodon websteri clade B	Webster's Salamander Clade B			p		p		p		p	p	p
Pleurobema beadleianum	Mississippi Pigtoe											
Pleurobema curtum	Black Clubshell											
Pleurobema decisum	Southern Clubshell											
Pleurobema perovatum	Ovate Clubshell											
Pleurobema riddellii	Louisiana Pigtoe											
Pleurobema sintoxia	Round Pigtoe											
Pleurobema taitianum	Heavy Pigtoe											
Pleurocera vestita	Brook Hornsnail											
Pleuronaia barnesiana	Tennessee Pigtoe											
Pleuronaia dolabelloides	Slabside Pearlymussel											
Pluvialis dominica	American Golden-Plover											
Pogonomyrmex badius	Florida Harvester Ant	p	p	p	p							
Polanisia tenuifolia	Slenderleaf Clammy-weed											
Polygonella americana	Southern Jointweed	p										
Polyodon spathula	Paddlefish											

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Polytaenia nuttallii	Prairie Parsley	p										p
Ponthieva racemosa	Shadow-witch Orchid	p		p		p			p			
Porphyrio martinicus	Purple Gallinule											
Potamilus alatus	Pink Heelsplitter											
Potamilus capax	Fat Pocketbook											
Potamilus inflatus	Inflated Heelsplitter											
Potamogeton epihydrus	Nuttall's Pondweed											
Potamogeton pusillus	Slender Pondweed											
Primula meadia	Shootingstar	p										
Pristis pectinata	Smalltooth Sawfish											
Pristis pristis	Largtooth Sawfish											
Procambarus ablusus	Hatchie River Crayfish											
Procambarus barbiger	Jackson Prairie Crayfish											
Procambarus bivittatus	Ribbon Crayfish											
Procambarus fitzpatricki	Spinytail Crayfish											
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish											
Procambarus hagenianus vesticeps	Egyptian Crayfish											
Procambarus lagniappe	Lagniappe Crayfish											
Procambarus lecontei	Mobile Crayfish											
Procambarus lylei	Shutispear Crayfish											
Procambarus mancus	Lame Crayfish											
Procambarus penni	Pearl Blackwater Crayfish											
Procambarus planirostris	Flatnose Crayfish											

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Procambarus shermani	Gulf Crayfish											
Procambarus viaeviridis	Vernal Crayfish											
Protonotaria citrea	Prothonotary Warbler										p	
Prunus alabamensis	Alabama Black Cherry											
Pseudacris collinsorum	Collinses' Mountain Chorus Frog											p
Pseudacris ornata	Ornate Chorus Frog				p							
Pseudemys alabamensis	Alabama Red-bellied Turtle											
Pseudiron centralis	White Sand-river Mayfly											
Pseudodontoides subvexus	Southern Creekmussel											
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper				p							
Pseudotriton montanus	Mud Salamander											
Pseudotriton ruber	Red Salamander											
Pteronotropis welaka	Bluenose Shiner											
Ptilimnium costatum	Eastern Bishopweed											
Ptychobranchus fasciolaris	Kidneyshell											
Puma concolor coryi	Florida Panther											
Pycnanthemum flexuosum	Narrowleaf Mountainmint											
Pycnanthemum pilosum	Whorled Mountainmint	p		p			p		p			
Quadrula nobilis	Gulf Mapleleaf											
Quadrula rumphiana	Ridged Mapleleaf											
Quercus arkansana	Arkansas Oak		p									
Quercus austrina	Bluff Oak						p					
Quercus macrocarpa var. *macrocarpa*	Bur Oak	p										

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Quercus minima	Dwarf Live Oak		p									p
Quercus myrtifolia	Myrtle-leaf Oak				p							p
Quercus oglethorpensis	Oglethorpe's Oak			p			p					
Quercus palustris	Pin Oak			p			p					
Quiscalus quiscula	Common Grackle										p	
Radula sullivantii	a liverwort					p						
Rallus elegans	King Rail											
Ranunculus flabellaris	Yellow Water-crowfoot											
Ranunculus septentrionalis	Carolina Buttercup											
Raptoheptagenia cruenta	Wallace's Deepwater Mayfly											
Regina septemvittata	Queen Snake											
Rhadinaea flavilata	Pine Woods Snake											
Rhinichthys obtusus	Blacknose Dace											
Rhinoptera brasiliensis	Brazilian Cownose Ray											
Rhodobryum roseum	Rose Moss	p										
Rhododendron alabamense	Alabama Rhododendron			p								
Rhododendron arborescens	Smooth Azalea			p								
Rhododendron austrinum	Orange Azalea							p			p	
Rhododendron periclymenoides	Pink Azalea			p							p	
Rhynchosia latifolia	Prairie Rhynchosia	p		p			p					
Rhynchospora baldwinii	Baldwin's Beakrush							p				
Rhynchospora brachychaeta	West Indies Beakrush											
Rhynchospora careyana	Broad-fruit Horned Beakrush											

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Rhynchospora cephalantha var. *attenuata*	Small-bunched Beaksedge							p				
Rhynchospora crinipes	Hairy-peduncled Beakrush											
Rhynchospora curtissii	Curtiss' Beakrush											
Rhynchospora decurrens	Swamp-forest Beakrush											
Rhynchospora distans	Fasciculate Beakrush											
Rhynchospora divergens	White-seeded Beakrush											
Rhynchospora fernaldii	Fernald's Beakrush											
Rhynchospora galeana	Short-bristle Baldrush							p				
Rhynchospora harperi	Harper's Beakrush											
Rhynchospora harveyi	Harvey's Beakrush							p				
Rhynchospora leptocarpa	Slender-fruit Beaksedge											
Rhynchospora marliniana	Marlin's Beaksedge											
Rhynchospora perplexa	Pineland Beakrush							p				
Rhynchospora pinetorum	Small's Beakrush											
Rhynchospora pleiantha	Brown Beakrush				p							
Rhynchospora torreyana	Torrey's Beakrush											
Rhynchospora tracyi	Tracy Beakrush											
Rhynchospora wrightiana	Wright's Beakrush							p				
Riccia warnstorfii	a liverwort											
Riparia riparia	Bank Swallow (breeding population)											
Rorippa aquatica	Lake-cress											
Rudbeckia grandiflora var. *alismifolia*	Rough Coneflower			p			p					
Rudbeckia subtomentosa	Sweet Coneflower			p								

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Ruellia noctiflora	Night-flowering Wild-petunia							p				
Ruellia pinetorum	Pine Barren Ruellia							p				
Rynchops niger	Black Skimmer											
Sabatia campestris	Prairie Pink			p				p		p		p
Sabatia decandra	Bartram's Rose-gentian											
Sabulina patula	Pitcher's Stitchwort	p										
Sageretia minutiflora	Tiny-leaved Buckthorn											
Sagittaria chapmanii	Chapman's Arrowhead											
Sagittaria isoetiformis	Slender Arrow-head											
Salix caroliniana	Carolina Willow											
Salvia chapmanii	Chapman's Sage	p		p								
Sapindus marginatus	Florida Soapberry											
Sarracenia alabamensis ssp. *wherryi*	Wherry's Sweet Pitcher-plant											
Sarracenia leucophylla	Whitetop Pitcherplant											
Sarracenia rosea	Purple Pitcherplant											
Scaphirhynchus albus	Pallid Sturgeon											
Scaphirhynchus platorynchus	Shovelnose Sturgeon											
Scaphirhynchus suttkusi	Alabama Sturgeon											
Sceptridium jenmanii	Alabama Grapefern			p	p			p				
Sceptridium lunarioides	Winter Grape-fern			p	p			p				p
Schisandra glabra	Bay Starvine				p	p			p		p	
Schizachyrium maritimum	Gulf Bluestem				p							
Schizachyrium scoparium ssp. *divergens*	Eastern Little Bluestem	p	p	p				p			p	p

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Schizachyrium stoloniferum	Creeping Bluestem							p				p
Schoenoplectiella purshiana	Weakstalk Bulrush											
Schoenoplectus americanus	Three-square Bulrush											
Schoenoplectus deltarum	Delta Bulrush											
Schoenoplectus subterminalis	Swaying Rush											
Schwalbea americana	Chaffseed							p				
Scirpus divaricatus	Spreading Bulrush											
Scirpus lineatus	Drooping Bulrush				p				p		p	
Scleria elliottii	Broad-leaved Hairy Nutrush			p						p		
Scleria georgiana	Georgia Nutrush											
Scleria nitida	Shining Nutrush		p									p
Scleria verticillata	Low Nutrush											
Sclerolepis uniflora	Pink Bogbutton											
Scolopax minor	American Woodcock			p							p	p
Scutellaria glabriuscula	Georgia Skullcap							p				p
Scutellaria leonardii	Shale-barren Skullcap	p										
Sedum pulchellum	Rock Stonecrop	p										
Sedum ternatum	Wood Stonecrop	p										p
Seiurus aurocapilla	Ovenbird (breeding population)					p					p	
Senega ambigua	Whorled Milkwort	p		p								
Senega appendiculata	Swamp Milkwort				p							
Senega balduinii	White Milkwort											
Senega curtissii	Curtiss' Milkwort	p		p								

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Senega hookeri	Hooker's Milkwort							p				
Senega leptostachys	Georgia Milkwort							p				p
Setaria corrugata	Coast Bristle Grass							p				
Setodes dixiensis	A Caddisfly											
Setophaga cerulea	Cerulean Warbler	p	p	p		p	p	p	p	p	p	p
Setophaga discolor	Prairie Warbler	p	p	p	p		p	p	p			p
Shipsa rotunda	Intrepid Forestfly											
Sideroxylon reclinatum ssp. *reclinatum*	Florida Bumelia											
Silene ovata	Ovate Catchfly			p	p	p					p	
Silene regia	Royal Catchfly											
Silphium confertifolium	Black Belt Rosinweed	p										
Silphium integrifolium var. *gattingeri*	Gattinger's Rosinweed	p										
Silphium pinnatifidum	Tansy Rosinweed	p										
Silphium simpsonii	Simpson's Rosinweed	p	p			p		p				p
Silphium terebinthinaceum var. *luciae-brauniae*	Lucy Braun's Prairie Dock	p										
Sitta pusilla	Brown-headed Nuthatch			p	p							
Smilax hugeri	Huger's Carrion-flower											
Smilax pulverulenta	Downy Carrion-flower	p							p			
Solanum pseudogracile	Glowing Nightshade											
Solidago auriculata	Eared Goldenrod	p				p					p	
Solidago brachyphylla	Dixie Goldenrod			p		p					p	
Solidago flaccidifolia	Appalachian Goldenrod	p		p						p	p	p

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Solidago juncea	Early Goldenrod			p								
Solidago rigidiuscula	Showy Goldenrod	p										
Solidago sphacelata	Autumn Goldenrod	p		p								
Somatochlora georgiana	Coppery Emerald											
Somatochlora provocans	Treetop Emerald											
Sophronanthe hispida	Pineland Hedge-Hyssop							p				p
Sorex longirostris	Southeastern Shrew	p	p	p	p	p	p	p	p	p	p	p
Speyeria diana	Diana					p						
Sphaerocarpos donnellii	a liverwort											
Sphaerosporoceros adscendens	a hornwort											
Sphagnum carolinianum	Carolina Peatmoss											
Sphagnum cyclophyllum	Circular-leaf Peatmoss											
Sphagnum fitzgeraldii	Fitzgerald's Peatmoss											
Sphenopholis penyslvanica	Swamp Wedgescale			p								p
Sphyrna lewini	Scalloped Hammerhead											
Sphyrna mokarran	Great Hammerhead											
Spilogale putorius	Eastern Spotted Skunk	p	p	p	p	p	p	p	p	p	p	p
Spinadis simplex	Wallace's Deepwater Mayfly											
Spiraea tomentosa	Steeplebush											
Spiranthes brevilabris	Texas Ladies'-tresses							p				
Spiranthes eatonii	Eaton's Ladies'-tresses							p				
Spiranthes floridana	Florida Ladies'-tresses							p				
Spiranthes lacera var. *gracilis*	Southern Slender Ladies'-tresses											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Spiranthes longilabris	Giant Spiral Ladies'-tresses											
Spiranthes magnicamporum	Great Plains Ladies'-tresses	p										
Spiranthes ovalis var. *ovalis*	Lesser Ladies'-tresses			p	p	p			p		p	
Spizella pusilla	Field Sparrow											
Sporobolus ozarkanus	Ozark Dropseed	p										
Stellaria corei	Tennessee Chickweed			p								p
Stellaria pubera	Giant Chickweed			p							p	
Stenanthium gramineum	Eastern Featherbells			p	p							
Stenanthium texanum	Pine Barren Deathcamas							p				
Sterna hirundo	Common Tern (breeding population)											
Sternula antillarum antillarum	Coastal Least Tern											
Sternula antillarum athalassos	Interior Least Tern											
Stewartia ovata	Mountain Camellia											
Stizostedion canadense	Sauger											
Stizostedion sp. *cf. vitreum*	Southern Walleye											
Strophitus pascagoulaensis	Pascagoula Creekshell											
Strophitus radiatus	Rayed Creekshell											
Strophitus undulatus	Creeper											
Sturnella magna	Eastern Meadowlark											
Stylisma aquatica	Water Southern Morning-glory											
Stylisma pickeringii ssp. *pattersonii*	Pickering Morning-glory	p	p		p							p
Stylisma pickeringii ssp. *pickeringii*	Pickering Morning-glory	p	p		p							p
Stylogomphus albistylus	Eastern Least Clubtail											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Stylurus potulentus	Yellow-sided Clubtail											
Stylurus townesi	Townes' Clubtail											
Swida alternifolia	Alternate-leaf Dogwood				p	p					p	
Symphyotrichum ericoides var. *ericoides*	White Heath Aster	p										
Symphyotrichum oblongifolium	Aromatic Aster	p										
Symphyotrichum oolentangiense	Sky Blue Aster	p					p					
Symphyotrichum pratense	Barrens Silky Aster	p										
Symphyotrichum puniceum var. *puniceum*	Purple-stem Aster											p
Symphyotrichum puniceum var. *scabricaule*	Rough-stem Aster											p
Syngonanthus flavidulus	Yellow Pipewort							p				
Syringodium filiforme	Manatee-grass											
Tachopteryx thoreyi	Gray Petaltail											
Taenidia integerrima	Yellow Pimpernel	p		p								
Tetraloniella albata	White-clothed Longhorn											
Thalasseus maximus	Royal Tern											
Thalasseus sandvicensis	Sandwich Tern											
Thalassia testudina	Turtle-grass											
Thalia dealbata	Powdery Thalia											
Thalictrum debile	Southern Meadowrue	p		p								
Thalictrum dioicum	Early Meadowrue											
Thalictrum macrostylum	Small-leaf Meadowrue							p				
Thelesperma filifolium	Stiff Greenthread	p										

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Theliderma cylindrica cylindrica	Rabbitsfoot											
Theliderma metanevra	Monkeyface											
Thryomanes bewickii	Bewick's Wren	p	p	p			p					p
Tiarella cordifolia	Heart-leaved Foam-flower	p			p							
Tomostima cuneifolia	Wedgeleaf Whitlow-grass	p										
Tomostima reptans	Carolina Whitlow-grass	p										
Tortula porteri	Porter's Screw Moss											
Toxolasma lividum	Purple Lilliput											
Trachyxiphium hypnaceum	Trachyxiphium Moss					p					p	
Tradescantia ernestiana	Ernest's Spider-wort	p		p								
Tradescantia hirsuticaulis	Hairy-stem Spiderwort			p	p							
Trautvetteria applanata	Ozark Tassel-rue											
Trichechus manatus latirostris	Florida Manatee											
Tridens carolinianus	Carolina Fluff Grass							p				p
Tridens chapmanii	Chapman's Redtop					p		p		p		p
Trifolium carolinianum	Carolina Clover	p					p	p			p	
Trifolium reflexum	Buffalo Clover	p		p			p					
Triglochin striata	Arrow-grass											
Trillium flexipes	Drooping Trillium			p	p							
Trillium foetidissimum	Fetid Trillium			p	p	p			p	p	p	p
Trillium ludovicianum	Louisiana Trillium			p	p				p		p	
Trillium pusillum var. *ozarkanum*	Ozark Least Trillium			p		p					p	
Tringa flavipes	Lesser Yellowlegs											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Tringa semipalmata	Willet											
Triphora trianthophoros var. *trianthophorus*	Nodding Pogonia				p	p					p	
Ulmus serotina	September Elm	p		p	p				p		p	
Uniomerus declivis	Tapered Pondhorn											
Ursus americanus	Black Bear	p		p		p	p	p	p		p	p
Ursus americanus luteolus	Louisiana Black Bear	p	p	p	p	p		p		p	p	p
Utricularia olivacea	Piedmont Bladderwort											
Utricularia purpurea	Purple Bladderwort											
Utterbackiana hartfieldorum	Cypress Floater											
Uvularia floridana	Florida Bellwort					p					p	
Vaccinium pallidum	Early Lowbush Blueberry	p		p								p
Vaccinium tenellum	Small Black Blueberry		p			p		p				p
Vandenboschia boschiana	Appalachian Bristle Fern	p										
Verbena xutha	Gulf Vervain								p			
Vermivora chrysoptera	Golden-winged Warbler					p		p	p	p	p	
Veronicastrum virginicum	Culver's-root								p			
Viburnum acerifolium	Mapleleaf Viburnum			p	p							
Villosa vanuxemensis	Mountain Creekshell											
Vireo gilvus	Warbling Vireo					p		p	p	p	p	
Vittaria appalachiana	Appalachian Vittaria			p								
Xyris chapmanii	Chapman's Yellow-eyed-grass							p				
Xyris drummondii	Drummond's Yellow-eyed-grass											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		1.1	1.1	1.1	1.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Scientific Name	**Common Name**	EGCP NORTHERN DRY UPLAND HARDWOOD FOREST	SCP DRY UPLAND HARDWOOD FOREST	EGCP INTERIOR SHORTLEAF PINE-OAK FOREST	EGCP INTERIOR UPLAND LONGLEAF PINE WOODLAND	EGCP NORTHERN MESIC HARDWOOD SLOPE FOREST	EGCP NORTHER LOESS PLAIN OAK-HICKORY UPLAND	EGCP NOTHERN LOESS BLUFF FOREST	EGCP SOUTHERN LOESS BLUFF FOREST	SCP MESIC SLOPE FOREST	SCP LIMESTONE FOREST	EGCP SOUTHERN LOBLOLLY-HARDWOOD FLATWOODS
Xyris flabelliformis	Savannah Yellow-eyed-grass											
Xyris louisianica	Kral's Yellow-eyed Grass							p				
Xyris scabrifolia	Harper's Yellow-eyed Grass							p				
Xyris serotina	Acid-swamp Yellow-eyed-grass											
Yeatesia viridiflora	Green-flower Yeatesia										p	
Zapus hudsonius	Meadow Jumping Mouse	p		p		p	p					
Zephyranthes simpsonii	Rainlily			p				p				

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Accipiter striatus	Sharp-shinned Hawk (breeding population)												
Acentrella alachua	A Mayfly												
Acer leucoderme	Chalk Maple	p	p										
Acipenser desotoi	Gulf Sturgeon												
Acipenser fulvescens	Lake Sturgeon												
Actaea racemosa	Black Bugbane	p											
Actinonaias ligamentina	Mucket												
Adiantum capillus-veneris	Southern Maidenhair-fern	p	p								p		
Aesculus glabra var. *glabra*	Ohio Buckeye	p										p	
Aeshna umbrosa	Shadow Darner												
Aetobatus narinari	Whitespotted Eagle Ray												
Agalinis auriculata	Earleaf False Foxglove												
Agalinis filicaulis	Thread-stem False Foxglove												
Agalinis homalantha	San Antonio False-foxglove									p			
Agalinis linifolia	Flaxleaf False Foxglove												
Agalinis oligophylla	Ridge-stem False-foxglove												
Agalinis skinneriana	Pale False Foxglove												
Agarodes libalis	Spring-loving Psiloneuran Caddisfly												
Agarodes stannardi	Stannard's Agarodes Caddisfly											p	
Agastache nepetoides	Yellow Giant-hyssop											p	
Agrimonia incisa	Incised Groovebur												
Alburnops candidus	Silverside Shiner												
Alburnops chalybaeus	Ironcolor Shiner												
Alburnops edwardraneyi	Fluvial Shiner												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Alisma subcordatum	Broad-leaved Water-plantain												
Allocapnia aurora	Aurora Snowfly												
Allocapnia polemistis	Black Warrior Snowfly												
Alloperla natchez	Natchez Stonefly												
Alophia drummondii	Purple Pleat-leaf												
Alosa alabamae	Alabama Shad												
Alosa chrysochloris	Skipjack Herring												
Amaranthus australis	Southern Amaranth						p						
Ambloplites rupestris	Rock Bass												
Amblyomma tuberculatum	Gopher Tortoise Tick												
Amblyscirtes alternata	Least Florida Skipper												
Amblyscirtes reversa	Reversed Roadside Skipper										p		
Ambystoma texanum	Smallmouth Salamander						p		p		p		
Ambystoma tigrinum	Tiger Salamander												
Ammocrypta clara	Western Sand Darter												
Ammodramus savannarum	Grasshopper Sparrow												
Ammospiza leconteii	LeConte's Sparrow												
Ammospiza maritima	Seaside Sparrow												
Ammospiza nelsoni	Nelson's Sparrow												
Amphiachyris dracunculoides	Broom-snakeroot												
Amphiagrion saucium	Eastern Red Damsel												
Amphinemura alabama	Alabama Forestfly												
Amphiuma pholeter	One-toed Amphiuma												
Amsonia ludoviciana	Louisiana Bluestar												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Anas acuta	Northern Pintail												
Anas fulvigula	Mottled Duck												
Andropogon dealbatus	Wetland White Bluestem												
Andropogon perangustatus	Narrow-leaved Bluestem												
Andropogon tracyi	Tracy's Bluestem												
Aneides aeneus	Green Salamander	p											
Anemone caroliniana	Carolina Anemone												
Anemone quinquefolia	Wood Anemone	p											
Anguilla rostrata	American Eel												
Anthoceros punctatus	a hornwort												
Antigone canadensis pulla	Mississippi Sandhill Crane												
Antrostomus carolinensis	Chuck-will's-widow												
Antrostomus vociferus	Eastern Whip-poor-will												
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle												
Aphyllon uniflorum	One-flowered Broomrape	p											
Apios priceana	Price's Potato-bean	p										p	
Aplectrum hyemale	Puttyroot												
Aquila chrysaetos	Golden Eagle												
Aquilegia canadensis	Wild Columbine		p	p									
Arabidopsis lyrata ssp. lyrata	Lyreleaf Rockcress		p	p									
Arabis patens	Spreading Rockcress	p	p	p									
Aralia racemosa	American Spikenard	p											
Archidium hallii	Hall's Archidium Moss										p		
Archosargus rhomboidalis	Western Atlantic Seabream												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Arcidens confragosus	Rock Pocketbook												
Arctosa sanctaerosae	Santa Rosa Wolf Spider												
Arigomphus lentulus	Stillwater Clubtail												
Arigomphus villosipes	Unicorn Clubtail												
Aristida beyrichiana	Southern Wiregrass												
Aristida mohrii	Mohr's Three-awn Grass												
Aristida simpliciflora	Southern Three-awn Grass												
Aristida spiciformis	Pine Barren Three-awn Grass						p						
Aristida tenuispica	Southern Arrowfeather												
Arnoglossum reniforme	Great Indian-plantain	p										p	
Asclepias hirtella	Green Milkweed												
Asclepias incarnata	Swamp Milkweed							p	p				
Asclepias purpurascens	Purple Milkweed							p	p	p		p	
Asio flammeus	Short-eared Owl												
Aspidogyne querceticola	Low Erythrodes												
Asplenium pinnatifidum	Lobed Spleenwort		p	p									
Asplenium resiliens	Black-stem Spleenwort	p	p	p									
Asplenium rhizophyllum	Walking-fern Spleenwort	p	p	p									
Asplenium trichomanes	Maidenhair Spleenwort	p	p	p									
Asplenium x kentuckiense	Kentucky Spleenwort	p	p	p									
Astragalus canadensis var. *canadensis*	Canadian Milkvetch	p							p				
Astragalus distortus var. *engelmannii*	Engelmann's Bent Milk-vetch												
Astragalus obcordatus	Florida Milkvetch												
Atractosteus spatula	Alligator Gar												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Atrytone arogos arogos	Arogos Skipper												
Atrytonopsis loammi	Loammi Skipper												
Attaneuria ruralis	Giant Stone												
Automeris louisiana	Louisiana Eyed Silkmoth												
Avicennia germinans	Black Mangrove												
Aythya affinis	Lesser Scaup												
Baetisca escambiensis	A Mayfly												
Bagisara brouana	A Noctuid Moth												
Balduina angustifolia	Coastal Plain Honeycomb-head						p						
Baptisia nuttalliana	Nuttall's Wild Indigo												
Baptisia sphaerocarpa	Green Wild Indigo												
Bidens trichosperma	Tickseed Sunflower											p	
Boltonia apalachicolensis	Apalachicola Doll's-Daisy										p	p	
Bombus fraternus	Southern Plains Bumble Bee												
Bombus pensylvanicus	American Bumblebee												
Bombus variabilis	Variable Cuckoo Bumble Bee												
Borodinia canadensis	Sicklepod	p	p	p									
Botaurus lentiginosus	American Bittern												
Bruchia ravenelii	Ravenel's Bruchia Moss										p		
Bulbostylis ciliatifolia	Capillary Hairsedge												
Burmannia biflora	Northern Burmannia												
Calidris canutus	Red Knot												
Calidris melanotos	Pectoral Sandpiper									p			
Calidris pusilla	Semipalmated Sandpiper												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Calidris subruficollis	Buff-breasted Sandpiper									p			
Callicladium haldanianum	Beautiful Branch Moss												
Calliphysalis carpenteri	Carpenter's Ground-cherry												
Callirhoe triangulata	Clustered Poppy-mallow										p	p	
Calopogon barbatus	Bearded Grass-pink												
Calopogon multiflorus	Many-flowered Grass-pink												
Calopogon oklahomensis	Oklahoma Grass-pink												
Camassia scilloides	Wild Hyacinth	p											
Cambarellus diminutus	Least Crayfish										p	p	p
Cambarellus lesliei	Angular Dwarf Crayfish										p		
Cambarus girardianus	Tanback Crayfish												
Cambarus rusticiformis	Depression Crayfish												
Cambarus striatus	Ambiguous Crayfish										p	p	
Campephilus principalis	Ivory-billed Woodpecker												
Campylopus angustiretis	Campylopus Moss												
Canis rufus	Red Wolf												
Canna flaccida	Bandana-of-the-Everglades												
Carcharhinus acronotus	Blacknose Shark												
Carcharhinus plumbeus	Sandbar Shark												
Carcharhinus porosus	Smalltail Shark												
Carcharias taurus	Sand Tiger Shark												
Cardamine angustata	Slender Toothwort	p										p	
Cardamine diphylla	Two-leaf Toothwort	p											
Caretta caretta	Loggerhead Sea Turtle												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Carex alata	Broadwing Sedge											p	
Carex albursina	White Bear Sedge												
Carex baltzellii	Baltzell's Sedge												
Carex bullata var. *greenei*	Button Sedge										p		
Carex communis	Fibrous-root Sedge	p											
Carex comosa	Bristly Sedge												
Carex crawei	Crawe's Sedge												
Carex dasycarpa	Velvet Sedge	p									p		
Carex elliottii	Elliott's Sedge												
Carex exilis	Coast Sedge												
Carex fissa var. *aristata*	Hammock Sedge												
Carex fissa var. *fissa*	Hammock Sedge												
Carex frankii	Frank's Sedge											p	
Carex gracilescens	Slender Sedge	p											
Carex gravida	Heavy-fruited Sedge												
Carex grayi	Asa Gray's Sedge							p		p		p	
Carex grisea	Inflated Narrowleaf Sedge	p										p	
Carex hyalina	Tissue Sedge							p					
Carex impressinervia	Impressed-nerved Sedge												
Carex jamesii	Nebraska Sedge	p										p	
Carex laxiflora	Broad Loose-flower Sedge	p											
Carex mesochorea	Midland Sedge												
Carex mitchelliana	Mitchell's Sedge	p									p		p
Carex molestiformis	Ozark Plateau Sedge	p										p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Carex normalis	Greater Straw Sedge	p									p	p	
Carex oligocarpa	Eastern Few-fruit Sedge	p											
Carex oxylepis var. *pubescens*	Sharp-scale Sedge	p						p	p			p	
Carex prasina	Drooping Sedge	p									p		p
Carex radiata	Stellate Sedge	p										p	
Carex reznicekii	Reznicek's Sedge												
Carex scoparia	Broom Sedge										p		
Carex seorsa	Weak Stellate Sedge										p	p	
Carex stipata var. *maxima*	Stalk-grain Sedge											p	
Carex striata var. *striata*	Southern Peatland Sedge												
Carex superata	Limestone Forest Sedge	p											
Carex torta	Twisted Sedge	p										p	
Carex verrucosa	Warty Sedge												
Carex virescens	Ribbed Sedge					p							
Carya laciniosa	Big Shellbark Hickory	p						p	p			p	
Castanea dentata (nut-bearing only)	American Chestnut												
Castilleja coccinea	Scarlet Indian-paintbrush												
Catocala atocala	Brou's Underwing						p				p		
Catocala delilah	Delilah Underwing												
Catocala miranda	A Noctuid Moth												
Catostomus commersonii	White Sucker												
Caupolicana electa	A Plasterer Bee												
Celithemis amanda	Amanda's Pennant												
Centronyx henslowii	Henslow's Sparrow												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Ceraclea spongillovorax	A Caddisfly												
Ceratophaga vicinella	Gopher Tortoise Shell Moth												
Ceratophyllum echinatum	Prickly Hornwort												
Ceratopteris pteridoides	Floating Antler Fern												
Chaetura pelagica	Chimney Swift												
Chamaecrista horizontalis	Florida Senna												
Chamaecyparis thyoides	Atlantic White Cedar										p		p
Charadrius melodus	Piping Plover												
Charadrius nivosus	Snowy Plover												
Charadrius wilsonia	Wilson's Plover												
Chasmanthium nitidum	Shiny Spikegrass										p		p
Chelone lyonii	Pink Turtlehead	p											
Chelone obliqua var. *obliqua*	Red Turtlehead										p		
Chelonia mydas	Green Sea Turtle												
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle												
Cheumatopsyche petersi	Peters' Cheumatopsyche Caddisfly												
Chimaphila maculata	Spotted Wintergreen												
Chimarra falculata	A Caddisfly												
Chlidonias niger	Black Tern												
Chordeiles minor	Common Nighthawk												
Chrosomus erythrogaster	Southern Redbelly Dace												
Cicindela marginipennis	Cobblestone Tiger Beetle												
Cicindela nigrior	Autumn Tiger Beetle												
Cicuta maculata var. *bolanderi*	Bolander's Water-hemlock										p	p	p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Cirsium lecontei	Leconte's Thistle												
Cirsium muticum	Swamp Thistle												
Cistothorus palustris marianae	Marian's Marsh Wren												
Cladium mariscoides	Twig Rush												
Cladrastis kentukea	Yellowwood	p											
Cleistesiopsis bifaria	Appalachian Small Spreading Pogonia										p		
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia												
Clematis glaucophylla	White-leaved Leather-flower	p									p		
Clematis subreticulata	Alabama Leatherflower	p	p									p	
Clinopodium arkansanum	Low Calamint												
Clinostomus funduloides	Rosyside Dace												
Coccyzus americanus	Yellow-billed Cuckoo						p		p	p	p		
Coelorachis cylindrica	Pitted Jointgrass												
Colinus virginianus	Northern Bobwhite												
Collinsonia anisata	Anise Horsebalm												
Collinsonia punctata	Spotted-leaf Horse-balm												
Cololejeunea setiloba	a liverwort										p		p
Coluber flagellum flagellum	Eastern Coachwhip												
Columbina passerina	Common Ground Dove												
Conopholis americana	American Cancer-root	p											
Conradina canescens	Blue-sage												
Convolvulus catesbyanus	Catesby's Bindweed	p											
Cordulegaster bilineata	Brown Spiketail												
Cordulegaster erronea	Tiger Spiketail										p		

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Coreopsis nudata	Georgia Tickseed												
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat						p	p	p	p	p	p	p
Cottus carolinae	Banded Sculpin												
Coturnicops noveboracensis	Yellow Rail												
Crataegus ashei	Ashe's Hawthorn												
Crataegus brachyacantha	Blueberry Hawthorn							p				p	
Crataegus mendosa	Albertville Hawthorn	p										p	
Crataegus mohrii	Mohr's Hawthorn	p											
Crataegus mollis var. *meridionalis*	Gallion Hawthorn	p											
Crataegus triflora	Three-flowered Hawthorn												
Creaserinus burrisi	Burris' Burrowing Crayfish												
Creaserinus danielae	Speckled Burrowing Crayfish												
Creaserinus fodiens	Digger Crayfish												
Creaserinus gordoni	Camp Shelby Burrowing Crayfish												
Crocanthemum arenicola	Coastal-sand Frostweed										p		
Crotalus adamanteus	Eastern Diamondback Rattlesnake												
Cryphaea ravenelii	Ravenel's Cryphaea Moss		p										
Cryptobranchus alleganiensis	Hellbender												
Crystallaria asprella	Crystal Darter												
Cunila origanoides	Common Dittany												
Cuphea viscosissima	Blue Waxweed	p											
Cuscuta glomerata	Clustered Dodder										p	p	
Cycleptus elongatus	Blue Sucker												
Cycleptus meridionalis	Southeastern Blue Sucker												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Cyclonaias tuberculata	Purple Wartyback												
Cylindrocolea rhizantha	a liverwort	p											
Cyperus articulatus	Jointed Flatsedge						p						
Cyperus bipartitus	Shining Flatsedge											p	
Cyperus drummondii	Green Flatsedge												
Cyperus elegans	Sticky Flatsedge						p						
Cyperus engelmannii	Slender Sand Flatsedge										p		
Cyperus flavicomus	White-edged Flatsedge												
Cyperus hystricinus	Bristly Flatsedge												
Cyperus lecontei	Le Conte's Flatsedge												
Cyperus neotropicalis	American Lipocarpha										p	p	
Cyperus ochraceus	Pond Flatsedge						p						
Cyperus refractus	Reflexed Flatsedge									p	p		
Cyperus thyrsiflorus	Southcentral Flatsedge	p											
Cyprinella callistia	Alabama Shiner												
Cyprinella galactura	Whitetail Shiner												
Cyprinella spiloptera	Spotfin Shiner												
Cyprinella whipplei	Steelcolor Shiner												
Cypripedium kentuckiense	Kentucky Yellow Lady's-slipper	p											
Cyprogenia aberti	Western Fanshell												
Dalea mountjoyae	White-tassels												
Decodon verticillatus	Hairy Swamp Loosestrife											p	
Deirochelys reticularia miaria	Western Chicken Turtle												
Deirochelys reticularia reticularia	Eastern Chicken Turtle												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Delphinium tricorne	Dwarf Larkspur	p	p										
Deparia acrostichoides	Silvery Spleenwort	p											
Dermochelys coriacea	Atlantic Leatherback Sea Turtle												
Desmodium ochroleucum	Creamflower Tick-trefoil	p											
Desmodium tenuifolium	Slim-leaf Tick-trefoil												
Desmognathus pascagoula	Pascagoula Dusky Salamander												
Desmognathus valentinei	Valentine's Southern Dusky Salamander												
Diaperia prolifera var. *prolifera*	Big-head Evax												
Dicentra cucullaria	Dutchman's Breeches	p											
Dichanthelium cryptanthum	Hidden-flower Witchgrass												
Dichanthelium curtifolium	Shortleaf Witchgrass										p		
Dichanthelium erectifolium	Erect-leaf Witchgrass										p		
Dichanthelium nudicaule	Naked-stemmed Panic Grass												
Dichanthelium wrightianum	Wright's Witchgrass												
Didiplis diandra	Water-purslane							p			p		
Didymoglossum membranaceum	Scale-edge Bristle Fern												
Didymoglossum petersii	Dwarf Filmy-fern			p									p
Diphasiastrum digitatum	Fan Club-moss	p											
Dirca palustris	Eastern Leatherwood	p											
Drepanolejeunea mosenii	a liverwort										p	p	p
Drymarchon couperi	Eastern Indigo Snake												
Dryobates borealis	Red-cockaded Woodpecker												
Dryopteris australis	Southern Woodfern											p	
Dryopteris celsa	Log Fern												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Dryopteris ludoviciana	Southern Shield Wood-fern										p		p
Echinodorus berteroi	Upright Burhead							p					
Egretta caerulea	Little Blue Heron						p		p	p	p		
Egretta rufescens	Reddish Egret												
Egretta tricolor	Tricolored Heron						p		p	p	p		
Elanoides forficatus	Swallow-tailed Kite						p		p		p		
Eleocharis albida	White Spikerush												
Eleocharis ambigens	Obscure Spikerush												
Eleocharis atropurpurea	Purple Spikerush												
Eleocharis bicolor	Small Spikerush												
Eleocharis cellulosa	Carolina Spikerush												
Eleocharis coloradoensis	Dwarf Spikerush												
Eleocharis compressa	Flat-stem Spikerush												
Eleocharis elliptica	Slender Spikerush												
Eleocharis elongata	Slim Spikerush												
Eleocharis erythropoda	Bald Spikerush							p		p			
Eleocharis geniculata	Capitate Spikerush												
Eleocharis intermedia	Matted Spikerush												
Eleocharis lanceolata	Lance-like Spikerush												
Eleocharis macrostachya	Creeping Spikerush							p				p	
Eleocharis melanocarpa	Black-fruit Spikerush												
Eleocharis microcarpa var. *microcarpa*	Small-fruit Spikerush										p		
Eleocharis ovata	Ovate Spikerush												
Eleocharis palustris	Creeping Spikerush												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Eleocharis parvula	Small Spikerush												
Eleocharis radicans	Rooted Spikerush										p		
Eleocharis robbinsii	Robbins Spikerush												
Eleocharis rostellata	Beaked Spikerush												
Eleocharis tenuis var. *pseudoptera*	Slender Spikerush										p		
Eleocharis tenuis var. *tenuis*	Slender Spikerush										p		
Eleocharis tricostata	Three-angle Spikerush	p										p	
Eleocharis wolfii	Wolf's Spikerush											p	
Elimia cylindracea	Cylinder Elimia												
Elionurus tripsacoides	Pan-american Balsamscale												
Ellipsaria lineolata	Butterfly												
Elliptio arca	Alabama Spike												
Elliptio arctata	Delicate Spike												
Elymus villosus	Hairy Wild Rye	p											
Enallagma concisum	Cherry Bluet												
Enallagma davisi	Sandhill Bluet												
Enallagma pallidum	Pale Bluet												
Enallagma pollutum	Florida Bluet												
Endotropis lanceolata	Lance-leaved Buckthorn												
Enemion biternatum	False Rue-anemone	p											
Enneacanthus gloriosus	Bluespotted Sunfish												
Epinephelus itajara	Atlantic Goliath Grouper												
Epioblasma brevidens	Cumberlandian Combshell												
Epioblasma penita	Southern Combshell												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Epioblasma triquetra	Snuffbox												
Epitheca spinosa	Robust Baskettail												
Equisetum arvense	Field Horsetail	p										p	
Eretmochelys imbricata	Hawksbill Sea Turtle												
Erigenia bulbosa	Harbinger-of-Spring	p											
Eriocaulon decangulare var. *latifolium*	Panhandle Pipewort												
Eriocaulon texense	Texas Pipewort												
Eryngium aquaticum	Marsh Rattlesnake-master												
Eryngium hookeri	Hooker's Coyote-thistle							p					
Eryngium species 1	Mocassin-master												
Erynnis martialis	Mottled Dusky Wing												
Erythrodiplax umbrata	Band-winged Dragonlet												
Erythronium albidum	White Trout-lily	p	p										
Erythronium americanum ssp. harperi	Yellow Trout-lily	p										p	
Etheostoma asprigene	Mud Darter												
Etheostoma blennioides	Greenside Darter												
Etheostoma duryi	Black Darter												
Etheostoma faulkneri	Yoknapatawpha Darter												
Etheostoma flabellare	Fantail Darter												
Etheostoma jessiae	Blueside Darter												
Etheostoma kennicotti	Stripetail Darter												
Etheostoma lachneri	Tombigbee Darter												
Etheostoma nigripinne	Blackfin Darter												
Etheostoma raneyi	Yazoo Darter												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Etheostoma rupestre	Rock Darter												
Etheostoma simoterum	Snubnose Darter												
Etheostoma zonifer	Backwater Darter												
Eumorpha intermedia	Intermediate Sphinx						p						
Eupatorium lancifolium	Lanceleaf Thoroughwort												
Euphagus carolinus	Rusty Blackbird						p		p	p	p		
Euphorbia discoidalis	Summer Spurge												
Euphorbia inundata var. *inundata*	Florida Pine Spurge												
Euphyes arpa	Palmetto Skipper												
Euphyes bayensis	Bay St. Louis Skipper												
Euphyes dukesi dukesi	Dukes' Skipper												
Euphyes pilatka	Palatka Skipper												
Euploca convolvulacea	Bindweed Heliotrope							p		p			
Eurycea longicauda longicauda	Longtail Salamander	p											
Eurycea lucifuga	Cave Salamander	p				p							
Eurycea sphagnicola	Bog Dwarf Salamander												
Eurynia dilatata	Spike												
Eustachys glauca	Saltmarsh Finger-grass												
Eustoma exaltatum	Tall Prairie-gentian						p						
Eutrichota gopheri	Gopher Tortoise Burrow Fly												
Falco sparverius paulus	Southeastern American Kestrel												
Farancia erytrogramma	Rainbow Snake												
Faxonius erichsonianus	Reticulate Crayfish												
Faxonius etnieri	Ets Crayfish												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Faxonius hartfieldi	Yazoo Crayfish												
Faxonius jonesi	Sucarnoochee River Crayfish												
Faxonius mississippiensis	Mississippi Crayfish												
Faxonius palmeri	Gray-Speckled Crayfish												
Faxonius placidus	Bigclaw Crayfish												
Faxonius validus	Powerful Crayfish												
Faxonius wrighti	Hardin Crayfish												
Faxonius yanahlindus	Spinywrist Crayfish												
Fissidens amoenus	Hall's Fissidens Moss										p		
Forestiera ligustrina	Upland Swamp Privet	p										p	
Fraxinus quadrangulata	Blue Ash	p											
Frullania donnellii	a liverwort										p		p
Fuirena longa	Coastal-plain Umbrella-sedge												
Fundulus blairae	Western Starhead Topminnow												
Fundulus dispar	Northern Starhead Topminnow								p				
Fundulus euryzonus	Broadstripe Topminnow												
Fundulus jenkinsi	Saltmarsh Topminnow												
Gaillardia aestivalis var. *flavovirens*	Lanceleaf Blanket Flower												
Galactia floridana	Florida Milkpea												
Galearis spectabilis	Showy Orchis	p											
Galium bermudense	Coastal Bedstraw												
Gelochelidon nilotica	Gull-billed Tern												
Gentiana catesbaei	Elliott's Gentian												
Gentianella occidentalis	Stiff Gentian												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Geothlypis formosa	Kentucky Warbler						p				p		
Gomphus australis	Clearlake Clubtail												
Gomphus dilatatus	Blackwater Clubtail												
Gomphus geminatus	Twin-striped Clubtail												
Gomphus hodgesi	Hodges' Clubtail												
Goodyera pubescens	Downy Rattlesnake-plantain	p	p										
Gopherus polyphemus	Gopher Tortoise												
Graptemys flavimaculata	Yellow-blotched Map Turtle										p		
Graptemys geographica	Common Map Turtle										p		
Graptemys gibbonsi	Pascagoula Map Turtle										p		
Graptemys nigrinoda	Black-knobbed Map Turtle										p		
Graptemys oculifera	Ringed Map Turtle										p		
Graptemys pearlensis	Pearl River Map Turtle										p		
Graptemys pulchra	Alabama Map Turtle										p		
Gratiola floridana	Florida Hedge-hyssop										p		p
Gratiola ramosa	Branched Hedge-hyssop										p		p
Gryllotalpa major	Prairie Mole Cricket												
Gymnocladus dioicus	Kentucky Coffeetree	p						p	p			p	
Gymnocthebius maureenae	Maureen's Gymnocthebius Minute Moss Beetle												
Gyrinophilus porphyriticus	Spring Salamander	p				p							
Habenaria quinqueseta	Michaux's Orchid												
Hackelia virginiana	Virginia Stickseed	p						p	p				
Haematopus palliatus	American Oystercatcher												
Halodule wrightii	Shoal-grass												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Halophila engelmannii	Engelmann's Sea-grass												
Hamamelis ovalis	Running Witch-hazel												
Hamiota perovalis	Orange-nacre Mucket												
Haploperla chukcho	Chukcho Stonefly												
Hedeoma drummondii var. *drummondii*	Drummond Pennyroyal												
Helanthium tenellum	Dwarf Burhead											p	
Helenium brevifolium	Shortleaf Sneezeweed												
Helianthus debilis ssp. tardiflorus	Gulf Coast Beach Sunflower												
Helianthus decapetalus	Thinleaf Sunflower												
Helianthus verticillatus	Whorled Sunflower												
Helmitheros vermivorum	Worm-eating Warbler												
Helopicus bogaloosa	Masked Springfly												
Hemidactylium scutatum	Four-toed Salamander	p											
Hepatica acutiloba	Sharp-lobed Hepatica	p											
Herbertia lahue	Herbertia												
Hesperapis oraria	Gulf Coast Solitary Bee												
Hesperia attalus	Dotted Skipper												
Heterandria formosa	Least Killifish												
Heteranthera dubia	Grassleaf Mud-plaintain												
Heteranthera missouriensis	Missouri Mud-plantain												
Heterodon simus	Southern Hognose Snake												
Heuchera macrorhiza	Giant Alumroot		p	p									
Heuchera parviflora	Little-flower Alumroot		p	p									
Hexalectris spicata	Crested Coralroot	p											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Hexastylis harperi	Large-flowered Heartleaf	p									p		
Hibiscus coccineus	Brilliant Hibiscus												
Hieracium venosum	Rattlesnake Hawkweed												
Hippocampus erectus	Lined Seahorse												
Hobbseus attenuatus	Pearl Rivulet Crayfish												
Hobbseus cristatus	Crested Rivulet Crayfish												
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish												
Hobbseus petilus	Tombigbee Rivulet Crayfish												
Hobbseus prominens	Prominence Rivulet Crayfish												
Hobbseus valleculus	Choctaw Rivulet Crayfish												
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish												
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly												
Hottonia inflata	Featherfoil									p			
Hybopsis amnis	Pallid Shiner												
Hydrastis canadensis	Golden-seal	p											
Hydroperla fugitans	Austin Springfly												
Hydrophyllum appendiculatum	Appendage Waterleaf	p											
Hydrophyllum macrophyllum	Large-leaf Water-leaf	p											
Hydroptila cretosa	A Caddisfly												
Hydroptila holzenthali	A Caddisfly												
Hydroptila homochitta	A Caddisfly												
Hydroptila molsonae	Molson's Microcaddisfly												
Hydroptila poirrieri	A Caddisfly												
Hydroptila tusculum	A Caddisfly												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Hylocichla mustelina	Wood Thrush						p				p		
Hymenocallis choctawensis	Florida Panhandle Spider-lily											p	
Hymenocallis occidentalis var. *eulae*	Woodland Spider-lily											p	
Hypericum canadense	Canadian St. John's-wort												
Hypericum myrtifolium	Myrtle-leaved St. Johnswort												
Hypoxis curtissii	Curtiss' Yellow Star-grass											p	
Ichthyomyzon castaneus	Chestnut Lamprey												
Ichthyomyzon unicuspis	Silver Lamprey												
Ictiobus niger	Black Buffalo												
Ilex cassine	Dahoon Holly												
Ipomoea brasiliensis	Railroad Morning-glory												
Ipomoea macrorhiza	Large-stem Morning-glory						p						
Iresine diffusa	Felicidad											p	
Iris brevicaulis	Lamance Iris											p	
Iris giganticaerulea	Giant Blue Iris												
Ischnura prognata	Furtive Forktail												
Isoetes appalachiana	Appalachian Quillwort										p		
Isoetes louisianensis	Louisiana Quillwort											p	
Isoetes melanopoda spp. *melanopoda*	Blackfoot Quillwort	p									p	p	
Isoetes melanopoda spp. *silvatica*	Eastern Blackfoot Quillwort	p									p	p	
Isoetes mississippiensis	Mississippi Quillwort											p	
Isoetes valida	Strong Quillwort										p	p	
Isogenoides varians	A Stonefly												
Isonychia berneri	A Mayfly												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Isurus oxyrinchus	Shortfin Mako Shark												
Ixobrychus exilis	Least Bittern												
Juglans cinerea	Butternut	p										p	
Juncus interior	Inland Rush									p			
Juniperus silicicola	Southern Red Cedar						p						
Lacunicambarus dalyae	Jewel Mudbug											p	
Lacunicambarus freudensteini	Banded Mudbug												
Lacunicambarus mobilensis	Lonesome Gravedigger										p	p	p
Lacunicambarus polychromatus	Paintedhand Mudbug												
Lampropeltis calligaster calligaster	Prairie Kingsnake												
Lampropeltis calligaster rhombomaculata	Mole Kingsnake												
Lampropeltis triangulum	Red Milk Snake												
Lampsilis fasciola	Wavy-rayed Lampmussel												
Lampsilis hydiana	Louisiana Fatmucket												
Lampsilis ovata	Pocketbook												
Lanius ludovicianus ludovicianus	Loggerhead Shrike												
Lanius ludovicianus migrans	Migrant Loggerhead Shrike												
Lapara phaeobrachycerous	Gulf Pine Sphinx												
Lasionycteris noctivagans	Silver-haired Bat						p		p	p	p		
Lasiurus cinereus	Hoary Bat						p		p	p	p	p	p
Lasiurus intermedius	Northern Yellow Bat										p	p	p
Lasmigona alabamensis	Alabama Heelsplitter												
Lasmigona complanata	White Heelslpitter												
Lasmigona costata	Flutedshell												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Laterallus jamaicensis	Black Rail												
Lejeunea bermudiana	a liverwort												
Lejeunea cladogyna	a liverwort										p		p
Lejeunea floridana	a liverwort	p									p		p
Lejeunea laetivirens	a liverwort											p	
Lepidochelys kempii	Kemp's Ridley Sea Turtle												
Lepidostoma morsei	Morse's Little Plain Brown Sedge												
Leptolucania ommata	Pygmy Killifish												
Lethenteron appendix	American Brook Lamprey												
Leuctra colemanorum	Yalobusha Needlefly												
Leuctra hicksi	Cypress Needlefly												
Liatris elegantula	Blazing-Star												
Ligumia recta	Black Sandshell												
Ligusticum canadense	Nondo Lovage	p											
Lilaeopsis carolinensis	Carolina Lilaeopsis						p						
Lilium iridollae	Panhangle Lily												
Lilium michiganense	Michigan Lily	p											
Limnodromus griseus	Short-billed Dowitcher												
Limnothlypis swainsonii	Swainson's Warbler						p				p		
Limosa fedoa	Marbled Godwit												
Lindera melissifolia	Pondberry							p					
Lindera subcoriacea	Bog Spicebush										p		p
Linum floridanum var. *chrysocarpum*	Yellow-fruited Flax												
Linum macrocarpum	Spring Hill Flax												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Liodytes rigida deltae	Delta Crayfish Snake												
Liodytes rigida sinicola	Gulf Crayfish Snake												
Lithasia armigera	Armored Rocksnail												
Lithasia hubrichti	Big Black Rocksnail												
Lithasia lima	Warty Rocksnail												
Lithasia verrucosa	Varicose Rocksnail												
Lithobates areolatus	Crawfish Frog												
Lithobates heckscheri	River Frog										p		
Lithobates sevosus	Dusky Gopher Frog												
Lithospermum caroliniense	Golden Puccoon										p		
Lithospermum latifolium	American Gromwell	p											
Lobelia boykinii	Boykin's Lobelia												
Ludwigia alata	Winged Seedbox												
Lupinus perennis ssp. *gracilis*	Sundail Lupine												
Luziola bahiensis	Brazilian Loziola												
Lycium carolinianum	Carolina Wolf-berry						p						
Lycopodioides ludovicianum	Gulf Spike-moss	p											
Lycopus amplectens	Sessile-leaved Bugleweed										p		p
Lythrurus fasciolaris	Scarlet Shiner												
Machimus polyphemi	Gopher Tortoise Robber Fly												
Macranthera flammea	Flame Flower										p		p
Macrhybopsis meeki	Sicklefin Chub												
Macrochelys temminckii	Alligator Snapping Turtle								p	p	p		
Macromia alleghaniensis	Allegheny River Cruiser												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Macromitrium richardii	Richard's Macromitrium Moss	p									p	p	p
Magnolia tripetala	Umbrella Magnolia												
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin												
Malus ioensis	Iowa Crabapple												
Manta birostris	Giant Manta Ray												
Marshallia angustifolia	Slim-leaf Barbara's-buttons												
Marshallia trinervia	Broadleaf Barbara's-buttons	p											
Marsilea vestita	Marsilea vestita							p					
Matelea baldwyniana	Baldwin's Milkvine	p											
Matelea decipiens	Old-field Milkvine	p											
Matelea obliqua	Climbing Milkweed	p											
Medionidus acutissimus	Alabama Moccasinshell												
Megalops atlanticus	Tarpon												
Melanerpes erythrocephalus	Red-headed Woodpecker						p		p		p		
Mertensia virginica	Virginia Bluebells	p									p	p	
Metzgeria uncigera	a liverwort										p	p	p
Micrurus fulvius	Eastern Coral Snake												
Mimulus ringens var. *ringens*	Square-stem Monkeyflower										p		
Miniellus boops	Bigeye Shiner												
Miniellus melanostomus	Blackmouth Shiner												
Miniellus sabinae	Sabine Shiner												
Mirabilis albida	Pale Umbrella-wort												
Mirabilis linearis	Narrowleaf Four-o'clock												
Mitreola angustifolia	Narrowleaf Miterwort												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Mobula hypostoma	Atlantic Pygmy Devil Ray												
Mobula tarapacana	Sicklefin Devil Ray												
Moxostoma anisurum	Silver Redhorse												
Moxostoma breviceps	Smallmouth Redhorse												
Moxostoma carinatum	River Redhorse												
Moxostoma duquesnei	Black Redhorse												
Muhlenbergia glabrifloris	Inland Muhly											p	
Muhlenbergia sylvatica	Woodland Muhly	p										p	
Muhlenbergia tenuiflora	Slender Muhly											p	
Mycteria americana	Wood Stork						p		p	p	p		
Myotis austroriparius	Southeastern Myotis	p				p	p	p	p	p	p	p	p
Myotis grisescens	Gray Bat					p	p		p	p	p	p	p
Myotis septentrionalis	Northern Long-eared Bat					p	p		p	p	p		p
Myotis sodalis	Indiana Bat					p	p		p	p	p	p	p
Myriophyllum laxum	Loose Water-milfoil												
Myriopteris alabamensis	Alabama Lipfern												
Myriopteris lanosa	Hairy Lipfern		p	p									
Nabalus asper	Rough Rattlesnake-root												
Nabalus barbatus	Barbed Rattlesnake-root	p											
Nannothemis bella	Elfin Skimmer												
Narcine bancroftii	Caribbean Electric Ray												
Necturus maculosus	Common Mudpuppy												
Negaprion brevirostris	Lemon Shark												
Nehalennia gracilis	Sphagnum Sprite												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Nemastylis geminiflora	Prairie Pleatleaf												
Nemocapnia carolina	Southern Snowfly												
Neogale frenata	Long-tailed Weasel	p											
Neonympha helicta	Helicta Satyr												
Neonympha mitchellii	Mitchell's Satyr												
Neoperla coxi	A Stonefly												
Neotrichia alabamensis	A Caddisfly												
Nerodia clarkii clarkii	Gulf Salt Marsh Snake												
Nestronia umbellula	Nestronia												
Neurocordulia yamaskanensis	Stygian Shadowdragon												
Neviusia alabamensis	Alabama Snow-wreath		p	p									
Nicrophorus americanus	American Burying Beetle												
Nothonotus rubrus	Bayou Darter												
Nothonotus rufilineatus	Redline Darter												
Notropis micropteryx	Highland Shiner												
Noturus exilis	Slender Madtom												
Noturus flavus	Stonecat												
Noturus gladiator	Piebald Madtom												
Noturus munitus	Frecklebelly Madtom												
Nuphar lutea ssp. ulvacea	West Florida Cow-Lily												
Nyctanassa violacea	Yellow-crowned Night-Heron						p		p	p	p		
Nycticorax nycticorax	Black-crowned Night-Heron						p		p	p	p		
Nymphaea mexicana	Banana Water-lily												
Nymphoides aquatica	Big Floating-heart												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Nymphoides cordata	Floating-heart												
Obovaria arkansasensis	Southern Hickorynut												
Obovaria c.f. unicolor	Undescribed Hickorynut												
Obovaria subrotunda	Round Hickorynut												
Obovaria unicolor	Alabama Hickorynut												
Oecetis daytona	A Caddisfly												
Oenothera capillifolia ssp. capillifolia	Berlandier's Sundrops												
Oenothera grandiflora	Large-flowered Evening-primrose											p	
Oenothera heterophylla ssp. orientalis	Alabama Evening-primrose												
Oenothera patriciae	Plains Gaura												
Oenothera triloba	Stemless Evening-primrose												
Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle												
Ophiogomphus australis	Southern Snaketail												
Ophisaurus attenuatus	Slender Glass Lizard												
Ophisaurus mimicus	Mimic Glass Lizard												
Opuntia macrorhiza	Twisted-spine Prickly-pear									p			
Orthochilus ecristatus	Giant Orchid												
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly												
Orthotrichum exiguum	Small Wood-bark Moss												
Oxalis grandis	Great Yellow Woodsorrel	p											
Oxalis macrantha	Tufted Yellow Woodsorrel												
Packera aurea	Golden Groundsel	p									p	p	
Packera paupercula var. *paupercula*	Balsam Ragwort												
Packera tomentosa	Woolly Groundsel												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Palafoxia callosa	Small Palafoxia												
Palhinhaea cernua	Nodding Clubmoss												
Panax quinquefolius	American Ginseng	p	p	p									
Papaipema maritima	Maritime Sunflower Borer												
Papaipema sp. 5	Rare Cane Borer Moth										p		
Paracymus seclusus	Seclusive Water Scavenger Beetle												
Parkesia motacilla	Louisiana Waterthrush						p		p	p	p		
Parnassia grandifolia	Largeleaf Grass-of-parnassus												
Paronychia baldwinii ssp. riparia	Perennial Dune Whitlow-wort										p		
Paronychia erecta var. *corymbosa*	Beach Sand-squares												
Paronychia erecta var. *erecta*	Beach Sand-squares												
Paronychia patula	Pineland Nailwort												
Paspalum monostachyum	Gulfdune Paspalum												
Passerina ciris	Painted Bunting						p						
Pellaea atropurpurea	Purple-stem Cliff-brake		p	p									
Penstemon canescens	Gray Beardtongue												
Penstemon pallidus	Pale Beardtongue												
Penstemon tenuis	Sharp-sepal Beardtongue							p	p				
Percina aurora	Pearl Darter												
Percina evides	Gilt Darter												
Percina kathae	Mobile Logperch												
Percina lenticula	Freckled Darter												
Percina phoxocephala	Slenderhead Darter												
Percina uranidea	Stargazing Darter												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Perideridia americana	Eastern Eulophus	p											
Perimyotis subflavus	Tricolored Bat	p		p		p	p		p	p	p	p	p
Perlesta lagoi	A Stonefly												
Peromyscus polionotus	Oldfield Mouse												
Persicaria hirsuta	Hairy Smartweed												
Peucaea aestivalis	Bachman's Sparrow												
Phacelia bipinnatifida	Fernleaf Phacelia	p	p	p									
Phacelia hirsuta	Hairy Scorpionweed									p			
Phacelia purshii	Miami-mist	p	p	p								p	
Phacelia ranunculacea	Blue Scorpionweed							p	p			p	
Phacelia strictiflora var. *robbinsii*	Prairie Scorpion-weed										p		
Phaseolus sinuatus	Sandhill Bean												
Phenacobius mirabilis	Suckermouth Minnow												
Philadelphus hirsutus	Streambank Mock-orange		p	p									
Philadelphus inodorus	Scentless Mock Orange	p	p	p									
Philonthus testudo	Western Gopher Tortoise Rove Beetle												
Phlox amplifolia	Largeleaf Phlox	p											
Physalis arenicola	Cypress-head Ground-cherry												
Physaria gracilis ssp. gracilis	Spreading Bladder-pod												
Pieris phillyreifolia	Climbing Fetter-bush												
Pinguicula planifolia	Chapman's Butterwort												
Pinguicula pumila	Dwarf Butterwort												
Pinus clausa	Sand Pine												
Pinus virginiana	Virginia Pine		p										

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Piranga olivacea	Scarlet Tanager (breeding population)												
Pituophis melanoleucus lodingi	Black Pine Snake												
Pituophis melanoleucus melanoleucus	Northern Pine Snake												
Pityopsis pinifolia	Taylor County Silk-grass												
Plagiochila floridana	Florida Leafy Liverwort	p									p	p	p
Plagiochila invisa	a liverwort										p	p	p
Plagiochila virginica var. *virginica*	a liverwort	p	p										
Plantago cordata	Heartleaf Plantain	p										p	
Platalea ajaja	Roseate Spoonbill						p		p	p	p		
Platanthera conspicua	Large White-fringe Orchid										p		
Platanthera integra	Yellow Fringeless Orchid												
Platanthera integrilabia	White Fringeless Orchid										p		
Platanthera lacera	Green-fringed Orchid	p											
Platanthera nivea	Snowy Orchid												
Platanthera peramoena	Purple Fringeless Orchid											p	
Platygobio gracilis	Flathead Chub												
Plestiodon anthracinus	Coal Skink	p											
Plethobasus cyphyus	Sheepnose												
Plethodon ventralis	Southern Zigzag Salamander	p				p							
Plethodon websteri clade A	Webster's Salamander Clade A	p											
Plethodon websteri clade B	Webster's Salamander Clade B	p											
Pleurobema beadleianum	Mississippi Pigtoe												
Pleurobema curtum	Black Clubshell												
Pleurobema decisum	Southern Clubshell												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Pleurobema perovatum	Ovate Clubshell												
Pleurobema riddellii	Louisiana Pigtoe												
Pleurobema sintoxia	Round Pigtoe												
Pleurobema taitianum	Heavy Pigtoe												
Pleurocera vestita	Brook Hornsnail												
Pleuronaia barnesiana	Tennessee Pigtoe												
Pleuronaia dolabelloides	Slabside Pearlymussel												
Pluvialis dominica	American Golden-Plover												
Pogonomyrmex badius	Florida Harvester Ant												
Polanisia tenuifolia	Slenderleaf Clammy-weed												
Polygonella americana	Southern Jointweed										p		
Polyodon spathula	Paddlefish												
Polytaenia nuttallii	Prairie Parsley												
Ponthieva racemosa	Shadow-witch Orchid	p										p	
Porphyrio martinicus	Purple Gallinule												
Potamilus alatus	Pink Heelsplitter												
Potamilus capax	Fat Pocketbook												
Potamilus inflatus	Inflated Heelsplitter												
Potamogeton epihydrus	Nuttall's Pondweed												
Potamogeton pusillus	Slender Pondweed												
Primula meadia	Shootingstar	p											
Pristis pectinata	Smalltooth Sawfish												
Pristis pristis	Largtooth Sawfish												
Procambarus ablusus	Hatchie River Crayfish												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Procambarus barbiger	Jackson Prairie Crayfish												
Procambarus bivittatus	Ribbon Crayfish												
Procambarus fitzpatricki	Spinytail Crayfish												
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish												
Procambarus hagenianus vesticeps	Egyptian Crayfish												
Procambarus lagniappe	Lagniappe Crayfish												
Procambarus lecontei	Mobile Crayfish												
Procambarus lylei	Shutispear Crayfish												
Procambarus mancus	Lame Crayfish											p	
Procambarus penni	Pearl Blackwater Crayfish												
Procambarus planirostris	Flatnose Crayfish											p	
Procambarus shermani	Gulf Crayfish												
Procambarus viaeviridis	Vernal Crayfish							p				p	
Protonotaria citrea	Prothonotary Warbler						p		p	p	p		
Prunus alabamensis	Alabama Black Cherry												
Pseudacris collinsorum	Collinses' Mountain Chorus Frog												
Pseudacris ornata	Ornate Chorus Frog												
Pseudemys alabamensis	Alabama Red-bellied Turtle												
Pseudiron centralis	White Sand-river Mayfly												
Pseudodontoides subvexus	Southern Creekmussel												
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper												
Pseudotriton montanus	Mud Salamander												
Pseudotriton ruber	Red Salamander												
Pteronotropis welaka	Bluenose Shiner												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Ptilimnium costatum	Eastern Bishopweed							p				p	
Ptychobranchus fasciolaris	Kidneyshell												
Puma concolor coryi	Florida Panther												
Pycnanthemum flexuosum	Narrowleaf Mountainmint												
Pycnanthemum pilosum	Whorled Mountainmint												
Quadrula nobilis	Gulf Mapleleaf												
Quadrula rumphiana	Ridged Mapleleaf												
Quercus arkansana	Arkansas Oak												
Quercus austrina	Bluff Oak												
Quercus macrocarpa var. *macrocarpa*	Bur Oak	p											
Quercus minima	Dwarf Live Oak												
Quercus myrtifolia	Myrtle-leaf Oak												
Quercus oglethorpensis	Oglethorpe's Oak	p										p	
Quercus palustris	Pin Oak	p										p	
Quiscalus quiscula	Common Grackle						p		p	p	p		
Radula sullivantii	a liverwort			p								p	
Rallus elegans	King Rail												
Ranunculus flabellaris	Yellow Water-crowfoot							p					
Ranunculus septentrionalis	Carolina Buttercup	p									p		
Raptoheptagenia cruenta	Wallace's Deepwater Mayfly												
Regina septemvittata	Queen Snake												
Rhadinaea flavilata	Pine Woods Snake												
Rhinichthys obtusus	Blacknose Dace												
Rhinoptera brasiliensis	Brazilian Cownose Ray												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Rhodobryum roseum	Rose Moss			p									
Rhododendron alabamense	Alabama Rhododendron	p									p	p	
Rhododendron arborescens	Smooth Azalea	p									p		
Rhododendron austrinum	Orange Azalea											p	
Rhododendron periclymenoides	Pink Azalea	p										p	
Rhynchosia latifolia	Prairie Rhynchosia												
Rhynchospora baldwinii	Baldwin's Beakrush												
Rhynchospora brachychaeta	West Indies Beakrush												
Rhynchospora careyana	Broad-fruit Horned Beakrush												
Rhynchospora cephalantha var. *attenuata*	Small-bunched Beaksedge												
Rhynchospora crinipes	Hairy-peduncled Beakrush										p		
Rhynchospora curtissii	Curtiss' Beakrush												
Rhynchospora decurrens	Swamp-forest Beakrush										p		p
Rhynchospora distans	Fasciculate Beakrush												
Rhynchospora divergens	White-seeded Beakrush												
Rhynchospora fernaldii	Fernald's Beakrush												
Rhynchospora galeana	Short-bristle Baldrush												
Rhynchospora harperi	Harper's Beakrush												
Rhynchospora harveyi	Harvey's Beakrush												
Rhynchospora leptocarpa	Slender-fruit Beaksedge												
Rhynchospora marliniana	Marlin's Beaksedge												
Rhynchospora perplexa	Pineland Beakrush												
Rhynchospora pinetorum	Small's Beakrush										p		

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Rhynchospora pleiantha	Brown Beakrush												
Rhynchospora torreyana	Torrey's Beakrush												
Rhynchospora tracyi	Tracy Beakrush												
Rhynchospora wrightiana	Wright's Beakrush												
Riccia warnstorfii	a liverwort											p	
Riparia riparia	Bank Swallow (breeding population)												
Rorippa aquatica	Lake-cress	p								p			
Rudbeckia grandiflora var. *alismifolia*	Rough Coneflower												
Rudbeckia subtomentosa	Sweet Coneflower												
Ruellia noctiflora	Night-flowering Wild-petunia						p						
Ruellia pinetorum	Pine Barren Ruellia												
Rynchops niger	Black Skimmer												
Sabatia campestris	Prairie Pink												
Sabatia decandra	Bartram's Rose-gentian												
Sabulina patula	Pitcher's Stitchwort												
Sageretia minutiflora	Tiny-leaved Buckthorn												
Sagittaria chapmanii	Chapman's Arrowhead						p					p	
Sagittaria isoetiformis	Slender Arrow-head												
Salix caroliniana	Carolina Willow										p		
Salvia chapmanii	Chapman's Sage	p											
Sapindus marginatus	Florida Soapberry												
Sarracenia alabamensis ssp. wherryi	Wherry's Sweet Pitcher-plant												
Sarracenia leucophylla	Whitetop Pitcherplant												
Sarracenia rosea	Purple Pitcherplant												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Scaphirhynchus albus	Pallid Sturgeon												
Scaphirhynchus platorynchus	Shovelnose Sturgeon												
Scaphirhynchus suttkusi	Alabama Sturgeon												
Sceptridium jenmanii	Alabama Grapefern												
Sceptridium lunarioides	Winter Grape-fern												
Schisandra glabra	Bay Starvine	p											
Schizachyrium maritimum	Gulf Bluestem												
Schizachyrium scoparium ssp. divergens	Eastern Little Bluestem										p		
Schizachyrium stoloniferum	Creeping Bluestem												
Schoenoplectiella purshiana	Weakstalk Bulrush										p		
Schoenoplectus americanus	Three-square Bulrush												
Schoenoplectus deltarum	Delta Bulrush												
Schoenoplectus subterminalis	Swaying Rush												
Schwalbea americana	Chaffseed												
Scirpus divaricatus	Spreading Bulrush	p									p	p	
Scirpus lineatus	Drooping Bulrush	p									p		
Scleria elliottii	Broad-leaved Hairy Nutrush	p										p	
Scleria georgiana	Georgia Nutrush												
Scleria nitida	Shining Nutrush												
Scleria verticillata	Low Nutrush												
Sclerolepis uniflora	Pink Bogbutton												
Scolopax minor	American Woodcock						p				p		
Scutellaria glabriuscula	Georgia Skullcap												
Scutellaria leonardii	Shale-barren Skullcap												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Sedum pulchellum	Rock Stonecrop					p							
Sedum ternatum	Wood Stonecrop	p	p	p							p	p	
Seiurus aurocapilla	Ovenbird (breeding population)												
Senega ambigua	Whorled Milkwort												
Senega appendiculata	Swamp Milkwort												
Senega balduinii	White Milkwort												
Senega curtissii	Curtiss' Milkwort												
Senega hookeri	Hooker's Milkwort												
Senega leptostachys	Georgia Milkwort												
Setaria corrugata	Coast Bristle Grass												
Setodes dixiensis	A Caddisfly												
Setophaga cerulea	Cerulean Warbler						p			p	p		
Setophaga discolor	Prairie Warbler												
Shipsa rotunda	Intrepid Forestfly												
Sideroxylon reclinatum ssp. reclinatum	Florida Bumelia							p					
Silene ovata	Ovate Catchfly	p	p										
Silene regia	Royal Catchfly	p	p										
Silphium confertifolium	Black Belt Rosinweed												
Silphium integrifolium var. *gattingeri*	Gattinger's Rosinweed												
Silphium pinnatifidum	Tansy Rosinweed												
Silphium simpsonii	Simpson's Rosinweed	p											
Silphium terebinthinaceum var. *luciae-brauniae*	Lucy Braun's Prairie Dock												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Sitta pusilla	Brown-headed Nuthatch												
Smilax hugeri	Huger's Carrion-flower	p										p	
Smilax pulverulenta	Downy Carrion-flower	p											
Solanum pseudogracile	Glowing Nightshade						p						
Solidago auriculata	Eared Goldenrod												
Solidago brachyphylla	Dixie Goldenrod												
Solidago flaccidifolia	Appalachian Goldenrod	p											
Solidago juncea	Early Goldenrod												
Solidago rigidiuscula	Showy Goldenrod												
Solidago sphacelata	Autumn Goldenrod		p	p									
Somatochlora georgiana	Coppery Emerald												
Somatochlora provocans	Treetop Emerald												
Sophronanthe hispida	Pineland Hedge-Hyssop												
Sorex longirostris	Southeastern Shrew						p		p	p	p	p	p
Speyeria diana	Diana												
Sphaerocarpos donnellii	a liverwort												
Sphaerosporoceros adscendens	a hornwort										p		
Sphagnum carolinianum	Carolina Peatmoss										p		p
Sphagnum cyclophyllum	Circular-leaf Peatmoss										p		p
Sphagnum fitzgeraldii	Fitzgerald's Peatmoss										p		p
Sphenopholis penyslvanica	Swamp Wedgescale												
Sphyrna lewini	Scalloped Hammerhead												
Sphyrna mokarran	Great Hammerhead												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Spilogale putorius	Eastern Spotted Skunk	p					p			p	p		
Spinadis simplex	Wallace's Deepwater Mayfly												
Spiraea tomentosa	Steeplebush										p		
Spiranthes brevilabris	Texas Ladies'-tresses												
Spiranthes eatonii	Eaton's Ladies'-tresses												
Spiranthes floridana	Florida Ladies'-tresses												
Spiranthes lacera var. *gracilis*	Southern Slender Ladies'-tresses												
Spiranthes longilabris	Giant Spiral Ladies'-tresses												
Spiranthes magnicamporum	Great Plains Ladies'-tresses												
Spiranthes ovalis var. *ovalis*	Lesser Ladies'-tresses	p						p	p		p	p	
Spizella pusilla	Field Sparrow												
Sporobolus ozarkanus	Ozark Dropseed												
Stellaria corei	Tennessee Chickweed												
Stellaria pubera	Giant Chickweed	p										p	
Stenanthium gramineum	Eastern Featherbells	p											
Stenanthium texanum	Pine Barren Deathcamas												
Sterna hirundo	Common Tern (breeding population)												
Sternula antillarum antillarum	Coastal Least Tern												
Sternula antillarum athalassos	Interior Least Tern									p			
Stewartia ovata	Mountain Camellia	p											
Stizostedion canadense	Sauger												
Stizostedion sp. cf. vitreum	Southern Walleye												
Strophitus pascagoulaensis	Pascagoula Creekshell												
Strophitus radiatus	Rayed Creekshell												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Strophitus undulatus	Creeper												
Sturnella magna	Eastern Meadowlark												
Stylisma aquatica	Water Southern Morning-glory												
Stylisma pickeringii ssp. pattersonii	Pickering Morning-glory												
Stylisma pickeringii ssp. pickeringii	Pickering Morning-glory												
Stylogomphus albistylus	Eastern Least Clubtail												
Stylurus potulentus	Yellow-sided Clubtail												
Stylurus townesi	Townes' Clubtail												
Swida alternifolia	Alternate-leaf Dogwood	p											
Symphyotrichum ericoides var. *ericoides*	White Heath Aster												
Symphyotrichum oblongifolium	Aromatic Aster		p										
Symphyotrichum oolentangiense	Sky Blue Aster												
Symphyotrichum pratense	Barrens Silky Aster												
Symphyotrichum puniceum var. *puniceum*	Purple-stem Aster										p		
Symphyotrichum puniceum var. *scabricaule*	Rough-stem Aster										p		
Syngonanthus flavidulus	Yellow Pipewort												
Syringodium filiforme	Manatee-grass												
Tachopteryx thoreyi	Gray Petaltail										p		
Taenidia integerrima	Yellow Pimpernel	p											
Tetraloniella albata	White-clothed Longhorn												
Thalasseus maximus	Royal Tern												
Thalasseus sandvicensis	Sandwich Tern												
Thalassia testudina	Turtle-grass												
Thalia dealbata	Powdery Thalia									p			

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
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Thalictrum debile	Southern Meadowrue	p										p	
Thalictrum dioicum	Early Meadowrue	p											
Thalictrum macrostylum	Small-leaf Meadowrue												
Thelesperma filifolium	Stiff Greenthread												
Theliderma cylindrica cylindrica	Rabbitsfoot												
Theliderma metanevra	Monkeyface												
Thryomanes bewickii	Bewick's Wren												
Tiarella cordifolia	Heart-leaved Foam-flower	p	p	p									
Tomostima cuneifolia	Wedgeleaf Whitlow-grass												
Tomostima reptans	Carolina Whitlow-grass												
Tortula porteri	Porter's Screw Moss	p	p										
Toxolasma lividum	Purple Lilliput												
Trachyxiphium hypnaceum	Trachyxiphium Moss												
Tradescantia ernestiana	Ernest's Spider-wort												
Tradescantia hirsuticaulis	Hairy-stem Spiderwort												
Trautvetteria applanata	Ozark Tassel-rue	p											
Trichechus manatus latirostris	Florida Manatee												
Tridens carolinianus	Carolina Fluff Grass										p		
Tridens chapmanii	Chapman's Redtop												
Trifolium carolinianum	Carolina Clover												
Trifolium reflexum	Buffalo Clover	p										p	
Triglochin striata	Arrow-grass						p						
Trillium flexipes	Drooping Trillium												
Trillium foetidissimum	Fetid Trillium	p											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Trillium ludovicianum	Louisiana Trillium	p										p	
Trillium pusillum var. *ozarkanum*	Ozark Least Trillium												
Tringa flavipes	Lesser Yellowlegs									p			
Tringa semipalmata	Willet												
Triphora trianthophoros var. *trianthophorus*	Nodding Pogonia	p										p	
Ulmus serotina	September Elm											p	
Uniomerus declivis	Tapered Pondhorn												
Ursus americanus	Black Bear						p	p	p	p	p	p	p
Ursus americanus luteolus	Louisiana Black Bear						p	p	p	p	p	p	p
Utricularia olivacea	Piedmont Bladderwort												
Utricularia purpurea	Purple Bladderwort												
Utterbackiana hartfieldorum	Cypress Floater												
Uvularia floridana	Florida Bellwort											p	
Vaccinium pallidum	Early Lowbush Blueberry												
Vaccinium tenellum	Small Black Blueberry												
Vandenboschia boschiana	Appalachian Bristle Fern	p	p	p									
Verbena xutha	Gulf Vervain						p	p		p		p	
Vermivora chrysoptera	Golden-winged Warbler						p		p	p	p		
Veronicastrum virginicum	Culver's-root	p											
Viburnum acerifolium	Mapleleaf Viburnum												
Villosa vanuxemensis	Mountain Creekshell												
Vireo gilvus	Warbling Vireo						p		p	p	p		
Vittaria appalachiana	Appalachian Vittaria		p	p							p		
Xyris chapmanii	Chapman's Yellow-eyed-grass										p		

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		3.1	3.1	3.1	3.1	3.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Scientific Name	**Common Name**	ROCK OUTCROPS	SOUTHERN INTERIOR SINKHOLE WALL	SCP CLIFF	EGCP DRY CHALK BLUFF	CAVES	MS RIVER LOW FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER HIGH FLOODPLAIN (BOTTOMLAND) FOREST	MS RIVER BOTTOMLAND DEPRESSION	MS RIVER RIPARIAN FOREST	EGCP LARGE RIVER FLOODPLAIN FOREST	EGCP SMALL STREAM AND FLOODPLAIN FOREST	SCP BLACKWATER RIVER FLOODPLAIN FOREST
Xyris drummondii	Drummond's Yellow-eyed-grass												
Xyris flabelliformis	Savannah Yellow-eyed-grass												
Xyris louisianica	Kral's Yellow-eyed Grass										p		
Xyris scabrifolia	Harper's Yellow-eyed Grass										p		
Xyris serotina	Acid-swamp Yellow-eyed-grass												
Yeatesia viridiflora	Green-flower Yeatesia	p	p	p								p	
Zapus hudsonius	Meadow Jumping Mouse										p		
Zephyranthes simpsonii	Rainlily												

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
Scientific Name	**Common Name**	SCP NONRIVERINE BASIN SWAMP	SCP NONRIVERINE CYPRESS DOME	SCP SEEPAGE SWAMP AND BAYGALL	EGCP NEAR-COAST PINE FLATWOODS	EGCP SAVANNAS AND WET PRAIRIES	SCP HERBACEOUS SEEPS AND BOGS	EGCP NORTHERN SEEPAGE SWAMP	SCP BLACKLAND PRAIRIE AND WOODLANDS	INLAND FRESHWATER MARSH
Accipiter striatus	Sharp-shinned Hawk (breeding population)									
Acentrella alachua	A Mayfly									
Acer leucoderme	Chalk Maple									
Acipenser desotoi	Gulf Sturgeon									
Acipenser fulvescens	Lake Sturgeon									
Actaea racemosa	Black Bugbane									
Actinonaias ligamentina	Mucket									
Adiantum capillus-veneris	Southern Maidenhair-fern									
Aesculus glabra var. *glabra*	Ohio Buckeye									
Aeshna umbrosa	Shadow Darner									
Aetobatus narinari	Whitespotted Eagle Ray									
Agalinis auriculata	Earleaf False Foxglove				p					
Agalinis filicaulis	Thread-stem False Foxglove							p	p	
Agalinis homalantha	San Antonio False-foxglove									p
Agalinis linifolia	Flaxleaf False Foxglove		p	p				p	p	
Agalinis oligophylla	Ridge-stem False-foxglove				p		p		p	
Agalinis skinneriana	Pale False Foxglove						p			
Agarodes libalis	Spring-loving Psiloneuran Caddisfly			p						
Agarodes stannardi	Stannard's Agarodes Caddisfly									
Agastache nepetoides	Yellow Giant-hyssop									
Agrimonia incisa	Incised Groovebur									
Alburnops candidus	Silverside Shiner									
Alburnops chalybaeus	Ironcolor Shiner									
Alburnops edwardraneyi	Fluvial Shiner									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
Scientific Name	**Common Name**	SCP NONRIVERINE BASIN SWAMP	SCP NONRIVERINE CYPRESS DOME	SCP SEEPAGE SWAMP AND BAYGALL	EGCP NEAR-COAST PINE FLATWOODS	EGCP SAVANNAS AND WET PRAIRIES	SCP HERBACEOUS SEEPS AND BOGS	EGCP NORTHERN SEEPAGE SWAMP	SCP BLACKLAND PRAIRIE AND WOODLANDS	INLAND FRESHWATER MARSH
Alisma subcordatum	Broad-leaved Water-plantain									
Allocapnia aurora	Aurora Snowfly									
Allocapnia polemistis	Black Warrior Snowfly									
Alloperla natchez	Natchez Stonefly									
Alophia drummondii	Purple Pleat-leaf									
Alosa alabamae	Alabama Shad									
Alosa chrysochloris	Skipjack Herring									
Amaranthus australis	Southern Amaranth									
Ambloplites rupestris	Rock Bass									
Amblyomma tuberculatum	Gopher Tortoise Tick									
Amblyscirtes alternata	Least Florida Skipper				p	p				
Amblyscirtes reversa	Reversed Roadside Skipper	p		p						
Ambystoma texanum	Smallmouth Salamander									
Ambystoma tigrinum	Tiger Salamander								p	
Ammocrypta clara	Western Sand Darter									
Ammodramus savannarum	Grasshopper Sparrow								p	
Ammospiza leconteii	LeConte's Sparrow					p	p		p	
Ammospiza maritima	Seaside Sparrow									
Ammospiza nelsoni	Nelson's Sparrow									
Amphiachyris dracunculoides	Broom-snakeroot				p					
Amphiagrion saucium	Eastern Red Damsel			p						
Amphinemura alabama	Alabama Forestfly									
Amphiuma pholeter	One-toed Amphiuma			p						
Amsonia ludoviciana	Louisiana Bluestar									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Anas acuta	Northern Pintail									p
Anas fulvigula	Mottled Duck									p
Andropogon dealbatus	Wetland White Bluestem			p				p	p	
Andropogon perangustatus	Narrow-leaved Bluestem							p	p	
Andropogon tracyi	Tracy's Bluestem									
Aneides aeneus	Green Salamander									
Anemone caroliniana	Carolina Anemone				p					
Anemone quinquefolia	Wood Anemone									
Anguilla rostrata	American Eel									
Anthoceros punctatus	a hornwort		p	p						
Antigone canadensis pulla	Mississippi Sandhill Crane				p	p	p			p
Antrostomus carolinensis	Chuck-will's-widow				p				p	
Antrostomus vociferus	Eastern Whip-poor-will									
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle									
Aphyllon uniflorum	One-flowered Broomrape									
Apios priceana	Price's Potato-bean									
Aplectrum hyemale	Puttyroot									
Aquila chrysaetos	Golden Eagle				p				p	
Aquilegia canadensis	Wild Columbine									
Arabidopsis lyrata ssp. *lyrata*	Lyreleaf Rockcress									
Arabis patens	Spreading Rockcress									
Aralia racemosa	American Spikenard									
Archidium hallii	Hall's Archidium Moss									
Archosargus rhomboidalis	Western Atlantic Seabream									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Arcidens confragosus	Rock Pocketbook									
Arctosa sanctaerosae	Santa Rosa Wolf Spider									
Arigomphus lentulus	Stillwater Clubtail									
Arigomphus villosipes	Unicorn Clubtail									
Aristida beyrichiana	Southern Wiregrass								p	
Aristida mohrii	Mohr's Three-awn Grass									
Aristida simpliciflora	Southern Three-awn Grass							p	p	
Aristida spiciformis	Pine Barren Three-awn Grass								p	
Aristida tenuispica	Southern Arrowfeather								p	
Arnoglossum reniforme	Great Indian-plantain									
Asclepias hirtella	Green Milkweed				p		p			
Asclepias incarnata	Swamp Milkweed									
Asclepias purpurascens	Purple Milkweed			p						
Asio flammeus	Short-eared Owl								p	p
Aspidogyne querceticola	Low Erythrodes									
Asplenium pinnatifidum	Lobed Spleenwort									
Asplenium resiliens	Black-stem Spleenwort									
Asplenium rhizophyllum	Walking-fern Spleenwort									
Asplenium trichomanes	Maidenhair Spleenwort									
Asplenium x kentuckiense	Kentucky Spleenwort									
Astragalus canadensis var. *canadensis*	Canadian Milkvetch				p					
Astragalus distortus var. *engelmannii*	Engelmann's Bent Milk-vetch									
Astragalus obcordatus	Florida Milkvetch									
Atractosteus spatula	Alligator Gar									p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Atrytone arogos arogos	Arogos Skipper									
Atrytonopsis loammi	Loammi Skipper				p	p				
Attaneuria ruralis	Giant Stone									
Automeris louisiana	Louisiana Eyed Silkmoth					p	p			p
Avicennia germinans	Black Mangrove									
Aythya affinis	Lesser Scaup									
Baetisca escambiensis	A Mayfly									
Bagisara brouana	A Noctuid Moth					p	p			
Balduina angustifolia	Coastal Plain Honeycomb-head							p		
Baptisia nuttalliana	Nuttall's Wild Indigo						p			
Baptisia sphaerocarpa	Green Wild Indigo								p	
Bidens trichosperma	Tickseed Sunflower									p
Boltonia apalachicolensis	Apalachicola Doll's-Daisy									p
Bombus fraternus	Southern Plains Bumble Bee								p	
Bombus pensylvanicus	American Bumblebee								p	
Bombus variabilis	Variable Cuckoo Bumble Bee								p	
Borodinia canadensis	Sicklepod									
Botaurus lentiginosus	American Bittern									p
Bruchia ravenelii	Ravenel's Bruchia Moss									
Bulbostylis ciliatifolia	Capillary Hairsedge									
Burmannia biflora	Northern Burmannia		p					p	p	
Calidris canutus	Red Knot									
Calidris melanotos	Pectoral Sandpiper									p
Calidris pusilla	Semipalmated Sandpiper									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Calidris subruficollis	Buff-breasted Sandpiper								p	
Callicladium haldanianum	Beautiful Branch Moss		p							
Calliphysalis carpenteri	Carpenter's Ground-cherry									
Callirhoe triangulata	Clustered Poppy-mallow					p				
Calopogon barbatus	Bearded Grass-pink							p	p	
Calopogon multiflorus	Many-flowered Grass-pink	p							p	
Calopogon oklahomensis	Oklahoma Grass-pink									
Camassia scilloides	Wild Hyacinth				p		p			
Cambarellus diminutus	Least Crayfish	p		p						
Cambarellus lesliei	Angular Dwarf Crayfish	p		p						
Cambarus girardianus	Tanback Crayfish									
Cambarus rusticiformis	Depression Crayfish									
Cambarus striatus	Ambiguous Crayfish									
Campephilus principalis	Ivory-billed Woodpecker									
Campylopus angustiretis	Campylopus Moss		p					p		
Canis rufus	Red Wolf									
Canna flaccida	Bandana-of-the-Everglades								p	p
Carcharhinus acronotus	Blacknose Shark									
Carcharhinus plumbeus	Sandbar Shark									
Carcharhinus porosus	Smalltail Shark									
Carcharias taurus	Sand Tiger Shark									
Cardamine angustata	Slender Toothwort									
Cardamine diphylla	Two-leaf Toothwort									
Caretta caretta	Loggerhead Sea Turtle									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Carex alata	Broadwing Sedge			p						p
Carex albursina	White Bear Sedge									
Carex baltzellii	Baltzell's Sedge									
Carex bullata var. *greenei*	Button Sedge			p						
Carex communis	Fibrous-root Sedge									
Carex comosa	Bristly Sedge									
Carex crawei	Crawe's Sedge				p					
Carex dasycarpa	Velvet Sedge									
Carex elliottii	Elliott's Sedge			p				p		
Carex exilis	Coast Sedge							p		
Carex fissa var. aristata	Hammock Sedge			p					p	
Carex fissa var. *fissa*	Hammock Sedge				p					
Carex frankii	Frank's Sedge									
Carex gracilescens	Slender Sedge									
Carex gravida	Heavy-fruited Sedge				p					
Carex grayi	Asa Gray's Sedge			p						
Carex grisea	Inflated Narrowleaf Sedge									
Carex hyalina	Tissue Sedge									
Carex impressinervia	Impressed-nerved Sedge									
Carex jamesii	Nebraska Sedge				p					
Carex laxiflora	Broad Loose-flower Sedge									
Carex mesochorea	Midland Sedge									
Carex mitchelliana	Mitchell's Sedge	p		p						p
Carex molestiformis	Ozark Plateau Sedge									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Carex normalis	Greater Straw Sedge				p					
Carex oligocarpa	Eastern Few-fruit Sedge									
Carex oxylepis var. *pubescens*	Sharp-scale Sedge									
Carex prasina	Drooping Sedge	p								
Carex radiata	Stellate Sedge									
Carex reznicekii	Reznicek's Sedge									
Carex scoparia	Broom Sedge		p	p						p
Carex seorsa	Weak Stellate Sedge		p	p						p
Carex stipata var. maxima	Stalk-grain Sedge	p	p	p						p
Carex striata var. striata	Southern Peatland Sedge	p		p					p	
Carex superata	Limestone Forest Sedge									
Carex torta	Twisted Sedge									
Carex verrucosa	Warty Sedge	p	p						p	
Carex virescens	Ribbed Sedge									
Carya laciniosa	Big Shellbark Hickory									
Castanea dentata (nut-bearing only)	American Chestnut									
Castilleja coccinea	Scarlet Indian-paintbrush				p					
Catocala atocala	Brou's Underwing									
Catocala delilah	Delilah Underwing									
Catocala miranda	A Noctuid Moth									
Catostomus commersonii	White Sucker									
Caupolicana electa	A Plasterer Bee									
Celithemis amanda	Amanda's Pennant			p						
Centronyx henslowii	Henslow's Sparrow				p	p	p			

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Ceraclea spongillovorax	A Caddisfly									
Ceratophaga vicinella	Gopher Tortoise Shell Moth									
Ceratophyllum echinatum	Prickly Hornwort									
Ceratopteris pteridoides	Floating Antler Fern									
Chaetura pelagica	Chimney Swift									
Chamaecrista horizontalis	Florida Senna									
Chamaecyparis thyoides	Atlantic White Cedar	p	p	p						
Charadrius melodus	Piping Plover									
Charadrius nivosus	Snowy Plover									
Charadrius wilsonia	Wilson's Plover									
Chasmanthium nitidum	Shiny Spikegrass	p		p						
Chelone lyonii	Pink Turtlehead									
Chelone obliqua var. obliqua	Red Turtlehead			p						
Chelonia mydas	Green Sea Turtle									
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle									
Cheumatopsyche petersi	Peters' Cheumatopsyche Caddisfly									
Chimaphila maculata	Spotted Wintergreen									
Chimarra falculata	A Caddisfly									
Chlidonias niger	Black Tern									p
Chordeiles minor	Common Nighthawk								p	
Chrosomus erythrogaster	Southern Redbelly Dace									
Cicindela marginipennis	Cobblestone Tiger Beetle									
Cicindela nigrior	Autumn Tiger Beetle									
Cicuta maculata var. *bolanderi*	Bolander's Water-hemlock				p	p			p	

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Cirsium lecontei	Leconte's Thistle							p	p	
Cirsium muticum	Swamp Thistle								p	
Cistothorus palustris marianae	Marian's Marsh Wren									
Cladium mariscoides	Twig Rush		p						p	
Cladrastis kentukea	Yellowwood									
Cleistesiopsis bifaria	Appalachian Small Spreading Pogonia			p						p
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia							p	p	
Clematis glaucophylla	White-leaved Leather-flower									
Clematis subreticulata	Alabama Leatherflower			p						
Clinopodium arkansanum	Low Calamint				p					
Clinostomus funduloides	Rosyside Dace									
Coccyzus americanus	Yellow-billed Cuckoo	p	p	p	p			p		
Coelorachis cylindrica	Pitted Jointgrass									
Colinus virginianus	Northern Bobwhite								p	
Collinsonia anisata	Anise Horsebalm									
Collinsonia punctata	Spotted-leaf Horse-balm									
Cololejeunea setiloba	a liverwort	p	p	p						p
Coluber flagellum flagellum	Eastern Coachwhip								p	
Columbina passerina	Common Ground Dove								p	
Conopholis americana	American Cancer-root									
Conradina canescens	Blue-sage									
Convolvulus catesbyanus	Catesby's Bindweed						p			
Cordulegaster bilineata	Brown Spiketail									p
Cordulegaster erronea	Tiger Spiketail			p						

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Coreopsis nudata	Georgia Tickseed	p	p	p					p	
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	p	p	p		p		p		p
Cottus carolinae	Banded Sculpin									
Coturnicops noveboracensis	Yellow Rail				p	p	p			p
Crataegus ashei	Ashe's Hawthorn				p		p			
Crataegus brachyacantha	Blueberry Hawthorn									
Crataegus mendosa	Albertville Hawthorn									
Crataegus mohrii	Mohr's Hawthorn									
Crataegus mollis var. *meridionalis*	Gallion Hawthorn				p		p			
Crataegus triflora	Three-flowered Hawthorn						p			
Creaserinus burrisi	Burris' Burrowing Crayfish					p	p			
Creaserinus danielae	Speckled Burrowing Crayfish					p	p			
Creaserinus fodiens	Digger Crayfish									
Creaserinus gordoni	Camp Shelby Burrowing Crayfish					p	p			
Crocanthemum arenicola	Coastal-sand Frostweed									
Crotalus adamanteus	Eastern Diamondback Rattlesnake				p					
Cryphaea ravenelii	Ravenel's Cryphaea Moss									
Cryptobranchus alleganiensis	Hellbender									
Crystallaria asprella	Crystal Darter									
Cunila origanoides	Common Dittany									
Cuphea viscosissima	Blue Waxweed				p					
Cuscuta glomerata	Clustered Dodder									
Cycleptus elongatus	Blue Sucker									
Cycleptus meridionalis	Southeastern Blue Sucker									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Cyclonaias tuberculata	Purple Wartyback									
Cylindrocolea rhizantha	a liverwort									
Cyperus articulatus	Jointed Flatsedge									
Cyperus bipartitus	Shining Flatsedge									
Cyperus drummondii	Green Flatsedge								p	
Cyperus elegans	Sticky Flatsedge									
Cyperus engelmannii	Slender Sand Flatsedge									
Cyperus flavicomus	White-edged Flatsedge									
Cyperus hystricinus	Bristly Flatsedge									
Cyperus lecontei	Le Conte's Flatsedge									
Cyperus neotropicalis	American Lipocarpha									
Cyperus ochraceus	Pond Flatsedge									
Cyperus refractus	Reflexed Flatsedge									p
Cyperus thyrsiflorus	Southcentral Flatsedge									
Cyprinella callistia	Alabama Shiner									
Cyprinella galactura	Whitetail Shiner									
Cyprinella spiloptera	Spotfin Shiner									
Cyprinella whipplei	Steelcolor Shiner									
Cypripedium kentuckiense	Kentucky Yellow Lady's-slipper									
Cyprogenia aberti	Western Fanshell									
Dalea mountjoyae	White-tassels								p	
Decodon verticillatus	Hairy Swamp Loosestrife			p						
Deirochelys reticularia miaria	Western Chicken Turtle									
Deirochelys reticularia reticularia	Eastern Chicken Turtle									

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Delphinium tricorne	Dwarf Larkspur				p					
Deparia acrostichoides	Silvery Spleenwort									
Dermochelys coriacea	Atlantic Leatherback Sea Turtle									
Desmodium ochroleucum	Creamflower Tick-trefoil									
Desmodium tenuifolium	Slim-leaf Tick-trefoil								p	
Desmognathus pascagoula	Pascagoula Dusky Salamander			p						
Desmognathus valentinei	Valentine's Southern Dusky Salamander			p						
Diaperia prolifera var. prolifera	Big-head Evax				p					
Dicentra cucullaria	Dutchman's Breeches									
Dichanthelium cryptanthum	Hidden-flower Witchgrass									p
Dichanthelium curtifolium	Shortleaf Witchgrass			p				p		
Dichanthelium erectifolium	Erect-leaf Witchgrass	p	p						p	
Dichanthelium nudicaule	Naked-stemmed Panic Grass							p	p	
Dichanthelium wrightianum	Wright's Witchgrass	p	p					p	p	
Didiplis diandra	Water-purslane		p	p				p	p	p
Didymoglossum membranaceum	Scale-edge Bristle Fern									
Didymoglossum petersii	Dwarf Filmy-fern			p						
Diphasiastrum digitatum	Fan Club-moss									
Dirca palustris	Eastern Leatherwood									
Drepanolejeunea mosenii	a liverwort	p								
Drymarchon couperi	Eastern Indigo Snake									
Dryobates borealis	Red-cockaded Woodpecker				p					
Dryopteris australis	Southern Woodfern		p	p						
Dryopteris celsa	Log Fern			p						

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Dryopteris ludoviciana	Southern Shield Wood-fern	p	p	p						
Echinodorus berteroi	Upright Burhead									
Egretta caerulea	Little Blue Heron	p	p							p
Egretta rufescens	Reddish Egret									
Egretta tricolor	Tricolored Heron	p	p							p
Elanoides forficatus	Swallow-tailed Kite	p	p							p
Eleocharis albida	White Spikerush								p	
Eleocharis ambigens	Obscure Spikerush									
Eleocharis atropurpurea	Purple Spikerush								p	
Eleocharis bicolor	Small Spikerush								p	
Eleocharis cellulosa	Carolina Spikerush	p							p	
Eleocharis coloradoensis	Dwarf Spikerush									
Eleocharis compressa	Flat-stem Spikerush				p					
Eleocharis elliptica	Slender Spikerush				p					
Eleocharis elongata	Slim Spikerush		p	p					p	
Eleocharis erythropoda	Bald Spikerush				p					
Eleocharis geniculata	Capitate Spikerush								p	p
Eleocharis intermedia	Matted Spikerush								p	
Eleocharis lanceolata	Lance-like Spikerush									
Eleocharis macrostachya	Creeping Spikerush									
Eleocharis melanocarpa	Black-fruit Spikerush	p							p	
Eleocharis microcarpa var. *microcarpa*	Small-fruit Spikerush							p	p	
Eleocharis ovata	Ovate Spikerush									
Eleocharis palustris	Creeping Spikerush									

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Eleocharis parvula	Small Spikerush									p
Eleocharis radicans	Rooted Spikerush									
Eleocharis robbinsii	Robbins Spikerush									
Eleocharis rostellata	Beaked Spikerush									
Eleocharis tenuis var. *pseudoptera*	Slender Spikerush									
Eleocharis tenuis var. *tenuis*	Slender Spikerush									
Eleocharis tricostata	Three-angle Spikerush	p	p					p	p	
Eleocharis wolfii	Wolf's Spikerush									
Elimia cylindracea	Cylinder Elimia									
Elionurus tripsacoides	Pan-american Balsamscale								p	
Ellipsaria lineolata	Butterfly									
Elliptio arca	Alabama Spike									
Elliptio arctata	Delicate Spike									
Elymus villosus	Hairy Wild Rye									
Enallagma concisum	Cherry Bluet									
Enallagma davisi	Sandhill Bluet									
Enallagma pallidum	Pale Bluet									
Enallagma pollutum	Florida Bluet									
Endotropis lanceolata	Lance-leaved Buckthorn				p		p			
Enemion biternatum	False Rue-anemone									
Enneacanthus gloriosus	Bluespotted Sunfish									p
Epinephelus itajara	Atlantic Goliath Grouper									
Epioblasma brevidens	Cumberlandian Combshell									
Epioblasma penita	Southern Combshell									

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Epioblasma triquetra	Snuffbox									
Epitheca spinosa	Robust Baskettail									
Equisetum arvense	Field Horsetail									
Eretmochelys imbricata	Hawksbill Sea Turtle									
Erigenia bulbosa	Harbinger-of-Spring									
Eriocaulon decangulare var. *latifolium*	Panhandle Pipewort							p	p	
Eriocaulon texense	Texas Pipewort							p	p	
Eryngium aquaticum	Marsh Rattlesnake-master									
Eryngium hookeri	Hooker's Coyote-thistle									
Eryngium species 1	Mocassin-master									
Erynnis martialis	Mottled Dusky Wing									
Erythrodiplax umbrata	Band-winged Dragonlet			p						
Erythronium albidum	White Trout-lily									
Erythronium americanum ssp. *harperi*	Yellow Trout-lily									
Etheostoma asprigene	Mud Darter									
Etheostoma blennioides	Greenside Darter									
Etheostoma duryi	Black Darter									
Etheostoma faulkneri	Yoknapatawpha Darter									
Etheostoma flabellare	Fantail Darter									
Etheostoma jessiae	Blueside Darter									
Etheostoma kennicotti	Stripetail Darter									
Etheostoma lachneri	Tombigbee Darter									
Etheostoma nigripinne	Blackfin Darter									
Etheostoma raneyi	Yazoo Darter									

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Etheostoma rupestre	Rock Darter									
Etheostoma simoterum	Snubnose Darter									
Etheostoma zonifer	Backwater Darter			p						
Eumorpha intermedia	Intermediate Sphinx									
Eupatorium lancifolium	Lanceleaf Thoroughwort				p		p			
Euphagus carolinus	Rusty Blackbird	p	p	p				p		
Euphorbia discoidalis	Summer Spurge									
Euphorbia inundata var. *inundata*	Florida Pine Spurge								p	
Euphyes arpa	Palmetto Skipper					p				
Euphyes bayensis	Bay St. Louis Skipper									
Euphyes dukesi dukesi	Dukes' Skipper	p		p						
Euphyes pilatka	Palatka Skipper									p
Euploca convolvulacea	Bindweed Heliotrope									p
Eurycea longicauda longicauda	Longtail Salamander									
Eurycea lucifuga	Cave Salamander									
Eurycea sphagnicola	Bog Dwarf Salamander			p						
Eurynia dilatata	Spike									
Eustachys glauca	Saltmarsh Finger-grass	p	p	p						p
Eustoma exaltatum	Tall Prairie-gentian									
Eutrichota gopheri	Gopher Tortoise Burrow Fly									
Falco sparverius paulus	Southeastern American Kestrel				p	p	p			
Farancia erytrogramma	Rainbow Snake									
Faxonius erichsonianus	Reticulate Crayfish									
Faxonius etnieri	Ets Crayfish									

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Faxonius hartfieldi	Yazoo Crayfish									
Faxonius jonesi	Sucarnoochee River Crayfish									
Faxonius mississippiensis	Mississippi Crayfish									
Faxonius palmeri	Gray-Speckled Crayfish									
Faxonius placidus	Bigclaw Crayfish									
Faxonius validus	Powerful Crayfish									
Faxonius wrighti	Hardin Crayfish									
Faxonius yanahlindus	Spinywrist Crayfish									
Fissidens amoenus	Hall's Fissidens Moss			p						
Forestiera ligustrina	Upland Swamp Privet									
Fraxinus quadrangulata	Blue Ash									
Frullania donnellii	a liverwort	p		p						p
Fuirena longa	Coastal-plain Umbrella-sedge	p		p					p	
Fundulus blairae	Western Starhead Topminnow									p
Fundulus dispar	Northern Starhead Topminnow									p
Fundulus euryzonus	Broadstripe Topminnow									
Fundulus jenkinsi	Saltmarsh Topminnow									
Gaillardia aestivalis var. *flavovirens*	Lanceleaf Blanket Flower									
Galactia floridana	Florida Milkpea									
Galearis spectabilis	Showy Orchis									
Galium bermudense	Coastal Bedstraw									
Gelochelidon nilotica	Gull-billed Tern									
Gentiana catesbaei	Elliott's Gentian			p					p	
Gentianella occidentalis	Stiff Gentian				p					

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Geothlypis formosa	Kentucky Warbler			p				p		
Gomphus australis	Clearlake Clubtail									
Gomphus dilatatus	Blackwater Clubtail									
Gomphus geminatus	Twin-striped Clubtail									
Gomphus hodgesi	Hodges' Clubtail									
Goodyera pubescens	Downy Rattlesnake-plantain									
Gopherus polyphemus	Gopher Tortoise									
Graptemys flavimaculata	Yellow-blotched Map Turtle									
Graptemys geographica	Common Map Turtle									
Graptemys gibbonsi	Pascagoula Map Turtle									
Graptemys nigrinoda	Black-knobbed Map Turtle									
Graptemys oculifera	Ringed Map Turtle									
Graptemys pearlensis	Pearl River Map Turtle									
Graptemys pulchra	Alabama Map Turtle									
Gratiola floridana	Florida Hedge-hyssop	p		p						
Gratiola ramosa	Branched Hedge-hyssop	p							p	
Gryllotalpa major	Prairie Mole Cricket								p	
Gymnocladus dioicus	Kentucky Coffeetree			p						
Gymnocthebius maureenae	Maureen's Gymnocthebius Minute Moss Beetle									
Gyrinophilus porphyriticus	Spring Salamander									
Habenaria quinqueseta	Michaux's Orchid								p	
Hackelia virginiana	Virginia Stickseed									
Haematopus palliatus	American Oystercatcher									
Halodule wrightii	Shoal-grass									

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Halophila engelmannii	Engelmann's Sea-grass									
Hamamelis ovalis	Running Witch-hazel									
Hamiota perovalis	Orange-nacre Mucket									
Haploperla chukcho	Chukcho Stonefly									
Hedeoma drummondii var. *drummondii*	Drummond Pennyroyal				p					
Helanthium tenellum	Dwarf Burhead									
Helenium brevifolium	Shortleaf Sneezeweed		p	p				p	p	
Helianthus debilis ssp. *tardiflorus*	Gulf Coast Beach Sunflower									
Helianthus decapetalus	Thinleaf Sunflower									
Helianthus verticillatus	Whorled Sunflower									
Helmitheros vermivorum	Worm-eating Warbler									
Helopicus bogaloosa	Masked Springfly									
Hemidactylium scutatum	Four-toed Salamander			p						
Hepatica acutiloba	Sharp-lobed Hepatica									
Herbertia lahue	Herbertia									
Hesperapis oraria	Gulf Coast Solitary Bee									
Hesperia attalus	Dotted Skipper								p	
Heterandria formosa	Least Killifish			p						p
Heteranthera dubia	Grassleaf Mud-plaintain									
Heteranthera missouriensis	Missouri Mud-plantain									
Heterodon simus	Southern Hognose Snake				p					
Heuchera macrorhiza	Giant Alumroot									
Heuchera parviflora	Little-flower Alumroot									
Hexalectris spicata	Crested Coralroot									

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Hexastylis harperi	Large-flowered Heartleaf									
Hibiscus coccineus	Brilliant Hibiscus			p						p
Hieracium venosum	Rattlesnake Hawkweed									
Hippocampus erectus	Lined Seahorse									
Hobbseus attenuatus	Pearl Rivulet Crayfish								p	
Hobbseus cristatus	Crested Rivulet Crayfish								p	
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish								p	
Hobbseus petilus	Tombigbee Rivulet Crayfish								p	
Hobbseus prominens	Prominence Rivulet Crayfish								p	
Hobbseus valleculus	Choctaw Rivulet Crayfish									
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish									
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly									
Hottonia inflata	Featherfoil			p						
Hybopsis amnis	Pallid Shiner									
Hydrastis canadensis	Golden-seal									
Hydroperla fugitans	Austin Springfly									
Hydrophyllum appendiculatum	Appendage Waterleaf									
Hydrophyllum macrophyllum	Large-leaf Water-leaf									
Hydroptila cretosa	A Caddisfly								P	
Hydroptila holzenthali	A Caddisfly									
Hydroptila homochitta	A Caddisfly									
Hydroptila molsonae	Molson's Microcaddisfly									
Hydroptila poirrieri	A Caddisfly									
Hydroptila tusculum	A Caddisfly									

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Hylocichla mustelina	Wood Thrush			p				p		
Hymenocallis choctawensis	Florida Panhandle Spider-lily		p							
Hymenocallis occidentalis var. *eulae*	Woodland Spider-lily		p	p						
Hypericum canadense	Canadian St. John's-wort							p	p	
Hypericum myrtifolium	Myrtle-leaved St. Johnswort	p	p						p	
Hypoxis curtissii	Curtiss' Yellow Star-grass		p	p						
Ichthyomyzon castaneus	Chestnut Lamprey									
Ichthyomyzon unicuspis	Silver Lamprey									
Ictiobus niger	Black Buffalo									
Ilex cassine	Dahoon Holly			p				p	p	
Ipomoea brasiliensis	Railroad Morning-glory									
Ipomoea macrorhiza	Large-stem Morning-glory									
Iresine diffusa	Felicidad									
Iris brevicaulis	Lamance Iris		p	p						
Iris giganticaerulea	Giant Blue Iris		p							p
Ischnura prognata	Furtive Forktail	p		p						
Isoetes appalachiana	Appalachian Quillwort									p
Isoetes louisianensis	Louisiana Quillwort			p						
Isoetes melanopoda spp. *melanopoda*	Blackfoot Quillwort			p						p
Isoetes melanopoda spp. *silvatica*	Eastern Blackfoot Quillwort			p						p
Isoetes mississippiensis	Mississippi Quillwort			p						
Isoetes valida	Strong Quillwort									p
Isogenoides varians	A Stonefly									

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Isonychia berneri	A Mayfly									
Isurus oxyrinchus	Shortfin Mako Shark									
Ixobrychus exilis	Least Bittern									p
Juglans cinerea	Butternut									
Juncus interior	Inland Rush				p					
Juniperus silicicola	Southern Red Cedar									
Lacunicambarus dalyae	Jewel Mudbug									
Lacunicambarus freudensteini	Banded Mudbug				p	p				
Lacunicambarus mobilensis	Lonesome Gravedigger									
Lacunicambarus polychromatus	Paintedhand Mudbug									
Lampropeltis calligaster calligaster	Prairie Kingsnake									
Lampropeltis calligaster rhombomaculata	Mole Kingsnake									
Lampropeltis triangulum	Red Milk Snake									
Lampsilis fasciola	Wavy-rayed Lampmussel									
Lampsilis hydiana	Louisiana Fatmucket									
Lampsilis ovata	Pocketbook									
Lanius ludovicianus ludovicianus	Loggerhead Shrike					p			p	
Lanius ludovicianus migrans	Migrant Loggerhead Shrike					p			p	
Lapara phaeobrachycerous	Gulf Pine Sphinx					p				
Lasionycteris noctivagans	Silver-haired Bat	p		p		p				
Lasiurus cinereus	Hoary Bat	p	p	p	p	p		p		
Lasiurus intermedius	Northern Yellow Bat	p	p	p	p	p				
Lasmigona alabamensis	Alabama Heelsplitter									
Lasmigona complanata	White Heelslpitter									

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Lasmigona costata	Flutedshell									
Laterallus jamaicensis	Black Rail					p				p
Lejeunea bermudiana	a liverwort		p	p						p
Lejeunea cladogyna	a liverwort	p	p	p						p
Lejeunea floridana	a liverwort	p	p	p						p
Lejeunea laetivirens	a liverwort			p						p
Lepidochelys kempii	Kemp's Ridley Sea Turtle									
Lepidostoma morsei	Morse's Little Plain Brown Sedge									
Leptolucania ommata	Pygmy Killifish			p						p
Lethenteron appendix	American Brook Lamprey									
Leuctra colemanorum	Yalobusha Needlefly									
Leuctra hicksi	Cypress Needlefly									
Liatris elegantula	Blazing-Star									
Ligumia recta	Black Sandshell									
Ligusticum canadense	Nondo Lovage									
Lilaeopsis carolinensis	Carolina Lilaeopsis									p
Lilium iridollae	Panhangle Lily			p						
Lilium michiganense	Michigan Lily									
Limnodromus griseus	Short-billed Dowitcher									
Limnothlypis swainsonii	Swainson's Warbler			p				p		
Limosa fedoa	Marbled Godwit									
Lindera melissifolia	Pondberry									
Lindera subcoriacea	Bog Spicebush	p	p	p				p	p	
Linum floridanum var. *chrysocarpum*	Yellow-fruited Flax								p	

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Linum macrocarpum	Spring Hill Flax							p	p	
Liodytes rigida deltae	Delta Crayfish Snake				p	p	p			
Liodytes rigida sinicola	Gulf Crayfish Snake				p	p	p			
Lithasia armigera	Armored Rocksnail									
Lithasia hubrichti	Big Black Rocksnail									
Lithasia lima	Warty Rocksnail									
Lithasia verrucosa	Varicose Rocksnail									
Lithobates areolatus	Crawfish Frog								p	
Lithobates heckscheri	River Frog	p		p						
Lithobates sevosus	Dusky Gopher Frog				p	p				
Lithospermum caroliniense	Golden Puccoon									
Lithospermum latifolium	American Gromwell				p					
Lobelia boykinii	Boykin's Lobelia	p	p						p	
Ludwigia alata	Winged Seedbox		p	p						p
Lupinus perennis ssp. *gracilis*	Sundail Lupine									
Luziola bahiensis	Brazilian Loziola			p						
Lycium carolinianum	Carolina Wolf-berry									
Lycopodioides ludovicianum	Gulf Spike-moss									
Lycopus amplectens	Sessile-leaved Bugleweed	p		p						
Lythrurus fasciolaris	Scarlet Shiner									
Machimus polyphemi	Gopher Tortoise Robber Fly									
Macranthera flammea	Flame Flower	p		p				p		
Macrhybopsis meeki	Sicklefin Chub									
Macrochelys temminckii	Alligator Snapping Turtle	p								

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Macromia alleghaniensis	Allegheny River Cruiser									
Macromitrium richardii	Richard's Macromitrium Moss	p								
Magnolia tripetala	Umbrella Magnolia									
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin									
Malus ioensis	Iowa Crabapple									
Manta birostris	Giant Manta Ray									
Marshallia angustifolia	Slim-leaf Barbara's-buttons								p	
Marshallia trinervia	Broadleaf Barbara's-buttons			p			p			
Marsilea vestita	Marsilea vestita									
Matelea baldwyniana	Baldwin's Milkvine						p			
Matelea decipiens	Old-field Milkvine									
Matelea obliqua	Climbing Milkweed									
Medionidus acutissimus	Alabama Moccasinshell									
Megalops atlanticus	Tarpon									
Melanerpes erythrocephalus	Red-headed Woodpecker	p	p	p	p	p		p	p	
Mertensia virginica	Virginia Bluebells									
Metzgeria uncigera	a liverwort	p	p	p						p
Micrurus fulvius	Eastern Coral Snake									
Mimulus ringens var. ringens	Square-stem Monkeyflower									
Miniellus boops	Bigeye Shiner									
Miniellus melanostomus	Blackmouth Shiner	p		p						
Miniellus sabinae	Sabine Shiner									
Mirabilis albida	Pale Umbrella-wort				p					
Mirabilis linearis	Narrowleaf Four-o'clock				p					

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Mitreola angustifolia	Narrowleaf Miterwort							p	p	
Mobula hypostoma	Atlantic Pygmy Devil Ray									
Mobula tarapacana	Sicklefin Devil Ray									
Moxostoma anisurum	Silver Redhorse									
Moxostoma breviceps	Smallmouth Redhorse									
Moxostoma carinatum	River Redhorse									
Moxostoma duquesnei	Black Redhorse									
Muhlenbergia glabrifloris	Inland Muhly									
Muhlenbergia sylvatica	Woodland Muhly									
Muhlenbergia tenuiflora	Slender Muhly									
Mycteria americana	Wood Stork	p	p							p
Myotis austroriparius	Southeastern Myotis	p	p	p		p				
Myotis grisescens	Gray Bat	p		p						
Myotis septentrionalis	Northern Long-eared Bat	p		p						
Myotis sodalis	Indiana Bat	p		p						
Myriophyllum laxum	Loose Water-milfoil									
Myriopteris alabamensis	Alabama Lipfern									
Myriopteris lanosa	Hairy Lipfern									
Nabalus asper	Rough Rattlesnake-root				p		p			
Nabalus barbatus	Barbed Rattlesnake-root				p					
Nannothemis bella	Elfin Skimmer			p						
Narcine bancroftii	Caribbean Electric Ray									
Necturus maculosus	Common Mudpuppy									
Negaprion brevirostris	Lemon Shark									

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Nehalennia gracilis	Sphagnum Sprite			p						
Nemastylis geminiflora	Prairie Pleatleaf				p					
Nemocapnia carolina	Southern Snowfly									
Neogale frenata	Long-tailed Weasel								p	
Neonympha helicta	Helicta Satyr					p	p			
Neonympha mitchellii	Mitchell's Satyr			p						
Neoperla coxi	A Stonefly									
Neotrichia alabamensis	A Caddisfly									
Nerodia clarkii clarkii	Gulf Salt Marsh Snake									
Nestronia umbellula	Nestronia									
Neurocordulia yamaskanensis	Stygian Shadowdragon									
Neviusia alabamensis	Alabama Snow-wreath									
Nicrophorus americanus	American Burying Beetle									
Nothonotus rubrus	Bayou Darter									
Nothonotus rufilineatus	Redline Darter									
Notropis micropteryx	Highland Shiner									
Noturus exilis	Slender Madtom									
Noturus flavus	Stonecat									
Noturus gladiator	Piebald Madtom									
Noturus munitus	Frecklebelly Madtom									
Nuphar lutea ssp. *ulvacea*	West Florida Cow-Lily		p	p						
Nyctanassa violacea	Yellow-crowned Night-Heron	p	p							p
Nycticorax nycticorax	Black-crowned Night-Heron	p	p							p
Nymphaea mexicana	Banana Water-lily									

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Nymphoides aquatica	Big Floating-heart									
Nymphoides cordata	Floating-heart									
Obovaria arkansasensis	Southern Hickorynut									
Obovaria c.f. unicolor	Undescribed Hickorynut									
Obovaria subrotunda	Round Hickorynut									
Obovaria unicolor	Alabama Hickorynut									
Oecetis daytona	A Caddisfly									
Oenothera capillifolia ssp. *capillifolia*	Berlandier's Sundrops						p			
Oenothera grandiflora	Large-flowered Evening-primrose									
Oenothera heterophylla ssp. *orientalis*	Alabama Evening-primrose									
Oenothera patriciae	Plains Gaura									
Oenothera triloba	Stemless Evening-primrose				p					
Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle									
Ophiogomphus australis	Southern Snaketail									
Ophisaurus attenuatus	Slender Glass Lizard				p	p			p	
Ophisaurus mimicus	Mimic Glass Lizard				p	p	p			
Opuntia macrorhiza	Twisted-spine Prickly-pear									p
Orthochilus ecristatus	Giant Orchid								p	
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly									
Orthotrichum exiguum	Small Wood-bark Moss									
Oxalis grandis	Great Yellow Woodsorrel									
Oxalis macrantha	Tufted Yellow Woodsorrel									
Packera aurea	Golden Groundsel				p					
Packera paupercula var. *paupercula*	Balsam Ragwort				p					

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Packera tomentosa	Woolly Groundsel									
Palafoxia callosa	Small Palafoxia				p					
Palhinhaea cernua	Nodding Clubmoss								p	
Panax quinquefolius	American Ginseng									
Papaipema maritima	Maritime Sunflower Borer								p	
Papaipema sp. *5*	Rare Cane Borer Moth									
Paracymus seclusus	Seclusive Water Scavenger Beetle									
Parkesia motacilla	Louisiana Waterthrush	p	p	p				p		
Parnassia grandifolia	Largeleaf Grass-of-parnassus			p				p		
Paronychia baldwinii ssp. *riparia*	Perennial Dune Whitlow-wort									
Paronychia erecta var. *corymbosa*	Beach Sand-squares									
Paronychia erecta var. *erecta*	Beach Sand-squares									
Paronychia patula	Pineland Nailwort									
Paspalum monostachyum	Gulfdune Paspalum									
Passerina ciris	Painted Bunting									
Pellaea atropurpurea	Purple-stem Cliff-brake									
Penstemon canescens	Gray Beardtongue									
Penstemon pallidus	Pale Beardtongue				p					
Penstemon tenuis	Sharp-sepal Beardtongue									
Percina aurora	Pearl Darter									
Percina evides	Gilt Darter									
Percina kathae	Mobile Logperch									
Percina lenticula	Freckled Darter									
Percina phoxocephala	Slenderhead Darter									

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Percina uranidea	Stargazing Darter									
Perideridia americana	Eastern Eulophus				p					
Perimyotis subflavus	Tricolored Bat	p	p	p		p		p		p
Perlesta lagoi	A Stonefly									
Peromyscus polionotus	Oldfield Mouse									
Persicaria hirsuta	Hairy Smartweed								p	
Peucaea aestivalis	Bachman's Sparrow				p				p	
Phacelia bipinnatifida	Fernleaf Phacelia									
Phacelia hirsuta	Hairy Scorpionweed									p
Phacelia purshii	Miami-mist									
Phacelia ranunculacea	Blue Scorpionweed									
Phacelia strictiflora var. *robbinsii*	Prairie Scorpion-weed									
Phaseolus sinuatus	Sandhill Bean									
Phenacobius mirabilis	Suckermouth Minnow									
Philadelphus hirsutus	Streambank Mock-orange									
Philadelphus inodorus	Scentless Mock Orange									
Philonthus testudo	Western Gopher Tortoise Rove Beetle									
Phlox amplifolia	Largeleaf Phlox									
Physalis arenicola	Cypress-head Ground-cherry									
Physaria gracilis ssp. *gracilis*	Spreading Bladder-pod				p					
Pieris phillyreifolia	Climbing Fetter-bush	p	p						p	
Pinguicula planifolia	Chapman's Butterwort	p		p				p	p	
Pinguicula pumila	Dwarf Butterwort							p	p	
Pinus clausa	Sand Pine									

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Pinus virginiana	Virginia Pine									
Piranga olivacea	Scarlet Tanager (breeding population)									
Pituophis melanoleucus lodingi	Black Pine Snake									
Pituophis melanoleucus melanoleucus	Northern Pine Snake									
Pityopsis pinifolia	Taylor County Silk-grass									
Plagiochila floridana	Florida Leafy Liverwort	p	p	p						p
Plagiochila invisa	a liverwort	p	p	p						p
Plagiochila virginica var. *virginica*	a liverwort									
Plantago cordata	Heartleaf Plantain									
Platalea ajaja	Roseate Spoonbill	p	p	p						p
Platanthera conspicua	Large White-fringe Orchid			p				p	p	
Platanthera integra	Yellow Fringeless Orchid				p	p	p			
Platanthera integrilabia	White Fringeless Orchid									p
Platanthera lacera	Green-fringed Orchid									
Platanthera nivea	Snowy Orchid				p	p	p			
Platanthera peramoena	Purple Fringeless Orchid							p	p	
Platygobio gracilis	Flathead Chub									
Plestiodon anthracinus	Coal Skink				p	p				
Plethobasus cyphyus	Sheepnose									
Plethodon ventralis	Southern Zigzag Salamander									
Plethodon websteri clade A	Webster's Salamander Clade A									
Plethodon websteri clade B	Webster's Salamander Clade B									
Pleurobema beadleianum	Mississippi Pigtoe									
Pleurobema curtum	Black Clubshell									

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Pleurobema decisum	Southern Clubshell									
Pleurobema perovatum	Ovate Clubshell									
Pleurobema riddellii	Louisiana Pigtoe									
Pleurobema sintoxia	Round Pigtoe									
Pleurobema taitianum	Heavy Pigtoe									
Pleurocera vestita	Brook Hornsnail									
Pleuronaia barnesiana	Tennessee Pigtoe									
Pleuronaia dolabelloides	Slabside Pearlymussel									
Pluvialis dominica	American Golden-Plover								p	p
Pogonomyrmex badius	Florida Harvester Ant									
Polanisia tenuifolia	Slenderleaf Clammy-weed									
Polygonella americana	Southern Jointweed									
Polyodon spathula	Paddlefish									
Polytaenia nuttallii	Prairie Parsley				p		p			
Ponthieva racemosa	Shadow-witch Orchid				p		p			
Porphyrio martinicus	Purple Gallinule									p
Potamilus alatus	Pink Heelsplitter									
Potamilus capax	Fat Pocketbook									
Potamilus inflatus	Inflated Heelsplitter									
Potamogeton epihydrus	Nuttall's Pondweed									
Potamogeton pusillus	Slender Pondweed		p	p						
Primula meadia	Shootingstar				p					
Pristis pectinata	Smalltooth Sawfish									
Pristis pristis	Largtooth Sawfish									

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Procambarus ablusus	Hatchie River Crayfish									
Procambarus barbiger	Jackson Prairie Crayfish								p	
Procambarus bivittatus	Ribbon Crayfish									
Procambarus fitzpatricki	Spinytail Crayfish				p	p				
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish					p				
Procambarus hagenianus vesticeps	Egyptian Crayfish								p	
Procambarus lagniappe	Lagniappe Crayfish									
Procambarus lecontei	Mobile Crayfish	p		p						
Procambarus lylei	Shutispear Crayfish									
Procambarus mancus	Lame Crayfish	p		p						
Procambarus penni	Pearl Blackwater Crayfish	p		p						
Procambarus planirostris	Flatnose Crayfish	p		p		p				
Procambarus shermani	Gulf Crayfish	p		p	p	p				
Procambarus viaeviridis	Vernal Crayfish									
Protonotaria citrea	Prothonotary Warbler	p	p	p				p		
Prunus alabamensis	Alabama Black Cherry									
Pseudacris collinsorum	Collinses' Mountain Chorus Frog									
Pseudacris ornata	Ornate Chorus Frog					p				
Pseudemys alabamensis	Alabama Red-bellied Turtle									
Pseudiron centralis	White Sand-river Mayfly									
Pseudodontoides subvexus	Southern Creekmussel									
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper								p	
Pseudotriton montanus	Mud Salamander			p	p					
Pseudotriton ruber	Red Salamander									

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Pteronotropis welaka	Bluenose Shiner									
Ptilimnium costatum	Eastern Bishopweed									
Ptychobranchus fasciolaris	Kidneyshell									
Puma concolor coryi	Florida Panther									
Pycnanthemum flexuosum	Narrowleaf Mountainmint			p				p	p	
Pycnanthemum pilosum	Whorled Mountainmint									
Quadrula nobilis	Gulf Mapleleaf									
Quadrula rumphiana	Ridged Mapleleaf									
Quercus arkansana	Arkansas Oak									
Quercus austrina	Bluff Oak									
Quercus macrocarpa var. *macrocarpa*	Bur Oak				p					
Quercus minima	Dwarf Live Oak								p	
Quercus myrtifolia	Myrtle-leaf Oak									
Quercus oglethorpensis	Oglethorpe's Oak						p			
Quercus palustris	Pin Oak									
Quiscalus quiscula	Common Grackle	p	p	p				p		p
Radula sullivantii	a liverwort		p	p						p
Rallus elegans	King Rail									p
Ranunculus flabellaris	Yellow Water-crowfoot									
Ranunculus septentrionalis	Carolina Buttercup									
Raptoheptagenia cruenta	Wallace's Deepwater Mayfly									
Regina septemvittata	Queen Snake									
Rhadinaea flavilata	Pine Woods Snake									
Rhinichthys obtusus	Blacknose Dace									

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Rhinoptera brasiliensis	Brazilian Cownose Ray									
Rhodobryum roseum	Rose Moss									
Rhododendron alabamense	Alabama Rhododendron									
Rhododendron arborescens	Smooth Azalea									
Rhododendron austrinum	Orange Azalea		p							
Rhododendron periclymenoides	Pink Azalea									
Rhynchosia latifolia	Prairie Rhynchosia									
Rhynchospora baldwinii	Baldwin's Beakrush								p	
Rhynchospora brachychaeta	West Indies Beakrush	p	p						p	
Rhynchospora careyana	Broad-fruit Horned Beakrush	p	p					p	p	
Rhynchospora cephalantha var. *attenuata*	Small-bunched Beaksedge							p	p	
Rhynchospora crinipes	Hairy-peduncled Beakrush									
Rhynchospora curtissii	Curtiss' Beakrush							p	p	
Rhynchospora decurrens	Swamp-forest Beakrush	p		p						p
Rhynchospora distans	Fasciculate Beakrush								p	
Rhynchospora divergens	White-seeded Beakrush								p	
Rhynchospora fernaldii	Fernald's Beakrush								p	
Rhynchospora galeana	Short-bristle Baldrush								p	
Rhynchospora harperi	Harper's Beakrush		p						p	
Rhynchospora harveyi	Harvey's Beakrush								p	
Rhynchospora leptocarpa	Slender-fruit Beaksedge			p					p	
Rhynchospora marliniana	Marlin's Beaksedge								p	
Rhynchospora perplexa	Pineland Beakrush								p	
Rhynchospora pinetorum	Small's Beakrush								p	

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Rhynchospora pleiantha	Brown Beakrush		p	p					p	
Rhynchospora torreyana	Torrey's Beakrush							p	p	
Rhynchospora tracyi	Tracy Beakrush	p	p						p	
Rhynchospora wrightiana	Wright's Beakrush								p	
Riccia warnstorfii	a liverwort									
Riparia riparia	Bank Swallow (breeding population)									p
Rorippa aquatica	Lake-cress			p						
Rudbeckia grandiflora var. *alismifolia*	Rough Coneflower									
Rudbeckia subtomentosa	Sweet Coneflower									
Ruellia noctiflora	Night-flowering Wild-petunia	p							p	
Ruellia pinetorum	Pine Barren Ruellia			p					p	
Rynchops niger	Black Skimmer									
Sabatia campestris	Prairie Pink						p	p		
Sabatia decandra	Bartram's Rose-gentian	p	p	p					p	
Sabulina patula	Pitcher's Stitchwort				p					
Sageretia minutiflora	Tiny-leaved Buckthorn									
Sagittaria chapmanii	Chapman's Arrowhead								p	
Sagittaria isoetiformis	Slender Arrow-head									
Salix caroliniana	Carolina Willow									
Salvia chapmanii	Chapman's Sage				p					
Sapindus marginatus	Florida Soapberry									
Sarracenia alabamensis ssp. *wherryi*	Wherry's Sweet Pitcher-plant							p	p	
Sarracenia leucophylla	Whitetop Pitcherplant							p	p	
Sarracenia rosea	Purple Pitcherplant							p	p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
Scientific Name	**Common Name**	SCP NONRIVERINE BASIN SWAMP	SCP NONRIVERINE CYPRESS DOME	SCP SEEPAGE SWAMP AND BAYGALL	EGCP NEAR-COAST PINE FLATWOODS	EGCP SAVANNAS AND WET PRAIRIES	SCP HERBACEOUS SEEPS AND BOGS	EGCP NORTHERN SEEPAGE SWAMP	SCP BLACKLAND PRAIRIE AND WOODLANDS	INLAND FRESHWATER MARSH
Scaphirhynchus albus	Pallid Sturgeon									
Scaphirhynchus platorynchus	Shovelnose Sturgeon									
Scaphirhynchus suttkusi	Alabama Sturgeon									
Sceptridium jenmanii	Alabama Grapefern									
Sceptridium lunarioides	Winter Grape-fern									
Schisandra glabra	Bay Starvine									
Schizachyrium maritimum	Gulf Bluestem									
Schizachyrium scoparium ssp. *divergens*	Eastern Little Bluestem									
Schizachyrium stoloniferum	Creeping Bluestem									
Schoenoplectiella purshiana	Weakstalk Bulrush			p						
Schoenoplectus americanus	Three-square Bulrush									
Schoenoplectus deltarum	Delta Bulrush									
Schoenoplectus subterminalis	Swaying Rush									p
Schwalbea americana	Chaffseed								p	
Scirpus divaricatus	Spreading Bulrush			p						
Scirpus lineatus	Drooping Bulrush			p	p		p			
Scleria elliottii	Broad-leaved Hairy Nutrush							p	p	
Scleria georgiana	Georgia Nutrush								p	
Scleria nitida	Shining Nutrush									
Scleria verticillata	Low Nutrush								p	p
Sclerolepis uniflora	Pink Bogbutton			p				p	p	
Scolopax minor	American Woodcock			p	p	p	p	p	p	
Scutellaria glabriuscula	Georgia Skullcap									
Scutellaria leonardii	Shale-barren Skullcap				p		p			

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
Scientific Name	**Common Name**	SCP NONRIVERINE BASIN SWAMP	SCP NONRIVERINE CYPRESS DOME	SCP SEEPAGE SWAMP AND BAYGALL	EGCP NEAR-COAST PINE FLATWOODS	EGCP SAVANNAS AND WET PRAIRIES	SCP HERBACEOUS SEEPS AND BOGS	EGCP NORTHERN SEEPAGE SWAMP	SCP BLACKLAND PRAIRIE AND WOODLANDS	INLAND FRESHWATER MARSH
Sedum pulchellum	Rock Stonecrop				p					
Sedum ternatum	Wood Stonecrop									
Seiurus aurocapilla	Ovenbird (breeding population)									
Senega ambigua	Whorled Milkwort									
Senega appendiculata	Swamp Milkwort							p	p	
Senega balduinii	White Milkwort								p	
Senega curtissii	Curtiss' Milkwort									
Senega hookeri	Hooker's Milkwort			p					p	
Senega leptostachys	Georgia Milkwort								p	
Setaria corrugata	Coast Bristle Grass								p	
Setodes dixiensis	A Caddisfly									
Setophaga cerulea	Cerulean Warbler									
Setophaga discolor	Prairie Warbler				p				p	
Shipsa rotunda	Intrepid Forestfly									
Sideroxylon reclinatum ssp. *reclinatum*	Florida Bumelia									
Silene ovata	Ovate Catchfly									
Silene regia	Royal Catchfly						p			
Silphium confertifolium	Black Belt Rosinweed				p		p			
Silphium integrifolium var. *gattingeri*	Gattinger's Rosinweed						p			
Silphium pinnatifidum	Tansy Rosinweed				p					
Silphium simpsonii	Simpson's Rosinweed				p		p			
Silphium terebinthinaceum var. *luciae-brauniae*	Lucy Braun's Prairie Dock				p					
Sitta pusilla	Brown-headed Nuthatch				p	p	p			
Smilax hugeri	Huger's Carrion-flower									

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Smilax pulverulenta	Downy Carrion-flower									
Solanum pseudogracile	Glowing Nightshade									
Solidago auriculata	Eared Goldenrod									
Solidago brachyphylla	Dixie Goldenrod									
Solidago flaccidifolia	Appalachian Goldenrod									
Solidago juncea	Early Goldenrod									
Solidago rigidiuscula	Showy Goldenrod				p					
Solidago sphacelata	Autumn Goldenrod									
Somatochlora georgiana	Coppery Emerald									
Somatochlora provocans	Treetop Emerald			p						
Sophronanthe hispida	Pineland Hedge-Hyssop									
Sorex longirostris	Southeastern Shrew	p	p	p	p	p	p	p	p	p
Speyeria diana	Diana									
Sphaerocarpos donnellii	a liverwort									
Sphaerosporoceros adscendens	a hornwort			p						
Sphagnum carolinianum	Carolina Peatmoss	p	p	p				p	p	
Sphagnum cyclophyllum	Circular-leaf Peatmoss	p		p				p	p	
Sphagnum fitzgeraldii	Fitzgerald's Peatmoss	p		p				p	p	
Sphenopholis penyslvanica	Swamp Wedgescale									
Sphyrna lewini	Scalloped Hammerhead									
Sphyrna mokarran	Great Hammerhead									
Spilogale putorius	Eastern Spotted Skunk			p	p	p			p	
Spinadis simplex	Wallace's Deepwater Mayfly									
Spiraea tomentosa	Steeplebush									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Spiranthes brevilabris	Texas Ladies'-tresses								p	
Spiranthes eatonii	Eaton's Ladies'-tresses								p	
Spiranthes floridana	Florida Ladies'-tresses							p	p	
Spiranthes lacera var. *gracilis*	Southern Slender Ladies'-tresses									
Spiranthes longilabris	Giant Spiral Ladies'-tresses								p	
Spiranthes magnicamporum	Great Plains Ladies'-tresses				p		p			
Spiranthes ovalis var. *ovalis*	Lesser Ladies'-tresses		p	p						
Spizella pusilla	Field Sparrow								p	
Sporobolus ozarkanus	Ozark Dropseed				p		p			
Stellaria corei	Tennessee Chickweed									
Stellaria pubera	Giant Chickweed									
Stenanthium gramineum	Eastern Featherbells									
Stenanthium texanum	Pine Barren Deathcamas			p					p	
Sterna hirundo	Common Tern (breeding population)									
Sternula antillarum antillarum	Coastal Least Tern									
Sternula antillarum athalassos	Interior Least Tern									p
Stewartia ovata	Mountain Camellia									
Stizostedion canadense	Sauger									
Stizostedion sp. cf. *vitreum*	Southern Walleye									
Strophitus pascagoulaensis	Pascagoula Creekshell									
Strophitus radiatus	Rayed Creekshell									
Strophitus undulatus	Creeper									
Sturnella magna	Eastern Meadowlark									
Stylisma aquatica	Water Southern Morning-glory		p						p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
Scientific Name	**Common Name**	SCP NONRIVERINE BASIN SWAMP	SCP NONRIVERINE CYPRESS DOME	SCP SEEPAGE SWAMP AND BAYGALL	EGCP NEAR-COAST PINE FLATWOODS	EGCP SAVANNAS AND WET PRAIRIES	SCP HERBACEOUS SEEPS AND BOGS	EGCP NORTHERN SEEPAGE SWAMP	SCP BLACKLAND PRAIRIE AND WOODLANDS	INLAND FRESHWATER MARSH
Stylisma pickeringii ssp. *pattersonii*	Pickering Morning-glory									
Stylisma pickeringii ssp. *pickeringii*	Pickering Morning-glory									
Stylogomphus albistylus	Eastern Least Clubtail									
Stylurus potulentus	Yellow-sided Clubtail									
Stylurus townesi	Townes' Clubtail			p						
Swida alternifolia	Alternate-leaf Dogwood									
Symphyotrichum ericoides var. *ericoides*	White Heath Aster				p		p			
Symphyotrichum oblongifolium	Aromatic Aster				p		p			
Symphyotrichum oolentangiense	Sky Blue Aster						p			
Symphyotrichum pratense	Barrens Silky Aster				p					
Symphyotrichum puniceum var. *puniceum*	Purple-stem Aster				p		p			
Symphyotrichum puniceum var. *scabricaule*	Rough-stem Aster				p		p			
Syngonanthus flavidulus	Yellow Pipewort	p						p	p	
Syringodium filiforme	Manatee-grass									
Tachopteryx thoreyi	Gray Petaltail			p						
Taenidia integerrima	Yellow Pimpernel				p					
Tetraloniella albata	White-clothed Longhorn								p	
Thalasseus maximus	Royal Tern									
Thalasseus sandvicensis	Sandwich Tern									
Thalassia testudina	Turtle-grass									
Thalia dealbata	Powdery Thalia									
Thalictrum debile	Southern Meadowrue									
Thalictrum dioicum	Early Meadowrue									
Thalictrum macrostylum	Small-leaf Meadowrue									p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
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Thelesperma filifolium	Stiff Greenthread				p					
Theliderma cylindrica cylindrica	Rabbitsfoot									
Theliderma metanevra	Monkeyface									
Thryomanes bewickii	Bewick's Wren								p	
Tiarella cordifolia	Heart-leaved Foam-flower									
Tomostima cuneifolia	Wedgeleaf Whitlow-grass				p		p			
Tomostima reptans	Carolina Whitlow-grass				p					
Tortula porteri	Porter's Screw Moss									
Toxolasma lividum	Purple Lilliput									
Trachyxiphium hypnaceum	Trachyxiphium Moss									
Tradescantia ernestiana	Ernest's Spider-wort									
Tradescantia hirsuticaulis	Hairy-stem Spiderwort									
Trautvetteria applanata	Ozark Tassel-rue									
Trichechus manatus latirostris	Florida Manatee									
Tridens carolinianus	Carolina Fluff Grass									
Tridens chapmanii	Chapman's Redtop									
Trifolium carolinianum	Carolina Clover				p		p			
Trifolium reflexum	Buffalo Clover				p					
Triglochin striata	Arrow-grass									
Trillium flexipes	Drooping Trillium									
Trillium foetidissimum	Fetid Trillium									
Trillium ludovicianum	Louisiana Trillium									
Trillium pusillum var. *ozarkanum*	Ozark Least Trillium									
Tringa flavipes	Lesser Yellowlegs									p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
Scientific Name	**Common Name**	SCP NONRIVERINE BASIN SWAMP	SCP NONRIVERINE CYPRESS DOME	SCP SEEPAGE SWAMP AND BAYGALL	EGCP NEAR-COAST PINE FLATWOODS	EGCP SAVANNAS AND WET PRAIRIES	SCP HERBACEOUS SEEPS AND BOGS	EGCP NORTHERN SEEPAGE SWAMP	SCP BLACKLAND PRAIRIE AND WOODLANDS	INLAND FRESHWATER MARSH
Tringa semipalmata	Willet									
Triphora trianthophoros var. *trianthophorus*	Nodding Pogonia		p	p						
Ulmus serotina	September Elm						p			
Uniomerus declivis	Tapered Pondhorn									
Ursus americanus	Black Bear	p		p						
Ursus americanus luteolus	Louisiana Black Bear	p		p	p	p		p		p
Utricularia olivacea	Piedmont Bladderwort		p	p						
Utricularia purpurea	Purple Bladderwort	p	p	p						p
Utterbackiana hartfieldorum	Cypress Floater									
Uvularia floridana	Florida Bellwort									
Vaccinium pallidum	Early Lowbush Blueberry									
Vaccinium tenellum	Small Black Blueberry								p	
Vandenboschia boschiana	Appalachian Bristle Fern									
Verbena xutha	Gulf Vervain									p
Vermivora chrysoptera	Golden-winged Warbler	p	p	p				p		
Veronicastrum virginicum	Culver's-root				p		p			
Viburnum acerifolium	Mapleleaf Viburnum									
Villosa vanuxemensis	Mountain Creekshell									
Vireo gilvus	Warbling Vireo	p	p	p				p		
Vittaria appalachiana	Appalachian Vittaria									
Xyris chapmanii	Chapman's Yellow-eyed-grass							p	p	
Xyris drummondii	Drummond's Yellow-eyed-grass				p	p	p			
Xyris flabelliformis	Savannah Yellow-eyed-grass							p	p	
Xyris louisianica	Kral's Yellow-eyed Grass							p	p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		5.1	5.2	5.2	6.1	6.1	7.1	7.2	8.1	9.1
Scientific Name	**Common Name**	SCP NONRIVERINE BASIN SWAMP	SCP NONRIVERINE CYPRESS DOME	SCP SEEPAGE SWAMP AND BAYGALL	EGCP NEAR-COAST PINE FLATWOODS	EGCP SAVANNAS AND WET PRAIRIES	SCP HERBACEOUS SEEPS AND BOGS	EGCP NORTHERN SEEPAGE SWAMP	SCP BLACKLAND PRAIRIE AND WOODLANDS	INLAND FRESHWATER MARSH
Xyris scabrifolia	Harper's Yellow-eyed Grass							p	p	
Xyris serotina	Acid-swamp Yellow-eyed-grass							p	p	
Yeatesia viridiflora	Green-flower Yeatesia									
Zapus hudsonius	Meadow Jumping Mouse			p					p	p
Zephyranthes simpsonii	Rainlily									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Accipiter striatus	Sharp-shinned Hawk (breeding population)											
Acentrella alachua	A Mayfly											
Acer leucoderme	Chalk Maple											
Acipenser desotoi	Gulf Sturgeon											
Acipenser fulvescens	Lake Sturgeon					e				p		
Actaea racemosa	Black Bugbane											
Actinonaias ligamentina	Mucket						p					
Adiantum capillus-veneris	Southern Maidenhair-fern											
Aesculus glabra var. *glabra*	Ohio Buckeye											
Aeshna umbrosa	Shadow Darner		p					p				p
Aetobatus narinari	Whitespotted Eagle Ray											
Agalinis auriculata	Earleaf False Foxglove											
Agalinis filicaulis	Thread-stem False Foxglove											
Agalinis homalantha	San Antonio False-foxglove											
Agalinis linifolia	Flaxleaf False Foxglove											
Agalinis oligophylla	Ridge-stem False-foxglove											
Agalinis skinneriana	Pale False Foxglove											
Agarodes libalis	Spring-loving Psiloneuran Caddisfly											
Agarodes stannardi	Stannard's Agarodes Caddisfly							p				p
Agastache nepetoides	Yellow Giant-hyssop											
Agrimonia incisa	Incised Groovebur											
Alburnops candidus	Silverside Shiner										p	
Alburnops chalybaeus	Ironcolor Shiner	p										

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Alburnops edwardraneyi	Fluvial Shiner										p	
Alisma subcordatum	Broad-leaved Water-plantain	p				p						
Allocapnia aurora	Aurora Snowfly										p	
Allocapnia polemistis	Black Warrior Snowfly									p	p	
Alloperla natchez	Natchez Stonefly											
Alophia drummondii	Purple Pleat-leaf											
Alosa alabamae	Alabama Shad										e	
Alosa chrysochloris	Skipjack Herring					p	p		p	p	p	
Amaranthus australis	Southern Amaranth											
Ambloplites rupestris	Rock Bass									p		
Amblyomma tuberculatum	Gopher Tortoise Tick											
Amblyscirtes alternata	Least Florida Skipper											
Amblyscirtes reversa	Reversed Roadside Skipper											
Ambystoma texanum	Smallmouth Salamander			p								
Ambystoma tigrinum	Tiger Salamander			p								
Ammocrypta clara	Western Sand Darter								e			
Ammodramus savannarum	Grasshopper Sparrow											
Ammospiza leconteii	LeConte's Sparrow											
Ammospiza maritima	Seaside Sparrow											
Ammospiza nelsoni	Nelson's Sparrow											
Amphiachyris dracunculoides	Broom-snakeroot											
Amphiagrion saucium	Eastern Red Damsel	p	p					p				p
Amphinemura alabama	Alabama Forestfly											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Amphiuma pholeter	One-toed Amphiuma											
Amsonia ludoviciana	Louisiana Bluestar											
Anas acuta	Northern Pintail	p										
Anas fulvigula	Mottled Duck											
Andropogon dealbatus	Wetland White Bluestem		p									
Andropogon perangustatus	Narrow-leaved Bluestem											
Andropogon tracyi	Tracy's Bluestem											
Aneides aeneus	Green Salamander											
Anemone caroliniana	Carolina Anemone											
Anemone quinquefolia	Wood Anemone											
Anguilla rostrata	American Eel					p	p	p			p	p
Anthoceros punctatus	a hornwort											
Antigone canadensis pulla	Mississippi Sandhill Crane			p	p							
Antrostomus carolinensis	Chuck-will's-widow											
Antrostomus vociferus	Eastern Whip-poor-will											
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle											
Aphyllon uniflorum	One-flowered Broomrape											
Apios priceana	Price's Potato-bean											
Aplectrum hyemale	Puttyroot											
Aquila chrysaetos	Golden Eagle											
Aquilegia canadensis	Wild Columbine											
Arabidopsis lyrata ssp. *lyrata*	Lyreleaf Rockcress											
Arabis patens	Spreading Rockcress											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Aralia racemosa	American Spikenard											
Archidium hallii	Hall's Archidium Moss											
Archosargus rhomboidalis	Western Atlantic Seabream											
Arcidens confragosus	Rock Pocketbook					p	p	p	p	p	p	
Arctosa sanctaerosae	Santa Rosa Wolf Spider											
Arigomphus lentulus	Stillwater Clubtail		p									
Arigomphus villosipes	Unicorn Clubtail		p									
Aristida beyrichiana	Southern Wiregrass											
Aristida mohrii	Mohr's Three-awn Grass											
Aristida simpliciflora	Southern Three-awn Grass											
Aristida spiciformis	Pine Barren Three-awn Grass											
Aristida tenuispica	Southern Arrowfeather											
Arnoglossum reniforme	Great Indian-plantain											
Asclepias hirtella	Green Milkweed											
Asclepias incarnata	Swamp Milkweed	p										
Asclepias purpurascens	Purple Milkweed											
Asio flammeus	Short-eared Owl											
Aspidogyne querceticola	Low Erythrodes											
Asplenium pinnatifidum	Lobed Spleenwort											
Asplenium resiliens	Black-stem Spleenwort											
Asplenium rhizophyllum	Walking-fern Spleenwort											
Asplenium trichomanes	Maidenhair Spleenwort											
Asplenium x kentuckiense	Kentucky Spleenwort											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Astragalus canadensis var. *canadensis*	Canadian Milkvetch											
Astragalus distortus var. *engelmannii*	Engelmann's Bent Milk-vetch											
Astragalus obcordatus	Florida Milkvetch											
Atractosteus spatula	Alligator Gar	p				p	p	p	p			
Atrytone arogos arogos	Arogos Skipper											
Atrytonopsis loammi	Loammi Skipper											
Attaneuria ruralis	Giant Stone											
Automeris louisiana	Louisiana Eyed Silkmoth											
Avicennia germinans	Black Mangrove											
Aythya affinis	Lesser Scaup	p										
Baetisca escambiensis	A Mayfly											
Bagisara brouana	A Noctuid Moth											
Balduina angustifolia	Coastal Plain Honeycomb-head											
Baptisia nuttalliana	Nuttall's Wild Indigo											
Baptisia sphaerocarpa	Green Wild Indigo											
Bidens trichosperma	Tickseed Sunflower	p										
Boltonia apalachicolensis	Apalachicola Doll's-Daisy											
Bombus fraternus	Southern Plains Bumble Bee											
Bombus pensylvanicus	American Bumblebee											
Bombus variabilis	Variable Cuckoo Bumble Bee											
Borodinia canadensis	Sicklepod											
Botaurus lentiginosus	American Bittern											
Bruchia ravenelii	Ravenel's Bruchia Moss											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Bulbostylis ciliatifolia	Capillary Hairsedge											
Burmannia biflora	Northern Burmannia				p							
Calidris canutus	Red Knot											
Calidris melanotos	Pectoral Sandpiper			p	p							
Calidris pusilla	Semipalmated Sandpiper			p								
Calidris subruficollis	Buff-breasted Sandpiper			p	p							
Callicladium haldanianum	Beautiful Branch Moss											
Calliphysalis carpenteri	Carpenter's Ground-cherry											
Callirhoe triangulata	Clustered Poppy-mallow											
Calopogon barbatus	Bearded Grass-pink											
Calopogon multiflorus	Many-flowered Grass-pink											
Calopogon oklahomensis	Oklahoma Grass-pink											
Camassia scilloides	Wild Hyacinth											
Cambarellus diminutus	Least Crayfish		p	p								
Cambarellus lesliei	Angular Dwarf Crayfish		p	p								
Cambarus girardianus	Tanback Crayfish									p		
Cambarus rusticiformis	Depression Crayfish									p		
Cambarus striatus	Ambiguous Crayfish							p		p	p	p
Campephilus principalis	Ivory-billed Woodpecker											
Campylopus angustiretis	Campylopus Moss											
Canis rufus	Red Wolf											
Canna flaccida	Bandana-of-the-Everglades											
Carcharhinus acronotus	Blacknose Shark											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Carcharhinus plumbeus	Sandbar Shark											
Carcharhinus porosus	Smalltail Shark											
Carcharias taurus	Sand Tiger Shark											
Cardamine angustata	Slender Toothwort											
Cardamine diphylla	Two-leaf Toothwort											
Caretta caretta	Loggerhead Sea Turtle											
Carex alata	Broadwing Sedge	p	p	p	p							
Carex albursina	White Bear Sedge											
Carex baltzellii	Baltzell's Sedge											
Carex bullata var. *greenei*	Button Sedge											
Carex communis	Fibrous-root Sedge											
Carex comosa	Bristly Sedge	p		p								
Carex crawei	Crawe's Sedge											
Carex dasycarpa	Velvet Sedge											
Carex elliottii	Elliott's Sedge											
Carex exilis	Coast Sedge											
Carex fissa var. *aristata*	Hammock Sedge											
Carex fissa var. *fissa*	Hammock Sedge											
Carex frankii	Frank's Sedge											
Carex gracilescens	Slender Sedge											
Carex gravida	Heavy-fruited Sedge											
Carex grayi	Asa Gray's Sedge			p								
Carex grisea	Inflated Narrowleaf Sedge											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Carex hyalina	Tissue Sedge											
Carex impressinervia	Impressed-nerved Sedge											
Carex jamesii	Nebraska Sedge											
Carex laxiflora	Broad Loose-flower Sedge											
Carex mesochorea	Midland Sedge											
Carex mitchelliana	Mitchell's Sedge											
Carex molestiformis	Ozark Plateau Sedge											
Carex normalis	Greater Straw Sedge											
Carex oligocarpa	Eastern Few-fruit Sedge											
Carex oxylepis var. *pubescens*	Sharp-scale Sedge											
Carex prasina	Drooping Sedge											
Carex radiata	Stellate Sedge											
Carex reznicekii	Reznicek's Sedge											
Carex scoparia	Broom Sedge	p										
Carex seorsa	Weak Stellate Sedge											
Carex stipata var. maxima	Stalk-grain Sedge	p										
Carex striata var. *striata*	Southern Peatland Sedge			p	p							
Carex superata	Limestone Forest Sedge											
Carex torta	Twisted Sedge										p	
Carex verrucosa	Warty Sedge											
Carex virescens	Ribbed Sedge											
Carya laciniosa	Big Shellbark Hickory											
Castanea dentata (nut-bearing only)	American Chestnut											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Castilleja coccinea	Scarlet Indian-paintbrush											
Catocala atocala	Brou's Underwing											
Catocala delilah	Delilah Underwing											
Catocala miranda	A Noctuid Moth											
Catostomus commersonii	White Sucker									e		
Caupolicana electa	A Plasterer Bee											
Celithemis amanda	Amanda's Pennant		p	p								
Centronyx henslowii	Henslow's Sparrow											
Ceraclea spongillovorax	A Caddisfly											
Ceratophaga vicinella	Gopher Tortoise Shell Moth											
Ceratophyllum echinatum	Prickly Hornwort		p	p	p							
Ceratopteris pteridoides	Floating Antler Fern					p						
Chaetura pelagica	Chimney Swift											
Chamaecrista horizontalis	Florida Senna											
Chamaecyparis thyoides	Atlantic White Cedar											
Charadrius melodus	Piping Plover											
Charadrius nivosus	Snowy Plover											
Charadrius wilsonia	Wilson's Plover											
Chasmanthium nitidum	Shiny Spikegrass											
Chelone lyonii	Pink Turtlehead											
Chelone obliqua var. *obliqua*	Red Turtlehead											
Chelonia mydas	Green Sea Turtle											
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Cheumatopsyche petersi	Peters' Cheumatopsyche Caddisfly											
Chimaphila maculata	Spotted Wintergreen											
Chimarra falculata	A Caddisfly											
Chlidonias niger	Black Tern					p						
Chordeiles minor	Common Nighthawk											
Chrosomus erythrogaster	Southern Redbelly Dace						p	p				
Cicindela marginipennis	Cobblestone Tiger Beetle											
Cicindela nigrior	Autumn Tiger Beetle											
Cicuta maculata var. *bolanderi*	Bolander's Water-hemlock											
Cirsium lecontei	Leconte's Thistle											
Cirsium muticum	Swamp Thistle											
Cistothorus palustris marianae	Marian's Marsh Wren											
Cladium mariscoides	Twig Rush											
Cladrastis kentukea	Yellowwood			p								
Cleistesiopsis bifaria	Appalachian Small Spreading Pogonia											
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia											
Clematis glaucophylla	White-leaved Leather-flower											
Clematis subreticulata	Alabama Leatherflower											
Clinopodium arkansanum	Low Calamint											
Clinostomus funduloides	Rosyside Dace									p		
Coccyzus americanus	Yellow-billed Cuckoo											
Coelorachis cylindrica	Pitted Jointgrass											
Colinus virginianus	Northern Bobwhite											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Collinsonia anisata	Anise Horsebalm											
Collinsonia punctata	Spotted-leaf Horse-balm											
Cololejeunea setiloba	a liverwort											
Coluber flagellum flagellum	Eastern Coachwhip											
Columbina passerina	Common Ground Dove											
Conopholis americana	American Cancer-root											
Conradina canescens	Blue-sage											
Convolvulus catesbyanus	Catesby's Bindweed											
Cordulegaster bilineata	Brown Spiketail											
Cordulegaster erronea	Tiger Spiketail											
Coreopsis nudata	Georgia Tickseed			p								
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	p	p	p	p							
Cottus carolinae	Banded Sculpin									p		
Coturnicops noveboracensis	Yellow Rail			p	p							
Crataegus ashei	Ashe's Hawthorn											
Crataegus brachyacantha	Blueberry Hawthorn											
Crataegus mendosa	Albertville Hawthorn											
Crataegus mohrii	Mohr's Hawthorn											
Crataegus mollis var. *meridionalis*	Gallion Hawthorn											
Crataegus triflora	Three-flowered Hawthorn											
Creaserinus burrisi	Burris' Burrowing Crayfish											
Creaserinus danielae	Speckled Burrowing Crayfish											
Creaserinus fodiens	Digger Crayfish							p	p		p	p

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Creaserinus gordoni	Camp Shelby Burrowing Crayfish											
Crocanthemum arenicola	Coastal-sand Frostweed											
Crotalus adamanteus	Eastern Diamondback Rattlesnake											
Cryphaea ravenelii	Ravenel's Cryphaea Moss											
Cryptobranchus alleganiensis	Hellbender									p		
Crystallaria asprella	Crystal Darter					p					p	
Cunila origanoides	Common Dittany											
Cuphea viscosissima	Blue Waxweed											
Cuscuta glomerata	Clustered Dodder											
Cycleptus elongatus	Blue Sucker					p	p	p	p			
Cycleptus meridionalis	Southeastern Blue Sucker										p	
Cyclonaias tuberculata	Purple Wartyback									p		
Cylindrocolea rhizantha	a liverwort											
Cyperus articulatus	Jointed Flatsedge											
Cyperus bipartitus	Shining Flatsedge	p										
Cyperus drummondii	Green Flatsedge				p							
Cyperus elegans	Sticky Flatsedge											
Cyperus engelmannii	Slender Sand Flatsedge											
Cyperus flavicomus	White-edged Flatsedge		p	p	p							
Cyperus hystricinus	Bristly Flatsedge											
Cyperus lecontei	Le Conte's Flatsedge											
Cyperus neotropicalis	American Lipocarpha		p	p	p							
Cyperus ochraceus	Pond Flatsedge											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Cyperus refractus	Reflexed Flatsedge											
Cyperus thyrsiflorus	Southcentral Flatsedge											
Cyprinella callistia	Alabama Shiner										p	
Cyprinella galactura	Whitetail Shiner									p		
Cyprinella spiloptera	Spotfin Shiner									p		
Cyprinella whipplei	Steelcolor Shiner							p		p		p
Cypripedium kentuckiense	Kentucky Yellow Lady's-slipper											
Cyprogenia aberti	Western Fanshell						e					
Dalea mountjoyae	White-tassels											
Decodon verticillatus	Hairy Swamp Loosestrife	P		p								
Deirochelys reticularia miaria	Western Chicken Turtle	p	p	p								
Deirochelys reticularia reticularia	Eastern Chicken Turtle		p	p								
Delphinium tricorne	Dwarf Larkspur											
Deparia acrostichoides	Silvery Spleenwort											
Dermochelys coriacea	Atlantic Leatherback Sea Turtle											
Desmodium ochroleucum	Creamflower Tick-trefoil											
Desmodium tenuifolium	Slim-leaf Tick-trefoil											
Desmognathus pascagoula	Pascagoula Dusky Salamander											
Desmognathus valentinei	Valentine's Southern Dusky Salamander											
Diaperia prolifera var. *prolifera*	Big-head Evax											
Dicentra cucullaria	Dutchman's Breeches											
Dichanthelium cryptanthum	Hidden-flower Witchgrass				p							
Dichanthelium curtifolium	Shortleaf Witchgrass											

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Dichanthelium erectifolium	Erect-leaf Witchgrass			p	p							
Dichanthelium nudicaule	Naked-stemmed Panic Grass											
Dichanthelium wrightianum	Wright's Witchgrass			p	p							
Didiplis diandra	Water-purslane	p	p	p	p	p	p			p		p
Didymoglossum membranaceum	Scale-edge Bristle Fern											
Didymoglossum petersii	Dwarf Filmy-fern											
Diphasiastrum digitatum	Fan Club-moss											
Dirca palustris	Eastern Leatherwood											
Drepanolejeunea mosenii	a liverwort											
Drymarchon couperi	Eastern Indigo Snake											
Dryobates borealis	Red-cockaded Woodpecker											
Dryopteris australis	Southern Woodfern											
Dryopteris celsa	Log Fern											
Dryopteris ludoviciana	Southern Shield Wood-fern		p									
Echinodorus berteroi	Upright Burhead	p		p		p						
Egretta caerulea	Little Blue Heron	p	p	p	p							
Egretta rufescens	Reddish Egret											
Egretta tricolor	Tricolored Heron	p	p	p	p							
Elanoides forficatus	Swallow-tailed Kite	p										
Eleocharis albida	White Spikerush											
Eleocharis ambigens	Obscure Spikerush											
Eleocharis atropurpurea	Purple Spikerush				p							
Eleocharis bicolor	Small Spikerush											

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Eleocharis cellulosa	Carolina Spikerush											
Eleocharis coloradoensis	Dwarf Spikerush			p								
Eleocharis compressa	Flat-stem Spikerush											
Eleocharis elliptica	Slender Spikerush	p										
Eleocharis elongata	Slim Spikerush			p	p							
Eleocharis erythropoda	Bald Spikerush											
Eleocharis geniculata	Capitate Spikerush											
Eleocharis intermedia	Matted Spikerush											
Eleocharis lanceolata	Lance-like Spikerush	p										
Eleocharis macrostachya	Creeping Spikerush	p										
Eleocharis melanocarpa	Black-fruit Spikerush				p							
Eleocharis microcarpa var. *microcarpa*	Small-fruit Spikerush	p		p	p							
Eleocharis ovata	Ovate Spikerush			p								
Eleocharis palustris	Creeping Spikerush											
Eleocharis parvula	Small Spikerush	p		p								
Eleocharis radicans	Rooted Spikerush											
Eleocharis robbinsii	Robbins Spikerush				p							
Eleocharis rostellata	Beaked Spikerush											
Eleocharis tenuis var. *pseudoptera*	Slender Spikerush	p										
Eleocharis tenuis var. tenuis	Slender Spikerush	p										
Eleocharis tricostata	Three-angle Spikerush				p							
Eleocharis wolfii	Wolf's Spikerush		p									
Elimia cylindracea	Cylinder Elimia											p

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Elionurus tripsacoides	Pan-american Balsamscale											
Ellipsaria lineolata	Butterfly						p		p	p	p	
Elliptio arca	Alabama Spike										p	
Elliptio arctata	Delicate Spike										p	
Elymus villosus	Hairy Wild Rye											
Enallagma concisum	Cherry Bluet											
Enallagma davisi	Sandhill Bluet		p	p								
Enallagma pallidum	Pale Bluet		p	p								
Enallagma pollutum	Florida Bluet		p	p								
Endotropis lanceolata	Lance-leaved Buckthorn											
Enemion biternatum	False Rue-anemone											
Enneacanthus gloriosus	Bluespotted Sunfish	p	p									
Epinephelus itajara	Atlantic Goliath Grouper											
Epioblasma brevidens	Cumberlandian Combshell									p		
Epioblasma penita	Southern Combshell										p	
Epioblasma triquetra	Snuffbox									p		
Epitheca spinosa	Robust Baskettail	p										
Equisetum arvense	Field Horsetail											
Eretmochelys imbricata	Hawksbill Sea Turtle											
Erigenia bulbosa	Harbinger-of-Spring											
Eriocaulon decangulare var. *latifolium*	Panhandle Pipewort											
Eriocaulon texense	Texas Pipewort											
Eryngium aquaticum	Marsh Rattlesnake-master											

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Eryngium hookeri	Hooker's Coyote-thistle											
Eryngium species 1	Mocassin-master											
Erynnis martialis	Mottled Dusky Wing											
Erythrodiplax umbrata	Band-winged Dragonlet		p	p								
Erythronium albidum	White Trout-lily											
Erythronium americanum ssp. *harperi*	Yellow Trout-lily											
Etheostoma asprigene	Mud Darter	p					p	p	p			
Etheostoma blennioides	Greenside Darter									p		
Etheostoma duryi	Black Darter									p		
Etheostoma faulkneri	Yoknapatawpha Darter							p				
Etheostoma flabellare	Fantail Darter									p		
Etheostoma jessiae	Blueside Darter									p		
Etheostoma kennicotti	Stripetail Darter									p		
Etheostoma lachneri	Tombigbee Darter										p	
Etheostoma nigripinne	Blackfin Darter									p		
Etheostoma raneyi	Yazoo Darter							p				
Etheostoma rupestre	Rock Darter										p	
Etheostoma simoterum	Snubnose Darter									p		
Etheostoma zonifer	Backwater Darter										p	
Eumorpha intermedia	Intermediate Sphinx											
Eupatorium lancifolium	Lanceleaf Thoroughwort											
Euphagus carolinus	Rusty Blackbird		p	p	p							
Euphorbia discoidalis	Summer Spurge											

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Euphorbia inundata var. *inundata*	Florida Pine Spurge											
Euphyes arpa	Palmetto Skipper											
Euphyes bayensis	Bay St. Louis Skipper											
Euphyes dukesi dukesi	Dukes' Skipper											
Euphyes pilatka	Palatka Skipper											
Euploca convolvulacea	Bindweed Heliotrope											
Eurycea longicauda longicauda	Longtail Salamander											
Eurycea lucifuga	Cave Salamander											
Eurycea sphagnicola	Bog Dwarf Salamander											
Eurynia dilatata	Spike						p					p
Eustachys glauca	Saltmarsh Finger-grass											
Eustoma exaltatum	Tall Prairie-gentian											
Eutrichota gopheri	Gopher Tortoise Burrow Fly											
Falco sparverius paulus	Southeastern American Kestrel											
Farancia erytrogramma	Rainbow Snake											
Faxonius erichsonianus	Reticulate Crayfish									p		
Faxonius etnieri	Ets Crayfish							p	p	p	p	p
Faxonius hartfieldi	Yazoo Crayfish							p	p			
Faxonius jonesi	Sucarnoochee River Crayfish										p	
Faxonius mississippiensis	Mississippi Crayfish										p	
Faxonius palmeri	Gray-Speckled Crayfish						p	p	p			p
Faxonius placidus	Bigclaw Crayfish									p		
Faxonius validus	Powerful Crayfish									p		

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Faxonius wrighti	Hardin Crayfish									p		
Faxonius yanahlindus	Spinywrist Crayfish									p		
Fissidens amoenus	Hall's Fissidens Moss											
Forestiera ligustrina	Upland Swamp Privet											
Fraxinus quadrangulata	Blue Ash											
Frullania donnellii	a liverwort											
Fuirena longa	Coastal-plain Umbrella-sedge			p	p							
Fundulus blairae	Western Starhead Topminnow		p				p	p	p		p	
Fundulus dispar	Northern Starhead Topminnow		p			p	p	p	p		p	p
Fundulus euryzonus	Broadstripe Topminnow		p									
Fundulus jenkinsi	Saltmarsh Topminnow											
Gaillardia aestivalis var. *flavovirens*	Lanceleaf Blanket Flower											
Galactia floridana	Florida Milkpea											
Galearis spectabilis	Showy Orchis											
Galium bermudense	Coastal Bedstraw											
Gelochelidon nilotica	Gull-billed Tern											
Gentiana catesbaei	Elliott's Gentian											
Gentianella occidentalis	Stiff Gentian											
Geothlypis formosa	Kentucky Warbler											
Gomphus australis	Clearlake Clubtail											
Gomphus dilatatus	Blackwater Clubtail											
Gomphus geminatus	Twin-striped Clubtail											
Gomphus hodgesi	Hodges' Clubtail											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Goodyera pubescens	Downy Rattlesnake-plantain											
Gopherus polyphemus	Gopher Tortoise											
Graptemys flavimaculata	Yellow-blotched Map Turtle	p										
Graptemys geographica	Common Map Turtle									p		
Graptemys gibbonsi	Pascagoula Map Turtle	p										
Graptemys nigrinoda	Black-knobbed Map Turtle	p									p	
Graptemys oculifera	Ringed Map Turtle	p										
Graptemys pearlensis	Pearl River Map Turtle	p										
Graptemys pulchra	Alabama Map Turtle	p									p	
Gratiola floridana	Florida Hedge-hyssop											
Gratiola ramosa	Branched Hedge-hyssop				p							
Gryllotalpa major	Prairie Mole Cricket											
Gymnocladus dioicus	Kentucky Coffeetree											
Gymnocthebius maureenae	Maureen's Gymnocthebius Minute Moss Beetle											
Gyrinophilus porphyriticus	Spring Salamander									p		
Habenaria quinqueseta	Michaux's Orchid											
Hackelia virginiana	Virginia Stickseed											
Haematopus palliatus	American Oystercatcher											
Halodule wrightii	Shoal-grass											
Halophila engelmannii	Engelmann's Sea-grass											
Hamamelis ovalis	Running Witch-hazel											
Hamiota perovalis	Orange-nacre Mucket										p	
Haploperla chukcho	Chukcho Stonefly											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Hedeoma drummondii var. *drummondii*	Drummond Pennyroyal											
Helanthium tenellum	Dwarf Burhead				p							
Helenium brevifolium	Shortleaf Sneezeweed											
Helianthus debilis ssp. *tardiflorus*	Gulf Coast Beach Sunflower											
Helianthus decapetalus	Thinleaf Sunflower											
Helianthus verticillatus	Whorled Sunflower											
Helmitheros vermivorum	Worm-eating Warbler											
Helopicus bogaloosa	Masked Springfly											
Hemidactylium scutatum	Four-toed Salamander											
Hepatica acutiloba	Sharp-lobed Hepatica											
Herbertia lahue	Herbertia											
Hesperapis oraria	Gulf Coast Solitary Bee											
Hesperia attalus	Dotted Skipper											
Heterandria formosa	Least Killifish		p									
Heteranthera dubia	Grassleaf Mud-plaintain			p				p				p
Heteranthera missouriensis	Missouri Mud-plantain			p								
Heterodon simus	Southern Hognose Snake											
Heuchera macrorhiza	Giant Alumroot											
Heuchera parviflora	Little-flower Alumroot											
Hexalectris spicata	Crested Coralroot											
Hexastylis harperi	Large-flowered Heartleaf											
Hibiscus coccineus	Brilliant Hibiscus											
Hieracium venosum	Rattlesnake Hawkweed											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Hippocampus erectus	Lined Seahorse											
Hobbseus attenuatus	Pearl Rivulet Crayfish			p								
Hobbseus cristatus	Crested Rivulet Crayfish			p							p	
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish			p							p	
Hobbseus petilus	Tombigbee Rivulet Crayfish			p							p	
Hobbseus prominens	Prominence Rivulet Crayfish			p							p	
Hobbseus valleculus	Choctaw Rivulet Crayfish			p								
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish			p				p	p			
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly											
Hottonia inflata	Featherfoil			p								
Hybopsis amnis	Pallid Shiner						p	p	p			p
Hydrastis canadensis	Golden-seal											
Hydroperla fugitans	Austin Springfly					p						
Hydrophyllum appendiculatum	Appendage Waterleaf											
Hydrophyllum macrophyllum	Large-leaf Water-leaf											
Hydroptila cretosa	A Caddisfly										p	
Hydroptila holzenthali	A Caddisfly											
Hydroptila homochitta	A Caddisfly										p	
Hydroptila molsonae	Molson's Microcaddisfly											
Hydroptila poirrieri	A Caddisfly									p		
Hydroptila tusculum	A Caddisfly											
Hylocichla mustelina	Wood Thrush											
Hymenocallis choctawensis	Florida Panhandle Spider-lily											

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Hymenocallis occidentalis var. *eulae*	Woodland Spider-lily											
Hypericum canadense	Canadian St. John's-wort											
Hypericum myrtifolium	Myrtle-leaved St. Johnswort											
Hypoxis curtissii	Curtiss' Yellow Star-grass											
Ichthyomyzon castaneus	Chestnut Lamprey					p	p	p	p	p	p	
Ichthyomyzon unicuspis	Silver Lamprey					p	p					
Ictiobus niger	Black Buffalo	p				p	p	p	p	p	p	
Ilex cassine	Dahoon Holly											
Ipomoea brasiliensis	Railroad Morning-glory											
Ipomoea macrorhiza	Large-stem Morning-glory											
Iresine diffusa	Felicidad											
Iris brevicaulis	Lamance Iris											
Iris giganticaerulea	Giant Blue Iris											
Ischnura prognata	Furtive Forktail		p	p								
Isoetes appalachiana	Appalachian Quillwort	p									p	p
Isoetes louisianensis	Louisiana Quillwort											
Isoetes melanopoda spp. *melanopoda*	Blackfoot Quillwort											
Isoetes melanopoda spp. *silvatica*	Eastern Blackfoot Quillwort											
Isoetes mississippiensis	Mississippi Quillwort											
Isoetes valida	Strong Quillwort											
Isogenoides varians	A Stonefly											
Isonychia berneri	A Mayfly											
Isurus oxyrinchus	Shortfin Mako Shark											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Ixobrychus exilis	Least Bittern											
Juglans cinerea	Butternut											
Juncus interior	Inland Rush			p								
Juniperus silicicola	Southern Red Cedar											
Lacunicambarus dalyae	Jewel Mudbug									p		
Lacunicambarus freudensteini	Banded Mudbug											
Lacunicambarus mobilensis	Lonesome Gravedigger											
Lacunicambarus polychromatus	Paintedhand Mudbug									p		
Lampropeltis calligaster calligaster	Prairie Kingsnake											
Lampropeltis calligaster rhombomaculata	Mole Kingsnake											
Lampropeltis triangulum	Red Milk Snake											
Lampsilis fasciola	Wavy-rayed Lampmussel									p		
Lampsilis hydiana	Louisiana Fatmucket						p					
Lampsilis ovata	Pocketbook									p		
Lanius ludovicianus ludovicianus	Loggerhead Shrike											
Lanius ludovicianus migrans	Migrant Loggerhead Shrike											
Lapara phaeobrachycerous	Gulf Pine Sphinx											
Lasionycteris noctivagans	Silver-haired Bat		p									
Lasiurus cinereus	Hoary Bat	p	p	p	p							
Lasiurus intermedius	Northern Yellow Bat		p									
Lasmigona alabamensis	Alabama Heelsplitter										p	
Lasmigona complanata	White Heelslpitter						p		p	p		
Lasmigona costata	Flutedshell									p		

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Laterallus jamaicensis	Black Rail			p	p							
Lejeunea bermudiana	a liverwort											
Lejeunea cladogyna	a liverwort											
Lejeunea floridana	a liverwort											
Lejeunea laetivirens	a liverwort											
Lepidochelys kempii	Kemp's Ridley Sea Turtle											
Lepidostoma morsei	Morse's Little Plain Brown Sedge											
Leptolucania ommata	Pygmy Killifish		p									
Lethenteron appendix	American Brook Lamprey									p		
Leuctra colemanorum	Yalobusha Needlefly							p				
Leuctra hicksi	Cypress Needlefly											
Liatris elegantula	Blazing-Star											
Ligumia recta	Black Sandshell						p			p	p	
Ligusticum canadense	Nondo Lovage											
Lilaeopsis carolinensis	Carolina Lilaeopsis	p										
Lilium iridollae	Panhangle Lily											
Lilium michiganense	Michigan Lily											
Limnodromus griseus	Short-billed Dowitcher			p								
Limnothlypis swainsonii	Swainson's Warbler											
Limosa fedoa	Marbled Godwit											
Lindera melissifolia	Pondberry											
Lindera subcoriacea	Bog Spicebush			p								
Linum floridanum var. *chrysocarpum*	Yellow-fruited Flax											

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Linum macrocarpum	Spring Hill Flax											
Liodytes rigida deltae	Delta Crayfish Snake											
Liodytes rigida sinicola	Gulf Crayfish Snake											
Lithasia armigera	Armored Rocksnail					p						
Lithasia hubrichti	Big Black Rocksnail								p			
Lithasia lima	Warty Rocksnail									p		
Lithasia verrucosa	Varicose Rocksnail					p						
Lithobates areolatus	Crawfish Frog			p								
Lithobates heckscheri	River Frog	p	p									
Lithobates sevosus	Dusky Gopher Frog			p								
Lithospermum caroliniense	Golden Puccoon											
Lithospermum latifolium	American Gromwell											
Lobelia boykinii	Boykin's Lobelia			p								
Ludwigia alata	Winged Seedbox	p		p								
Lupinus perennis ssp. *gracilis*	Sundail Lupine											
Luziola bahiensis	Brazilian Loziola											
Lycium carolinianum	Carolina Wolf-berry											
Lycopodioides ludovicianum	Gulf Spike-moss											
Lycopus amplectens	Sessile-leaved Bugleweed		p									
Lythrurus fasciolaris	Scarlet Shiner									p		
Machimus polyphemi	Gopher Tortoise Robber Fly											
Macranthera flammea	Flame Flower											
Macrhybopsis meeki	Sicklefin Chub					p						

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Macrochelys temminckii	Alligator Snapping Turtle	p				p	p	p	p		p	p
Macromia alleghaniensis	Allegheny River Cruiser										p	
Macromitrium richardii	Richard's Macromitrium Moss											
Magnolia tripetala	Umbrella Magnolia											
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin											
Malus ioensis	Iowa Crabapple											
Manta birostris	Giant Manta Ray											
Marshallia angustifolia	Slim-leaf Barbara's-buttons											
Marshallia trinervia	Broadleaf Barbara's-buttons											
Marsilea vestita	Marsilea vestita	p										
Matelea baldwyniana	Baldwin's Milkvine											
Matelea decipiens	Old-field Milkvine											
Matelea obliqua	Climbing Milkweed											
Medionidus acutissimus	Alabama Moccasinshell										p	
Megalops atlanticus	Tarpon											
Melanerpes erythrocephalus	Red-headed Woodpecker		p									
Mertensia virginica	Virginia Bluebells											
Metzgeria uncigera	a liverwort											
Micrurus fulvius	Eastern Coral Snake											
Mimulus ringens var. *ringens*	Square-stem Monkeyflower	p										
Miniellus boops	Bigeye Shiner									p		
Miniellus melanostomus	Blackmouth Shiner	p										
Miniellus sabinae	Sabine Shiner							p	p			

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Mirabilis albida	Pale Umbrella-wort											
Mirabilis linearis	Narrowleaf Four-o'clock											
Mitreola angustifolia	Narrowleaf Miterwort											
Mobula hypostoma	Atlantic Pygmy Devil Ray											
Mobula tarapacana	Sicklefin Devil Ray											
Moxostoma anisurum	Silver Redhorse									p		
Moxostoma breviceps	Smallmouth Redhorse									p		
Moxostoma carinatum	River Redhorse									p	p	
Moxostoma duquesnei	Black Redhorse									p		
Muhlenbergia glabrifloris	Inland Muhly											
Muhlenbergia sylvatica	Woodland Muhly											
Muhlenbergia tenuiflora	Slender Muhly											
Mycteria americana	Wood Stork	p	p	p	p							
Myotis austroriparius	Southeastern Myotis	p	p		p							
Myotis grisescens	Gray Bat		p									
Myotis septentrionalis	Northern Long-eared Bat		p									
Myotis sodalis	Indiana Bat		p									
Myriophyllum laxum	Loose Water-milfoil			p	p							
Myriopteris alabamensis	Alabama Lipfern											
Myriopteris lanosa	Hairy Lipfern											
Nabalus asper	Rough Rattlesnake-root											
Nabalus barbatus	Barbed Rattlesnake-root											
Nannothemis bella	Elfin Skimmer											

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Narcine bancroftii	Caribbean Electric Ray											
Necturus maculosus	Common Mudpuppy					p	p			p		
Negaprion brevirostris	Lemon Shark											
Nehalennia gracilis	Sphagnum Sprite		p					p				p
Nemastylis geminiflora	Prairie Pleatleaf											
Nemocapnia carolina	Southern Snowfly											
Neogale frenata	Long-tailed Weasel											
Neonympha helicta	Helicta Satyr											
Neonympha mitchellii	Mitchell's Satyr		p									
Neoperla coxi	A Stonefly											
Neotrichia alabamensis	A Caddisfly											
Nerodia clarkii clarkii	Gulf Salt Marsh Snake											
Nestronia umbellula	Nestronia											
Neurocordulia yamaskanensis	Stygian Shadowdragon										p	
Neviusia alabamensis	Alabama Snow-wreath											
Nicrophorus americanus	American Burying Beetle											
Nothonotus rubrus	Bayou Darter											
Nothonotus rufilineatus	Redline Darter									p		
Notropis micropteryx	Highland Shiner									p		
Noturus exilis	Slender Madtom									p		
Noturus flavus	Stonecat					p						
Noturus gladiator	Piebald Madtom							p	p			p
Noturus munitus	Frecklebelly Madtom										p	

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Nuphar lutea ssp. *ulvacea*	West Florida Cow-Lily											
Nyctanassa violacea	Yellow-crowned Night-Heron	p	p	p	p							
Nycticorax nycticorax	Black-crowned Night-Heron	p	p	p	p							
Nymphaea mexicana	Banana Water-lily											
Nymphoides aquatica	Big Floating-heart		p		p							
Nymphoides cordata	Floating-heart		p		p							
Obovaria arkansasensis	Southern Hickorynut								p		p	
Obovaria c.f. unicolor	Undescribed Hickorynut											
Obovaria subrotunda	Round Hickorynut								P			
Obovaria unicolor	Alabama Hickorynut										p	
Oecetis daytona	A Caddisfly											
Oenothera capillifolia ssp. *capillifolia*	Berlandier's Sundrops											
Oenothera grandiflora	Large-flowered Evening-primrose											
Oenothera heterophylla ssp. *orientalis*	Alabama Evening-primrose											
Oenothera patriciae	Plains Gaura											
Oenothera triloba	Stemless Evening-primrose											
Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle											
Ophiogomphus australis	Southern Snaketail											
Ophisaurus attenuatus	Slender Glass Lizard											
Ophisaurus mimicus	Mimic Glass Lizard											
Opuntia macrorhiza	Twisted-spine Prickly-pear											
Orthochilus ecristatus	Giant Orchid											
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly											

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Orthotrichum exiguum	Small Wood-bark Moss											
Oxalis grandis	Great Yellow Woodsorrel											
Oxalis macrantha	Tufted Yellow Woodsorrel											
Packera aurea	Golden Groundsel											
Packera paupercula var. *paupercula*	Balsam Ragwort											
Packera tomentosa	Woolly Groundsel											
Palafoxia callosa	Small Palafoxia											
Palhinhaea cernua	Nodding Clubmoss											
Panax quinquefolius	American Ginseng											
Papaipema maritima	Maritime Sunflower Borer											
Papaipema sp. 5	Rare Cane Borer Moth											
Paracymus seclusus	Seclusive Water Scavenger Beetle			p								
Parkesia motacilla	Louisiana Waterthrush		p									
Parnassia grandifolia	Largeleaf Grass-of-parnassus			p								
Paronychia baldwinii ssp. *riparia*	Perennial Dune Whitlow-wort											
Paronychia erecta var. *corymbosa*	Beach Sand-squares											
Paronychia erecta var. *erecta*	Beach Sand-squares											
Paronychia patula	Pineland Nailwort											
Paspalum monostachyum	Gulfdune Paspalum											
Passerina ciris	Painted Bunting											
Pellaea atropurpurea	Purple-stem Cliff-brake											
Penstemon canescens	Gray Beardtongue											
Penstemon pallidus	Pale Beardtongue											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Penstemon tenuis	Sharp-sepal Beardtongue											
Percina aurora	Pearl Darter											
Percina evides	Gilt Darter									p		
Percina kathae	Mobile Logperch										p	
Percina lenticula	Freckled Darter										p	
Percina phoxocephala	Slenderhead Darter							e		p		
Percina uranidea	Stargazing Darter									p		
Perideridia americana	Eastern Eulophus											
Perimyotis subflavus	Tricolored Bat	p	p	p								
Perlesta lagoi	A Stonefly							p	p			
Peromyscus polionotus	Oldfield Mouse											
Persicaria hirsuta	Hairy Smartweed											
Peucaea aestivalis	Bachman's Sparrow											
Phacelia bipinnatifida	Fernleaf Phacelia											
Phacelia hirsuta	Hairy Scorpionweed											
Phacelia purshii	Miami-mist											
Phacelia ranunculacea	Blue Scorpionweed											
Phacelia strictiflora var. *robbinsii*	Prairie Scorpion-weed											
Phaseolus sinuatus	Sandhill Bean											
Phenacobius mirabilis	Suckermouth Minnow									e		
Philadelphus hirsutus	Streambank Mock-orange											
Philadelphus inodorus	Scentless Mock Orange											
Philonthus testudo	Western Gopher Tortoise Rove Beetle											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Phlox amplifolia	Largeleaf Phlox											
Physalis arenicola	Cypress-head Ground-cherry											
Physaria gracilis ssp. *gracilis*	Spreading Bladder-pod											
Pieris phillyreifolia	Climbing Fetter-bush				p							
Pinguicula planifolia	Chapman's Butterwort		p	p								
Pinguicula pumila	Dwarf Butterwort											
Pinus clausa	Sand Pine											
Pinus virginiana	Virginia Pine											
Piranga olivacea	Scarlet Tanager (breeding population)											
Pituophis melanoleucus lodingi	Black Pine Snake											
Pituophis melanoleucus melanoleucus	Northern Pine Snake											
Pityopsis pinifolia	Taylor County Silk-grass											
Plagiochila floridana	Florida Leafy Liverwort											
Plagiochila invisa	a liverwort											
Plagiochila virginica var. *virginica*	a liverwort											
Plantago cordata	Heartleaf Plantain											p
Platalea ajaja	Roseate Spoonbill	p	p	p	p							
Platanthera conspicua	Large White-fringe Orchid											
Platanthera integra	Yellow Fringeless Orchid											
Platanthera integrilabia	White Fringeless Orchid											
Platanthera lacera	Green-fringed Orchid			p								
Platanthera nivea	Snowy Orchid											
Platanthera peramoena	Purple Fringeless Orchid		p									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Platygobio gracilis	Flathead Chub					e						
Plestiodon anthracinus	Coal Skink											
Plethobasus cyphyus	Sheepnose						p					
Plethodon ventralis	Southern Zigzag Salamander											
Plethodon websteri clade A	Webster's Salamander Clade A											
Plethodon websteri clade B	Webster's Salamander Clade B											
Pleurobema beadleianum	Mississippi Pigtoe											
Pleurobema curtum	Black Clubshell										p	
Pleurobema decisum	Southern Clubshell										p	
Pleurobema perovatum	Ovate Clubshell										p	
Pleurobema riddellii	Louisiana Pigtoe											
Pleurobema sintoxia	Round Pigtoe						p	p	p			
Pleurobema taitianum	Heavy Pigtoe										e	
Pleurocera vestita	Brook Hornsnail										p	
Pleuronaia barnesiana	Tennessee Pigtoe									e		
Pleuronaia dolabelloides	Slabside Pearlymussel									p		
Pluvialis dominica	American Golden-Plover			p	p							
Pogonomyrmex badius	Florida Harvester Ant											
Polanisia tenuifolia	Slenderleaf Clammy-weed											
Polygonella americana	Southern Jointweed											
Polyodon spathula	Paddlefish	p				p	p	p	p		p	
Polytaenia nuttallii	Prairie Parsley											
Ponthieva racemosa	Shadow-witch Orchid											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Porphyrio martinicus	Purple Gallinule			p	p							
Potamilus alatus	Pink Heelsplitter									p		
Potamilus capax	Fat Pocketbook					p	p					
Potamilus inflatus	Inflated Heelsplitter										p	
Potamogeton epihydrus	Nuttall's Pondweed				p							
Potamogeton pusillus	Slender Pondweed	p		p								
Primula meadia	Shootingstar											
Pristis pectinata	Smalltooth Sawfish											
Pristis pristis	Largtooth Sawfish											
Procambarus ablusus	Hatchie River Crayfish									p		p
Procambarus barbiger	Jackson Prairie Crayfish											
Procambarus bivittatus	Ribbon Crayfish	p										
Procambarus fitzpatricki	Spinytail Crayfish											
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish											
Procambarus hagenianus vesticeps	Egyptian Crayfish											
Procambarus lagniappe	Lagniappe Crayfish										p	
Procambarus lecontei	Mobile Crayfish											
Procambarus lylei	Shutispear Crayfish							p				
Procambarus mancus	Lame Crayfish											
Procambarus penni	Pearl Blackwater Crayfish		p									
Procambarus planirostris	Flatnose Crayfish			p								
Procambarus shermani	Gulf Crayfish			p								
Procambarus viaeviridis	Vernal Crayfish	p		p			p	p	p			p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Protonotaria citrea	Prothonotary Warbler	p	p									
Prunus alabamensis	Alabama Black Cherry											
Pseudacris collinsorum	Collinses' Mountain Chorus Frog			p								
Pseudacris ornata	Ornate Chorus Frog			p								
Pseudemys alabamensis	Alabama Red-bellied Turtle											
Pseudiron centralis	White Sand-river Mayfly											
Pseudodontoides subvexus	Southern Creekmussel										p	
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper											
Pseudotriton montanus	Mud Salamander		p									
Pseudotriton ruber	Red Salamander							p	p	p	p	p
Pteronotropis welaka	Bluenose Shiner											
Ptilimnium costatum	Eastern Bishopweed											
Ptychobranchus fasciolaris	Kidneyshell									p		
Puma concolor coryi	Florida Panther											
Pycnanthemum flexuosum	Narrowleaf Mountainmint											
Pycnanthemum pilosum	Whorled Mountainmint											
Quadrula nobilis	Gulf Mapleleaf											
Quadrula rumphiana	Ridged Mapleleaf										p	
Quercus arkansana	Arkansas Oak											
Quercus austrina	Bluff Oak											
Quercus macrocarpa var. *macrocarpa*	Bur Oak											
Quercus minima	Dwarf Live Oak											
Quercus myrtifolia	Myrtle-leaf Oak											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Quercus oglethorpensis	Oglethorpe's Oak											
Quercus palustris	Pin Oak											
Quiscalus quiscula	Common Grackle											
Radula sullivantii	a liverwort											
Rallus elegans	King Rail			p	p							
Ranunculus flabellaris	Yellow Water-crowfoot			p		p						
Ranunculus septentrionalis	Carolina Buttercup											
Raptoheptagenia cruenta	Wallace's Deepwater Mayfly											
Regina septemvittata	Queen Snake									p		
Rhadinaea flavilata	Pine Woods Snake											
Rhinichthys obtusus	Blacknose Dace									p		
Rhinoptera brasiliensis	Brazilian Cownose Ray											
Rhodobryum roseum	Rose Moss											
Rhododendron alabamense	Alabama Rhododendron											
Rhododendron arborescens	Smooth Azalea											
Rhododendron austrinum	Orange Azalea											
Rhododendron periclymenoides	Pink Azalea											
Rhynchosia latifolia	Prairie Rhynchosia											
Rhynchospora baldwinii	Baldwin's Beakrush											
Rhynchospora brachychaeta	West Indies Beakrush											
Rhynchospora careyana	Broad-fruit Horned Beakrush											
Rhynchospora cephalantha var. *attenuata*	Small-bunched Beaksedge											
Rhynchospora crinipes	Hairy-peduncled Beakrush											

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Rhynchospora curtissii	Curtiss' Beakrush											
Rhynchospora decurrens	Swamp-forest Beakrush											
Rhynchospora distans	Fasciculate Beakrush											
Rhynchospora divergens	White-seeded Beakrush											
Rhynchospora fernaldii	Fernald's Beakrush			p								
Rhynchospora galeana	Short-bristle Baldrush											
Rhynchospora harperi	Harper's Beakrush			p	p							
Rhynchospora harveyi	Harvey's Beakrush											
Rhynchospora leptocarpa	Slender-fruit Beaksedge											
Rhynchospora marliniana	Marlin's Beaksedge											
Rhynchospora perplexa	Pineland Beakrush				p							
Rhynchospora pinetorum	Small's Beakrush			p								
Rhynchospora pleiantha	Brown Beakrush			p								
Rhynchospora torreyana	Torrey's Beakrush				p							
Rhynchospora tracyi	Tracy Beakrush			p	p							
Rhynchospora wrightiana	Wright's Beakrush											
Riccia warnstorfii	a liverwort											
Riparia riparia	Bank Swallow (breeding population)	p				p						
Rorippa aquatica	Lake-cress			p								
Rudbeckia grandiflora var. *alismifolia*	Rough Coneflower											
Rudbeckia subtomentosa	Sweet Coneflower											
Ruellia noctiflora	Night-flowering Wild-petunia			p								
Ruellia pinetorum	Pine Barren Ruellia											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
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Rynchops niger	Black Skimmer											
Sabatia campestris	Prairie Pink											
Sabatia decandra	Bartram's Rose-gentian											
Sabulina patula	Pitcher's Stitchwort											
Sageretia minutiflora	Tiny-leaved Buckthorn											
Sagittaria chapmanii	Chapman's Arrowhead											
Sagittaria isoetiformis	Slender Arrow-head				p							
Salix caroliniana	Carolina Willow											
Salvia chapmanii	Chapman's Sage											
Sapindus marginatus	Florida Soapberry											
Sarracenia alabamensis ssp. *wherryi*	Wherry's Sweet Pitcher-plant											
Sarracenia leucophylla	Whitetop Pitcherplant											
Sarracenia rosea	Purple Pitcherplant											
Scaphirhynchus albus	Pallid Sturgeon					p						
Scaphirhynchus platorynchus	Shovelnose Sturgeon					p	p					
Scaphirhynchus suttkusi	Alabama Sturgeon										e	
Sceptridium jenmanii	Alabama Grapefern											
Sceptridium lunarioides	Winter Grape-fern											
Schisandra glabra	Bay Starvine											
Schizachyrium maritimum	Gulf Bluestem											
Schizachyrium scoparium ssp. *divergens*	Eastern Little Bluestem											
Schizachyrium stoloniferum	Creeping Bluestem											

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Schoenoplectiella purshiana	Weakstalk Bulrush	p		p								
Schoenoplectus americanus	Three-square Bulrush											
Schoenoplectus deltarum	Delta Bulrush											
Schoenoplectus subterminalis	Swaying Rush		p									
Schwalbea americana	Chaffseed			p								
Scirpus divaricatus	Spreading Bulrush											
Scirpus lineatus	Drooping Bulrush											
Scleria elliottii	Broad-leaved Hairy Nutrush											
Scleria georgiana	Georgia Nutrush				p							
Scleria nitida	Shining Nutrush											
Scleria verticillata	Low Nutrush											
Sclerolepis uniflora	Pink Bogbutton											
Scolopax minor	American Woodcock		p									
Scutellaria glabriuscula	Georgia Skullcap											
Scutellaria leonardii	Shale-barren Skullcap											
Sedum pulchellum	Rock Stonecrop											
Sedum ternatum	Wood Stonecrop											
Seiurus aurocapilla	Ovenbird (breeding population)											
Senega ambigua	Whorled Milkwort											
Senega appendiculata	Swamp Milkwort											
Senega balduinii	White Milkwort											
Senega curtissii	Curtiss' Milkwort											

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Senega hookeri	Hooker's Milkwort											
Senega leptostachys	Georgia Milkwort											
Setaria corrugata	Coast Bristle Grass											
Setodes dixiensis	A Caddisfly											
Setophaga cerulea	Cerulean Warbler											
Setophaga discolor	Prairie Warbler											
Shipsa rotunda	Intrepid Forestfly											
Sideroxylon reclinatum ssp. *reclinatum*	Florida Bumelia											
Silene ovata	Ovate Catchfly											
Silene regia	Royal Catchfly											
Silphium confertifolium	Black Belt Rosinweed											
Silphium integrifolium var. *gattingeri*	Gattinger's Rosinweed											
Silphium pinnatifidum	Tansy Rosinweed											
Silphium simpsonii	Simpson's Rosinweed											
Silphium terebinthinaceum var. *luciae-brauniae*	Lucy Braun's Prairie Dock											
Sitta pusilla	Brown-headed Nuthatch											
Smilax hugeri	Huger's Carrion-flower											
Smilax pulverulenta	Downy Carrion-flower											
Solanum pseudogracile	Glowing Nightshade											
Solidago auriculata	Eared Goldenrod											
Solidago brachyphylla	Dixie Goldenrod											
Solidago flaccidifolia	Appalachian Goldenrod											

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Solidago juncea	Early Goldenrod											
Solidago rigidiuscula	Showy Goldenrod											
Solidago sphacelata	Autumn Goldenrod											
Somatochlora georgiana	Coppery Emerald											
Somatochlora provocans	Treetop Emerald											
Sophronanthe hispida	Pineland Hedge-Hyssop											
Sorex longirostris	Southeastern Shrew		p									
Speyeria diana	Diana											
Sphaerocarpos donnellii	a liverwort			p								
Sphaerosporoceros adscendens	a hornwort											
Sphagnum carolinianum	Carolina Peatmoss											
Sphagnum cyclophyllum	Circular-leaf Peatmoss											
Sphagnum fitzgeraldii	Fitzgerald's Peatmoss											
Sphenopholis penyslvanica	Swamp Wedgescale											
Sphyrna lewini	Scalloped Hammerhead											
Sphyrna mokarran	Great Hammerhead											
Spilogale putorius	Eastern Spotted Skunk											
Spinadis simplex	Wallace's Deepwater Mayfly					p						
Spiraea tomentosa	Steeplebush	p										
Spiranthes brevilabris	Texas Ladies'-tresses											
Spiranthes eatonii	Eaton's Ladies'-tresses											
Spiranthes floridana	Florida Ladies'-tresses											

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Spiranthes lacera var. *gracilis*	Southern Slender Ladies'-tresses											
Spiranthes longilabris	Giant Spiral Ladies'-tresses											
Spiranthes magnicamporum	Great Plains Ladies'-tresses											
Spiranthes ovalis var. ovalis	Lesser Ladies'-tresses											
Spizella pusilla	Field Sparrow											
Sporobolus ozarkanus	Ozark Dropseed											
Stellaria corei	Tennessee Chickweed											
Stellaria pubera	Giant Chickweed											
Stenanthium gramineum	Eastern Featherbells											
Stenanthium texanum	Pine Barren Deathcamas											
Sterna hirundo	Common Tern (breeding population)											
Sternula antillarum antillarum	Coastal Least Tern											
Sternula antillarum athalassos	Interior Least Tern	p		p		p	p					
Stewartia ovata	Mountain Camellia											
Stizostedion canadense	Sauger	p				p				e		
Stizostedion sp. *cf. vitreum*	Southern Walleye										p	
Strophitus pascagoulaensis	Pascagoula Creekshell											
Strophitus radiatus	Rayed Creekshell						p	p	p		p	
Strophitus undulatus	Creeper						p	p	p	p		p
Sturnella magna	Eastern Meadowlark											
Stylisma aquatica	Water Southern Morning-glory				p							
Stylisma pickeringii ssp. *pattersonii*	Pickering Morning-glory											

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Stylisma pickeringii ssp. *pickeringii*	Pickering Morning-glory											
Stylogomphus albistylus	Eastern Least Clubtail									p	p	p
Stylurus potulentus	Yellow-sided Clubtail											
Stylurus townesi	Townes' Clubtail											
Swida alternifolia	Alternate-leaf Dogwood											
Symphyotrichum ericoides var. *ericoides*	White Heath Aster											
Symphyotrichum oblongifolium	Aromatic Aster											
Symphyotrichum oolentangiense	Sky Blue Aster											
Symphyotrichum pratense	Barrens Silky Aster											
Symphyotrichum puniceum var. *puniceum*	Purple-stem Aster											
Symphyotrichum puniceum var. *scabricaule*	Rough-stem Aster											
Syngonanthus flavidulus	Yellow Pipewort				p							
Syringodium filiforme	Manatee-grass											
Tachopteryx thoreyi	Gray Petaltail											
Taenidia integerrima	Yellow Pimpernel											
Tetraloniella albata	White-clothed Longhorn											
Thalasseus maximus	Royal Tern											
Thalasseus sandvicensis	Sandwich Tern											
Thalassia testudina	Turtle-grass											
Thalia dealbata	Powdery Thalia	p										
Thalictrum debile	Southern Meadowrue											
Thalictrum dioicum	Early Meadowrue											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Thalictrum macrostylum	Small-leaf Meadowrue											
Thelesperma filifolium	Stiff Greenthread											
Theliderma cylindrica cylindrica	Rabbitsfoot						p		p	p		
Theliderma metanevra	Monkeyface						e	e			e	
Thryomanes bewickii	Bewick's Wren											
Tiarella cordifolia	Heart-leaved Foam-flower											
Tomostima cuneifolia	Wedgeleaf Whitlow-grass											
Tomostima reptans	Carolina Whitlow-grass											
Tortula porteri	Porter's Screw Moss											
Toxolasma lividum	Purple Lilliput									p		
Trachyxiphium hypnaceum	Trachyxiphium Moss											
Tradescantia ernestiana	Ernest's Spider-wort											
Tradescantia hirsuticaulis	Hairy-stem Spiderwort											
Trautvetteria applanata	Ozark Tassel-rue											
Trichechus manatus latirostris	Florida Manatee											
Tridens carolinianus	Carolina Fluff Grass			p								
Tridens chapmanii	Chapman's Redtop											
Trifolium carolinianum	Carolina Clover											
Trifolium reflexum	Buffalo Clover											
Triglochin striata	Arrow-grass											
Trillium flexipes	Drooping Trillium											
Trillium foetidissimum	Fetid Trillium											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Trillium ludovicianum	Louisiana Trillium											
Trillium pusillum var. *ozarkanum*	Ozark Least Trillium											
Tringa flavipes	Lesser Yellowlegs			p	p							
Tringa semipalmata	Willet											
Triphora trianthophoros var. *trianthophorus*	Nodding Pogonia											
Ulmus serotina	September Elm											
Uniomerus declivis	Tapered Pondhorn						p		p		p	
Ursus americanus	Black Bear	p	p	p								
Ursus americanus luteolus	Louisiana Black Bear	p	p	p								
Utricularia olivacea	Piedmont Bladderwort	p	p									
Utricularia purpurea	Purple Bladderwort	p	p		p							
Utterbackiana hartfieldorum	Cypress Floater	p										
Uvularia floridana	Florida Bellwort											
Vaccinium pallidum	Early Lowbush Blueberry											
Vaccinium tenellum	Small Black Blueberry											
Vandenboschia boschiana	Appalachian Bristle Fern											
Verbena xutha	Gulf Vervain											
Vermivora chrysoptera	Golden-winged Warbler											
Veronicastrum virginicum	Culver's-root											
Viburnum acerifolium	Mapleleaf Viburnum											
Villosa vanuxemensis	Mountain Creekshell									p		
Vireo gilvus	Warbling Vireo											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		10.1	10.2	10.3	10.3	11.1	11.2	11.3	11.4	12.1	12.2	12.3
Scientific Name	**Common Name**	OXBOW LAKES	BEAVER PONDS	EPHEMERAL POOLS	EGCP DEPRESSION PONDS	MISSISSIPPI RIVER	MS ALLUVIAL PLAIN	UPPER COASTAL PLAIN, YAZOO	BIG BLACK RIVER	NORTHEAST HILLS, TENNESSEE RIVER DRAINAGE	TOMBIGBEE DRAINAGE	LOWER MS NORTH DRAINAGE (HATCHIE AND WOLF)
Vittaria appalachiana	Appalachian Vittaria											
Xyris chapmanii	Chapman's Yellow-eyed-grass											
Xyris drummondii	Drummond's Yellow-eyed-grass											
Xyris flabelliformis	Savannah Yellow-eyed-grass											
Xyris louisianica	Kral's Yellow-eyed Grass		p									
Xyris scabrifolia	Harper's Yellow-eyed Grass		p									
Xyris serotina	Acid-swamp Yellow-eyed-grass				p							
Yeatesia viridiflora	Green-flower Yeatesia											
Zapus hudsonius	Meadow Jumping Mouse		p									
Zephyranthes simpsonii	Rainlily											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Accipiter striatus	Sharp-shinned Hawk (breeding population)						
Acentrella alachua	A Mayfly			p	p		
Acer leucoderme	Chalk Maple						
Acipenser desotoi	Gulf Sturgeon		p	p	p		
Acipenser fulvescens	Lake Sturgeon						
Actaea racemosa	Black Bugbane						
Actinonaias ligamentina	Mucket						
Adiantum capillus-veneris	Southern Maidenhair-fern						
Aesculus glabra var. *glabra*	Ohio Buckeye						
Aeshna umbrosa	Shadow Darner						
Aetobatus narinari	Whitespotted Eagle Ray						
Agalinis auriculata	Earleaf False Foxglove						
Agalinis filicaulis	Thread-stem False Foxglove						
Agalinis homalantha	San Antonio False-foxglove						
Agalinis linifolia	Flaxleaf False Foxglove						
Agalinis oligophylla	Ridge-stem False-foxglove						
Agalinis skinneriana	Pale False Foxglove						
Agarodes libalis	Spring-loving Psiloneuran Caddisfly						
Agarodes stannardi	Stannard's Agarodes Caddisfly						
Agastache nepetoides	Yellow Giant-hyssop						
Agrimonia incisa	Incised Groovebur						
Alburnops candidus	Silverside Shiner						
Alburnops chalybaeus	Ironcolor Shiner		p	p	p		
Alburnops edwardraneyi	Fluvial Shiner						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Alisma subcordatum	Broad-leaved Water-plantain						
Allocapnia aurora	Aurora Snowfly		p	p		p	p
Allocapnia polemistis	Black Warrior Snowfly						
Alloperla natchez	Natchez Stonefly		p				p
Alophia drummondii	Purple Pleat-leaf						
Alosa alabamae	Alabama Shad	p	e	p	p	e	
Alosa chrysochloris	Skipjack Herring		p	p	p	p	p
Amaranthus australis	Southern Amaranth						
Ambloplites rupestris	Rock Bass						
Amblyomma tuberculatum	Gopher Tortoise Tick						
Amblyscirtes alternata	Least Florida Skipper						
Amblyscirtes reversa	Reversed Roadside Skipper						
Ambystoma texanum	Smallmouth Salamander						
Ambystoma tigrinum	Tiger Salamander						
Ammocrypta clara	Western Sand Darter						
Ammodramus savannarum	Grasshopper Sparrow						
Ammospiza leconteii	LeConte's Sparrow						
Ammospiza maritima	Seaside Sparrow						
Ammospiza nelsoni	Nelson's Sparrow						
Amphiachyris dracunculoides	Broom-snakeroot						
Amphiagrion saucium	Eastern Red Damsel						
Amphinemura alabama	Alabama Forestfly						
Amphiuma pholeter	One-toed Amphiuma						
Amsonia ludoviciana	Louisiana Bluestar						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Anas acuta	Northern Pintail						
Anas fulvigula	Mottled Duck						
Andropogon dealbatus	Wetland White Bluestem						
Andropogon perangustatus	Narrow-leaved Bluestem						
Andropogon tracyi	Tracy's Bluestem						
Aneides aeneus	Green Salamander						
Anemone caroliniana	Carolina Anemone						
Anemone quinquefolia	Wood Anemone						
Anguilla rostrata	American Eel		p	p	p	p	p
Anthoceros punctatus	a hornwort						
Antigone canadensis pulla	Mississippi Sandhill Crane						
Antrostomus carolinensis	Chuck-will's-widow						
Antrostomus vociferus	Eastern Whip-poor-will						
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle						
Aphyllon uniflorum	One-flowered Broomrape						
Apios priceana	Price's Potato-bean						
Aplectrum hyemale	Puttyroot						
Aquila chrysaetos	Golden Eagle						
Aquilegia canadensis	Wild Columbine						
Arabidopsis lyrata ssp. *lyrata*	Lyreleaf Rockcress						
Arabis patens	Spreading Rockcress						
Aralia racemosa	American Spikenard						
Archidium hallii	Hall's Archidium Moss						
Archosargus rhomboidalis	Western Atlantic Seabream						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Arcidens confragosus	Rock Pocketbook	p	p				p
Arctosa sanctaerosae	Santa Rosa Wolf Spider						
Arigomphus lentulus	Stillwater Clubtail						
Arigomphus villosipes	Unicorn Clubtail						
Aristida beyrichiana	Southern Wiregrass						
Aristida mohrii	Mohr's Three-awn Grass						
Aristida simpliciflora	Southern Three-awn Grass						
Aristida spiciformis	Pine Barren Three-awn Grass						
Aristida tenuispica	Southern Arrowfeather						
Arnoglossum reniforme	Great Indian-plantain						
Asclepias hirtella	Green Milkweed						
Asclepias incarnata	Swamp Milkweed						
Asclepias purpurascens	Purple Milkweed						
Asio flammeus	Short-eared Owl						
Aspidogyne querceticola	Low Erythrodes						
Asplenium pinnatifidum	Lobed Spleenwort						
Asplenium resiliens	Black-stem Spleenwort						
Asplenium rhizophyllum	Walking-fern Spleenwort						
Asplenium trichomanes	Maidenhair Spleenwort						
Asplenium x kentuckiense	Kentucky Spleenwort						
Astragalus canadensis var. *canadensis*	Canadian Milkvetch						
Astragalus distortus var. *engelmannii*	Engelmann's Bent Milk-vetch						
Astragalus obcordatus	Florida Milkvetch						
Atractosteus spatula	Alligator Gar		p	p	p		p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Atrytone arogos arogos	Arogos Skipper						
Atrytonopsis loammi	Loammi Skipper						
Attaneuria ruralis	Giant Stone		p				
Automeris louisiana	Louisiana Eyed Silkmoth						
Avicennia germinans	Black Mangrove						
Aythya affinis	Lesser Scaup						
Baetisca escambiensis	A Mayfly			p			
Bagisara brouana	A Noctuid Moth						
Balduina angustifolia	Coastal Plain Honeycomb-head				p		
Baptisia nuttalliana	Nuttall's Wild Indigo						
Baptisia sphaerocarpa	Green Wild Indigo						
Bidens trichosperma	Tickseed Sunflower						
Boltonia apalachicolensis	Apalachicola Doll's-Daisy						
Bombus fraternus	Southern Plains Bumble Bee						
Bombus pensylvanicus	American Bumblebee						
Bombus variabilis	Variable Cuckoo Bumble Bee						
Borodinia canadensis	Sicklepod						
Botaurus lentiginosus	American Bittern						
Bruchia ravenelii	Ravenel's Bruchia Moss						
Bulbostylis ciliatifolia	Capillary Hairsedge						
Burmannia biflora	Northern Burmannia						
Calidris canutus	Red Knot						
Calidris melanotos	Pectoral Sandpiper						
Calidris pusilla	Semipalmated Sandpiper						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	Common Name	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Calidris subruficollis	Buff-breasted Sandpiper						
Callicladium haldanianum	Beautiful Branch Moss						
Calliphysalis carpenteri	Carpenter's Ground-cherry						
Callirhoe triangulata	Clustered Poppy-mallow						
Calopogon barbatus	Bearded Grass-pink						
Calopogon multiflorus	Many-flowered Grass-pink						
Calopogon oklahomensis	Oklahoma Grass-pink						
Camassia scilloides	Wild Hyacinth						
Cambarellus diminutus	Least Crayfish			p	p		
Cambarellus lesliei	Angular Dwarf Crayfish			p			
Cambarus girardianus	Tanback Crayfish						
Cambarus rusticiformis	Depression Crayfish						
Cambarus striatus	Ambiguous Crayfish	p		p	p		p
Campephilus principalis	Ivory-billed Woodpecker						
Campylopus angustiretis	Campylopus Moss						
Canis rufus	Red Wolf						
Canna flaccida	Bandana-of-the-Everglades						
Carcharhinus acronotus	Blacknose Shark						
Carcharhinus plumbeus	Sandbar Shark						
Carcharhinus porosus	Smalltail Shark						
Carcharias taurus	Sand Tiger Shark						
Cardamine angustata	Slender Toothwort						
Cardamine diphylla	Two-leaf Toothwort						
Caretta caretta	Loggerhead Sea Turtle						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Carex alata	Broadwing Sedge						
Carex albursina	White Bear Sedge						
Carex baltzellii	Baltzell's Sedge						
Carex bullata var. *greenei*	Button Sedge						
Carex communis	Fibrous-root Sedge						
Carex comosa	Bristly Sedge						
Carex crawei	Crawe's Sedge						
Carex dasycarpa	Velvet Sedge						
Carex elliottii	Elliott's Sedge						
Carex exilis	Coast Sedge						
Carex fissa var. *aristata*	Hammock Sedge						
Carex fissa var. *fissa*	Hammock Sedge						
Carex frankii	Frank's Sedge						
Carex gracilescens	Slender Sedge						
Carex gravida	Heavy-fruited Sedge						
Carex grayi	Asa Gray's Sedge						
Carex grisea	Inflated Narrowleaf Sedge						
Carex hyalina	Tissue Sedge						
Carex impressinervia	Impressed-nerved Sedge						
Carex jamesii	Nebraska Sedge						
Carex laxiflora	Broad Loose-flower Sedge						
Carex mesochorea	Midland Sedge						
Carex mitchelliana	Mitchell's Sedge						
Carex molestiformis	Ozark Plateau Sedge						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Carex normalis	Greater Straw Sedge						
Carex oligocarpa	Eastern Few-fruit Sedge						
Carex oxylepis var. *pubescens*	Sharp-scale Sedge						
Carex prasina	Drooping Sedge						
Carex radiata	Stellate Sedge						
Carex reznicekii	Reznicek's Sedge						
Carex scoparia	Broom Sedge						
Carex seorsa	Weak Stellate Sedge						
Carex stipata var. *maxima*	Stalk-grain Sedge						
Carex striata var. *striata*	Southern Peatland Sedge						
Carex superata	Limestone Forest Sedge						
Carex torta	Twisted Sedge						
Carex verrucosa	Warty Sedge						
Carex virescens	Ribbed Sedge						
Carya laciniosa	Big Shellbark Hickory						
Castanea dentata (nut-bearing only)	American Chestnut						
Castilleja coccinea	Scarlet Indian-paintbrush						
Catocala atocala	Brou's Underwing						
Catocala delilah	Delilah Underwing						
Catocala miranda	A Noctuid Moth						
Catostomus commersonii	White Sucker						
Caupolicana electa	A Plasterer Bee						
Celithemis amanda	Amanda's Pennant						
Centronyx henslowii	Henslow's Sparrow						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Ceraclea spongillovorax	A Caddisfly						
Ceratophaga vicinella	Gopher Tortoise Shell Moth						
Ceratophyllum echinatum	Prickly Hornwort						
Ceratopteris pteridoides	Floating Antler Fern						
Chaetura pelagica	Chimney Swift						
Chamaecrista horizontalis	Florida Senna						
Chamaecyparis thyoides	Atlantic White Cedar				p		
Charadrius melodus	Piping Plover						
Charadrius nivosus	Snowy Plover						
Charadrius wilsonia	Wilson's Plover						
Chasmanthium nitidum	Shiny Spikegrass						
Chelone lyonii	Pink Turtlehead						
Chelone obliqua var. *obliqua*	Red Turtlehead						
Chelonia mydas	Green Sea Turtle						
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle						
Cheumatopsyche petersi	Peters' Cheumatopsyche Caddisfly			p	p		
Chimaphila maculata	Spotted Wintergreen						
Chimarra falculata	A Caddisfly			p	p		
Chlidonias niger	Black Tern						
Chordeiles minor	Common Nighthawk						
Chrosomus erythrogaster	Southern Redbelly Dace						p
Cicindela marginipennis	Cobblestone Tiger Beetle						
Cicindela nigrior	Autumn Tiger Beetle						
Cicuta maculata var. *bolanderi*	Bolander's Water-hemlock						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Cirsium lecontei	Leconte's Thistle						
Cirsium muticum	Swamp Thistle						
Cistothorus palustris marianae	Marian's Marsh Wren						
Cladium mariscoides	Twig Rush						
Cladrastis kentukea	Yellowwood						
Cleistesiopsis bifaria	Appalachian Small Spreading Pogonia						
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia						
Clematis glaucophylla	White-leaved Leather-flower						
Clematis subreticulata	Alabama Leatherflower						
Clinopodium arkansanum	Low Calamint						
Clinostomus funduloides	Rosyside Dace						
Coccyzus americanus	Yellow-billed Cuckoo						
Coelorachis cylindrica	Pitted Jointgrass						
Colinus virginianus	Northern Bobwhite						
Collinsonia anisata	Anise Horsebalm						
Collinsonia punctata	Spotted-leaf Horse-balm						
Cololejeunea setiloba	a liverwort						
Coluber flagellum flagellum	Eastern Coachwhip						
Columbina passerina	Common Ground Dove						
Conopholis americana	American Cancer-root						
Conradina canescens	Blue-sage						
Convolvulus catesbyanus	Catesby's Bindweed						
Cordulegaster bilineata	Brown Spiketail						
Cordulegaster erronea	Tiger Spiketail						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Coreopsis nudata	Georgia Tickseed						
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat						
Cottus carolinae	Banded Sculpin						
Coturnicops noveboracensis	Yellow Rail						
Crataegus ashei	Ashe's Hawthorn						
Crataegus brachyacantha	Blueberry Hawthorn						
Crataegus mendosa	Albertville Hawthorn						
Crataegus mohrii	Mohr's Hawthorn						
Crataegus mollis var. *meridionalis*	Gallion Hawthorn						
Crataegus triflora	Three-flowered Hawthorn						
Creaserinus burrisi	Burris' Burrowing Crayfish						
Creaserinus danielae	Speckled Burrowing Crayfish						
Creaserinus fodiens	Digger Crayfish	p					p
Creaserinus gordoni	Camp Shelby Burrowing Crayfish						
Crocanthemum arenicola	Coastal-sand Frostweed						
Crotalus adamanteus	Eastern Diamondback Rattlesnake						
Cryphaea ravenelii	Ravenel's Cryphaea Moss						
Cryptobranchus alleganiensis	Hellbender						
Crystallaria asprella	Crystal Darter		p				p
Cunila origanoides	Common Dittany						
Cuphea viscosissima	Blue Waxweed						
Cuscuta glomerata	Clustered Dodder						
Cycleptus elongatus	Blue Sucker						
Cycleptus meridionalis	Southeastern Blue Sucker		p	p			

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	Common Name	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Cyclonaias tuberculata	Purple Wartyback						
Cylindrocolea rhizantha	a liverwort						
Cyperus articulatus	Jointed Flatsedge						
Cyperus bipartitus	Shining Flatsedge						
Cyperus drummondii	Green Flatsedge						
Cyperus elegans	Sticky Flatsedge						
Cyperus engelmannii	Slender Sand Flatsedge						
Cyperus flavicomus	White-edged Flatsedge						
Cyperus hystricinus	Bristly Flatsedge						
Cyperus lecontei	Le Conte's Flatsedge						
Cyperus neotropicalis	American Lipocarpha						
Cyperus ochraceus	Pond Flatsedge						
Cyperus refractus	Reflexed Flatsedge						
Cyperus thyrsiflorus	Southcentral Flatsedge						
Cyprinella callistia	Alabama Shiner						
Cyprinella galactura	Whitetail Shiner						
Cyprinella spiloptera	Spotfin Shiner						
Cyprinella whipplei	Steelcolor Shiner						
Cypripedium kentuckiense	Kentucky Yellow Lady's-slipper						
Cyprogenia aberti	Western Fanshell						
Dalea mountjoyae	White-tassels						
Decodon verticillatus	Hairy Swamp Loosestrife						
Deirochelys reticularia miaria	Western Chicken Turtle						
Deirochelys reticularia reticularia	Eastern Chicken Turtle						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Delphinium tricorne	Dwarf Larkspur						
Deparia acrostichoides	Silvery Spleenwort						
Dermochelys coriacea	Atlantic Leatherback Sea Turtle						
Desmodium ochroleucum	Creamflower Tick-trefoil						
Desmodium tenuifolium	Slim-leaf Tick-trefoil						
Desmognathus pascagoula	Pascagoula Dusky Salamander						
Desmognathus valentinei	Valentine's Southern Dusky Salamander						
Diaperia prolifera var. *prolifera*	Big-head Evax						
Dicentra cucullaria	Dutchman's Breeches						
Dichanthelium cryptanthum	Hidden-flower Witchgrass						
Dichanthelium curtifolium	Shortleaf Witchgrass						
Dichanthelium erectifolium	Erect-leaf Witchgrass						
Dichanthelium nudicaule	Naked-stemmed Panic Grass						
Dichanthelium wrightianum	Wright's Witchgrass						
Didiplis diandra	Water-purslane	p	p	p	p	p	
Didymoglossum membranaceum	Scale-edge Bristle Fern						
Didymoglossum petersii	Dwarf Filmy-fern						
Diphasiastrum digitatum	Fan Club-moss						
Dirca palustris	Eastern Leatherwood						
Drepanolejeunea mosenii	a liverwort						
Drymarchon couperi	Eastern Indigo Snake						
Dryobates borealis	Red-cockaded Woodpecker						
Dryopteris australis	Southern Woodfern						
Dryopteris celsa	Log Fern						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Dryopteris ludoviciana	Southern Shield Wood-fern						
Echinodorus berteroi	Upright Burhead						
Egretta caerulea	Little Blue Heron						
Egretta rufescens	Reddish Egret						
Egretta tricolor	Tricolored Heron						
Elanoides forficatus	Swallow-tailed Kite						
Eleocharis albida	White Spikerush						
Eleocharis ambigens	Obscure Spikerush						
Eleocharis atropurpurea	Purple Spikerush						
Eleocharis bicolor	Small Spikerush						
Eleocharis cellulosa	Carolina Spikerush						
Eleocharis coloradoensis	Dwarf Spikerush						
Eleocharis compressa	Flat-stem Spikerush						
Eleocharis elliptica	Slender Spikerush						
Eleocharis elongata	Slim Spikerush						
Eleocharis erythropoda	Bald Spikerush						
Eleocharis geniculata	Capitate Spikerush						
Eleocharis intermedia	Matted Spikerush						
Eleocharis lanceolata	Lance-like Spikerush						
Eleocharis macrostachya	Creeping Spikerush						
Eleocharis melanocarpa	Black-fruit Spikerush						
Eleocharis microcarpa var. *microcarpa*	Small-fruit Spikerush						
Eleocharis ovata	Ovate Spikerush						
Eleocharis palustris	Creeping Spikerush						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	Common Name	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Eleocharis parvula	Small Spikerush						
Eleocharis radicans	Rooted Spikerush						
Eleocharis robbinsii	Robbins Spikerush						
Eleocharis rostellata	Beaked Spikerush						
Eleocharis tenuis var. *pseudoptera*	Slender Spikerush						
Eleocharis tenuis var. *tenuis*	Slender Spikerush						
Eleocharis tricostata	Three-angle Spikerush						
Eleocharis wolfii	Wolf's Spikerush						
Elimia cylindracea	Cylinder Elimia						
Elionurus tripsacoides	Pan-american Balsamscale						
Ellipsaria lineolata	Butterfly						
Elliptio arca	Alabama Spike						
Elliptio arctata	Delicate Spike	e	p	p			
Elymus villosus	Hairy Wild Rye						
Enallagma concisum	Cherry Bluet			p	p		
Enallagma davisi	Sandhill Bluet			p			
Enallagma pallidum	Pale Bluet		p	p	p		
Enallagma pollutum	Florida Bluet		p	p	p		
Endotropis lanceolata	Lance-leaved Buckthorn						
Enemion biternatum	False Rue-anemone						
Enneacanthus gloriosus	Bluespotted Sunfish			p	p		
Epinephelus itajara	Atlantic Goliath Grouper						
Epioblasma brevidens	Cumberlandian Combshell						
Epioblasma penita	Southern Combshell						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Epioblasma triquetra	Snuffbox						
Epitheca spinosa	Robust Baskettail						p
Equisetum arvense	Field Horsetail						
Eretmochelys imbricata	Hawksbill Sea Turtle						
Erigenia bulbosa	Harbinger-of-Spring						
Eriocaulon decangulare var. *latifolium*	Panhandle Pipewort						
Eriocaulon texense	Texas Pipewort						
Eryngium aquaticum	Marsh Rattlesnake-master					p	
Eryngium hookeri	Hooker's Coyote-thistle						
Eryngium species 1	Mocassin-master						
Erynnis martialis	Mottled Dusky Wing						
Erythrodiplax umbrata	Band-winged Dragonlet						
Erythronium albidum	White Trout-lily						
Erythronium americanum ssp. *harperi*	Yellow Trout-lily						
Etheostoma asprigene	Mud Darter						p
Etheostoma blennioides	Greenside Darter						
Etheostoma duryi	Black Darter						
Etheostoma faulkneri	Yoknapatawpha Darter						
Etheostoma flabellare	Fantail Darter						
Etheostoma jessiae	Blueside Darter						
Etheostoma kennicotti	Stripetail Darter						
Etheostoma lachneri	Tombigbee Darter						
Etheostoma nigripinne	Blackfin Darter						
Etheostoma raneyi	Yazoo Darter						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Etheostoma rupestre	Rock Darter						
Etheostoma simoterum	Snubnose Darter						
Etheostoma zonifer	Backwater Darter						
Eumorpha intermedia	Intermediate Sphinx						
Eupatorium lancifolium	Lanceleaf Thoroughwort						
Euphagus carolinus	Rusty Blackbird						
Euphorbia discoidalis	Summer Spurge						
Euphorbia inundata var. *inundata*	Florida Pine Spurge						
Euphyes arpa	Palmetto Skipper						
Euphyes bayensis	Bay St. Louis Skipper						
Euphyes dukesi dukesi	Dukes' Skipper						
Euphyes pilatka	Palatka Skipper						
Euploca convolvulacea	Bindweed Heliotrope						
Eurycea longicauda longicauda	Longtail Salamander						
Eurycea lucifuga	Cave Salamander						
Eurycea sphagnicola	Bog Dwarf Salamander						
Eurynia dilatata	Spike						
Eustachys glauca	Saltmarsh Finger-grass						
Eustoma exaltatum	Tall Prairie-gentian						
Eutrichota gopheri	Gopher Tortoise Burrow Fly						
Falco sparverius paulus	Southeastern American Kestrel						
Farancia erytrogramma	Rainbow Snake		p	p	p		
Faxonius erichsonianus	Reticulate Crayfish						
Faxonius etnieri	Ets Crayfish	p					

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Faxonius hartfieldi	Yazoo Crayfish						
Faxonius jonesi	Sucarnoochee River Crayfish						
Faxonius mississippiensis	Mississippi Crayfish						
Faxonius palmeri	Gray-Speckled Crayfish	p	p	p	p	p	p
Faxonius placidus	Bigclaw Crayfish						
Faxonius validus	Powerful Crayfish						
Faxonius wrighti	Hardin Crayfish						
Faxonius yanahlindus	Spinywrist Crayfish						
Fissidens amoenus	Hall's Fissidens Moss						
Forestiera ligustrina	Upland Swamp Privet						
Fraxinus quadrangulata	Blue Ash						
Frullania donnellii	a liverwort						
Fuirena longa	Coastal-plain Umbrella-sedge						
Fundulus blairae	Western Starhead Topminnow		p	p	p		p
Fundulus dispar	Northern Starhead Topminnow	p	p	p	p		
Fundulus euryzonus	Broadstripe Topminnow					p	
Fundulus jenkinsi	Saltmarsh Topminnow		p	p	p		
Gaillardia aestivalis var. *flavovirens*	Lanceleaf Blanket Flower						
Galactia floridana	Florida Milkpea						
Galearis spectabilis	Showy Orchis						
Galium bermudense	Coastal Bedstraw						
Gelochelidon nilotica	Gull-billed Tern						
Gentiana catesbaei	Elliott's Gentian						
Gentianella occidentalis	Stiff Gentian						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	Common Name	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Geothlypis formosa	Kentucky Warbler						
Gomphus australis	Clearlake Clubtail			p			
Gomphus dilatatus	Blackwater Clubtail			p			
Gomphus geminatus	Twin-striped Clubtail			p			
Gomphus hodgesi	Hodges' Clubtail			p			
Goodyera pubescens	Downy Rattlesnake-plantain						
Gopherus polyphemus	Gopher Tortoise						
Graptemys flavimaculata	Yellow-blotched Map Turtle			p			
Graptemys geographica	Common Map Turtle						
Graptemys gibbonsi	Pascagoula Map Turtle			p			
Graptemys nigrinoda	Black-knobbed Map Turtle						
Graptemys oculifera	Ringed Map Turtle	p	p				
Graptemys pearlensis	Pearl River Map Turtle	p	p				
Graptemys pulchra	Alabama Map Turtle						
Gratiola floridana	Florida Hedge-hyssop						
Gratiola ramosa	Branched Hedge-hyssop						
Gryllotalpa major	Prairie Mole Cricket						
Gymnocladus dioicus	Kentucky Coffeetree						
Gymnocthebius maureenae	Maureen's Gymnocthebius Minute Moss Beetle			p			
Gyrinophilus porphyriticus	Spring Salamander						
Habenaria quinqueseta	Michaux's Orchid						
Hackelia virginiana	Virginia Stickseed						
Haematopus palliatus	American Oystercatcher						
Halodule wrightii	Shoal-grass						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
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Halophila engelmannii	Engelmann's Sea-grass						
Hamamelis ovalis	Running Witch-hazel						
Hamiota perovalis	Orange-nacre Mucket						
Haploperla chukcho	Chukcho Stonefly						p
Hedeoma drummondii var. *drummondii*	Drummond Pennyroyal						
Helanthium tenellum	Dwarf Burhead						
Helenium brevifolium	Shortleaf Sneezeweed						
Helianthus debilis ssp. *tardiflorus*	Gulf Coast Beach Sunflower						
Helianthus decapetalus	Thinleaf Sunflower						
Helianthus verticillatus	Whorled Sunflower						
Helmitheros vermivorum	Worm-eating Warbler						
Helopicus bogaloosa	Masked Springfly	p	p	p			
Hemidactylium scutatum	Four-toed Salamander						
Hepatica acutiloba	Sharp-lobed Hepatica						
Herbertia lahue	Herbertia						
Hesperapis oraria	Gulf Coast Solitary Bee						
Hesperia attalus	Dotted Skipper						
Heterandria formosa	Least Killifish		p		p		
Heteranthera dubia	Grassleaf Mud-plaintain				p		
Heteranthera missouriensis	Missouri Mud-plantain		p				
Heterodon simus	Southern Hognose Snake						
Heuchera macrorhiza	Giant Alumroot						
Heuchera parviflora	Little-flower Alumroot						
Hexalectris spicata	Crested Coralroot						

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Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Hexastylis harperi	Large-flowered Heartleaf						
Hibiscus coccineus	Brilliant Hibiscus				p		
Hieracium venosum	Rattlesnake Hawkweed						
Hippocampus erectus	Lined Seahorse						
Hobbseus attenuatus	Pearl Rivulet Crayfish	p		p			
Hobbseus cristatus	Crested Rivulet Crayfish			p			
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish						
Hobbseus petilus	Tombigbee Rivulet Crayfish						
Hobbseus prominens	Prominence Rivulet Crayfish						
Hobbseus valleculus	Choctaw Rivulet Crayfish	p					
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish						
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly						p
Hottonia inflata	Featherfoil						
Hybopsis amnis	Pallid Shiner						p
Hydrastis canadensis	Golden-seal						
Hydroperla fugitans	Austin Springfly						
Hydrophyllum appendiculatum	Appendage Waterleaf						
Hydrophyllum macrophyllum	Large-leaf Water-leaf						
Hydroptila cretosa	A Caddisfly						
Hydroptila holzenthali	A Caddisfly			p			
Hydroptila homochitta	A Caddisfly						
Hydroptila molsonae	Molson's Microcaddisfly		p	p	p		
Hydroptila poirrieri	A Caddisfly			p		p	p
Hydroptila tusculum	A Caddisfly					p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Hylocichla mustelina	Wood Thrush						
Hymenocallis choctawensis	Florida Panhandle Spider-lily				p		
Hymenocallis occidentalis var. *eulae*	Woodland Spider-lily						
Hypericum canadense	Canadian St. John's-wort						
Hypericum myrtifolium	Myrtle-leaved St. Johnswort						
Hypoxis curtissii	Curtiss' Yellow Star-grass						
Ichthyomyzon castaneus	Chestnut Lamprey		p			p	p
Ichthyomyzon unicuspis	Silver Lamprey						
Ictiobus niger	Black Buffalo	p	p				
Ilex cassine	Dahoon Holly						
Ipomoea brasiliensis	Railroad Morning-glory						
Ipomoea macrorhiza	Large-stem Morning-glory						
Iresine diffusa	Felicidad						
Iris brevicaulis	Lamance Iris						
Iris giganticaerulea	Giant Blue Iris						
Ischnura prognata	Furtive Forktail						
Isoetes appalachiana	Appalachian Quillwort						
Isoetes louisianensis	Louisiana Quillwort						
Isoetes melanopoda spp. *melanopoda*	Blackfoot Quillwort						
Isoetes melanopoda spp. *silvatica*	Eastern Blackfoot Quillwort						
Isoetes mississippiensis	Mississippi Quillwort						
Isoetes valida	Strong Quillwort						
Isogenoides varians	A Stonefly		p				
Isonychia berneri	A Mayfly			p	p		

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Isurus oxyrinchus	Shortfin Mako Shark						
Ixobrychus exilis	Least Bittern						
Juglans cinerea	Butternut						
Juncus interior	Inland Rush						
Juniperus silicicola	Southern Red Cedar						
Lacunicambarus dalyae	Jewel Mudbug						
Lacunicambarus freudensteini	Banded Mudbug			p			
Lacunicambarus mobilensis	Lonesome Gravedigger			p			
Lacunicambarus polychromatus	Paintedhand Mudbug						
Lampropeltis calligaster calligaster	Prairie Kingsnake						
Lampropeltis calligaster rhombomaculata	Mole Kingsnake						
Lampropeltis triangulum	Red Milk Snake						
Lampsilis fasciola	Wavy-rayed Lampmussel						
Lampsilis hydiana	Louisiana Fatmucket						
Lampsilis ovata	Pocketbook						
Lanius ludovicianus ludovicianus	Loggerhead Shrike						
Lanius ludovicianus migrans	Migrant Loggerhead Shrike						
Lapara phaeobrachycerous	Gulf Pine Sphinx						
Lasionycteris noctivagans	Silver-haired Bat						
Lasiurus cinereus	Hoary Bat						
Lasiurus intermedius	Northern Yellow Bat						
Lasmigona alabamensis	Alabama Heelsplitter						
Lasmigona complanata	White Heelslpitter	p	p	p			
Lasmigona costata	Flutedshell						

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Laterallus jamaicensis	Black Rail						
Lejeunea bermudiana	a liverwort						
Lejeunea cladogyna	a liverwort						
Lejeunea floridana	a liverwort						
Lejeunea laetivirens	a liverwort						
Lepidochelys kempii	Kemp's Ridley Sea Turtle						
Lepidostoma morsei	Morse's Little Plain Brown Sedge			p			
Leptolucania ommata	Pygmy Killifish			e			
Lethenteron appendix	American Brook Lamprey						
Leuctra colemanorum	Yalobusha Needlefly						
Leuctra hicksi	Cypress Needlefly			p			
Liatris elegantula	Blazing-Star						
Ligumia recta	Black Sandshell		e				
Ligusticum canadense	Nondo Lovage						
Lilaeopsis carolinensis	Carolina Lilaeopsis						
Lilium iridollae	Panhangle Lily						
Lilium michiganense	Michigan Lily						
Limnodromus griseus	Short-billed Dowitcher						
Limnothlypis swainsonii	Swainson's Warbler						
Limosa fedoa	Marbled Godwit						
Lindera melissifolia	Pondberry						
Lindera subcoriacea	Bog Spicebush						
Linum floridanum var. *chrysocarpum*	Yellow-fruited Flax						
Linum macrocarpum	Spring Hill Flax						

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Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Liodytes rigida deltae	Delta Crayfish Snake						
Liodytes rigida sinicola	Gulf Crayfish Snake						
Lithasia armigera	Armored Rocksnail						
Lithasia hubrichti	Big Black Rocksnail						
Lithasia lima	Warty Rocksnail						
Lithasia verrucosa	Varicose Rocksnail						
Lithobates areolatus	Crawfish Frog						
Lithobates heckscheri	River Frog			p	p		
Lithobates sevosus	Dusky Gopher Frog						
Lithospermum caroliniense	Golden Puccoon						
Lithospermum latifolium	American Gromwell						
Lobelia boykinii	Boykin's Lobelia						
Ludwigia alata	Winged Seedbox					p	
Lupinus perennis ssp. *gracilis*	Sundail Lupine						
Luziola bahiensis	Brazilian Loziola				p		
Lycium carolinianum	Carolina Wolf-berry						
Lycopodioides ludovicianum	Gulf Spike-moss						
Lycopus amplectens	Sessile-leaved Bugleweed						
Lythrurus fasciolaris	Scarlet Shiner						
Machimus polyphemi	Gopher Tortoise Robber Fly						
Macranthera flammea	Flame Flower						
Macrhybopsis meeki	Sicklefin Chub						
Macrochelys temminckii	Alligator Snapping Turtle	p	p	p	p	p	p
Macromia alleghaniensis	Allegheny River Cruiser			p			

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Macromitrium richardii	Richard's Macromitrium Moss						
Magnolia tripetala	Umbrella Magnolia						
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin						
Malus ioensis	Iowa Crabapple						
Manta birostris	Giant Manta Ray						
Marshallia angustifolia	Slim-leaf Barbara's-buttons						
Marshallia trinervia	Broadleaf Barbara's-buttons						
Marsilea vestita	Marsilea vestita						
Matelea baldwyniana	Baldwin's Milkvine						
Matelea decipiens	Old-field Milkvine						
Matelea obliqua	Climbing Milkweed						
Medionidus acutissimus	Alabama Moccasinshell						
Megalops atlanticus	Tarpon						
Melanerpes erythrocephalus	Red-headed Woodpecker						
Mertensia virginica	Virginia Bluebells						
Metzgeria uncigera	a liverwort						
Micrurus fulvius	Eastern Coral Snake						
Mimulus ringens var. *ringens*	Square-stem Monkeyflower						
Miniellus boops	Bigeye Shiner						
Miniellus melanostomus	Blackmouth Shiner			p			
Miniellus sabinae	Sabine Shiner						
Mirabilis albida	Pale Umbrella-wort						
Mirabilis linearis	Narrowleaf Four-o'clock						
Mitreola angustifolia	Narrowleaf Miterwort						

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Mobula hypostoma	Atlantic Pygmy Devil Ray						
Mobula tarapacana	Sicklefin Devil Ray						
Moxostoma anisurum	Silver Redhorse						
Moxostoma breviceps	Smallmouth Redhorse						
Moxostoma carinatum	River Redhorse		p	p			
Moxostoma duquesnei	Black Redhorse						
Muhlenbergia glabrifloris	Inland Muhly						
Muhlenbergia sylvatica	Woodland Muhly						
Muhlenbergia tenuiflora	Slender Muhly						
Mycteria americana	Wood Stork						
Myotis austroriparius	Southeastern Myotis						
Myotis grisescens	Gray Bat						
Myotis septentrionalis	Northern Long-eared Bat						
Myotis sodalis	Indiana Bat						
Myriophyllum laxum	Loose Water-milfoil						
Myriopteris alabamensis	Alabama Lipfern						
Myriopteris lanosa	Hairy Lipfern						
Nabalus asper	Rough Rattlesnake-root						
Nabalus barbatus	Barbed Rattlesnake-root						
Nannothemis bella	Elfin Skimmer			p			
Narcine bancroftii	Caribbean Electric Ray						
Necturus maculosus	Common Mudpuppy						
Negaprion brevirostris	Lemon Shark						
Nehalennia gracilis	Sphagnum Sprite						

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Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Nemastylis geminiflora	Prairie Pleatleaf						
Nemocapnia carolina	Southern Snowfly					p	p
Neogale frenata	Long-tailed Weasel						
Neonympha helicta	Helicta Satyr						
Neonympha mitchellii	Mitchell's Satyr						
Neoperla coxi	A Stonefly						p
Neotrichia alabamensis	A Caddisfly						
Nerodia clarkii clarkii	Gulf Salt Marsh Snake						
Nestronia umbellula	Nestronia						
Neurocordulia yamaskanensis	Stygian Shadowdragon	p		p			
Neviusia alabamensis	Alabama Snow-wreath						
Nicrophorus americanus	American Burying Beetle						
Nothonotus rubrus	Bayou Darter						p
Nothonotus rufilineatus	Redline Darter						
Notropis micropteryx	Highland Shiner						
Noturus exilis	Slender Madtom						
Noturus flavus	Stonecat						
Noturus gladiator	Piebald Madtom						
Noturus munitus	Frecklebelly Madtom		p				
Nuphar lutea ssp. *ulvacea*	West Florida Cow-Lily				p		
Nyctanassa violacea	Yellow-crowned Night-Heron						
Nycticorax nycticorax	Black-crowned Night-Heron						
Nymphaea mexicana	Banana Water-lily						
Nymphoides aquatica	Big Floating-heart			p	p		

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Nymphoides cordata	Floating-heart						
Obovaria arkansasensis	Southern Hickorynut	p	p			p	
Obovaria c.f. unicolor	Undescribed Hickorynut	p	p	p		p	
Obovaria subrotunda	Round Hickorynut						p
Obovaria unicolor	Alabama Hickorynut						
Oecetis daytona	A Caddisfly			p	p		
Oenothera capillifolia ssp. *capillifolia*	Berlandier's Sundrops						
Oenothera grandiflora	Large-flowered Evening-primrose						
Oenothera heterophylla ssp. *orientalis*	Alabama Evening-primrose						
Oenothera patriciae	Plains Gaura						
Oenothera triloba	Stemless Evening-primrose						
Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle						
Ophiogomphus australis	Southern Snaketail					p	
Ophisaurus attenuatus	Slender Glass Lizard						
Ophisaurus mimicus	Mimic Glass Lizard						
Opuntia macrorhiza	Twisted-spine Prickly-pear						
Orthochilus ecristatus	Giant Orchid						
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly				p		
Orthotrichum exiguum	Small Wood-bark Moss						
Oxalis grandis	Great Yellow Woodsorrel						
Oxalis macrantha	Tufted Yellow Woodsorrel						
Packera aurea	Golden Groundsel						
Packera paupercula var. *paupercula*	Balsam Ragwort						

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Packera tomentosa	Woolly Groundsel						
Palafoxia callosa	Small Palafoxia						
Palhinhaea cernua	Nodding Clubmoss						
Panax quinquefolius	American Ginseng						
Papaipema maritima	Maritime Sunflower Borer						
Papaipema sp. 5	Rare Cane Borer Moth						
Paracymus seclusus	Seclusive Water Scavenger Beetle						
Parkesia motacilla	Louisiana Waterthrush						
Parnassia grandifolia	Largeleaf Grass-of-parnassus						
Paronychia baldwinii ssp. *riparia*	Perennial Dune Whitlow-wort						
Paronychia erecta var. *corymbosa*	Beach Sand-squares						
Paronychia erecta var. *erecta*	Beach Sand-squares						
Paronychia patula	Pineland Nailwort						
Paspalum monostachyum	Gulfdune Paspalum						
Passerina ciris	Painted Bunting						
Pellaea atropurpurea	Purple-stem Cliff-brake						
Penstemon canescens	Gray Beardtongue						
Penstemon pallidus	Pale Beardtongue						
Penstemon tenuis	Sharp-sepal Beardtongue						
Percina aurora	Pearl Darter		e	p			
Percina evides	Gilt Darter						
Percina kathae	Mobile Logperch						
Percina lenticula	Freckled Darter		p	p			
Percina phoxocephala	Slenderhead Darter						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
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Percina uranidea	Stargazing Darter						
Perideridia americana	Eastern Eulophus						
Perimyotis subflavus	Tricolored Bat						
Perlesta lagoi	A Stonefly			p			
Peromyscus polionotus	Oldfield Mouse						
Persicaria hirsuta	Hairy Smartweed						
Peucaea aestivalis	Bachman's Sparrow						
Phacelia bipinnatifida	Fernleaf Phacelia						
Phacelia hirsuta	Hairy Scorpionweed						
Phacelia purshii	Miami-mist						
Phacelia ranunculacea	Blue Scorpionweed						
Phacelia strictiflora var. *robbinsii*	Prairie Scorpion-weed						
Phaseolus sinuatus	Sandhill Bean						
Phenacobius mirabilis	Suckermouth Minnow						
Philadelphus hirsutus	Streambank Mock-orange						
Philadelphus inodorus	Scentless Mock Orange						
Philonthus testudo	Western Gopher Tortoise Rove Beetle						
Phlox amplifolia	Largeleaf Phlox						
Physalis arenicola	Cypress-head Ground-cherry						
Physaria gracilis ssp. *gracilis*	Spreading Bladder-pod						
Pieris phillyreifolia	Climbing Fetter-bush						
Pinguicula planifolia	Chapman's Butterwort						
Pinguicula pumila	Dwarf Butterwort						
Pinus clausa	Sand Pine						

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Pinus virginiana	Virginia Pine						
Piranga olivacea	Scarlet Tanager (breeding population)						
Pituophis melanoleucus lodingi	Black Pine Snake						
Pituophis melanoleucus melanoleucus	Northern Pine Snake						
Pityopsis pinifolia	Taylor County Silk-grass						
Plagiochila floridana	Florida Leafy Liverwort						
Plagiochila invisa	a liverwort						
Plagiochila virginica var. *virginica*	a liverwort						
Plantago cordata	Heartleaf Plantain						
Platalea ajaja	Roseate Spoonbill						
Platanthera conspicua	Large White-fringe Orchid						
Platanthera integra	Yellow Fringeless Orchid						
Platanthera integrilabia	White Fringeless Orchid						
Platanthera lacera	Green-fringed Orchid						
Platanthera nivea	Snowy Orchid						
Platanthera peramoena	Purple Fringeless Orchid						
Platygobio gracilis	Flathead Chub						
Plestiodon anthracinus	Coal Skink						
Plethobasus cyphyus	Sheepnose						
Plethodon ventralis	Southern Zigzag Salamander						
Plethodon websteri clade A	Webster's Salamander Clade A						
Plethodon websteri clade B	Webster's Salamander Clade B						
Pleurobema beadleianum	Mississippi Pigtoe	p	p	p	p	p	
Pleurobema curtum	Black Clubshell						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
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Pleurobema decisum	Southern Clubshell						
Pleurobema perovatum	Ovate Clubshell						
Pleurobema riddellii	Louisiana Pigtoe		p				
Pleurobema sintoxia	Round Pigtoe						
Pleurobema taitianum	Heavy Pigtoe						
Pleurocera vestita	Brook Hornsnail		p	p			
Pleuronaia barnesiana	Tennessee Pigtoe						
Pleuronaia dolabelloides	Slabside Pearlymussel						
Pluvialis dominica	American Golden-Plover						
Pogonomyrmex badius	Florida Harvester Ant						
Polanisia tenuifolia	Slenderleaf Clammy-weed						
Polygonella americana	Southern Jointweed						
Polyodon spathula	Paddlefish		p	p			
Polytaenia nuttallii	Prairie Parsley						
Ponthieva racemosa	Shadow-witch Orchid						
Porphyrio martinicus	Purple Gallinule						
Potamilus alatus	Pink Heelsplitter						
Potamilus capax	Fat Pocketbook						p
Potamilus inflatus	Inflated Heelsplitter		p			p	
Potamogeton epihydrus	Nuttall's Pondweed			p	p		
Potamogeton pusillus	Slender Pondweed		p	p	p		
Primula meadia	Shootingstar						
Pristis pectinata	Smalltooth Sawfish						
Pristis pristis	Largtooth Sawfish						

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Procambarus ablusus	Hatchie River Crayfish						
Procambarus barbiger	Jackson Prairie Crayfish						
Procambarus bivittatus	Ribbon Crayfish		p	p			
Procambarus fitzpatricki	Spinytail Crayfish						
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish						
Procambarus hagenianus vesticeps	Egyptian Crayfish						
Procambarus lagniappe	Lagniappe Crayfish						
Procambarus lecontei	Mobile Crayfish			p	p		
Procambarus lylei	Shutispear Crayfish						
Procambarus mancus	Lame Crayfish			p			
Procambarus penni	Pearl Blackwater Crayfish		p				p
Procambarus planirostris	Flatnose Crayfish			p	p		
Procambarus shermani	Gulf Crayfish		p	p	p		
Procambarus viaeviridis	Vernal Crayfish						
Protonotaria citrea	Prothonotary Warbler						
Prunus alabamensis	Alabama Black Cherry						
Pseudacris collinsorum	Collinses' Mountain Chorus Frog						
Pseudacris ornata	Ornate Chorus Frog						
Pseudemys alabamensis	Alabama Red-bellied Turtle			p	p		
Pseudiron centralis	White Sand-river Mayfly						
Pseudodontoides subvexus	Southern Creekmussel						
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper						
Pseudotriton montanus	Mud Salamander		p	p	p		
Pseudotriton ruber	Red Salamander	p		p			p

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Pteronotropis welaka	Bluenose Shiner		p	p	p		
Ptilimnium costatum	Eastern Bishopweed						
Ptychobranchus fasciolaris	Kidneyshell						
Puma concolor coryi	Florida Panther						
Pycnanthemum flexuosum	Narrowleaf Mountainmint						
Pycnanthemum pilosum	Whorled Mountainmint						
Quadrula nobilis	Gulf Mapleleaf	p	p	p			
Quadrula rumphiana	Ridged Mapleleaf						
Quercus arkansana	Arkansas Oak						
Quercus austrina	Bluff Oak						
Quercus macrocarpa var. *macrocarpa*	Bur Oak						
Quercus minima	Dwarf Live Oak						
Quercus myrtifolia	Myrtle-leaf Oak						
Quercus oglethorpensis	Oglethorpe's Oak						
Quercus palustris	Pin Oak						
Quiscalus quiscula	Common Grackle						
Radula sullivantii	a liverwort						
Rallus elegans	King Rail						
Ranunculus flabellaris	Yellow Water-crowfoot						
Ranunculus septentrionalis	Carolina Buttercup						
Raptoheptagenia cruenta	Wallace's Deepwater Mayfly						
Regina septemvittata	Queen Snake			p			
Rhadinaea flavilata	Pine Woods Snake						

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Rhinichthys obtusus	Blacknose Dace						
Rhinoptera brasiliensis	Brazilian Cownose Ray						
Rhodobryum roseum	Rose Moss						
Rhododendron alabamense	Alabama Rhododendron						
Rhododendron arborescens	Smooth Azalea						
Rhododendron austrinum	Orange Azalea						
Rhododendron periclymenoides	Pink Azalea						
Rhynchosia latifolia	Prairie Rhynchosia						
Rhynchospora baldwinii	Baldwin's Beakrush						
Rhynchospora brachychaeta	West Indies Beakrush						
Rhynchospora careyana	Broad-fruit Horned Beakrush						
Rhynchospora cephalantha var. *attenuata*	Small-bunched Beaksedge						
Rhynchospora crinipes	Hairy-peduncled Beakrush				p	p	
Rhynchospora curtissii	Curtiss' Beakrush						
Rhynchospora decurrens	Swamp-forest Beakrush						
Rhynchospora distans	Fasciculate Beakrush						
Rhynchospora divergens	White-seeded Beakrush						
Rhynchospora fernaldii	Fernald's Beakrush						
Rhynchospora galeana	Short-bristle Baldrush						
Rhynchospora harperi	Harper's Beakrush						
Rhynchospora harveyi	Harvey's Beakrush						
Rhynchospora leptocarpa	Slender-fruit Beaksedge						
Rhynchospora marliniana	Marlin's Beaksedge						
Rhynchospora perplexa	Pineland Beakrush						

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Rhynchospora pinetorum	Small's Beakrush						
Rhynchospora pleiantha	Brown Beakrush						
Rhynchospora torreyana	Torrey's Beakrush						
Rhynchospora tracyi	Tracy Beakrush						
Rhynchospora wrightiana	Wright's Beakrush						
Riccia warnstorfii	a liverwort			p	p		
Riparia riparia	Bank Swallow (breeding population)						
Rorippa aquatica	Lake-cress						
Rudbeckia grandiflora var. *alismifolia*	Rough Coneflower						
Rudbeckia subtomentosa	Sweet Coneflower						
Ruellia noctiflora	Night-flowering Wild-petunia						
Ruellia pinetorum	Pine Barren Ruellia						
Rynchops niger	Black Skimmer						
Sabatia campestris	Prairie Pink						
Sabatia decandra	Bartram's Rose-gentian						
Sabulina patula	Pitcher's Stitchwort						
Sageretia minutiflora	Tiny-leaved Buckthorn						
Sagittaria chapmanii	Chapman's Arrowhead				p		
Sagittaria isoetiformis	Slender Arrow-head						
Salix caroliniana	Carolina Willow						
Salvia chapmanii	Chapman's Sage						
Sapindus marginatus	Florida Soapberry						
Sarracenia alabamensis ssp. *wherryi*	Wherry's Sweet Pitcher-plant						
Sarracenia leucophylla	Whitetop Pitcherplant						

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Sarracenia rosea	Purple Pitcherplant						
Scaphirhynchus albus	Pallid Sturgeon						
Scaphirhynchus platorynchus	Shovelnose Sturgeon						
Scaphirhynchus suttkusi	Alabama Sturgeon						
Sceptridium jenmanii	Alabama Grapefern						
Sceptridium lunarioides	Winter Grape-fern						
Schisandra glabra	Bay Starvine						
Schizachyrium maritimum	Gulf Bluestem						
Schizachyrium scoparium ssp. *divergens*	Eastern Little Bluestem						
Schizachyrium stoloniferum	Creeping Bluestem						
Schoenoplectiella purshiana	Weakstalk Bulrush						
Schoenoplectus americanus	Three-square Bulrush						
Schoenoplectus deltarum	Delta Bulrush						
Schoenoplectus subterminalis	Swaying Rush				p		
Schwalbea americana	Chaffseed						
Scirpus divaricatus	Spreading Bulrush						
Scirpus lineatus	Drooping Bulrush						
Scleria elliottii	Broad-leaved Hairy Nutrush						
Scleria georgiana	Georgia Nutrush						
Scleria nitida	Shining Nutrush						
Scleria verticillata	Low Nutrush						
Sclerolepis uniflora	Pink Bogbutton						
Scolopax minor	American Woodcock						
Scutellaria glabriuscula	Georgia Skullcap						

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Scutellaria leonardii	Shale-barren Skullcap						
Sedum pulchellum	Rock Stonecrop						
Sedum ternatum	Wood Stonecrop						
Seiurus aurocapilla	Ovenbird (breeding population)						
Senega ambigua	Whorled Milkwort						
Senega appendiculata	Swamp Milkwort						
Senega balduinii	White Milkwort						
Senega curtissii	Curtiss' Milkwort						
Senega hookeri	Hooker's Milkwort						
Senega leptostachys	Georgia Milkwort						
Setaria corrugata	Coast Bristle Grass						
Setodes dixiensis	A Caddisfly					p	
Setophaga cerulea	Cerulean Warbler						
Setophaga discolor	Prairie Warbler						
Shipsa rotunda	Intrepid Forestfly						
Sideroxylon reclinatum ssp. *reclinatum*	Florida Bumelia						
Silene ovata	Ovate Catchfly						
Silene regia	Royal Catchfly						
Silphium confertifolium	Black Belt Rosinweed						
Silphium integrifolium var. *gattingeri*	Gattinger's Rosinweed						
Silphium pinnatifidum	Tansy Rosinweed						
Silphium simpsonii	Simpson's Rosinweed						
Silphium terebinthinaceum var. *luciae-brauniae*	Lucy Braun's Prairie Dock						
Sitta pusilla	Brown-headed Nuthatch						

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Smilax hugeri	Huger's Carrion-flower						
Smilax pulverulenta	Downy Carrion-flower						
Solanum pseudogracile	Glowing Nightshade						
Solidago auriculata	Eared Goldenrod						
Solidago brachyphylla	Dixie Goldenrod						
Solidago flaccidifolia	Appalachian Goldenrod						
Solidago juncea	Early Goldenrod						
Solidago rigidiuscula	Showy Goldenrod						
Solidago sphacelata	Autumn Goldenrod						
Somatochlora georgiana	Coppery Emerald			p			
Somatochlora provocans	Treetop Emerald						
Sophronanthe hispida	Pineland Hedge-Hyssop						
Sorex longirostris	Southeastern Shrew						
Speyeria diana	Diana						
Sphaerocarpos donnellii	a liverwort						
Sphaerosporoceros adscendens	a hornwort						
Sphagnum carolinianum	Carolina Peatmoss						
Sphagnum cyclophyllum	Circular-leaf Peatmoss						
Sphagnum fitzgeraldii	Fitzgerald's Peatmoss						
Sphenopholis penyslvanica	Swamp Wedgescale						
Sphyrna lewini	Scalloped Hammerhead						
Sphyrna mokarran	Great Hammerhead						
Spilogale putorius	Eastern Spotted Skunk						
Spinadis simplex	Wallace's Deepwater Mayfly						

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Spiraea tomentosa	Steeplebush						
Spiranthes brevilabris	Texas Ladies'-tresses						
Spiranthes eatonii	Eaton's Ladies'-tresses						
Spiranthes floridana	Florida Ladies'-tresses						
Spiranthes lacera var. *gracilis*	Southern Slender Ladies'-tresses						
Spiranthes longilabris	Giant Spiral Ladies'-tresses						
Spiranthes magnicamporum	Great Plains Ladies'-tresses						
Spiranthes ovalis var. *ovalis*	Lesser Ladies'-tresses						
Spizella pusilla	Field Sparrow						
Sporobolus ozarkanus	Ozark Dropseed						
Stellaria corei	Tennessee Chickweed						
Stellaria pubera	Giant Chickweed						
Stenanthium gramineum	Eastern Featherbells						
Stenanthium texanum	Pine Barren Deathcamas						
Sterna hirundo	Common Tern (breeding population)						
Sternula antillarum antillarum	Coastal Least Tern						
Sternula antillarum athalassos	Interior Least Tern						
Stewartia ovata	Mountain Camellia						
Stizostedion canadense	Sauger						p
Stizostedion sp. *cf. vitreum*	Southern Walleye						
Strophitus pascagoulaensis	Pascagoula Creekshell	p	p	p	p	p	
Strophitus radiatus	Rayed Creekshell						p
Strophitus undulatus	Creeper						p
Sturnella magna	Eastern Meadowlark						

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Stylisma aquatica	Water Southern Morning-glory						
Stylisma pickeringii ssp. *pattersonii*	Pickering Morning-glory						
Stylisma pickeringii ssp. *pickeringii*	Pickering Morning-glory						
Stylogomphus albistylus	Eastern Least Clubtail						
Stylurus potulentus	Yellow-sided Clubtail		p	p	p		
Stylurus townesi	Townes' Clubtail		p	p			
Swida alternifolia	Alternate-leaf Dogwood						
Symphyotrichum ericoides var. *ericoides*	White Heath Aster						
Symphyotrichum oblongifolium	Aromatic Aster						
Symphyotrichum oolentangiense	Sky Blue Aster						
Symphyotrichum pratense	Barrens Silky Aster						
Symphyotrichum puniceum var. *puniceum*	Purple-stem Aster						
Symphyotrichum puniceum var. *scabricaule*	Rough-stem Aster						
Syngonanthus flavidulus	Yellow Pipewort						
Syringodium filiforme	Manatee-grass						
Tachopteryx thoreyi	Gray Petaltail						
Taenidia integerrima	Yellow Pimpernel						
Tetraloniella albata	White-clothed Longhorn						
Thalasseus maximus	Royal Tern						
Thalasseus sandvicensis	Sandwich Tern						
Thalassia testudina	Turtle-grass						
Thalia dealbata	Powdery Thalia						
Thalictrum debile	Southern Meadowrue						
Thalictrum dioicum	Early Meadowrue						

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Thalictrum macrostylum	Small-leaf Meadowrue						
Thelesperma filifolium	Stiff Greenthread						
Theliderma cylindrica cylindrica	Rabbitsfoot						
Theliderma metanevra	Monkeyface						
Thryomanes bewickii	Bewick's Wren						
Tiarella cordifolia	Heart-leaved Foam-flower						
Tomostima cuneifolia	Wedgeleaf Whitlow-grass						
Tomostima reptans	Carolina Whitlow-grass						
Tortula porteri	Porter's Screw Moss						
Toxolasma lividum	Purple Lilliput						
Trachyxiphium hypnaceum	Trachyxiphium Moss						
Tradescantia ernestiana	Ernest's Spider-wort						
Tradescantia hirsuticaulis	Hairy-stem Spiderwort						
Trautvetteria applanata	Ozark Tassel-rue						
Trichechus manatus latirostris	Florida Manatee		p	p	p		
Tridens carolinianus	Carolina Fluff Grass						
Tridens chapmanii	Chapman's Redtop						
Trifolium carolinianum	Carolina Clover						
Trifolium reflexum	Buffalo Clover						
Triglochin striata	Arrow-grass				p	p	
Trillium flexipes	Drooping Trillium						
Trillium foetidissimum	Fetid Trillium						
Trillium ludovicianum	Louisiana Trillium						
Trillium pusillum var. *ozarkanum*	Ozark Least Trillium						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Tringa flavipes	Lesser Yellowlegs						
Tringa semipalmata	Willet						
Triphora trianthophoros var. *trianthophorus*	Nodding Pogonia						
Ulmus serotina	September Elm						
Uniomerus declivis	Tapered Pondhorn		p	p			p
Ursus americanus	Black Bear						
Ursus americanus luteolus	Louisiana Black Bear						
Utricularia olivacea	Piedmont Bladderwort						
Utricularia purpurea	Purple Bladderwort						
Utterbackiana hartfieldorum	Cypress Floater	p	p	p			
Uvularia floridana	Florida Bellwort						
Vaccinium pallidum	Early Lowbush Blueberry						
Vaccinium tenellum	Small Black Blueberry						
Vandenboschia boschiana	Appalachian Bristle Fern						
Verbena xutha	Gulf Vervain						
Vermivora chrysoptera	Golden-winged Warbler						
Veronicastrum virginicum	Culver's-root						
Viburnum acerifolium	Mapleleaf Viburnum						
Villosa vanuxemensis	Mountain Creekshell						
Vireo gilvus	Warbling Vireo						
Vittaria appalachiana	Appalachian Vittaria						
Xyris chapmanii	Chapman's Yellow-eyed-grass						
Xyris drummondii	Drummond's Yellow-eyed-grass						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		13.1	13.2	14.1	14.2	15.1	15.2
Scientific Name	**Common Name**	UPPER COASTAL PLAIN, PEARL RIVER	LOWER COASTAL PLAIN, PEARL	PASCAGOULA DRAINAGE	COASTAL RIVERS	LAKE PONCHARTRAIN	LOWER MS SOUTH DRAINAGE
Xyris flabelliformis	Savannah Yellow-eyed-grass						
Xyris louisianica	Kral's Yellow-eyed Grass						
Xyris scabrifolia	Harper's Yellow-eyed Grass						
Xyris serotina	Acid-swamp Yellow-eyed-grass						
Yeatesia viridiflora	Green-flower Yeatesia						
Zapus hudsonius	Meadow Jumping Mouse						
Zephyranthes simpsonii	Rainlily						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
Scientific Name	**Common Name**	FLORIDA PANHANDLE BEACH VEGETATION	MAINLAND BEACHES	EGCP DUNE AND COASTAL GRASSLAND	EGCP MARITIME FOREST	EGCP FRESHWATER TIDAL SWAMP	SCP INTERDUNAL WETLANDS	NORTH-CENTRAL GoMx SALT AND BRACKISH TIDAL MARSHES	MISSISSIPPI SOUND FRESH AND OLIGOHALINE MARSHES	SHELL MIDDENS AND ESTUARINE SHRUBLANDS
Accipiter striatus	Sharp-shinned Hawk (breeding population)									
Acentrella alachua	A Mayfly									
Acer leucoderme	Chalk Maple									
Acipenser desotoi	Gulf Sturgeon									
Acipenser fulvescens	Lake Sturgeon									
Actaea racemosa	Black Bugbane									
Actinonaias ligamentina	Mucket									
Adiantum capillus-veneris	Southern Maidenhair-fern									
Aesculus glabra var. *glabra*	Ohio Buckeye									
Aeshna umbrosa	Shadow Darner									
Aetobatus narinari	Whitespotted Eagle Ray									
Agalinis auriculata	Earleaf False Foxglove									
Agalinis filicaulis	Thread-stem False Foxglove									
Agalinis homalantha	San Antonio False-foxglove									
Agalinis linifolia	Flaxleaf False Foxglove									
Agalinis oligophylla	Ridge-stem False-foxglove									
Agalinis skinneriana	Pale False Foxglove									
Agarodes libalis	Spring-loving Psiloneuran Caddisfly									
Agarodes stannardi	Stannard's Agarodes Caddisfly									
Agastache nepetoides	Yellow Giant-hyssop									
Agrimonia incisa	Incised Groovebur									
Alburnops candidus	Silverside Shiner									
Alburnops chalybaeus	Ironcolor Shiner									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
Scientific Name	**Common Name**	FLORIDA PANHANDLE BEACH VEGETATION	MAINLAND BEACHES	EGCP DUNE AND COASTAL GRASSLAND	EGCP MARITIME FOREST	EGCP FRESHWATER TIDAL SWAMP	SCP INTERDUNAL WETLANDS	NORTH-CENTRAL GoMx SALT AND BRACKISH TIDAL MARSHES	MISSISSIPPI SOUND FRESH AND OLIGOHALINE MARSHES	SHELL MIDDENS AND ESTUARINE SHRUBLANDS
Alburnops edwardraneyi	Fluvial Shiner									
Alisma subcordatum	Broad-leaved Water-plantain									
Allocapnia aurora	Aurora Snowfly									
Allocapnia polemistis	Black Warrior Snowfly									
Alloperla natchez	Natchez Stonefly									
Alophia drummondii	Purple Pleat-leaf									
Alosa alabamae	Alabama Shad									
Alosa chrysochloris	Skipjack Herring									
Amaranthus australis	Southern Amaranth	p					p	p	p	
Ambloplites rupestris	Rock Bass									
Amblyomma tuberculatum	Gopher Tortoise Tick									
Amblyscirtes alternata	Least Florida Skipper									
Amblyscirtes reversa	Reversed Roadside Skipper									
Ambystoma texanum	Smallmouth Salamander									
Ambystoma tigrinum	Tiger Salamander									
Ammocrypta clara	Western Sand Darter									
Ammodramus savannarum	Grasshopper Sparrow									
Ammospiza leconteii	LeConte's Sparrow									
Ammospiza maritima	Seaside Sparrow						p	p		
Ammospiza nelsoni	Nelson's Sparrow						p	p		
Amphiachyris dracunculoides	Broom-snakeroot									
Amphiagrion saucium	Eastern Red Damsel									
Amphinemura alabama	Alabama Forestfly									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
Scientific Name	**Common Name**	FLORIDA PANHANDLE BEACH VEGETATION	MAINLAND BEACHES	EGCP DUNE AND COASTAL GRASSLAND	EGCP MARITIME FOREST	EGCP FRESHWATER TIDAL SWAMP	SCP INTERDUNAL WETLANDS	NORTH-CENTRAL GoMx SALT AND BRACKISH TIDAL MARSHES	MISSISSIPPI SOUND FRESH AND OLIGOHALINE MARSHES	SHELL MIDDENS AND ESTUARINE SHRUBLANDS
Amphiuma pholeter	One-toed Amphiuma									
Amsonia ludoviciana	Louisiana Bluestar									
Anas acuta	Northern Pintail							p		
Anas fulvigula	Mottled Duck						p	p		
Andropogon dealbatus	Wetland White Bluestem						p			
Andropogon perangustatus	Narrow-leaved Bluestem									
Andropogon tracyi	Tracy's Bluestem									
Aneides aeneus	Green Salamander									
Anemone caroliniana	Carolina Anemone									
Anemone quinquefolia	Wood Anemone									
Anguilla rostrata	American Eel									
Anthoceros punctatus	a hornwort									
Antigone canadensis pulla	Mississippi Sandhill Crane							p		
Antrostomus carolinensis	Chuck-will's-widow			p	p					p
Antrostomus vociferus	Eastern Whip-poor-will			p	p					p
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle									
Aphyllon uniflorum	One-flowered Broomrape									
Apios priceana	Price's Potato-bean									
Aplectrum hyemale	Puttyroot									
Aquila chrysaetos	Golden Eagle									
Aquilegia canadensis	Wild Columbine									
Arabidopsis lyrata ssp. lyrata	Lyreleaf Rockcress									
Arabis patens	Spreading Rockcress									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Aralia racemosa	American Spikenard									
Archidium hallii	Hall's Archidium Moss					p				
Archosargus rhomboidalis	Western Atlantic Seabream							p		
Arcidens confragosus	Rock Pocketbook									
Arctosa sanctaerosae	Santa Rosa Wolf Spider	p	p	p						
Arigomphus lentulus	Stillwater Clubtail									
Arigomphus villosipes	Unicorn Clubtail									
Aristida beyrichiana	Southern Wiregrass									
Aristida mohrii	Mohr's Three-awn Grass									
Aristida simpliciflora	Southern Three-awn Grass									
Aristida spiciformis	Pine Barren Three-awn Grass					p	p			
Aristida tenuispica	Southern Arrowfeather	p					p			
Arnoglossum reniforme	Great Indian-plantain									
Asclepias hirtella	Green Milkweed									
Asclepias incarnata	Swamp Milkweed									
Asclepias purpurascens	Purple Milkweed									
Asio flammeus	Short-eared Owl			p			p	p		
Aspidogyne querceticola	Low Erythrodes									
Asplenium pinnatifidum	Lobed Spleenwort									
Asplenium resiliens	Black-stem Spleenwort									
Asplenium rhizophyllum	Walking-fern Spleenwort									
Asplenium trichomanes	Maidenhair Spleenwort									
Asplenium x kentuckiense	Kentucky Spleenwort									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Astragalus canadensis var. *canadensis*	Canadian Milkvetch									
Astragalus distortus var. *engelmannii*	Engelmann's Bent Milk-vetch									
Astragalus obcordatus	Florida Milkvetch					p				
Atractosteus spatula	Alligator Gar									
Atrytone arogos arogos	Arogos Skipper									
Atrytonopsis loammi	Loammi Skipper									
Attaneuria ruralis	Giant Stone									
Automeris louisiana	Louisiana Eyed Silkmoth				p			p		
Avicennia germinans	Black Mangrove	p								
Aythya affinis	Lesser Scaup							p		
Baetisca escambiensis	A Mayfly									
Bagisara brouana	A Noctuid Moth									
Balduina angustifolia	Coastal Plain Honeycomb-head	p				p	p			
Baptisia nuttalliana	Nuttall's Wild Indigo									
Baptisia sphaerocarpa	Green Wild Indigo									
Bidens trichosperma	Tickseed Sunflower							p	p	
Boltonia apalachicolensis	Apalachicola Doll's-Daisy								p	
Bombus fraternus	Southern Plains Bumble Bee									
Bombus pensylvanicus	American Bumblebee									
Bombus variabilis	Variable Cuckoo Bumble Bee									
Borodinia canadensis	Sicklepod									
Botaurus lentiginosus	American Bittern						p	p		
Bruchia ravenelii	Ravenel's Bruchia Moss									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Bulbostylis ciliatifolia	Capillary Hairsedge									
Burmannia biflora	Northern Burmannia									
Calidris canutus	Red Knot	p	p				p			
Calidris melanotos	Pectoral Sandpiper	p	p				p	p		
Calidris pusilla	Semipalmated Sandpiper	p	p	p			p	p		
Calidris subruficollis	Buff-breasted Sandpiper	p	p				p	p		
Callicladium haldanianum	Beautiful Branch Moss									
Calliphysalis carpenteri	Carpenter's Ground-cherry									
Callirhoe triangulata	Clustered Poppy-mallow									
Calopogon barbatus	Bearded Grass-pink									
Calopogon multiflorus	Many-flowered Grass-pink									
Calopogon oklahomensis	Oklahoma Grass-pink									
Camassia scilloides	Wild Hyacinth									
Cambarellus diminutus	Least Crayfish									
Cambarellus lesliei	Angular Dwarf Crayfish									
Cambarus girardianus	Tanback Crayfish									
Cambarus rusticiformis	Depression Crayfish									
Cambarus striatus	Ambiguous Crayfish									
Campephilus principalis	Ivory-billed Woodpecker									
Campylopus angustiretis	Campylopus Moss									
Canis rufus	Red Wolf									
Canna flaccida	Bandana-of-the-Everglades							p	p	
Carcharhinus acronotus	Blacknose Shark									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Carcharhinus plumbeus	Sandbar Shark									
Carcharhinus porosus	Smalltail Shark							p		
Carcharias taurus	Sand Tiger Shark									
Cardamine angustata	Slender Toothwort									
Cardamine diphylla	Two-leaf Toothwort									
Caretta caretta	Loggerhead Sea Turtle	p	p							
Carex alata	Broadwing Sedge									
Carex albursina	White Bear Sedge									
Carex baltzellii	Baltzell's Sedge									
Carex bullata var. *greenei*	Button Sedge									
Carex communis	Fibrous-root Sedge									
Carex comosa	Bristly Sedge									
Carex crawei	Crawe's Sedge									
Carex dasycarpa	Velvet Sedge					p				
Carex elliottii	Elliott's Sedge									
Carex exilis	Coast Sedge									
Carex fissa var. *aristata*	Hammock Sedge									
Carex fissa var. *fissa*	Hammock Sedge									
Carex frankii	Frank's Sedge									
Carex gracilescens	Slender Sedge									
Carex gravida	Heavy-fruited Sedge									
Carex grayi	Asa Gray's Sedge									
Carex grisea	Inflated Narrowleaf Sedge									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Carex hyalina	Tissue Sedge									
Carex impressinervia	Impressed-nerved Sedge									
Carex jamesii	Nebraska Sedge									
Carex laxiflora	Broad Loose-flower Sedge									
Carex mesochorea	Midland Sedge									
Carex mitchelliana	Mitchell's Sedge									
Carex molestiformis	Ozark Plateau Sedge									
Carex normalis	Greater Straw Sedge									
Carex oligocarpa	Eastern Few-fruit Sedge									
Carex oxylepis var. *pubescens*	Sharp-scale Sedge									
Carex prasina	Drooping Sedge									
Carex radiata	Stellate Sedge									
Carex reznicekii	Reznicek's Sedge									
Carex scoparia	Broom Sedge									
Carex seorsa	Weak Stellate Sedge									
Carex stipata var. *maxima*	Stalk-grain Sedge									
Carex striata var. *striata*	Southern Peatland Sedge									
Carex superata	Limestone Forest Sedge									
Carex torta	Twisted Sedge									
Carex verrucosa	Warty Sedge									
Carex virescens	Ribbed Sedge									
Carya laciniosa	Big Shellbark Hickory									
Castanea dentata (nut-bearing only)	American Chestnut									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Castilleja coccinea	Scarlet Indian-paintbrush									
Catocala atocala	Brou's Underwing									
Catocala delilah	Delilah Underwing									
Catocala miranda	A Noctuid Moth									
Catostomus commersonii	White Sucker									
Caupolicana electa	A Plasterer Bee									
Celithemis amanda	Amanda's Pennant									
Centronyx henslowii	Henslow's Sparrow				p					
Ceraclea spongillovorax	A Caddisfly									
Ceratophaga vicinella	Gopher Tortoise Shell Moth									
Ceratophyllum echinatum	Prickly Hornwort			p						
Ceratopteris pteridoides	Floating Antler Fern									
Chaetura pelagica	Chimney Swift									
Chamaecrista horizontalis	Florida Senna						p			
Chamaecyparis thyoides	Atlantic White Cedar									
Charadrius melodus	Piping Plover	p	p				p			
Charadrius nivosus	Snowy Plover	p	p	p			p			
Charadrius wilsonia	Wilson's Plover	p	p	p			p	p		
Chasmanthium nitidum	Shiny Spikegrass									
Chelone lyonii	Pink Turtlehead									
Chelone obliqua var. *obliqua*	Red Turtlehead									
Chelonia mydas	Green Sea Turtle									
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Cheumatopsyche petersi	Peters' Cheumatopsyche Caddisfly									
Chimaphila maculata	Spotted Wintergreen									
Chimarra falculata	A Caddisfly									
Chlidonias niger	Black Tern	p	p				p	p		
Chordeiles minor	Common Nighthawk			p	p					p
Chrosomus erythrogaster	Southern Redbelly Dace									
Cicindela marginipennis	Cobblestone Tiger Beetle									
Cicindela nigrior	Autumn Tiger Beetle									
Cicuta maculata var. *bolanderi*	Bolander's Water-hemlock									
Cirsium lecontei	Leconte's Thistle	p					p			
Cirsium muticum	Swamp Thistle									
Cistothorus palustris marianae	Marian's Marsh Wren							p		
Cladium mariscoides	Twig Rush									
Cladrastis kentukea	Yellowwood									
Cleistesiopsis bifaria	Appalachian Small Spreading Pogonia									
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia									
Clematis glaucophylla	White-leaved Leather-flower									
Clematis subreticulata	Alabama Leatherflower									
Clinopodium arkansanum	Low Calamint									
Clinostomus funduloides	Rosyside Dace									
Coccyzus americanus	Yellow-billed Cuckoo			p	p					p
Coelorachis cylindrica	Pitted Jointgrass									
Colinus virginianus	Northern Bobwhite									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Collinsonia anisata	Anise Horsebalm									
Collinsonia punctata	Spotted-leaf Horse-balm									
Cololejeunea setiloba	a liverwort									
Coluber flagellum flagellum	Eastern Coachwhip			p						
Columbina passerina	Common Ground Dove			p	p					
Conopholis americana	American Cancer-root									
Conradina canescens	Blue-sage					p	p			
Convolvulus catesbyanus	Catesby's Bindweed									
Cordulegaster bilineata	Brown Spiketail									
Cordulegaster erronea	Tiger Spiketail									
Coreopsis nudata	Georgia Tickseed									
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat									
Cottus carolinae	Banded Sculpin									
Coturnicops noveboracensis	Yellow Rail				p		p	p		
Crataegus ashei	Ashe's Hawthorn									
Crataegus brachyacantha	Blueberry Hawthorn									
Crataegus mendosa	Albertville Hawthorn									
Crataegus mohrii	Mohr's Hawthorn									
Crataegus mollis var. *meridionalis*	Gallion Hawthorn									
Crataegus triflora	Three-flowered Hawthorn									
Creaserinus burrisi	Burris' Burrowing Crayfish									
Creaserinus danielae	Speckled Burrowing Crayfish									
Creaserinus fodiens	Digger Crayfish									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Creaserinus gordoni	Camp Shelby Burrowing Crayfish									
Crocanthemum arenicola	Coastal-sand Frostweed		p				p			
Crotalus adamanteus	Eastern Diamondback Rattlesnake									
Cryphaea ravenelii	Ravenel's Cryphaea Moss									
Cryptobranchus alleganiensis	Hellbender									
Crystallaria asprella	Crystal Darter									
Cunila origanoides	Common Dittany									
Cuphea viscosissima	Blue Waxweed									
Cuscuta glomerata	Clustered Dodder									
Cycleptus elongatus	Blue Sucker									
Cycleptus meridionalis	Southeastern Blue Sucker									
Cyclonaias tuberculata	Purple Wartyback									
Cylindrocolea rhizantha	a liverwort					p				
Cyperus articulatus	Jointed Flatsedge							p	p	
Cyperus bipartitus	Shining Flatsedge									
Cyperus drummondii	Green Flatsedge									
Cyperus elegans	Sticky Flatsedge									
Cyperus engelmannii	Slender Sand Flatsedge									
Cyperus flavicomus	White-edged Flatsedge			p						
Cyperus hystricinus	Bristly Flatsedge									
Cyperus lecontei	Le Conte's Flatsedge		p							p
Cyperus neotropicalis	American Lipocarpha			p						
Cyperus ochraceus	Pond Flatsedge							p	p	

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Cyperus refractus	Reflexed Flatsedge									
Cyperus thyrsiflorus	Southcentral Flatsedge									
Cyprinella callistia	Alabama Shiner									
Cyprinella galactura	Whitetail Shiner									
Cyprinella spiloptera	Spotfin Shiner									
Cyprinella whipplei	Steelcolor Shiner									
Cypripedium kentuckiense	Kentucky Yellow Lady's-slipper									
Cyprogenia aberti	Western Fanshell									
Dalea mountjoyae	White-tassels									
Decodon verticillatus	Hairy Swamp Loosestrife									
Deirochelys reticularia miaria	Western Chicken Turtle									
Deirochelys reticularia reticularia	Eastern Chicken Turtle									
Delphinium tricorne	Dwarf Larkspur									
Deparia acrostichoides	Silvery Spleenwort									
Dermochelys coriacea	Atlantic Leatherback Sea Turtle									
Desmodium ochroleucum	Creamflower Tick-trefoil									
Desmodium tenuifolium	Slim-leaf Tick-trefoil	p					p			
Desmognathus pascagoula	Pascagoula Dusky Salamander									
Desmognathus valentinei	Valentine's Southern Dusky Salamander									
Diaperia prolifera var. *prolifera*	Big-head Evax									
Dicentra cucullaria	Dutchman's Breeches									
Dichanthelium cryptanthum	Hidden-flower Witchgrass									
Dichanthelium curtifolium	Shortleaf Witchgrass									

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Dichanthelium erectifolium	Erect-leaf Witchgrass					p	p			
Dichanthelium nudicaule	Naked-stemmed Panic Grass									
Dichanthelium wrightianum	Wright's Witchgrass									
Didiplis diandra	Water-purslane			p						
Didymoglossum membranaceum	Scale-edge Bristle Fern									
Didymoglossum petersii	Dwarf Filmy-fern									
Diphasiastrum digitatum	Fan Club-moss									
Dirca palustris	Eastern Leatherwood									
Drepanolejeunea mosenii	a liverwort									
Drymarchon couperi	Eastern Indigo Snake									
Dryobates borealis	Red-cockaded Woodpecker									
Dryopteris australis	Southern Woodfern									
Dryopteris celsa	Log Fern									
Dryopteris ludoviciana	Southern Shield Wood-fern									
Echinodorus berteroi	Upright Burhead			p						
Egretta caerulea	Little Blue Heron		p				p	p		
Egretta rufescens	Reddish Egret	p	p				p			
Egretta tricolor	Tricolored Heron		p				p	p		
Elanoides forficatus	Swallow-tailed Kite									
Eleocharis albida	White Spikerush							p	p	
Eleocharis ambigens	Obscure Spikerush							p	p	
Eleocharis atropurpurea	Purple Spikerush									
Eleocharis bicolor	Small Spikerush									

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Eleocharis cellulosa	Carolina Spikerush	p							p	
Eleocharis coloradoensis	Dwarf Spikerush									
Eleocharis compressa	Flat-stem Spikerush									
Eleocharis elliptica	Slender Spikerush									
Eleocharis elongata	Slim Spikerush									
Eleocharis erythropoda	Bald Spikerush									
Eleocharis geniculata	Capitate Spikerush	p							p	
Eleocharis intermedia	Matted Spikerush									
Eleocharis lanceolata	Lance-like Spikerush									
Eleocharis macrostachya	Creeping Spikerush									
Eleocharis melanocarpa	Black-fruit Spikerush									
Eleocharis microcarpa var. *microcarpa*	Small-fruit Spikerush									
Eleocharis ovata	Ovate Spikerush			p						
Eleocharis palustris	Creeping Spikerush									
Eleocharis parvula	Small Spikerush	p						p		
Eleocharis radicans	Rooted Spikerush									
Eleocharis robbinsii	Robbins Spikerush									
Eleocharis rostellata	Beaked Spikerush							p	p	
Eleocharis tenuis var. *pseudoptera*	Slender Spikerush									
Eleocharis tenuis var. *tenuis*	Slender Spikerush									
Eleocharis tricostata	Three-angle Spikerush									
Eleocharis wolfii	Wolf's Spikerush									
Elimia cylindracea	Cylinder Elimia									

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Elionurus tripsacoides	Pan-american Balsamscale									
Ellipsaria lineolata	Butterfly									
Elliptio arca	Alabama Spike									
Elliptio arctata	Delicate Spike									
Elymus villosus	Hairy Wild Rye									
Enallagma concisum	Cherry Bluet									
Enallagma davisi	Sandhill Bluet									
Enallagma pallidum	Pale Bluet									
Enallagma pollutum	Florida Bluet									
Endotropis lanceolata	Lance-leaved Buckthorn									
Enemion biternatum	False Rue-anemone									
Enneacanthus gloriosus	Bluespotted Sunfish									
Epinephelus itajara	Atlantic Goliath Grouper									
Epioblasma brevidens	Cumberlandian Combshell									
Epioblasma penita	Southern Combshell									
Epioblasma triquetra	Snuffbox									
Epitheca spinosa	Robust Baskettail									
Equisetum arvense	Field Horsetail									
Eretmochelys imbricata	Hawksbill Sea Turtle									
Erigenia bulbosa	Harbinger-of-Spring									
Eriocaulon decangulare var. *latifolium*	Panhandle Pipewort									
Eriocaulon texense	Texas Pipewort									
Eryngium aquaticum	Marsh Rattlesnake-master							p	p	

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Eryngium hookeri	Hooker's Coyote-thistle									
Eryngium species 1	Mocassin-master									
Erynnis martialis	Mottled Dusky Wing									
Erythrodiplax umbrata	Band-winged Dragonlet									
Erythronium albidum	White Trout-lily									
Erythronium americanum ssp. harperi	Yellow Trout-lily									
Etheostoma asprigene	Mud Darter									
Etheostoma blennioides	Greenside Darter									
Etheostoma duryi	Black Darter									
Etheostoma faulkneri	Yoknapatawpha Darter									
Etheostoma flabellare	Fantail Darter									
Etheostoma jessiae	Blueside Darter									
Etheostoma kennicotti	Stripetail Darter									
Etheostoma lachneri	Tombigbee Darter									
Etheostoma nigripinne	Blackfin Darter									
Etheostoma raneyi	Yazoo Darter									
Etheostoma rupestre	Rock Darter									
Etheostoma simoterum	Snubnose Darter									
Etheostoma zonifer	Backwater Darter									
Eumorpha intermedia	Intermediate Sphinx									
Eupatorium lancifolium	Lanceleaf Thoroughwort									
Euphagus carolinus	Rusty Blackbird									
Euphorbia discoidalis	Summer Spurge									

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Euphorbia inundata var. *inundata*	Florida Pine Spurge						p			
Euphyes arpa	Palmetto Skipper									
Euphyes bayensis	Bay St. Louis Skipper							p		
Euphyes dukesi dukesi	Dukes' Skipper									
Euphyes pilatka	Palatka Skipper							p		
Euploca convolvulacea	Bindweed Heliotrope									
Eurycea longicauda longicauda	Longtail Salamander									
Eurycea lucifuga	Cave Salamander									
Eurycea sphagnicola	Bog Dwarf Salamander									
Eurynia dilatata	Spike									
Eustachys glauca	Saltmarsh Finger-grass								p	
Eustoma exaltatum	Tall Prairie-gentian								p	
Eutrichota gopheri	Gopher Tortoise Burrow Fly									
Falco sparverius paulus	Southeastern American Kestrel				p					
Farancia erytrogramma	Rainbow Snake									
Faxonius erichsonianus	Reticulate Crayfish									
Faxonius etnieri	Ets Crayfish									
Faxonius hartfieldi	Yazoo Crayfish									
Faxonius jonesi	Sucarnoochee River Crayfish									
Faxonius mississippiensis	Mississippi Crayfish									
Faxonius palmeri	Gray-Speckled Crayfish									
Faxonius placidus	Bigclaw Crayfish									
Faxonius validus	Powerful Crayfish									

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Faxonius wrighti	Hardin Crayfish									
Faxonius yanahlindus	Spinywrist Crayfish									
Fissidens amoenus	Hall's Fissidens Moss									
Forestiera ligustrina	Upland Swamp Privet									
Fraxinus quadrangulata	Blue Ash									
Frullania donnellii	a liverwort									
Fuirena longa	Coastal-plain Umbrella-sedge									
Fundulus blairae	Western Starhead Topminnow									
Fundulus dispar	Northern Starhead Topminnow									
Fundulus euryzonus	Broadstripe Topminnow									
Fundulus jenkinsi	Saltmarsh Topminnow							p		
Gaillardia aestivalis var. *flavovirens*	Lanceleaf Blanket Flower									
Galactia floridana	Florida Milkpea	p			p					
Galearis spectabilis	Showy Orchis									
Galium bermudense	Coastal Bedstraw					p	p			
Gelochelidon nilotica	Gull-billed Tern	p	p				p	p		
Gentiana catesbaei	Elliott's Gentian									
Gentianella occidentalis	Stiff Gentian									
Geothlypis formosa	Kentucky Warbler			p	p					p
Gomphus australis	Clearlake Clubtail									
Gomphus dilatatus	Blackwater Clubtail									
Gomphus geminatus	Twin-striped Clubtail									
Gomphus hodgesi	Hodges' Clubtail									

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Goodyera pubescens	Downy Rattlesnake-plantain									
Gopherus polyphemus	Gopher Tortoise									
Graptemys flavimaculata	Yellow-blotched Map Turtle									
Graptemys geographica	Common Map Turtle									
Graptemys gibbonsi	Pascagoula Map Turtle									
Graptemys nigrinoda	Black-knobbed Map Turtle									
Graptemys oculifera	Ringed Map Turtle									
Graptemys pearlensis	Pearl River Map Turtle									
Graptemys pulchra	Alabama Map Turtle									
Gratiola floridana	Florida Hedge-hyssop									
Gratiola ramosa	Branched Hedge-hyssop						p			
Gryllotalpa major	Prairie Mole Cricket									
Gymnocladus dioicus	Kentucky Coffeetree									
Gymnocthebius maureenae	Maureen's Gymnocthebius Minute Moss Beetle									
Gyrinophilus porphyriticus	Spring Salamander									
Habenaria quinqueseta	Michaux's Orchid									
Hackelia virginiana	Virginia Stickseed									
Haematopus palliatus	American Oystercatcher	p	p	p			p	p		
Halodule wrightii	Shoal-grass									
Halophila engelmannii	Engelmann's Sea-grass									
Hamamelis ovalis	Running Witch-hazel									
Hamiota perovalis	Orange-nacre Mucket									

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Haploperla chukcho	Chukcho Stonefly									
Hedeoma drummondii var. *drummondii*	Drummond Pennyroyal									
Helanthium tenellum	Dwarf Burhead									
Helenium brevifolium	Shortleaf Sneezeweed									
Helianthus debilis ssp. tardiflorus	Gulf Coast Beach Sunflower		p			p				
Helianthus decapetalus	Thinleaf Sunflower									
Helianthus verticillatus	Whorled Sunflower									
Helmitheros vermivorum	Worm-eating Warbler			p	p					p
Helopicus bogaloosa	Masked Springfly									
Hemidactylium scutatum	Four-toed Salamander									
Hepatica acutiloba	Sharp-lobed Hepatica									
Herbertia lahue	Herbertia									
Hesperapis oraria	Gulf Coast Solitary Bee			p	p					
Hesperia attalus	Dotted Skipper									
Heterandria formosa	Least Killifish							p		
Heteranthera dubia	Grassleaf Mud-plaintain									
Heteranthera missouriensis	Missouri Mud-plantain									
Heterodon simus	Southern Hognose Snake				p					
Heuchera macrorhiza	Giant Alumroot									
Heuchera parviflora	Little-flower Alumroot									
Hexalectris spicata	Crested Coralroot									
Hexastylis harperi	Large-flowered Heartleaf									
Hibiscus coccineus	Brilliant Hibiscus							p	p	

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Hieracium venosum	Rattlesnake Hawkweed									
Hippocampus erectus	Lined Seahorse							p		
Hobbseus attenuatus	Pearl Rivulet Crayfish									
Hobbseus cristatus	Crested Rivulet Crayfish									
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish									
Hobbseus petilus	Tombigbee Rivulet Crayfish									
Hobbseus prominens	Prominence Rivulet Crayfish									
Hobbseus valleculus	Choctaw Rivulet Crayfish									
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish									
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly									
Hottonia inflata	Featherfoil									
Hybopsis amnis	Pallid Shiner									
Hydrastis canadensis	Golden-seal									
Hydroperla fugitans	Austin Springfly									
Hydrophyllum appendiculatum	Appendage Waterleaf									
Hydrophyllum macrophyllum	Large-leaf Water-leaf									
Hydroptila cretosa	A Caddisfly									
Hydroptila holzenthali	A Caddisfly									
Hydroptila homochitta	A Caddisfly									
Hydroptila molsonae	Molson's Microcaddisfly									
Hydroptila poirrieri	A Caddisfly									
Hydroptila tusculum	A Caddisfly									
Hylocichla mustelina	Wood Thrush			p	p					p

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Hymenocallis choctawensis	Florida Panhandle Spider-lily									
Hymenocallis occidentalis var. *eulae*	Woodland Spider-lily									
Hypericum canadense	Canadian St. John's-wort									
Hypericum myrtifolium	Myrtle-leaved St. Johnswort									
Hypoxis curtissii	Curtiss' Yellow Star-grass	p								
Ichthyomyzon castaneus	Chestnut Lamprey									
Ichthyomyzon unicuspis	Silver Lamprey									
Ictiobus niger	Black Buffalo									
Ilex cassine	Dahoon Holly									
Ipomoea brasiliensis	Railroad Morning-glory		p				p			
Ipomoea macrorhiza	Large-stem Morning-glory				p	p				
Iresine diffusa	Felicidad									
Iris brevicaulis	Lamance Iris									
Iris giganticaerulea	Giant Blue Iris					p				
Ischnura prognata	Furtive Forktail									
Isoetes appalachiana	Appalachian Quillwort									
Isoetes louisianensis	Louisiana Quillwort									
Isoetes melanopoda spp. melanopoda	Blackfoot Quillwort									
Isoetes melanopoda spp. silvatica	Eastern Blackfoot Quillwort									
Isoetes mississippiensis	Mississippi Quillwort									
Isoetes valida	Strong Quillwort									
Isogenoides varians	A Stonefly									
Isonychia berneri	A Mayfly									

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Isurus oxyrinchus	Shortfin Mako Shark									
Ixobrychus exilis	Least Bittern						p	p		
Juglans cinerea	Butternut									
Juncus interior	Inland Rush									
Juniperus silicicola	Southern Red Cedar				p	p			p	
Lacunicambarus dalyae	Jewel Mudbug									
Lacunicambarus freudensteini	Banded Mudbug									
Lacunicambarus mobilensis	Lonesome Gravedigger									
Lacunicambarus polychromatus	Paintedhand Mudbug									
Lampropeltis calligaster calligaster	Prairie Kingsnake									
Lampropeltis calligaster rhombomaculata	Mole Kingsnake									
Lampropeltis triangulum	Red Milk Snake									
Lampsilis fasciola	Wavy-rayed Lampmussel									
Lampsilis hydiana	Louisiana Fatmucket									
Lampsilis ovata	Pocketbook									
Lanius ludovicianus ludovicianus	Loggerhead Shrike			p	p					
Lanius ludovicianus migrans	Migrant Loggerhead Shrike			p	p					
Lapara phaeobrachycerous	Gulf Pine Sphinx									
Lasionycteris noctivagans	Silver-haired Bat									
Lasiurus cinereus	Hoary Bat									
Lasiurus intermedius	Northern Yellow Bat									
Lasmigona alabamensis	Alabama Heelsplitter									
Lasmigona complanata	White Heelslpitter									

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Lasmigona costata	Flutedshell									
Laterallus jamaicensis	Black Rail						p	p		
Lejeunea bermudiana	a liverwort									
Lejeunea cladogyna	a liverwort									
Lejeunea floridana	a liverwort					p				
Lejeunea laetivirens	a liverwort									
Lepidochelys kempii	Kemp's Ridley Sea Turtle									
Lepidostoma morsei	Morse's Little Plain Brown Sedge									
Leptolucania ommata	Pygmy Killifish							p		
Lethenteron appendix	American Brook Lamprey									
Leuctra colemanorum	Yalobusha Needlefly									
Leuctra hicksi	Cypress Needlefly									
Liatris elegantula	Blazing-Star									
Ligumia recta	Black Sandshell									
Ligusticum canadense	Nondo Lovage									
Lilaeopsis carolinensis	Carolina Lilaeopsis			p				p	p	
Lilium iridollae	Panhangle Lily									
Lilium michiganense	Michigan Lily									
Limnodromus griseus	Short-billed Dowitcher	p	p	p			p	p		
Limnothlypis swainsonii	Swainson's Warbler			p	p					p
Limosa fedoa	Marbled Godwit	p	p				p			
Lindera melissifolia	Pondberry									

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Lindera subcoriacea	Bog Spicebush									
Linum floridanum var. *chrysocarpum*	Yellow-fruited Flax									
Linum macrocarpum	Spring Hill Flax									
Liodytes rigida deltae	Delta Crayfish Snake									
Liodytes rigida sinicola	Gulf Crayfish Snake									
Lithasia armigera	Armored Rocksnail									
Lithasia hubrichti	Big Black Rocksnail									
Lithasia lima	Warty Rocksnail									
Lithasia verrucosa	Varicose Rocksnail									
Lithobates areolatus	Crawfish Frog									
Lithobates heckscheri	River Frog									
Lithobates sevosus	Dusky Gopher Frog									
Lithospermum caroliniense	Golden Puccoon									
Lithospermum latifolium	American Gromwell									
Lobelia boykinii	Boykin's Lobelia									
Ludwigia alata	Winged Seedbox	p		p					p	
Lupinus perennis ssp. gracilis	Sundail Lupine									
Luziola bahiensis	Brazilian Loziola									
Lycium carolinianum	Carolina Wolf-berry		p		p		p			
Lycopodioides ludovicianum	Gulf Spike-moss									
Lycopus amplectens	Sessile-leaved Bugleweed									
Lythrurus fasciolaris	Scarlet Shiner									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Machimus polyphemi	Gopher Tortoise Robber Fly									
Macranthera flammea	Flame Flower									
Macrhybopsis meeki	Sicklefin Chub									
Macrochelys temminckii	Alligator Snapping Turtle									
Macromia alleghaniensis	Allegheny River Cruiser									
Macromitrium richardii	Richard's Macromitrium Moss									
Magnolia tripetala	Umbrella Magnolia									
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin	p	p				p	p		p
Malus ioensis	Iowa Crabapple									
Manta birostris	Giant Manta Ray									
Marshallia angustifolia	Slim-leaf Barbara's-buttons									
Marshallia trinervia	Broadleaf Barbara's-buttons									
Marsilea vestita	Marsilea vestita									
Matelea baldwyniana	Baldwin's Milkvine									
Matelea decipiens	Old-field Milkvine									
Matelea obliqua	Climbing Milkweed									
Medionidus acutissimus	Alabama Moccasinshell									
Megalops atlanticus	Tarpon							p		
Melanerpes erythrocephalus	Red-headed Woodpecker				p					
Mertensia virginica	Virginia Bluebells									
Metzgeria uncigera	a liverwort									
Micrurus fulvius	Eastern Coral Snake									

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Mimulus ringens var. *ringens*	Square-stem Monkeyflower									
Miniellus boops	Bigeye Shiner									
Miniellus melanostomus	Blackmouth Shiner									
Miniellus sabinae	Sabine Shiner									
Mirabilis albida	Pale Umbrella-wort									
Mirabilis linearis	Narrowleaf Four-o'clock									
Mitreola angustifolia	Narrowleaf Miterwort									
Mobula hypostoma	Atlantic Pygmy Devil Ray									
Mobula tarapacana	Sicklefin Devil Ray									
Moxostoma anisurum	Silver Redhorse									
Moxostoma breviceps	Smallmouth Redhorse									
Moxostoma carinatum	River Redhorse									
Moxostoma duquesnei	Black Redhorse									
Muhlenbergia glabrifloris	Inland Muhly									
Muhlenbergia sylvatica	Woodland Muhly									
Muhlenbergia tenuiflora	Slender Muhly									
Mycteria americana	Wood Stork									
Myotis austroriparius	Southeastern Myotis									
Myotis grisescens	Gray Bat									
Myotis septentrionalis	Northern Long-eared Bat									
Myotis sodalis	Indiana Bat									
Myriophyllum laxum	Loose Water-milfoil									

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Myriopteris alabamensis	Alabama Lipfern									
Myriopteris lanosa	Hairy Lipfern									
Nabalus asper	Rough Rattlesnake-root									
Nabalus barbatus	Barbed Rattlesnake-root									
Nannothemis bella	Elfin Skimmer									
Narcine bancroftii	Caribbean Electric Ray									
Necturus maculosus	Common Mudpuppy									
Negaprion brevirostris	Lemon Shark									
Nehalennia gracilis	Sphagnum Sprite									
Nemastylis geminiflora	Prairie Pleatleaf									
Nemocapnia carolina	Southern Snowfly									
Neogale frenata	Long-tailed Weasel									
Neonympha helicta	Helicta Satyr									
Neonympha mitchellii	Mitchell's Satyr									
Neoperla coxi	A Stonefly									
Neotrichia alabamensis	A Caddisfly									
Nerodia clarkii clarkii	Gulf Salt Marsh Snake						p	p		
Nestronia umbellula	Nestronia									
Neurocordulia yamaskanensis	Stygian Shadowdragon									
Neviusia alabamensis	Alabama Snow-wreath									
Nicrophorus americanus	American Burying Beetle									
Nothonotus rubrus	Bayou Darter									

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Nothonotus rufilineatus	Redline Darter									
Notropis micropteryx	Highland Shiner									
Noturus exilis	Slender Madtom									
Noturus flavus	Stonecat									
Noturus gladiator	Piebald Madtom									
Noturus munitus	Frecklebelly Madtom									
Nuphar lutea ssp. ulvacea	West Florida Cow-Lily							p		
Nyctanassa violacea	Yellow-crowned Night-Heron		p				p	p		
Nycticorax nycticorax	Black-crowned Night-Heron		p				p	p		
Nymphaea mexicana	Banana Water-lily							p		
Nymphoides aquatica	Big Floating-heart								p	
Nymphoides cordata	Floating-heart									
Obovaria arkansasensis	Southern Hickorynut									
Obovaria c.f. unicolor	Undescribed Hickorynut									
Obovaria subrotunda	Round Hickorynut									
Obovaria unicolor	Alabama Hickorynut									
Oecetis daytona	A Caddisfly									
Oenothera capillifolia ssp. capillifolia	Berlandier's Sundrops									
Oenothera grandiflora	Large-flowered Evening-primrose									
Oenothera heterophylla ssp. orientalis	Alabama Evening-primrose									
Oenothera patriciae	Plains Gaura									
Oenothera triloba	Stemless Evening-primrose									

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Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle									
Ophiogomphus australis	Southern Snaketail									
Ophisaurus attenuatus	Slender Glass Lizard									
Ophisaurus mimicus	Mimic Glass Lizard									
Opuntia macrorhiza	Twisted-spine Prickly-pear									
Orthochilus ecristatus	Giant Orchid									
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly									
Orthotrichum exiguum	Small Wood-bark Moss									
Oxalis grandis	Great Yellow Woodsorrel									
Oxalis macrantha	Tufted Yellow Woodsorrel									
Packera aurea	Golden Groundsel									
Packera paupercula var. *paupercula*	Balsam Ragwort									
Packera tomentosa	Woolly Groundsel									
Palafoxia callosa	Small Palafoxia									
Palhinhaea cernua	Nodding Clubmoss									
Panax quinquefolius	American Ginseng									
Papaipema maritima	Maritime Sunflower Borer							p		
Papaipema sp. 5	Rare Cane Borer Moth									
Paracymus seclusus	Seclusive Water Scavenger Beetle									
Parkesia motacilla	Louisiana Waterthrush			p	p					p
Parnassia grandifolia	Largeleaf Grass-of-parnassus									

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Paronychia baldwinii ssp. riparia	Perennial Dune Whitlow-wort									
Paronychia erecta var. *corymbosa*	Beach Sand-squares		p				p			
Paronychia erecta var. *erecta*	Beach Sand-squares		p				p			
Paronychia patula	Pineland Nailwort									
Paspalum monostachyum	Gulfdune Paspalum	p	p							
Passerina ciris	Painted Bunting			p	p					p
Pellaea atropurpurea	Purple-stem Cliff-brake									
Penstemon canescens	Gray Beardtongue									
Penstemon pallidus	Pale Beardtongue									
Penstemon tenuis	Sharp-sepal Beardtongue									
Percina aurora	Pearl Darter									
Percina evides	Gilt Darter									
Percina kathae	Mobile Logperch									
Percina lenticula	Freckled Darter									
Percina phoxocephala	Slenderhead Darter									
Percina uranidea	Stargazing Darter									
Perideridia americana	Eastern Eulophus									
Perimyotis subflavus	Tricolored Bat									
Perlesta lagoi	A Stonefly									
Peromyscus polionotus	Oldfield Mouse									
Persicaria hirsuta	Hairy Smartweed									

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Peucaea aestivalis	Bachman's Sparrow				p					
Phacelia bipinnatifida	Fernleaf Phacelia									
Phacelia hirsuta	Hairy Scorpionweed									
Phacelia purshii	Miami-mist									
Phacelia ranunculacea	Blue Scorpionweed									
Phacelia strictiflora var. *robbinsii*	Prairie Scorpion-weed									
Phaseolus sinuatus	Sandhill Bean									p
Phenacobius mirabilis	Suckermouth Minnow									
Philadelphus hirsutus	Streambank Mock-orange									
Philadelphus inodorus	Scentless Mock Orange									
Philonthus testudo	Western Gopher Tortoise Rove Beetle									
Phlox amplifolia	Largeleaf Phlox									
Physalis arenicola	Cypress-head Ground-cherry					p				
Physaria gracilis ssp. gracilis	Spreading Bladder-pod									
Pieris phillyreifolia	Climbing Fetter-bush							p		
Pinguicula planifolia	Chapman's Butterwort									
Pinguicula pumila	Dwarf Butterwort									
Pinus clausa	Sand Pine					p				
Pinus virginiana	Virginia Pine									
Piranga olivacea	Scarlet Tanager (breeding population)			p	p					p
Pituophis melanoleucus lodingi	Black Pine Snake									
Pituophis melanoleucus melanoleucus	Northern Pine Snake									

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Pityopsis pinifolia	Taylor County Silk-grass									
Plagiochila floridana	Florida Leafy Liverwort					p				
Plagiochila invisa	a liverwort									
Plagiochila virginica var. *virginica*	a liverwort									
Plantago cordata	Heartleaf Plantain									
Platalea ajaja	Roseate Spoonbill						p	p		p
Platanthera conspicua	Large White-fringe Orchid									
Platanthera integra	Yellow Fringeless Orchid									
Platanthera integrilabia	White Fringeless Orchid									
Platanthera lacera	Green-fringed Orchid									
Platanthera nivea	Snowy Orchid									
Platanthera peramoena	Purple Fringeless Orchid									
Platygobio gracilis	Flathead Chub									
Plestiodon anthracinus	Coal Skink									
Plethobasus cyphyus	Sheepnose									
Plethodon ventralis	Southern Zigzag Salamander									
Plethodon websteri clade A	Webster's Salamander Clade A									
Plethodon websteri clade B	Webster's Salamander Clade B									
Pleurobema beadleianum	Mississippi Pigtoe									
Pleurobema curtum	Black Clubshell									
Pleurobema decisum	Southern Clubshell									
Pleurobema perovatum	Ovate Clubshell									

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Pleurobema riddellii	Louisiana Pigtoe									
Pleurobema sintoxia	Round Pigtoe									
Pleurobema taitianum	Heavy Pigtoe									
Pleurocera vestita	Brook Hornsnail									
Pleuronaia barnesiana	Tennessee Pigtoe									
Pleuronaia dolabelloides	Slabside Pearlymussel									
Pluvialis dominica	American Golden-Plover	p	p				p	p		
Pogonomyrmex badius	Florida Harvester Ant			p						
Polanisia tenuifolia	Slenderleaf Clammy-weed						p			
Polygonella americana	Southern Jointweed									
Polyodon spathula	Paddlefish									
Polytaenia nuttallii	Prairie Parsley									
Ponthieva racemosa	Shadow-witch Orchid									
Porphyrio martinicus	Purple Gallinule							p		
Potamilus alatus	Pink Heelsplitter									
Potamilus capax	Fat Pocketbook									
Potamilus inflatus	Inflated Heelsplitter									
Potamogeton epihydrus	Nuttall's Pondweed			p						
Potamogeton pusillus	Slender Pondweed			p						
Primula meadia	Shootingstar									
Pristis pectinata	Smalltooth Sawfish							p		
Pristis pristis	Largtooth Sawfish							p		

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Procambarus ablusus	Hatchie River Crayfish									
Procambarus barbiger	Jackson Prairie Crayfish									
Procambarus bivittatus	Ribbon Crayfish									
Procambarus fitzpatricki	Spinytail Crayfish									
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish									
Procambarus hagenianus vesticeps	Egyptian Crayfish									
Procambarus lagniappe	Lagniappe Crayfish									
Procambarus lecontei	Mobile Crayfish									
Procambarus lylei	Shutispear Crayfish									
Procambarus mancus	Lame Crayfish									
Procambarus penni	Pearl Blackwater Crayfish									
Procambarus planirostris	Flatnose Crayfish									
Procambarus shermani	Gulf Crayfish									
Procambarus viaeviridis	Vernal Crayfish									
Protonotaria citrea	Prothonotary Warbler			p	p					p
Prunus alabamensis	Alabama Black Cherry									
Pseudacris collinsorum	Collinses' Mountain Chorus Frog									
Pseudacris ornata	Ornate Chorus Frog									
Pseudemys alabamensis	Alabama Red-bellied Turtle				p			p		
Pseudiron centralis	White Sand-river Mayfly									
Pseudodontoides subvexus	Southern Creekmussel									
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper									

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Pseudotriton montanus	Mud Salamander									
Pseudotriton ruber	Red Salamander									
Pteronotropis welaka	Bluenose Shiner									
Ptilimnium costatum	Eastern Bishopweed							p		
Ptychobranchus fasciolaris	Kidneyshell									
Puma concolor coryi	Florida Panther									
Pycnanthemum flexuosum	Narrowleaf Mountainmint									
Pycnanthemum pilosum	Whorled Mountainmint			p						
Quadrula nobilis	Gulf Mapleleaf									
Quadrula rumphiana	Ridged Mapleleaf									
Quercus arkansana	Arkansas Oak									
Quercus austrina	Bluff Oak					p				
Quercus macrocarpa var. *macrocarpa*	Bur Oak									
Quercus minima	Dwarf Live Oak					p	p			
Quercus myrtifolia	Myrtle-leaf Oak						p			
Quercus oglethorpensis	Oglethorpe's Oak									
Quercus palustris	Pin Oak									
Quiscalus quiscula	Common Grackle									
Radula sullivantii	a liverwort									
Rallus elegans	King Rail							p		
Ranunculus flabellaris	Yellow Water-crowfoot									
Ranunculus septentrionalis	Carolina Buttercup									

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Raptoheptagenia cruenta	Wallace's Deepwater Mayfly									
Regina septemvittata	Queen Snake									
Rhadinaea flavilata	Pine Woods Snake				p					
Rhinichthys obtusus	Blacknose Dace									
Rhinoptera brasiliensis	Brazilian Cownose Ray									
Rhodobryum roseum	Rose Moss									
Rhododendron alabamense	Alabama Rhododendron									
Rhododendron arborescens	Smooth Azalea									
Rhododendron austrinum	Orange Azalea	p				p		p		
Rhododendron periclymenoides	Pink Azalea									
Rhynchosia latifolia	Prairie Rhynchosia									
Rhynchospora baldwinii	Baldwin's Beakrush									
Rhynchospora brachychaeta	West Indies Beakrush									
Rhynchospora careyana	Broad-fruit Horned Beakrush									
Rhynchospora cephalantha var. *attenuata*	Small-bunched Beaksedge									
Rhynchospora crinipes	Hairy-peduncled Beakrush									
Rhynchospora curtissii	Curtiss' Beakrush									
Rhynchospora decurrens	Swamp-forest Beakrush									
Rhynchospora distans	Fasciculate Beakrush									
Rhynchospora divergens	White-seeded Beakrush									
Rhynchospora fernaldii	Fernald's Beakrush									
Rhynchospora galeana	Short-bristle Baldrush									

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Rhynchospora harperi	Harper's Beakrush									
Rhynchospora harveyi	Harvey's Beakrush									
Rhynchospora leptocarpa	Slender-fruit Beaksedge									
Rhynchospora marliniana	Marlin's Beaksedge									
Rhynchospora perplexa	Pineland Beakrush									
Rhynchospora pinetorum	Small's Beakrush									
Rhynchospora pleiantha	Brown Beakrush									
Rhynchospora torreyana	Torrey's Beakrush									
Rhynchospora tracyi	Tracy Beakrush									
Rhynchospora wrightiana	Wright's Beakrush									
Riccia warnstorfii	a liverwort									
Riparia riparia	Bank Swallow (breeding population)									
Rorippa aquatica	Lake-cress									
Rudbeckia grandiflora var. *alismifolia*	Rough Coneflower									
Rudbeckia subtomentosa	Sweet Coneflower									
Ruellia noctiflora	Night-flowering Wild-petunia	p					p			
Ruellia pinetorum	Pine Barren Ruellia									
Rynchops niger	Black Skimmer	p	p				p	p		
Sabatia campestris	Prairie Pink									
Sabatia decandra	Bartram's Rose-gentian									
Sabulina patula	Pitcher's Stitchwort									
Sageretia minutiflora	Tiny-leaved Buckthorn				p	p				

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
Scientific Name	**Common Name**	FLORIDA PANHANDLE BEACH VEGETATION	MAINLAND BEACHES	EGCP DUNE AND COASTAL GRASSLAND	EGCP MARITIME FOREST	EGCP FRESHWATER TIDAL SWAMP	SCP INTERDUNAL WETLANDS	NORTH-CENTRAL GoMx SALT AND BRACKISH TIDAL MARSHES	MISSISSIPPI SOUND FRESH AND OLIGOHALINE MARSHES	SHELL MIDDENS AND ESTUARINE SHRUBLANDS
Sagittaria chapmanii	Chapman's Arrowhead									
Sagittaria isoetiformis	Slender Arrow-head									
Salix caroliniana	Carolina Willow									
Salvia chapmanii	Chapman's Sage									
Sapindus marginatus	Florida Soapberry				p	p				
Sarracenia alabamensis ssp. wherryi	Wherry's Sweet Pitcher-plant									
Sarracenia leucophylla	Whitetop Pitcherplant									
Sarracenia rosea	Purple Pitcherplant									
Scaphirhynchus albus	Pallid Sturgeon									
Scaphirhynchus platorynchus	Shovelnose Sturgeon									
Scaphirhynchus suttkusi	Alabama Sturgeon									
Sceptridium jenmanii	Alabama Grapefern									
Sceptridium lunarioides	Winter Grape-fern									
Schisandra glabra	Bay Starvine									
Schizachyrium maritimum	Gulf Bluestem	p	p							p
Schizachyrium scoparium ssp. divergens	Eastern Little Bluestem									
Schizachyrium stoloniferum	Creeping Bluestem									
Schoenoplectiella purshiana	Weakstalk Bulrush									
Schoenoplectus americanus	Three-square Bulrush							p	p	
Schoenoplectus deltarum	Delta Bulrush									
Schoenoplectus subterminalis	Swaying Rush									
Schwalbea americana	Chaffseed									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
Scientific Name	**Common Name**	FLORIDA PANHANDLE BEACH VEGETATION	MAINLAND BEACHES	EGCP DUNE AND COASTAL GRASSLAND	EGCP MARITIME FOREST	EGCP FRESHWATER TIDAL SWAMP	SCP INTERDUNAL WETLANDS	NORTH-CENTRAL GoMx SALT AND BRACKISH TIDAL MARSHES	MISSISSIPPI SOUND FRESH AND OLIGOHALINE MARSHES	SHELL MIDDENS AND ESTUARINE SHRUBLANDS
Scirpus divaricatus	Spreading Bulrush									
Scirpus lineatus	Drooping Bulrush									
Scleria elliottii	Broad-leaved Hairy Nutrush									
Scleria georgiana	Georgia Nutrush	p								
Scleria nitida	Shining Nutrush									
Scleria verticillata	Low Nutrush	p								
Sclerolepis uniflora	Pink Bogbutton									
Scolopax minor	American Woodcock				p					
Scutellaria glabriuscula	Georgia Skullcap									
Scutellaria leonardii	Shale-barren Skullcap									
Sedum pulchellum	Rock Stonecrop									
Sedum ternatum	Wood Stonecrop									
Seiurus aurocapilla	Ovenbird (breeding population)									
Senega ambigua	Whorled Milkwort									
Senega appendiculata	Swamp Milkwort									
Senega balduinii	White Milkwort	p								
Senega curtissii	Curtiss' Milkwort									
Senega hookeri	Hooker's Milkwort									
Senega leptostachys	Georgia Milkwort									
Setaria corrugata	Coast Bristle Grass					p	p			
Setodes dixiensis	A Caddisfly									
Setophaga cerulea	Cerulean Warbler			p	p					p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Setophaga discolor	Prairie Warbler			p	p					p
Shipsa rotunda	Intrepid Forestfly									
Sideroxylon reclinatum ssp. reclinatum	Florida Bumelia									
Silene ovata	Ovate Catchfly									
Silene regia	Royal Catchfly									
Silphium confertifolium	Black Belt Rosinweed									
Silphium integrifolium var. *gattingeri*	Gattinger's Rosinweed									
Silphium pinnatifidum	Tansy Rosinweed									
Silphium simpsonii	Simpson's Rosinweed									
Silphium terebinthinaceum var. *luciae-brauniae*	Lucy Braun's Prairie Dock									
Sitta pusilla	Brown-headed Nuthatch									
Smilax hugeri	Huger's Carrion-flower									
Smilax pulverulenta	Downy Carrion-flower									
Solanum pseudogracile	Glowing Nightshade						p			
Solidago auriculata	Eared Goldenrod									
Solidago brachyphylla	Dixie Goldenrod									
Solidago flaccidifolia	Appalachian Goldenrod									
Solidago juncea	Early Goldenrod									
Solidago rigidiuscula	Showy Goldenrod									
Solidago sphacelata	Autumn Goldenrod									
Somatochlora georgiana	Coppery Emerald									
Somatochlora provocans	Treetop Emerald									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Sophronanthe hispida	Pineland Hedge-Hyssop									
Sorex longirostris	Southeastern Shrew				p					
Speyeria diana	Diana									
Sphaerocarpos donnellii	a liverwort									
Sphaerosporoceros adscendens	a hornwort			p						
Sphagnum carolinianum	Carolina Peatmoss									
Sphagnum cyclophyllum	Circular-leaf Peatmoss									
Sphagnum fitzgeraldii	Fitzgerald's Peatmoss									
Sphenopholis penyslvanica	Swamp Wedgescale			p						
Sphyrna lewini	Scalloped Hammerhead									
Sphyrna mokarran	Great Hammerhead									
Spilogale putorius	Eastern Spotted Skunk									
Spinadis simplex	Wallace's Deepwater Mayfly									
Spiraea tomentosa	Steeplebush									
Spiranthes brevilabris	Texas Ladies'-tresses									
Spiranthes eatonii	Eaton's Ladies'-tresses									
Spiranthes floridana	Florida Ladies'-tresses									
Spiranthes lacera var. *gracilis*	Southern Slender Ladies'-tresses									
Spiranthes longilabris	Giant Spiral Ladies'-tresses									
Spiranthes magnicamporum	Great Plains Ladies'-tresses									
Spiranthes ovalis var. *ovalis*	Lesser Ladies'-tresses									
Spizella pusilla	Field Sparrow									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Sporobolus ozarkanus	Ozark Dropseed									
Stellaria corei	Tennessee Chickweed									
Stellaria pubera	Giant Chickweed									
Stenanthium gramineum	Eastern Featherbells									
Stenanthium texanum	Pine Barren Deathcamas									
Sterna hirundo	Common Tern (breeding population)	p					p	p		
Sternula antillarum antillarum	Coastal Least Tern	p	p				p	p		
Sternula antillarum athalassos	Interior Least Tern									
Stewartia ovata	Mountain Camellia									
Stizostedion canadense	Sauger									
Stizostedion sp. cf. vitreum	Southern Walleye									
Strophitus pascagoulaensis	Pascagoula Creekshell									
Strophitus radiatus	Rayed Creekshell									
Strophitus undulatus	Creeper									
Sturnella magna	Eastern Meadowlark									
Stylisma aquatica	Water Southern Morning-glory									
Stylisma pickeringii ssp. pattersonii	Pickering Morning-glory									
Stylisma pickeringii ssp. pickeringii	Pickering Morning-glory									
Stylogomphus albistylus	Eastern Least Clubtail									
Stylurus potulentus	Yellow-sided Clubtail									
Stylurus townesi	Townes' Clubtail									
Swida alternifolia	Alternate-leaf Dogwood									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Symphyotrichum ericoides var. *ericoides*	White Heath Aster									
Symphyotrichum oblongifolium	Aromatic Aster									
Symphyotrichum oolentangiense	Sky Blue Aster									
Symphyotrichum pratense	Barrens Silky Aster									
Symphyotrichum puniceum var. *puniceum*	Purple-stem Aster									
Symphyotrichum puniceum var. *scabricaule*	Rough-stem Aster									
Syngonanthus flavidulus	Yellow Pipewort									
Syringodium filiforme	Manatee-grass									
Tachopteryx thoreyi	Gray Petaltail									
Taenidia integerrima	Yellow Pimpernel									
Tetraloniella albata	White-clothed Longhorn									
Thalasseus maximus	Royal Tern	p	p				p	p		
Thalasseus sandvicensis	Sandwich Tern	p	p				p	p		
Thalassia testudina	Turtle-grass									
Thalia dealbata	Powdery Thalia									
Thalictrum debile	Southern Meadowrue									
Thalictrum dioicum	Early Meadowrue									
Thalictrum macrostylum	Small-leaf Meadowrue									
Thelesperma filifolium	Stiff Greenthread									
Theliderma cylindrica cylindrica	Rabbitsfoot									
Theliderma metanevra	Monkeyface									
Thryomanes bewickii	Bewick's Wren									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
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Tiarella cordifolia	Heart-leaved Foam-flower									
Tomostima cuneifolia	Wedgeleaf Whitlow-grass									
Tomostima reptans	Carolina Whitlow-grass									
Tortula porteri	Porter's Screw Moss									
Toxolasma lividum	Purple Lilliput									
Trachyxiphium hypnaceum	Trachyxiphium Moss									
Tradescantia ernestiana	Ernest's Spider-wort									
Tradescantia hirsuticaulis	Hairy-stem Spiderwort									
Trautvetteria applanata	Ozark Tassel-rue									
Trichechus manatus latirostris	Florida Manatee									
Tridens carolinianus	Carolina Fluff Grass									
Tridens chapmanii	Chapman's Redtop									
Trifolium carolinianum	Carolina Clover									
Trifolium reflexum	Buffalo Clover									
Triglochin striata	Arrow-grass							p	p	p
Trillium flexipes	Drooping Trillium									
Trillium foetidissimum	Fetid Trillium									
Trillium ludovicianum	Louisiana Trillium									
Trillium pusillum var. *ozarkanum*	Ozark Least Trillium									
Tringa flavipes	Lesser Yellowlegs	p	p				p	p		
Tringa semipalmata	Willet	p	p	p			p	p		
Triphora trianthophoros var. *trianthophorus*	Nodding Pogonia									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
Scientific Name	**Common Name**	FLORIDA PANHANDLE BEACH VEGETATION	MAINLAND BEACHES	EGCP DUNE AND COASTAL GRASSLAND	EGCP MARITIME FOREST	EGCP FRESHWATER TIDAL SWAMP	SCP INTERDUNAL WETLANDS	NORTH-CENTRAL GoMx SALT AND BRACKISH TIDAL MARSHES	MISSISSIPPI SOUND FRESH AND OLIGOHALINE MARSHES	SHELL MIDDENS AND ESTUARINE SHRUBLANDS
Ulmus serotina	September Elm									
Uniomerus declivis	Tapered Pondhorn									
Ursus americanus	Black Bear									
Ursus americanus luteolus	Louisiana Black Bear									
Utricularia olivacea	Piedmont Bladderwort			p						
Utricularia purpurea	Purple Bladderwort									
Utterbackiana hartfieldorum	Cypress Floater									
Uvularia floridana	Florida Bellwort									
Vaccinium pallidum	Early Lowbush Blueberry									
Vaccinium tenellum	Small Black Blueberry									
Vandenboschia boschiana	Appalachian Bristle Fern									
Verbena xutha	Gulf Vervain					p				
Vermivora chrysoptera	Golden-winged Warbler			p	p					p
Veronicastrum virginicum	Culver's-root									
Viburnum acerifolium	Mapleleaf Viburnum									
Villosa vanuxemensis	Mountain Creekshell									
Vireo gilvus	Warbling Vireo			p	p					p
Vittaria appalachiana	Appalachian Vittaria									
Xyris chapmanii	Chapman's Yellow-eyed-grass									
Xyris drummondii	Drummond's Yellow-eyed-grass									
Xyris flabelliformis	Savannah Yellow-eyed-grass	p					p			

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		16.1	16.1	16.1	16.2	16.2	16.3	16.4	16.4	16.6
Scientific Name	**Common Name**	FLORIDA PANHANDLE BEACH VEGETATION	MAINLAND BEACHES	EGCP DUNE AND COASTAL GRASSLAND	EGCP MARITIME FOREST	EGCP FRESHWATER TIDAL SWAMP	SCP INTERDUNAL WETLANDS	NORTH-CENTRAL GoMx SALT AND BRACKISH TIDAL MARSHES	MISSISSIPPI SOUND FRESH AND OLIGOHALINE MARSHES	SHELL MIDDENS AND ESTUARINE SHRUBLANDS
Xyris louisianica	Kral's Yellow-eyed Grass					p			p	
Xyris scabrifolia	Harper's Yellow-eyed Grass									
Xyris serotina	Acid-swamp Yellow-eyed-grass									
Yeatesia viridiflora	Green-flower Yeatesia									
Zapus hudsonius	Meadow Jumping Mouse									
Zephyranthes simpsonii	Rainlily									

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	Common Name	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Accipiter striatus	Sharp-shinned Hawk (breeding population)							
Acentrella alachua	A Mayfly							
Acer leucoderme	Chalk Maple							
Acipenser desotoi	Gulf Sturgeon	p	p		p	p		
Acipenser fulvescens	Lake Sturgeon							
Actaea racemosa	Black Bugbane							
Actinonaias ligamentina	Mucket							
Adiantum capillus-veneris	Southern Maidenhair-fern							
Aesculus glabra var. *glabra*	Ohio Buckeye							
Aeshna umbrosa	Shadow Darner							
Aetobatus narinari	Whitespotted Eagle Ray	p			p	p	p	p
Agalinis auriculata	Earleaf False Foxglove							
Agalinis filicaulis	Thread-stem False Foxglove							
Agalinis homalantha	San Antonio False-foxglove							
Agalinis linifolia	Flaxleaf False Foxglove							
Agalinis oligophylla	Ridge-stem False-foxglove							
Agalinis skinneriana	Pale False Foxglove							
Agarodes libalis	Spring-loving Psiloneuran Caddisfly							
Agarodes stannardi	Stannard's Agarodes Caddisfly							
Agastache nepetoides	Yellow Giant-hyssop							
Agrimonia incisa	Incised Groovebur							
Alburnops candidus	Silverside Shiner							
Alburnops chalybaeus	Ironcolor Shiner							
Alburnops edwardraneyi	Fluvial Shiner							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Alisma subcordatum	Broad-leaved Water-plantain							
Allocapnia aurora	Aurora Snowfly							
Allocapnia polemistis	Black Warrior Snowfly							
Alloperla natchez	Natchez Stonefly							
Alophia drummondii	Purple Pleat-leaf							
Alosa alabamae	Alabama Shad	p			p			
Alosa chrysochloris	Skipjack Herring	p			p			
Amaranthus australis	Southern Amaranth							
Ambloplites rupestris	Rock Bass							
Amblyomma tuberculatum	Gopher Tortoise Tick							
Amblyscirtes alternata	Least Florida Skipper							
Amblyscirtes reversa	Reversed Roadside Skipper							
Ambystoma texanum	Smallmouth Salamander							
Ambystoma tigrinum	Tiger Salamander							
Ammocrypta clara	Western Sand Darter							
Ammodramus savannarum	Grasshopper Sparrow							
Ammospiza leconteii	LeConte's Sparrow							
Ammospiza maritima	Seaside Sparrow							
Ammospiza nelsoni	Nelson's Sparrow							
Amphiachyris dracunculoides	Broom-snakeroot							
Amphiagrion saucium	Eastern Red Damsel							
Amphinemura alabama	Alabama Forestfly							
Amphiuma pholeter	One-toed Amphiuma							
Amsonia ludoviciana	Louisiana Bluestar							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Anas acuta	Northern Pintail	p						
Anas fulvigula	Mottled Duck	p						
Andropogon dealbatus	Wetland White Bluestem							
Andropogon perangustatus	Narrow-leaved Bluestem							
Andropogon tracyi	Tracy's Bluestem							
Aneides aeneus	Green Salamander							
Anemone caroliniana	Carolina Anemone							
Anemone quinquefolia	Wood Anemone							
Anguilla rostrata	American Eel							
Anthoceros punctatus	a hornwort						p	
Antigone canadensis pulla	Mississippi Sandhill Crane							
Antrostomus carolinensis	Chuck-will's-widow							
Antrostomus vociferus	Eastern Whip-poor-will							
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle							
Aphyllon uniflorum	One-flowered Broomrape							
Apios priceana	Price's Potato-bean							
Aplectrum hyemale	Puttyroot							
Aquila chrysaetos	Golden Eagle							
Aquilegia canadensis	Wild Columbine							
Arabidopsis lyrata ssp. *lyrata*	Lyreleaf Rockcress							
Arabis patens	Spreading Rockcress							
Aralia racemosa	American Spikenard							
Archidium hallii	Hall's Archidium Moss							
Archosargus rhomboidalis	Western Atlantic Seabream		p	p	p			p

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Arcidens confragosus	Rock Pocketbook							
Arctosa sanctaerosae	Santa Rosa Wolf Spider							
Arigomphus lentulus	Stillwater Clubtail							
Arigomphus villosipes	Unicorn Clubtail							
Aristida beyrichiana	Southern Wiregrass							
Aristida mohrii	Mohr's Three-awn Grass							
Aristida simpliciflora	Southern Three-awn Grass							
Aristida spiciformis	Pine Barren Three-awn Grass							
Aristida tenuispica	Southern Arrowfeather							
Arnoglossum reniforme	Great Indian-plantain							
Asclepias hirtella	Green Milkweed							
Asclepias incarnata	Swamp Milkweed							
Asclepias purpurascens	Purple Milkweed							
Asio flammeus	Short-eared Owl							
Aspidogyne querceticola	Low Erythrodes							
Asplenium pinnatifidum	Lobed Spleenwort							
Asplenium resiliens	Black-stem Spleenwort							
Asplenium rhizophyllum	Walking-fern Spleenwort							
Asplenium trichomanes	Maidenhair Spleenwort							
Asplenium x kentuckiense	Kentucky Spleenwort							
Astragalus canadensis var. *canadensis*	Canadian Milkvetch							
Astragalus distortus var. *engelmannii*	Engelmann's Bent Milk-vetch							
Astragalus obcordatus	Florida Milkvetch							
Atractosteus spatula	Alligator Gar	p	p		p			

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Atrytone arogos arogos	Arogos Skipper							
Atrytonopsis loammi	Loammi Skipper							
Attaneuria ruralis	Giant Stone							
Automeris louisiana	Louisiana Eyed Silkmoth	p						
Avicennia germinans	Black Mangrove							
Aythya affinis	Lesser Scaup	p	p		p	p		
Baetisca escambiensis	A Mayfly							
Bagisara brouana	A Noctuid Moth							
Balduina angustifolia	Coastal Plain Honeycomb-head							
Baptisia nuttalliana	Nuttall's Wild Indigo							
Baptisia sphaerocarpa	Green Wild Indigo							
Bidens trichosperma	Tickseed Sunflower							
Boltonia apalachicolensis	Apalachicola Doll's-Daisy							
Bombus fraternus	Southern Plains Bumble Bee							
Bombus pensylvanicus	American Bumblebee							
Bombus variabilis	Variable Cuckoo Bumble Bee							
Borodinia canadensis	Sicklepod							
Botaurus lentiginosus	American Bittern							
Bruchia ravenelii	Ravenel's Bruchia Moss							
Bulbostylis ciliatifolia	Capillary Hairsedge							
Burmannia biflora	Northern Burmannia							
Calidris canutus	Red Knot			p				
Calidris melanotos	Pectoral Sandpiper							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Calidris pusilla	Semipalmated Sandpiper							
Calidris subruficollis	Buff-breasted Sandpiper							
Callicladium haldanianum	Beautiful Branch Moss							
Calliphysalis carpenteri	Carpenter's Ground-cherry							
Callirhoe triangulata	Clustered Poppy-mallow							
Calopogon barbatus	Bearded Grass-pink							
Calopogon multiflorus	Many-flowered Grass-pink							
Calopogon oklahomensis	Oklahoma Grass-pink							
Camassia scilloides	Wild Hyacinth							
Cambarellus diminutus	Least Crayfish							
Cambarellus lesliei	Angular Dwarf Crayfish							
Cambarus girardianus	Tanback Crayfish							
Cambarus rusticiformis	Depression Crayfish							
Cambarus striatus	Ambiguous Crayfish							
Campephilus principalis	Ivory-billed Woodpecker							
Campylopus angustiretis	Campylopus Moss							
Canis rufus	Red Wolf							
Canna flaccida	Bandana-of-the-Everglades							
Carcharhinus acronotus	Blacknose Shark		p		p	p	p	p
Carcharhinus plumbeus	Sandbar Shark	p			p	p	p	p
Carcharhinus porosus	Smalltail Shark	p			p		p	
Carcharias taurus	Sand Tiger Shark							p
Cardamine angustata	Slender Toothwort							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	Common Name	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Cardamine diphylla	Two-leaf Toothwort							
Caretta caretta	Loggerhead Sea Turtle	p	p		p	p	p	p
Carex alata	Broadwing Sedge							
Carex albursina	White Bear Sedge							
Carex baltzellii	Baltzell's Sedge							
Carex bullata var. *greenei*	Button Sedge							
Carex communis	Fibrous-root Sedge							
Carex comosa	Bristly Sedge							
Carex crawei	Crawe's Sedge							
Carex dasycarpa	Velvet Sedge							
Carex elliottii	Elliott's Sedge							
Carex exilis	Coast Sedge							
Carex fissa var. *aristata*	Hammock Sedge							
Carex fissa var. *fissa*	Hammock Sedge							
Carex frankii	Frank's Sedge							
Carex gracilescens	Slender Sedge							
Carex gravida	Heavy-fruited Sedge							
Carex grayi	Asa Gray's Sedge							
Carex grisea	Inflated Narrowleaf Sedge							
Carex hyalina	Tissue Sedge							
Carex impressinervia	Impressed-nerved Sedge							
Carex jamesii	Nebraska Sedge							
Carex laxiflora	Broad Loose-flower Sedge							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Carex mesochorea	Midland Sedge							
Carex mitchelliana	Mitchell's Sedge							
Carex molestiformis	Ozark Plateau Sedge							
Carex normalis	Greater Straw Sedge							
Carex oligocarpa	Eastern Few-fruit Sedge							
Carex oxylepis var. *pubescens*	Sharp-scale Sedge							
Carex prasina	Drooping Sedge							
Carex radiata	Stellate Sedge							
Carex reznicekii	Reznicek's Sedge							
Carex scoparia	Broom Sedge							
Carex seorsa	Weak Stellate Sedge							
Carex stipata var. *maxima*	Stalk-grain Sedge							
Carex striata var. *striata*	Southern Peatland Sedge							
Carex superata	Limestone Forest Sedge							
Carex torta	Twisted Sedge							
Carex verrucosa	Warty Sedge							
Carex virescens	Ribbed Sedge							
Carya laciniosa	Big Shellbark Hickory							
Castanea dentata (nut-bearing only)	American Chestnut							
Castilleja coccinea	Scarlet Indian-paintbrush							
Catocala atocala	Brou's Underwing							
Catocala delilah	Delilah Underwing							
Catocala miranda	A Noctuid Moth							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
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Catostomus commersonii	White Sucker							
Caupolicana electa	A Plasterer Bee							
Celithemis amanda	Amanda's Pennant							
Centronyx henslowii	Henslow's Sparrow							
Ceraclea spongillovorax	A Caddisfly							
Ceratophaga vicinella	Gopher Tortoise Shell Moth							
Ceratophyllum echinatum	Prickly Hornwort							
Ceratopteris pteridoides	Floating Antler Fern							
Chaetura pelagica	Chimney Swift							
Chamaecrista horizontalis	Florida Senna							
Chamaecyparis thyoides	Atlantic White Cedar	p						
Charadrius melodus	Piping Plover							
Charadrius nivosus	Snowy Plover							
Charadrius wilsonia	Wilson's Plover							
Chasmanthium nitidum	Shiny Spikegrass							
Chelone lyonii	Pink Turtlehead							
Chelone obliqua var. *obliqua*	Red Turtlehead							
Chelonia mydas	Green Sea Turtle		p		p	p	p	p
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle							
Cheumatopsyche petersi	Peters' Cheumatopsyche Caddisfly							
Chimaphila maculata	Spotted Wintergreen							
Chimarra falculata	A Caddisfly							
Chlidonias niger	Black Tern	p			p	p		

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
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Chordeiles minor	Common Nighthawk							
Chrosomus erythrogaster	Southern Redbelly Dace							
Cicindela marginipennis	Cobblestone Tiger Beetle							
Cicindela nigrior	Autumn Tiger Beetle							
Cicuta maculata var. *bolanderi*	Bolander's Water-hemlock							
Cirsium lecontei	Leconte's Thistle							
Cirsium muticum	Swamp Thistle							
Cistothorus palustris marianae	Marian's Marsh Wren							
Cladium mariscoides	Twig Rush							
Cladrastis kentukea	Yellowwood							
Cleistesiopsis bifaria	Appalachian Small Spreading Pogonia							
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia							
Clematis glaucophylla	White-leaved Leather-flower							
Clematis subreticulata	Alabama Leatherflower							
Clinopodium arkansanum	Low Calamint							
Clinostomus funduloides	Rosyside Dace							
Coccyzus americanus	Yellow-billed Cuckoo							
Coelorachis cylindrica	Pitted Jointgrass							
Colinus virginianus	Northern Bobwhite							
Collinsonia anisata	Anise Horsebalm							
Collinsonia punctata	Spotted-leaf Horse-balm							
Cololejeunea setiloba	a liverwort							
Coluber flagellum flagellum	Eastern Coachwhip							

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Columbina passerina	Common Ground Dove							
Conopholis americana	American Cancer-root							
Conradina canescens	Blue-sage							
Convolvulus catesbyanus	Catesby's Bindweed							
Cordulegaster bilineata	Brown Spiketail							
Cordulegaster erronea	Tiger Spiketail							
Coreopsis nudata	Georgia Tickseed							
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat							
Cottus carolinae	Banded Sculpin							
Coturnicops noveboracensis	Yellow Rail							
Crataegus ashei	Ashe's Hawthorn							
Crataegus brachyacantha	Blueberry Hawthorn							
Crataegus mendosa	Albertville Hawthorn							
Crataegus mohrii	Mohr's Hawthorn							
Crataegus mollis var. *meridionalis*	Gallion Hawthorn							
Crataegus triflora	Three-flowered Hawthorn							
Creaserinus burrisi	Burris' Burrowing Crayfish							
Creaserinus danielae	Speckled Burrowing Crayfish							
Creaserinus fodiens	Digger Crayfish							
Creaserinus gordoni	Camp Shelby Burrowing Crayfish							
Crocanthemum arenicola	Coastal-sand Frostweed							
Crotalus adamanteus	Eastern Diamondback Rattlesnake							
Cryphaea ravenelii	Ravenel's Cryphaea Moss							

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Cryptobranchus alleganiensis	Hellbender							
Crystallaria asprella	Crystal Darter							
Cunila origanoides	Common Dittany							
Cuphea viscosissima	Blue Waxweed							
Cuscuta glomerata	Clustered Dodder							
Cycleptus elongatus	Blue Sucker							
Cycleptus meridionalis	Southeastern Blue Sucker							
Cyclonaias tuberculata	Purple Wartyback							
Cylindrocolea rhizantha	a liverwort							
Cyperus articulatus	Jointed Flatsedge							
Cyperus bipartitus	Shining Flatsedge							
Cyperus drummondii	Green Flatsedge							
Cyperus elegans	Sticky Flatsedge							
Cyperus engelmannii	Slender Sand Flatsedge							
Cyperus flavicomus	White-edged Flatsedge							
Cyperus hystricinus	Bristly Flatsedge							
Cyperus lecontei	Le Conte's Flatsedge							
Cyperus neotropicalis	American Lipocarpha							
Cyperus ochraceus	Pond Flatsedge							
Cyperus refractus	Reflexed Flatsedge							
Cyperus thyrsiflorus	Southcentral Flatsedge							
Cyprinella callistia	Alabama Shiner							
Cyprinella galactura	Whitetail Shiner							

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Cyprinella spiloptera	Spotfin Shiner							
Cyprinella whipplei	Steelcolor Shiner							
Cypripedium kentuckiense	Kentucky Yellow Lady's-slipper							
Cyprogenia aberti	Western Fanshell							
Dalea mountjoyae	White-tassels							
Decodon verticillatus	Hairy Swamp Loosestrife							
Deirochelys reticularia miaria	Western Chicken Turtle							
Deirochelys reticularia reticularia	Eastern Chicken Turtle							
Delphinium tricorne	Dwarf Larkspur							
Deparia acrostichoides	Silvery Spleenwort							
Dermochelys coriacea	Atlantic Leatherback Sea Turtle				p	p	p	p
Desmodium ochroleucum	Creamflower Tick-trefoil							
Desmodium tenuifolium	Slim-leaf Tick-trefoil							
Desmognathus pascagoula	Pascagoula Dusky Salamander							
Desmognathus valentinei	Valentine's Southern Dusky Salamander							
Diaperia prolifera var. *prolifera*	Big-head Evax							
Dicentra cucullaria	Dutchman's Breeches							
Dichanthelium cryptanthum	Hidden-flower Witchgrass							
Dichanthelium curtifolium	Shortleaf Witchgrass							
Dichanthelium erectifolium	Erect-leaf Witchgrass							
Dichanthelium nudicaule	Naked-stemmed Panic Grass							
Dichanthelium wrightianum	Wright's Witchgrass							
Didiplis diandra	Water-purslane						p	

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Didymoglossum membranaceum	Scale-edge Bristle Fern							
Didymoglossum petersii	Dwarf Filmy-fern							
Diphasiastrum digitatum	Fan Club-moss							
Dirca palustris	Eastern Leatherwood							
Drepanolejeunea mosenii	a liverwort							
Drymarchon couperi	Eastern Indigo Snake							
Dryobates borealis	Red-cockaded Woodpecker							
Dryopteris australis	Southern Woodfern							
Dryopteris celsa	Log Fern							
Dryopteris ludoviciana	Southern Shield Wood-fern							
Echinodorus berteroi	Upright Burhead							
Egretta caerulea	Little Blue Heron	p						
Egretta rufescens	Reddish Egret	p						
Egretta tricolor	Tricolored Heron	p						
Elanoides forficatus	Swallow-tailed Kite							
Eleocharis albida	White Spikerush							
Eleocharis ambigens	Obscure Spikerush							
Eleocharis atropurpurea	Purple Spikerush							
Eleocharis bicolor	Small Spikerush							
Eleocharis cellulosa	Carolina Spikerush							
Eleocharis coloradoensis	Dwarf Spikerush							
Eleocharis compressa	Flat-stem Spikerush							
Eleocharis elliptica	Slender Spikerush							

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Eleocharis elongata	Slim Spikerush							
Eleocharis erythropoda	Bald Spikerush							
Eleocharis geniculata	Capitate Spikerush							
Eleocharis intermedia	Matted Spikerush							
Eleocharis lanceolata	Lance-like Spikerush							
Eleocharis macrostachya	Creeping Spikerush							
Eleocharis melanocarpa	Black-fruit Spikerush							
Eleocharis microcarpa var. *microcarpa*	Small-fruit Spikerush							
Eleocharis ovata	Ovate Spikerush							
Eleocharis palustris	Creeping Spikerush							
Eleocharis parvula	Small Spikerush							
Eleocharis radicans	Rooted Spikerush							
Eleocharis robbinsii	Robbins Spikerush							
Eleocharis rostellata	Beaked Spikerush							
Eleocharis tenuis var. *pseudoptera*	Slender Spikerush							
Eleocharis tenuis var. *tenuis*	Slender Spikerush							
Eleocharis tricostata	Three-angle Spikerush							
Eleocharis wolfii	Wolf's Spikerush							
Elimia cylindracea	Cylinder Elimia							
Elionurus tripsacoides	Pan-american Balsamscale							
Ellipsaria lineolata	Butterfly							
Elliptio arca	Alabama Spike							
Elliptio arctata	Delicate Spike							

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Elymus villosus	Hairy Wild Rye							
Enallagma concisum	Cherry Bluet							
Enallagma davisi	Sandhill Bluet							
Enallagma pallidum	Pale Bluet							
Enallagma pollutum	Florida Bluet							
Endotropis lanceolata	Lance-leaved Buckthorn							
Enemion biternatum	False Rue-anemone							
Enneacanthus gloriosus	Bluespotted Sunfish	p						
Epinephelus itajara	Atlantic Goliath Grouper	p			p	p		p
Epioblasma brevidens	Cumberlandian Combshell							
Epioblasma penita	Southern Combshell							
Epioblasma triquetra	Snuffbox							
Epitheca spinosa	Robust Baskettail							
Equisetum arvense	Field Horsetail							
Eretmochelys imbricata	Hawksbill Sea Turtle				p	p	p	p
Erigenia bulbosa	Harbinger-of-Spring							
Eriocaulon decangulare var. *latifolium*	Panhandle Pipewort							
Eriocaulon texense	Texas Pipewort							
Eryngium aquaticum	Marsh Rattlesnake-master							
Eryngium hookeri	Hooker's Coyote-thistle							
Eryngium species 1	Mocassin-master							
Erynnis martialis	Mottled Dusky Wing							
Erythrodiplax umbrata	Band-winged Dragonlet							

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Erythronium albidum	White Trout-lily							
Erythronium americanum ssp. *harperi*	Yellow Trout-lily							
Etheostoma asprigene	Mud Darter							
Etheostoma blennioides	Greenside Darter							
Etheostoma duryi	Black Darter							
Etheostoma faulkneri	Yoknapatawpha Darter							
Etheostoma flabellare	Fantail Darter							
Etheostoma jessiae	Blueside Darter							
Etheostoma kennicotti	Stripetail Darter							
Etheostoma lachneri	Tombigbee Darter							
Etheostoma nigripinne	Blackfin Darter							
Etheostoma raneyi	Yazoo Darter							
Etheostoma rupestre	Rock Darter							
Etheostoma simoterum	Snubnose Darter							
Etheostoma zonifer	Backwater Darter							
Eumorpha intermedia	Intermediate Sphinx							
Eupatorium lancifolium	Lanceleaf Thoroughwort							
Euphagus carolinus	Rusty Blackbird							
Euphorbia discoidalis	Summer Spurge							
Euphorbia inundata var. *inundata*	Florida Pine Spurge							
Euphyes arpa	Palmetto Skipper							
Euphyes bayensis	Bay St. Louis Skipper							
Euphyes dukesi dukesi	Dukes' Skipper							

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Euphyes pilatka	Palatka Skipper							
Euploca convolvulacea	Bindweed Heliotrope							
Eurycea longicauda longicauda	Longtail Salamander							
Eurycea lucifuga	Cave Salamander							
Eurycea sphagnicola	Bog Dwarf Salamander							
Eurynia dilatata	Spike							
Eustachys glauca	Saltmarsh Finger-grass							
Eustoma exaltatum	Tall Prairie-gentian							
Eutrichota gopheri	Gopher Tortoise Burrow Fly							
Falco sparverius paulus	Southeastern American Kestrel							
Farancia erytrogramma	Rainbow Snake							
Faxonius erichsonianus	Reticulate Crayfish							
Faxonius etnieri	Ets Crayfish							
Faxonius hartfieldi	Yazoo Crayfish							
Faxonius jonesi	Sucarnoochee River Crayfish							
Faxonius mississippiensis	Mississippi Crayfish							
Faxonius palmeri	Gray-Speckled Crayfish							
Faxonius placidus	Bigclaw Crayfish							
Faxonius validus	Powerful Crayfish							
Faxonius wrighti	Hardin Crayfish							
Faxonius yanahlindus	Spinywrist Crayfish							
Fissidens amoenus	Hall's Fissidens Moss							
Forestiera ligustrina	Upland Swamp Privet							

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Fraxinus quadrangulata	Blue Ash							
Frullania donnellii	a liverwort							
Fuirena longa	Coastal-plain Umbrella-sedge							
Fundulus blairae	Western Starhead Topminnow							
Fundulus dispar	Northern Starhead Topminnow							
Fundulus euryzonus	Broadstripe Topminnow							
Fundulus jenkinsi	Saltmarsh Topminnow	p	p		p			
Gaillardia aestivalis var. *flavovirens*	Lanceleaf Blanket Flower							
Galactia floridana	Florida Milkpea							
Galearis spectabilis	Showy Orchis							
Galium bermudense	Coastal Bedstraw							
Gelochelidon nilotica	Gull-billed Tern	p	p		p	p	p	
Gentiana catesbaei	Elliott's Gentian							
Gentianella occidentalis	Stiff Gentian							
Geothlypis formosa	Kentucky Warbler							
Gomphus australis	Clearlake Clubtail							
Gomphus dilatatus	Blackwater Clubtail							
Gomphus geminatus	Twin-striped Clubtail							
Gomphus hodgesi	Hodges' Clubtail							
Goodyera pubescens	Downy Rattlesnake-plantain							
Gopherus polyphemus	Gopher Tortoise							
Graptemys flavimaculata	Yellow-blotched Map Turtle							
Graptemys geographica	Common Map Turtle							

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Graptemys gibbonsi	Pascagoula Map Turtle							
Graptemys nigrinoda	Black-knobbed Map Turtle							
Graptemys oculifera	Ringed Map Turtle							
Graptemys pearlensis	Pearl River Map Turtle							
Graptemys pulchra	Alabama Map Turtle		p					
Gratiola floridana	Florida Hedge-hyssop							
Gratiola ramosa	Branched Hedge-hyssop							
Gryllotalpa major	Prairie Mole Cricket							
Gymnocladus dioicus	Kentucky Coffeetree							
Gymnocthebius maureenae	Maureen's Gymnocthebius Minute Moss Beetle							
Gyrinophilus porphyriticus	Spring Salamander							
Habenaria quinqueseta	Michaux's Orchid							
Hackelia virginiana	Virginia Stickseed							
Haematopus palliatus	American Oystercatcher			p				
Halodule wrightii	Shoal-grass			p				
Halophila engelmannii	Engelmann's Sea-grass			p				
Hamamelis ovalis	Running Witch-hazel							
Hamiota perovalis	Orange-nacre Mucket							
Haploperla chukcho	Chukcho Stonefly							
Hedeoma drummondii var. drummondii	Drummond Pennyroyal							
Helanthium tenellum	Dwarf Burhead							
Helenium brevifolium	Shortleaf Sneezeweed							
Helianthus debilis ssp. *tardiflorus*	Gulf Coast Beach Sunflower							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	Common Name	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Helianthus decapetalus	Thinleaf Sunflower							
Helianthus verticillatus	Whorled Sunflower							
Helmitheros vermivorum	Worm-eating Warbler							
Helopicus bogaloosa	Masked Springfly							
Hemidactylium scutatum	Four-toed Salamander							
Hepatica acutiloba	Sharp-lobed Hepatica							
Herbertia lahue	Herbertia							
Hesperapis oraria	Gulf Coast Solitary Bee							
Hesperia attalus	Dotted Skipper							
Heterandria formosa	Least Killifish	p	p					
Heteranthera dubia	Grassleaf Mud-plaintain							
Heteranthera missouriensis	Missouri Mud-plantain							
Heterodon simus	Southern Hognose Snake							
Heuchera macrorhiza	Giant Alumroot							
Heuchera parviflora	Little-flower Alumroot							
Hexalectris spicata	Crested Coralroot							
Hexastylis harperi	Large-flowered Heartleaf							
Hibiscus coccineus	Brilliant Hibiscus							
Hieracium venosum	Rattlesnake Hawkweed							
Hippocampus erectus	Lined Seahorse		p	p	p			
Hobbseus attenuatus	Pearl Rivulet Crayfish							
Hobbseus cristatus	Crested Rivulet Crayfish							
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish							

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Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Hobbseus petilus	Tombigbee Rivulet Crayfish							
Hobbseus prominens	Prominence Rivulet Crayfish							
Hobbseus valleculus	Choctaw Rivulet Crayfish							
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish							
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly							
Hottonia inflata	Featherfoil							
Hybopsis amnis	Pallid Shiner							
Hydrastis canadensis	Golden-seal							
Hydroperla fugitans	Austin Springfly							
Hydrophyllum appendiculatum	Appendage Waterleaf							
Hydrophyllum macrophyllum	Large-leaf Water-leaf							
Hydroptila cretosa	A Caddisfly							
Hydroptila holzenthali	A Caddisfly							
Hydroptila homochitta	A Caddisfly							
Hydroptila molsonae	Molson's Microcaddisfly							
Hydroptila poirrieri	A Caddisfly							
Hydroptila tusculum	A Caddisfly							
Hylocichla mustelina	Wood Thrush							
Hymenocallis choctawensis	Florida Panhandle Spider-lily							
Hymenocallis occidentalis var. *eulae*	Woodland Spider-lily							
Hypericum canadense	Canadian St. John's-wort							
Hypericum myrtifolium	Myrtle-leaved St. Johnswort							
Hypoxis curtissii	Curtiss' Yellow Star-grass							

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Ichthyomyzon castaneus	Chestnut Lamprey							
Ichthyomyzon unicuspis	Silver Lamprey							
Ictiobus niger	Black Buffalo							
Ilex cassine	Dahoon Holly							
Ipomoea brasiliensis	Railroad Morning-glory							
Ipomoea macrorhiza	Large-stem Morning-glory							
Iresine diffusa	Felicidad							
Iris brevicaulis	Lamance Iris							
Iris giganticaerulea	Giant Blue Iris							
Ischnura prognata	Furtive Forktail							
Isoetes appalachiana	Appalachian Quillwort							
Isoetes louisianensis	Louisiana Quillwort							
Isoetes melanopoda spp. *melanopoda*	Blackfoot Quillwort							
Isoetes melanopoda spp. *silvatica*	Eastern Blackfoot Quillwort							
Isoetes mississippiensis	Mississippi Quillwort							
Isoetes valida	Strong Quillwort							
Isogenoides varians	A Stonefly							
Isonychia berneri	A Mayfly							
Isurus oxyrinchus	Shortfin Mako Shark						p	
Ixobrychus exilis	Least Bittern							
Juglans cinerea	Butternut							
Juncus interior	Inland Rush							
Juniperus silicicola	Southern Red Cedar	p						

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Lacunicambarus dalyae	Jewel Mudbug							
Lacunicambarus freudensteini	Banded Mudbug							
Lacunicambarus mobilensis	Lonesome Gravedigger							
Lacunicambarus polychromatus	Paintedhand Mudbug							
Lampropeltis calligaster calligaster	Prairie Kingsnake							
Lampropeltis calligaster rhombomaculata	Mole Kingsnake							
Lampropeltis triangulum	Red Milk Snake							
Lampsilis fasciola	Wavy-rayed Lampmussel							
Lampsilis hydiana	Louisiana Fatmucket							
Lampsilis ovata	Pocketbook							
Lanius ludovicianus ludovicianus	Loggerhead Shrike							
Lanius ludovicianus migrans	Migrant Loggerhead Shrike							
Lapara phaeobrachycerous	Gulf Pine Sphinx							
Lasionycteris noctivagans	Silver-haired Bat							
Lasiurus cinereus	Hoary Bat							
Lasiurus intermedius	Northern Yellow Bat							
Lasmigona alabamensis	Alabama Heelsplitter							
Lasmigona complanata	White Heelslpitter							
Lasmigona costata	Flutedshell							
Laterallus jamaicensis	Black Rail							
Lejeunea bermudiana	a liverwort							
Lejeunea cladogyna	a liverwort							
Lejeunea floridana	a liverwort							

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Lejeunea laetivirens	a liverwort							
Lepidochelys kempii	Kemp's Ridley Sea Turtle	p	p	p	p	p	p	p
Lepidostoma morsei	Morse's Little Plain Brown Sedge							
Leptolucania ommata	Pygmy Killifish	p	p					
Lethenteron appendix	American Brook Lamprey							
Leuctra colemanorum	Yalobusha Needlefly							
Leuctra hicksi	Cypress Needlefly							
Liatris elegantula	Blazing-Star							
Ligumia recta	Black Sandshell							
Ligusticum canadense	Nondo Lovage							
Lilaeopsis carolinensis	Carolina Lilaeopsis							
Lilium iridollae	Panhangle Lily							
Lilium michiganense	Michigan Lily							
Limnodromus griseus	Short-billed Dowitcher							
Limnothlypis swainsonii	Swainson's Warbler							
Limosa fedoa	Marbled Godwit			p				
Lindera melissifolia	Pondberry							
Lindera subcoriacea	Bog Spicebush							
Linum floridanum var. *chrysocarpum*	Yellow-fruited Flax							
Linum macrocarpum	Spring Hill Flax							
Liodytes rigida deltae	Delta Crayfish Snake							
Liodytes rigida sinicola	Gulf Crayfish Snake							
Lithasia armigera	Armored Rocksnail							

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Lithasia hubrichti	Big Black Rocksnail							
Lithasia lima	Warty Rocksnail							
Lithasia verrucosa	Varicose Rocksnail							
Lithobates areolatus	Crawfish Frog							
Lithobates heckscheri	River Frog							
Lithobates sevosus	Dusky Gopher Frog							
Lithospermum caroliniense	Golden Puccoon							
Lithospermum latifolium	American Gromwell							
Lobelia boykinii	Boykin's Lobelia							
Ludwigia alata	Winged Seedbox							
Lupinus perennis ssp. *gracilis*	Sundail Lupine							
Luziola bahiensis	Brazilian Loziola							
Lycium carolinianum	Carolina Wolf-berry		p					
Lycopodioides ludovicianum	Gulf Spike-moss							
Lycopus amplectens	Sessile-leaved Bugleweed							
Lythrurus fasciolaris	Scarlet Shiner							
Machimus polyphemi	Gopher Tortoise Robber Fly							
Macranthera flammea	Flame Flower							
Macrhybopsis meeki	Sicklefin Chub							
Macrochelys temminckii	Alligator Snapping Turtle							
Macromia alleghaniensis	Allegheny River Cruiser							
Macromitrium richardii	Richard's Macromitrium Moss							
Magnolia tripetala	Umbrella Magnolia							

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Malaclemys terrapin pileata	Mississippi Diamondback Terrapin	p	p	p	p			
Malus ioensis	Iowa Crabapple							
Manta birostris	Giant Manta Ray					p	p	p
Marshallia angustifolia	Slim-leaf Barbara's-buttons							
Marshallia trinervia	Broadleaf Barbara's-buttons							
Marsilea vestita	Marsilea vestita							
Matelea baldwyniana	Baldwin's Milkvine							
Matelea decipiens	Old-field Milkvine							
Matelea obliqua	Climbing Milkweed							
Medionidus acutissimus	Alabama Moccasinshell							
Megalops atlanticus	Tarpon	p		p	p	p	p	
Melanerpes erythrocephalus	Red-headed Woodpecker							
Mertensia virginica	Virginia Bluebells							
Metzgeria uncigera	a liverwort							
Micrurus fulvius	Eastern Coral Snake							
Mimulus ringens var. *ringens*	Square-stem Monkeyflower							
Miniellus boops	Bigeye Shiner							
Miniellus melanostomus	Blackmouth Shiner							
Miniellus sabinae	Sabine Shiner							
Mirabilis albida	Pale Umbrella-wort							
Mirabilis linearis	Narrowleaf Four-o'clock							
Mitreola angustifolia	Narrowleaf Miterwort							
Mobula hypostoma	Atlantic Pygmy Devil Ray				p	p	p	

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Mobula tarapacana	Sicklefin Devil Ray					p	p	
Moxostoma anisurum	Silver Redhorse							
Moxostoma breviceps	Smallmouth Redhorse							
Moxostoma carinatum	River Redhorse							
Moxostoma duquesnei	Black Redhorse							
Muhlenbergia glabrifloris	Inland Muhly							
Muhlenbergia sylvatica	Woodland Muhly							
Muhlenbergia tenuiflora	Slender Muhly							
Mycteria americana	Wood Stork							
Myotis austroriparius	Southeastern Myotis							
Myotis grisescens	Gray Bat							
Myotis septentrionalis	Northern Long-eared Bat							
Myotis sodalis	Indiana Bat							
Myriophyllum laxum	Loose Water-milfoil							
Myriopteris alabamensis	Alabama Lipfern							
Myriopteris lanosa	Hairy Lipfern							
Nabalus asper	Rough Rattlesnake-root							
Nabalus barbatus	Barbed Rattlesnake-root							
Nannothemis bella	Elfin Skimmer							
Narcine bancroftii	Caribbean Electric Ray					p		
Necturus maculosus	Common Mudpuppy							
Negaprion brevirostris	Lemon Shark	p	p			p	p	p
Nehalennia gracilis	Sphagnum Sprite							

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Nemastylis geminiflora	Prairie Pleatleaf							
Nemocapnia carolina	Southern Snowfly							
Neogale frenata	Long-tailed Weasel							
Neonympha helicta	Helicta Satyr							
Neonympha mitchellii	Mitchell's Satyr							
Neoperla coxi	A Stonefly							
Neotrichia alabamensis	A Caddisfly							
Nerodia clarkii clarkii	Gulf Salt Marsh Snake	p						
Nestronia umbellula	Nestronia							
Neurocordulia yamaskanensis	Stygian Shadowdragon							
Neviusia alabamensis	Alabama Snow-wreath							
Nicrophorus americanus	American Burying Beetle							
Nothonotus rubrus	Bayou Darter							
Nothonotus rufilineatus	Redline Darter							
Notropis micropteryx	Highland Shiner							
Noturus exilis	Slender Madtom							
Noturus flavus	Stonecat							
Noturus gladiator	Piebald Madtom							
Noturus munitus	Frecklebelly Madtom							
Nuphar lutea ssp. *ulvacea*	West Florida Cow-Lily							
Nyctanassa violacea	Yellow-crowned Night-Heron	p						
Nycticorax nycticorax	Black-crowned Night-Heron	p						
Nymphaea mexicana	Banana Water-lily							

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Nymphoides aquatica	Big Floating-heart							
Nymphoides cordata	Floating-heart							
Obovaria arkansasensis	Southern Hickorynut							
Obovaria c.f. unicolor	Undescribed Hickorynut							
Obovaria subrotunda	Round Hickorynut							
Obovaria unicolor	Alabama Hickorynut							
Oecetis daytona	A Caddisfly							
Oenothera capillifolia ssp. *capillifolia*	Berlandier's Sundrops							
Oenothera grandiflora	Large-flowered Evening-primrose							
Oenothera heterophylla ssp. *orientalis*	Alabama Evening-primrose							
Oenothera patriciae	Plains Gaura							
Oenothera triloba	Stemless Evening-primrose							
Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle							
Ophiogomphus australis	Southern Snaketail							
Ophisaurus attenuatus	Slender Glass Lizard							
Ophisaurus mimicus	Mimic Glass Lizard							
Opuntia macrorhiza	Twisted-spine Prickly-pear							
Orthochilus ecristatus	Giant Orchid							
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly							
Orthotrichum exiguum	Small Wood-bark Moss							
Oxalis grandis	Great Yellow Woodsorrel							
Oxalis macrantha	Tufted Yellow Woodsorrel							

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Packera aurea	Golden Groundsel							
Packera paupercula var. *paupercula*	Balsam Ragwort							
Packera tomentosa	Woolly Groundsel							
Palafoxia callosa	Small Palafoxia							
Palhinhaea cernua	Nodding Clubmoss							
Panax quinquefolius	American Ginseng							
Papaipema maritima	Maritime Sunflower Borer							
Papaipema sp. 5	Rare Cane Borer Moth							
Paracymus seclusus	Seclusive Water Scavenger Beetle							
Parkesia motacilla	Louisiana Waterthrush							
Parnassia grandifolia	Largeleaf Grass-of-parnassus							
Paronychia baldwinii ssp. *riparia*	Perennial Dune Whitlow-wort							
Paronychia erecta var. *corymbosa*	Beach Sand-squares							
Paronychia erecta var. *erecta*	Beach Sand-squares							
Paronychia patula	Pineland Nailwort							
Paspalum monostachyum	Gulfdune Paspalum							
Passerina ciris	Painted Bunting							
Pellaea atropurpurea	Purple-stem Cliff-brake							
Penstemon canescens	Gray Beardtongue							
Penstemon pallidus	Pale Beardtongue							
Penstemon tenuis	Sharp-sepal Beardtongue							
Percina aurora	Pearl Darter							
Percina evides	Gilt Darter							

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Percina kathae	Mobile Logperch							
Percina lenticula	Freckled Darter							
Percina phoxocephala	Slenderhead Darter							
Percina uranidea	Stargazing Darter							
Perideridia americana	Eastern Eulophus							
Perimyotis subflavus	Tricolored Bat							
Perlesta lagoi	A Stonefly							
Peromyscus polionotus	Oldfield Mouse							
Persicaria hirsuta	Hairy Smartweed							
Peucaea aestivalis	Bachman's Sparrow							
Phacelia bipinnatifida	Fernleaf Phacelia							
Phacelia hirsuta	Hairy Scorpionweed							
Phacelia purshii	Miami-mist							
Phacelia ranunculacea	Blue Scorpionweed							
Phacelia strictiflora var. *robbinsii*	Prairie Scorpion-weed							
Phaseolus sinuatus	Sandhill Bean							
Phenacobius mirabilis	Suckermouth Minnow							
Philadelphus hirsutus	Streambank Mock-orange							
Philadelphus inodorus	Scentless Mock Orange							
Philonthus testudo	Western Gopher Tortoise Rove Beetle							
Phlox amplifolia	Largeleaf Phlox							
Physalis arenicola	Cypress-head Ground-cherry							
Physaria gracilis ssp. *gracilis*	Spreading Bladder-pod							

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Pieris phillyreifolia	Climbing Fetter-bush							
Pinguicula planifolia	Chapman's Butterwort							
Pinguicula pumila	Dwarf Butterwort							
Pinus clausa	Sand Pine							
Pinus virginiana	Virginia Pine							
Piranga olivacea	Scarlet Tanager (breeding population)							
Pituophis melanoleucus lodingi	Black Pine Snake							
Pituophis melanoleucus melanoleucus	Northern Pine Snake							
Pityopsis pinifolia	Taylor County Silk-grass							
Plagiochila floridana	Florida Leafy Liverwort							
Plagiochila invisa	a liverwort							
Plagiochila virginica var. *virginica*	a liverwort							
Plantago cordata	Heartleaf Plantain							
Platalea ajaja	Roseate Spoonbill	p						
Platanthera conspicua	Large White-fringe Orchid							
Platanthera integra	Yellow Fringeless Orchid							
Platanthera integrilabia	White Fringeless Orchid							
Platanthera lacera	Green-fringed Orchid							
Platanthera nivea	Snowy Orchid							
Platanthera peramoena	Purple Fringeless Orchid							
Platygobio gracilis	Flathead Chub							
Plestiodon anthracinus	Coal Skink							
Plethobasus cyphyus	Sheepnose							

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Plethodon ventralis	Southern Zigzag Salamander							
Plethodon websteri clade A	Webster's Salamander Clade A							
Plethodon websteri clade B	Webster's Salamander Clade B							
Pleurobema beadleianum	Mississippi Pigtoe							
Pleurobema curtum	Black Clubshell							
Pleurobema decisum	Southern Clubshell							
Pleurobema perovatum	Ovate Clubshell							
Pleurobema riddellii	Louisiana Pigtoe							
Pleurobema sintoxia	Round Pigtoe							
Pleurobema taitianum	Heavy Pigtoe							
Pleurocera vestita	Brook Hornsnail							
Pleuronaia barnesiana	Tennessee Pigtoe							
Pleuronaia dolabelloides	Slabside Pearlymussel							
Pluvialis dominica	American Golden-Plover							
Pogonomyrmex badius	Florida Harvester Ant							
Polanisia tenuifolia	Slenderleaf Clammy-weed							
Polygonella americana	Southern Jointweed							
Polyodon spathula	Paddlefish							
Polytaenia nuttallii	Prairie Parsley							
Ponthieva racemosa	Shadow-witch Orchid							
Porphyrio martinicus	Purple Gallinule							
Potamilus alatus	Pink Heelsplitter							
Potamilus capax	Fat Pocketbook							

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Potamilus inflatus	Inflated Heelsplitter							
Potamogeton epihydrus	Nuttall's Pondweed							
Potamogeton pusillus	Slender Pondweed							
Primula meadia	Shootingstar							
Pristis pectinata	Smalltooth Sawfish	p	p		p	p	p	p
Pristis pristis	Largtooth Sawfish		p				p	
Procambarus ablusus	Hatchie River Crayfish							
Procambarus barbiger	Jackson Prairie Crayfish							
Procambarus bivittatus	Ribbon Crayfish							
Procambarus fitzpatricki	Spinytail Crayfish							
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish							
Procambarus hagenianus vesticeps	Egyptian Crayfish							
Procambarus lagniappe	Lagniappe Crayfish							
Procambarus lecontei	Mobile Crayfish							
Procambarus lylei	Shutispear Crayfish							
Procambarus mancus	Lame Crayfish							
Procambarus penni	Pearl Blackwater Crayfish							
Procambarus planirostris	Flatnose Crayfish							
Procambarus shermani	Gulf Crayfish							
Procambarus viaeviridis	Vernal Crayfish							
Protonotaria citrea	Prothonotary Warbler							
Prunus alabamensis	Alabama Black Cherry							
Pseudacris collinsorum	Collinses' Mountain Chorus Frog							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Pseudacris ornata	Ornate Chorus Frog							
Pseudemys alabamensis	Alabama Red-bellied Turtle	p	p					
Pseudiron centralis	White Sand-river Mayfly							
Pseudodontoides subvexus	Southern Creekmussel							
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper							
Pseudotriton montanus	Mud Salamander							
Pseudotriton ruber	Red Salamander							
Pteronotropis welaka	Bluenose Shiner							
Ptilimnium costatum	Eastern Bishopweed							
Ptychobranchus fasciolaris	Kidneyshell							
Puma concolor coryi	Florida Panther							
Pycnanthemum flexuosum	Narrowleaf Mountainmint							
Pycnanthemum pilosum	Whorled Mountainmint							
Quadrula nobilis	Gulf Mapleleaf							
Quadrula rumphiana	Ridged Mapleleaf							
Quercus arkansana	Arkansas Oak							
Quercus austrina	Bluff Oak							
Quercus macrocarpa var. *macrocarpa*	Bur Oak							
Quercus minima	Dwarf Live Oak							
Quercus myrtifolia	Myrtle-leaf Oak							
Quercus oglethorpensis	Oglethorpe's Oak							
Quercus palustris	Pin Oak							
Quiscalus quiscula	Common Grackle							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Radula sullivantii	a liverwort							
Rallus elegans	King Rail							
Ranunculus flabellaris	Yellow Water-crowfoot							
Ranunculus septentrionalis	Carolina Buttercup							
Raptoheptagenia cruenta	Wallace's Deepwater Mayfly							
Regina septemvittata	Queen Snake							
Rhadinaea flavilata	Pine Woods Snake							
Rhinichthys obtusus	Blacknose Dace							
Rhinoptera brasiliensis	Brazilian Cownose Ray	p	p	p	p	p	p	p
Rhodobryum roseum	Rose Moss							
Rhododendron alabamense	Alabama Rhododendron							
Rhododendron arborescens	Smooth Azalea							
Rhododendron austrinum	Orange Azalea							
Rhododendron periclymenoides	Pink Azalea							
Rhynchosia latifolia	Prairie Rhynchosia							
Rhynchospora baldwinii	Baldwin's Beakrush							
Rhynchospora brachychaeta	West Indies Beakrush							
Rhynchospora careyana	Broad-fruit Horned Beakrush							
Rhynchospora cephalantha var. *attenuata*	Small-bunched Beaksedge							
Rhynchospora crinipes	Hairy-peduncled Beakrush							
Rhynchospora curtissii	Curtiss' Beakrush							
Rhynchospora decurrens	Swamp-forest Beakrush							
Rhynchospora distans	Fasciculate Beakrush							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Rhynchospora divergens	White-seeded Beakrush							
Rhynchospora fernaldii	Fernald's Beakrush							
Rhynchospora galeana	Short-bristle Baldrush							
Rhynchospora harperi	Harper's Beakrush							
Rhynchospora harveyi	Harvey's Beakrush							
Rhynchospora leptocarpa	Slender-fruit Beaksedge							
Rhynchospora marliniana	Marlin's Beaksedge							
Rhynchospora perplexa	Pineland Beakrush							
Rhynchospora pinetorum	Small's Beakrush							
Rhynchospora pleiantha	Brown Beakrush							
Rhynchospora torreyana	Torrey's Beakrush							
Rhynchospora tracyi	Tracy Beakrush							
Rhynchospora wrightiana	Wright's Beakrush							
Riccia warnstorfii	a liverwort							
Riparia riparia	Bank Swallow (breeding population)							
Rorippa aquatica	Lake-cress							
Rudbeckia grandiflora var. *alismifolia*	Rough Coneflower							
Rudbeckia subtomentosa	Sweet Coneflower							
Ruellia noctiflora	Night-flowering Wild-petunia							
Ruellia pinetorum	Pine Barren Ruellia							
Rynchops niger	Black Skimmer	p	p		p	p	p	
Sabatia campestris	Prairie Pink							
Sabatia decandra	Bartram's Rose-gentian							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Sabulina patula	Pitcher's Stitchwort							
Sageretia minutiflora	Tiny-leaved Buckthorn							
Sagittaria chapmanii	Chapman's Arrowhead							
Sagittaria isoetiformis	Slender Arrow-head							
Salix caroliniana	Carolina Willow							
Salvia chapmanii	Chapman's Sage							
Sapindus marginatus	Florida Soapberry							
Sarracenia alabamensis ssp. *wherryi*	Wherry's Sweet Pitcher-plant							
Sarracenia leucophylla	Whitetop Pitcherplant							
Sarracenia rosea	Purple Pitcherplant							
Scaphirhynchus albus	Pallid Sturgeon							
Scaphirhynchus platorynchus	Shovelnose Sturgeon							
Scaphirhynchus suttkusi	Alabama Sturgeon							
Sceptridium jenmanii	Alabama Grapefern							
Sceptridium lunarioides	Winter Grape-fern							
Schisandra glabra	Bay Starvine							
Schizachyrium maritimum	Gulf Bluestem							
Schizachyrium scoparium ssp. *divergens*	Eastern Little Bluestem							
Schizachyrium stoloniferum	Creeping Bluestem							
Schoenoplectiella purshiana	Weakstalk Bulrush							
Schoenoplectus americanus	Three-square Bulrush							
Schoenoplectus deltarum	Delta Bulrush							
Schoenoplectus subterminalis	Swaying Rush							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Schwalbea americana	Chaffseed							
Scirpus divaricatus	Spreading Bulrush							
Scirpus lineatus	Drooping Bulrush							
Scleria elliottii	Broad-leaved Hairy Nutrush							
Scleria georgiana	Georgia Nutrush							
Scleria nitida	Shining Nutrush							
Scleria verticillata	Low Nutrush							
Sclerolepis uniflora	Pink Bogbutton							
Scolopax minor	American Woodcock							
Scutellaria glabriuscula	Georgia Skullcap							
Scutellaria leonardii	Shale-barren Skullcap							
Sedum pulchellum	Rock Stonecrop							
Sedum ternatum	Wood Stonecrop							
Seiurus aurocapilla	Ovenbird (breeding population)							
Senega ambigua	Whorled Milkwort							
Senega appendiculata	Swamp Milkwort							
Senega balduinii	White Milkwort							
Senega curtissii	Curtiss' Milkwort							
Senega hookeri	Hooker's Milkwort							
Senega leptostachys	Georgia Milkwort							
Setaria corrugata	Coast Bristle Grass							
Setodes dixiensis	A Caddisfly							
Setophaga cerulea	Cerulean Warbler							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Setophaga discolor	Prairie Warbler							
Shipsa rotunda	Intrepid Forestfly							
Sideroxylon reclinatum ssp. *reclinatum*	Florida Bumelia							
Silene ovata	Ovate Catchfly							
Silene regia	Royal Catchfly							
Silphium confertifolium	Black Belt Rosinweed							
Silphium integrifolium var. *gattingeri*	Gattinger's Rosinweed							
Silphium pinnatifidum	Tansy Rosinweed							
Silphium simpsonii	Simpson's Rosinweed							
Silphium terebinthinaceum var. *luciae-brauniae*	Lucy Braun's Prairie Dock							
Sitta pusilla	Brown-headed Nuthatch							
Smilax hugeri	Huger's Carrion-flower							
Smilax pulverulenta	Downy Carrion-flower							
Solanum pseudogracile	Glowing Nightshade							
Solidago auriculata	Eared Goldenrod							
Solidago brachyphylla	Dixie Goldenrod							
Solidago flaccidifolia	Appalachian Goldenrod							
Solidago juncea	Early Goldenrod							
Solidago rigidiuscula	Showy Goldenrod							
Solidago sphacelata	Autumn Goldenrod							
Somatochlora georgiana	Coppery Emerald							
Somatochlora provocans	Treetop Emerald							
Sophronanthe hispida	Pineland Hedge-Hyssop							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Sorex longirostris	Southeastern Shrew							
Speyeria diana	Diana							
Sphaerocarpos donnellii	a liverwort							
Sphaerosporoceros adscendens	a hornwort							
Sphagnum carolinianum	Carolina Peatmoss							
Sphagnum cyclophyllum	Circular-leaf Peatmoss							
Sphagnum fitzgeraldii	Fitzgerald's Peatmoss							
Sphenopholis penyslvanica	Swamp Wedgescale							
Sphyrna lewini	Scalloped Hammerhead		p	p	p	p	p	p
Sphyrna mokarran	Great Hammerhead		p	p	p	p	p	p
Spilogale putorius	Eastern Spotted Skunk							
Spinadis simplex	Wallace's Deepwater Mayfly							
Spiraea tomentosa	Steeplebush							
Spiranthes brevilabris	Texas Ladies'-tresses							
Spiranthes eatonii	Eaton's Ladies'-tresses							
Spiranthes floridana	Florida Ladies'-tresses							
Spiranthes lacera var. *gracilis*	Southern Slender Ladies'-tresses							
Spiranthes longilabris	Giant Spiral Ladies'-tresses							
Spiranthes magnicamporum	Great Plains Ladies'-tresses							
Spiranthes ovalis var. *ovalis*	Lesser Ladies'-tresses							
Spizella pusilla	Field Sparrow							
Sporobolus ozarkanus	Ozark Dropseed							
Stellaria corei	Tennessee Chickweed							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Stellaria pubera	Giant Chickweed							
Stenanthium gramineum	Eastern Featherbells							
Stenanthium texanum	Pine Barren Deathcamas							
Sterna hirundo	Common Tern (breeding population)	p	p		p	p		
Sternula antillarum antillarum	Coastal Least Tern	p	p		p	p		
Sternula antillarum athalassos	Interior Least Tern							
Stewartia ovata	Mountain Camellia							
Stizostedion canadense	Sauger							
Stizostedion sp. *cf. vitreum*	Southern Walleye							
Strophitus pascagoulaensis	Pascagoula Creekshell							
Strophitus radiatus	Rayed Creekshell							
Strophitus undulatus	Creeper							
Sturnella magna	Eastern Meadowlark							
Stylisma aquatica	Water Southern Morning-glory							
Stylisma pickeringii ssp. *pattersonii*	Pickering Morning-glory							
Stylisma pickeringii ssp. *pickeringii*	Pickering Morning-glory							
Stylogomphus albistylus	Eastern Least Clubtail							
Stylurus potulentus	Yellow-sided Clubtail							
Stylurus townesi	Townes' Clubtail							
Swida alternifolia	Alternate-leaf Dogwood							
Symphyotrichum ericoides var. *ericoides*	White Heath Aster							
Symphyotrichum oblongifolium	Aromatic Aster							
Symphyotrichum oolentangiense	Sky Blue Aster							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Symphyotrichum pratense	Barrens Silky Aster							
Symphyotrichum puniceum var. *puniceum*	Purple-stem Aster							
Symphyotrichum puniceum var. *scabricaule*	Rough-stem Aster							
Syngonanthus flavidulus	Yellow Pipewort							
Syringodium filiforme	Manatee-grass			p				
Tachopteryx thoreyi	Gray Petaltail							
Taenidia integerrima	Yellow Pimpernel							
Tetraloniella albata	White-clothed Longhorn							
Thalasseus maximus	Royal Tern	p	p		p	p	p	
Thalasseus sandvicensis	Sandwich Tern	p	p		p	p	p	
Thalassia testudina	Turtle-grass			p				
Thalia dealbata	Powdery Thalia							
Thalictrum debile	Southern Meadowrue							
Thalictrum dioicum	Early Meadowrue							
Thalictrum macrostylum	Small-leaf Meadowrue							
Thelesperma filifolium	Stiff Greenthread							
Theliderma cylindrica cylindrica	Rabbitsfoot							
Theliderma metanevra	Monkeyface							
Thryomanes bewickii	Bewick's Wren							
Tiarella cordifolia	Heart-leaved Foam-flower							
Tomostima cuneifolia	Wedgeleaf Whitlow-grass							
Tomostima reptans	Carolina Whitlow-grass							
Tortula porteri	Porter's Screw Moss							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Toxolasma lividum	Purple Lilliput							
Trachyxiphium hypnaceum	Trachyxiphium Moss							
Tradescantia ernestiana	Ernest's Spider-wort							
Tradescantia hirsuticaulis	Hairy-stem Spiderwort							
Trautvetteria applanata	Ozark Tassel-rue							
Trichechus manatus latirostris	Florida Manatee	p	p		p		p	
Tridens carolinianus	Carolina Fluff Grass							
Tridens chapmanii	Chapman's Redtop							
Trifolium carolinianum	Carolina Clover							
Trifolium reflexum	Buffalo Clover							
Triglochin striata	Arrow-grass							
Trillium flexipes	Drooping Trillium							
Trillium foetidissimum	Fetid Trillium							
Trillium ludovicianum	Louisiana Trillium							
Trillium pusillum var. *ozarkanum*	Ozark Least Trillium							
Tringa flavipes	Lesser Yellowlegs							
Tringa semipalmata	Willet							
Triphora trianthophoros var. trianthophorus	Nodding Pogonia							
Ulmus serotina	September Elm							
Uniomerus declivis	Tapered Pondhorn							
Ursus americanus	Black Bear							
Ursus americanus luteolus	Louisiana Black Bear							
Utricularia olivacea	Piedmont Bladderwort							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		17.1	17.2	17.3	17.4	17.5	18.1	18.2
Scientific Name	**Common Name**	ESTUARINE BAYS, LAKES AND TIDAL STREAMS	NORTHERN GULF MEXICO SEAGRASS BED	MOLLUSK REEFS	MISSISSIPPI SOUND	BARRIER ISLAND PASSES	MARINE HABITATS (SMOOTH BOTTOMS)	HARD BOTTOMS AND OCEANIC REEFS
Utricularia purpurea	Purple Bladderwort							
Utterbackiana hartfieldorum	Cypress Floater							
Uvularia floridana	Florida Bellwort							
Vaccinium pallidum	Early Lowbush Blueberry							
Vaccinium tenellum	Small Black Blueberry							
Vandenboschia boschiana	Appalachian Bristle Fern							
Verbena xutha	Gulf Vervain							
Vermivora chrysoptera	Golden-winged Warbler							
Veronicastrum virginicum	Culver's-root							
Viburnum acerifolium	Mapleleaf Viburnum							
Villosa vanuxemensis	Mountain Creekshell							
Vireo gilvus	Warbling Vireo							
Vittaria appalachiana	Appalachian Vittaria							
Xyris chapmanii	Chapman's Yellow-eyed-grass							
Xyris drummondii	Drummond's Yellow-eyed-grass							
Xyris flabelliformis	Savannah Yellow-eyed-grass							
Xyris louisianica	Kral's Yellow-eyed Grass							
Xyris scabrifolia	Harper's Yellow-eyed Grass							
Xyris serotina	Acid-swamp Yellow-eyed-grass							
Yeatesia viridiflora	Green-flower Yeatesia							
Zapus hudsonius	Meadow Jumping Mouse							
Zephyranthes simpsonii	Rainlily							

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.8	19.9	19.1
Scientific Name	**Common Name**	URBAN AND SUBURBAN LANDS	BUILDINGS, BRIDGES, OVERPASSES, ETC.	UTILITY RIGHT-OF-WAYS	HAY AND PASTURE LANDS	CULTIVATED FOREST	SHRUBLANDS	AGRICULTURE/ AQUACULTURE FIELDS	IMPOUNDMENTS	LARGE IMPOUNDMENTS	MAN-MADE BEACHES	ARTIFICIAL REEFS
Accipiter striatus	Sharp-shinned Hawk (breeding population)					p						
Acentrella alachua	A Mayfly											
Acer leucoderme	Chalk Maple				p							
Acipenser desotoi	Gulf Sturgeon											
Acipenser fulvescens	Lake Sturgeon									p		
Actaea racemosa	Black Bugbane											
Actinonaias ligamentina	Mucket											
Adiantum capillus-veneris	Southern Maidenhair-fern											
Aesculus glabra var. *glabra*	Ohio Buckeye											
Aeshna umbrosa	Shadow Darner											
Aetobatus narinari	Whitespotted Eagle Ray										p	p
Agalinis auriculata	Earleaf False Foxglove											
Agalinis filicaulis	Thread-stem False Foxglove			p								
Agalinis homalantha	San Antonio False-foxglove						p					
Agalinis linifolia	Flaxleaf False Foxglove			p								
Agalinis oligophylla	Ridge-stem False-foxglove			p	p	p						
Agalinis skinneriana	Pale False Foxglove											
Agarodes libalis	Spring-loving Psiloneuran Caddisfly											
Agarodes stannardi	Stannard's Agarodes Caddisfly											
Agastache nepetoides	Yellow Giant-hyssop											
Agrimonia incisa	Incised Groovebur	p		p	p							
Alburnops candidus	Silverside Shiner											
Alburnops chalybaeus	Ironcolor Shiner											
Alburnops edwardraneyi	Fluvial Shiner											
Alisma subcordatum	Broad-leaved Water-plantain											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.8	19.9	19.1
Scientific Name	**Common Name**	URBAN AND SUBURBAN LANDS	BUILDINGS, BRIDGES, OVERPASSES, ETC.	UTILITY RIGHT-OF-WAYS	HAY AND PASTURE LANDS	CULTIVATED FOREST	SHRUBLANDS	AGRICULTURE/ AQUACULTURE FIELDS	IMPOUNDMENTS	LARGE IMPOUNDMENTS	MAN-MADE BEACHES	ARTIFICIAL REEFS
Allocapnia aurora	Aurora Snowfly											
Allocapnia polemistis	Black Warrior Snowfly											
Alloperla natchez	Natchez Stonefly											
Alophia drummondii	Purple Pleat-leaf			p								
Alosa alabamae	Alabama Shad											
Alosa chrysochloris	Skipjack Herring											
Amaranthus australis	Southern Amaranth											
Ambloplites rupestris	Rock Bass									p		
Amblyomma tuberculatum	Gopher Tortoise Tick	p		p	p	p	p	p				
Amblyscirtes alternata	Least Florida Skipper											
Amblyscirtes reversa	Reversed Roadside Skipper											
Ambystoma texanum	Smallmouth Salamander			p				p				
Ambystoma tigrinum	Tiger Salamander							p				
Ammocrypta clara	Western Sand Darter											
Ammodramus savannarum	Grasshopper Sparrow				p			p				
Ammospiza leconteii	LeConte's Sparrow			p	p			p				
Ammospiza maritima	Seaside Sparrow											
Ammospiza nelsoni	Nelson's Sparrow											
Amphiachyris dracunculoides	Broom-snakeroot											
Amphiagrion saucium	Eastern Red Damsel											
Amphinemura alabama	Alabama Forestfly											
Amphiuma pholeter	One-toed Amphiuma											
Amsonia ludoviciana	Louisiana Bluestar											
Anas acuta	Northern Pintail							p	p	p		
Anas fulvigula	Mottled Duck											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.8	19.9	19.1
Scientific Name	**Common Name**	URBAN AND SUBURBAN LANDS	BUILDINGS, BRIDGES, OVERPASSES, ETC.	UTILITY RIGHT-OF-WAYS	HAY AND PASTURE LANDS	CULTIVATED FOREST	SHRUBLANDS	AGRICULTURE/ AQUACULTURE FIELDS	IMPOUNDMENTS	LARGE IMPOUNDMENTS	MAN-MADE BEACHES	ARTIFICIAL REEFS
Andropogon dealbatus	Wetland White Bluestem			p								
Andropogon perangustatus	Narrow-leaved Bluestem			p								
Andropogon tracyi	Tracy's Bluestem			p								
Aneides aeneus	Green Salamander											
Anemone caroliniana	Carolina Anemone		p		p	p						
Anemone quinquefolia	Wood Anemone											
Anguilla rostrata	American Eel											
Anthoceros punctatus	a hornwort	p	p		p	p		p	p			
Antigone canadensis pulla	Mississippi Sandhill Crane				p			p				
Antrostomus carolinensis	Chuck-will's-widow			p	p	p	p					
Antrostomus vociferus	Eastern Whip-poor-will					p						
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle	p		p	p	p	p	p				
Aphyllon uniflorum	One-flowered Broomrape											
Apios priceana	Price's Potato-bean				p							
Aplectrum hyemale	Puttyroot											
Aquila chrysaetos	Golden Eagle					p						
Aquilegia canadensis	Wild Columbine											
Arabidopsis lyrata ssp. *lyrata*	Lyreleaf Rockcress		p									
Arabis patens	Spreading Rockcress											
Aralia racemosa	American Spikenard											
Archidium hallii	Hall's Archidium Moss			p								
Archosargus rhomboidalis	Western Atlantic Seabream											p
Arcidens confragosus	Rock Pocketbook											
Arctosa sanctaerosae	Santa Rosa Wolf Spider											
Arigomphus lentulus	Stillwater Clubtail								p			

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Arigomphus villosipes	Unicorn Clubtail								p			
Aristida beyrichiana	Southern Wiregrass	p		p								
Aristida mohrii	Mohr's Three-awn Grass											
Aristida simpliciflora	Southern Three-awn Grass											
Aristida spiciformis	Pine Barren Three-awn Grass											
Aristida tenuispica	Southern Arrowfeather	p										
Arnoglossum reniforme	Great Indian-plantain											
Asclepias hirtella	Green Milkweed	p	p	p	p	p						
Asclepias incarnata	Swamp Milkweed											
Asclepias purpurascens	Purple Milkweed											
Asio flammeus	Short-eared Owl				p			p				
Aspidogyne querceticola	Low Erythrodes											
Asplenium pinnatifidum	Lobed Spleenwort											
Asplenium resiliens	Black-stem Spleenwort											
Asplenium rhizophyllum	Walking-fern Spleenwort											
Asplenium trichomanes	Maidenhair Spleenwort											
Asplenium x kentuckiense	Kentucky Spleenwort											
Astragalus canadensis var. *canadensis*	Canadian Milkvetch		p		p							
Astragalus distortus var. *engelmannii*	Engelmann's Bent Milk-vetch											
Astragalus obcordatus	Florida Milkvetch											
Atractosteus spatula	Alligator Gar											
Atrytone arogos arogos	Arogos Skipper											
Atrytonopsis loammi	Loammi Skipper											
Attaneuria ruralis	Giant Stone											
Automeris louisiana	Louisiana Eyed Silkmoth											

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Avicennia germinans	Black Mangrove											
Aythya affinis	Lesser Scaup								p	p		
Baetisca escambiensis	A Mayfly											
Bagisara brouana	A Noctuid Moth											
Balduina angustifolia	Coastal Plain Honeycomb-head		p									
Baptisia nuttalliana	Nuttall's Wild Indigo			p	p	p						
Baptisia sphaerocarpa	Green Wild Indigo			p	p							
Bidens trichosperma	Tickseed Sunflower									p		
Boltonia apalachicolensis	Apalachicola Doll's-Daisy											
Bombus fraternus	Southern Plains Bumble Bee			p	p		p	p				
Bombus pensylvanicus	American Bumblebee	p		p	p		p	p				
Bombus variabilis	Variable Cuckoo Bumble Bee											
Borodinia canadensis	Sicklepod		p									
Botaurus lentiginosus	American Bittern							p				
Bruchia ravenelii	Ravenel's Bruchia Moss	p			p							
Bulbostylis ciliatifolia	Capillary Hairsedge	p		p	p							
Burmannia biflora	Northern Burmannia								p			
Calidris canutus	Red Knot										p	
Calidris melanotos	Pectoral Sandpiper							p	p		p	
Calidris pusilla	Semipalmated Sandpiper							p	p		p	
Calidris subruficollis	Buff-breasted Sandpiper				p			p	p			
Callicladium haldanianum	Beautiful Branch Moss											
Calliphysalis carpenteri	Carpenter's Ground-cherry											
Callirhoe triangulata	Clustered Poppy-mallow			p								
Calopogon barbatus	Bearded Grass-pink											

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Calopogon multiflorus	Many-flowered Grass-pink											
Calopogon oklahomensis	Oklahoma Grass-pink											
Camassia scilloides	Wild Hyacinth											
Cambarellus diminutus	Least Crayfish											
Cambarellus lesliei	Angular Dwarf Crayfish											
Cambarus girardianus	Tanback Crayfish									p		
Cambarus rusticiformis	Depression Crayfish											
Cambarus striatus	Ambiguous Crayfish			p								
Campephilus principalis	Ivory-billed Woodpecker											
Campylopus angustiretis	Campylopus Moss											
Canis rufus	Red Wolf											
Canna flaccida	Bandana-of-the-Everglades			p								
Carcharhinus acronotus	Blacknose Shark										p	p
Carcharhinus plumbeus	Sandbar Shark											p
Carcharhinus porosus	Smalltail Shark										p	
Carcharias taurus	Sand Tiger Shark											
Cardamine angustata	Slender Toothwort											
Cardamine diphylla	Two-leaf Toothwort											
Caretta caretta	Loggerhead Sea Turtle										p	p
Carex alata	Broadwing Sedge	p								p		
Carex albursina	White Bear Sedge											
Carex baltzellii	Baltzell's Sedge											
Carex bullata var. *greenei*	Button Sedge											
Carex communis	Fibrous-root Sedge											
Carex comosa	Bristly Sedge	p			p							

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Carex crawei	Crawe's Sedge											
Carex dasycarpa	Velvet Sedge											
Carex elliottii	Elliott's Sedge											
Carex exilis	Coast Sedge											
Carex fissa var. *aristata*	Hammock Sedge			p	p							
Carex fissa var. *fissa*	Hammock Sedge				p							
Carex frankii	Frank's Sedge					p						
Carex gracilescens	Slender Sedge											
Carex gravida	Heavy-fruited Sedge				p	p						
Carex grayi	Asa Gray's Sedge									p		
Carex grisea	Inflated Narrowleaf Sedge											
Carex hyalina	Tissue Sedge				p							
Carex impressinervia	Impressed-nerved Sedge											
Carex jamesii	Nebraska Sedge											
Carex laxiflora	Broad Loose-flower Sedge											
Carex mesochorea	Midland Sedge					p						
Carex mitchelliana	Mitchell's Sedge											
Carex molestiformis	Ozark Plateau Sedge				p	p						
Carex normalis	Greater Straw Sedge											
Carex oligocarpa	Eastern Few-fruit Sedge											
Carex oxylepis var. *pubescens*	Sharp-scale Sedge											
Carex prasina	Drooping Sedge											
Carex radiata	Stellate Sedge	p	p									
Carex reznicekii	Reznicek's Sedge		p									
Carex scoparia	Broom Sedge			p	p	p						

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Carex seorsa	Weak Stellate Sedge											
Carex stipata var. *maxima*	Stalk-grain Sedge			p	p							
Carex striata var. *striata*	Southern Peatland Sedge											
Carex superata	Limestone Forest Sedge											
Carex torta	Twisted Sedge											
Carex verrucosa	Warty Sedge											
Carex virescens	Ribbed Sedge											
Carya laciniosa	Big Shellbark Hickory											
Castanea dentata (nut-bearing only)	American Chestnut											
Castilleja coccinea	Scarlet Indian-paintbrush											
Catocala atocala	Brou's Underwing											
Catocala delilah	Delilah Underwing											
Catocala miranda	A Noctuid Moth											
Catostomus commersonii	White Sucker											
Caupolicana electa	A Plasterer Bee											
Celithemis amanda	Amanda's Pennant											
Centronyx henslowii	Henslow's Sparrow											
Ceraclea spongillovorax	A Caddisfly											
Ceratophaga vicinella	Gopher Tortoise Shell Moth	p		p	p	p	p	p				
Ceratophyllum echinatum	Prickly Hornwort								p	p		
Ceratopteris pteridoides	Floating Antler Fern								p			
Chaetura pelagica	Chimney Swift	p	p									
Chamaecrista horizontalis	Florida Senna											
Chamaecyparis thyoides	Atlantic White Cedar			p								
Charadrius melodus	Piping Plover										p	

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Charadrius nivosus	Snowy Plover										p	
Charadrius wilsonia	Wilson's Plover										p	
Chasmanthium nitidum	Shiny Spikegrass											
Chelone lyonii	Pink Turtlehead											
Chelone obliqua var. *obliqua*	Red Turtlehead											
Chelonia mydas	Green Sea Turtle											
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle	p		p	p	p	p	p				
Cheumatopsyche petersi	Peters' Cheumatopsyche Caddisfly											
Chimaphila maculata	Spotted Wintergreen											
Chimarra falculata	A Caddisfly											
Chlidonias niger	Black Tern								p	p	p	
Chordeiles minor	Common Nighthawk	p	p	p	p							
Chrosomus erythrogaster	Southern Redbelly Dace											
Cicindela marginipennis	Cobblestone Tiger Beetle											
Cicindela nigrior	Autumn Tiger Beetle											
Cicuta maculata var. *bolanderi*	Bolander's Water-hemlock			p	p							
Cirsium lecontei	Leconte's Thistle			p								
Cirsium muticum	Swamp Thistle											
Cistothorus palustris marianae	Marian's Marsh Wren											
Cladium mariscoides	Twig Rush			p								
Cladrastis kentukea	Yellowwood											
Cleistesiopsis bifaria	Appalachian Small Spreading Pogonia											
Cleistesiopsis oricamporum	Small Coastal Plain Spreading Pogonia											
Clematis glaucophylla	White-leaved Leather-flower											
Clematis subreticulata	Alabama Leatherflower				p							

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Clinopodium arkansanum	Low Calamint				p	p						
Clinostomus funduloides	Rosyside Dace											
Coccyzus americanus	Yellow-billed Cuckoo					p						
Coelorachis cylindrica	Pitted Jointgrass			p	p							
Colinus virginianus	Northern Bobwhite			p	p	p	p	p				
Collinsonia anisata	Anise Horsebalm											
Collinsonia punctata	Spotted-leaf Horse-balm											
Cololejeunea setiloba	a liverwort											
Coluber flagellum flagellum	Eastern Coachwhip			p	p	p	p	p				
Columbina passerina	Common Ground Dove			p	p	p	p	p				
Conopholis americana	American Cancer-root											
Conradina canescens	Blue-sage											
Convolvulus catesbyanus	Catesby's Bindweed				p							
Cordulegaster bilineata	Brown Spiketail											
Cordulegaster erronea	Tiger Spiketail											
Coreopsis nudata	Georgia Tickseed			p					p			
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	p	p									
Cottus carolinae	Banded Sculpin											
Coturnicops noveboracensis	Yellow Rail				p			p				
Crataegus ashei	Ashe's Hawthorn				p	p						
Crataegus brachyacantha	Blueberry Hawthorn											
Crataegus mendosa	Albertville Hawthorn											
Crataegus mohrii	Mohr's Hawthorn											
Crataegus mollis var. *meridionalis*	Gallion Hawthorn					p						
Crataegus triflora	Three-flowered Hawthorn				p	p						

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Creaserinus burrisi	Burris' Burrowing Crayfish			p								
Creaserinus danielae	Speckled Burrowing Crayfish			p								
Creaserinus fodiens	Digger Crayfish	p		p								
Creaserinus gordoni	Camp Shelby Burrowing Crayfish			p								
Crocanthemum arenicola	Coastal-sand Frostweed											p
Crotalus adamanteus	Eastern Diamondback Rattlesnake			p		p	p					
Cryphaea ravenelii	Ravenel's Cryphaea Moss											
Cryptobranchus alleganiensis	Hellbender											
Crystallaria asprella	Crystal Darter											
Cunila origanoides	Common Dittany											
Cuphea viscosissima	Blue Waxweed				p							
Cuscuta glomerata	Clustered Dodder											
Cycleptus elongatus	Blue Sucker											
Cycleptus meridionalis	Southeastern Blue Sucker											
Cyclonaias tuberculata	Purple Wartyback									p		
Cylindrocolea rhizantha	a liverwort											
Cyperus articulatus	Jointed Flatsedge											
Cyperus bipartitus	Shining Flatsedge				p	p						
Cyperus drummondii	Green Flatsedge			p								
Cyperus elegans	Sticky Flatsedge	p	p	p								
Cyperus engelmannii	Slender Sand Flatsedge	p		p								
Cyperus flavicomus	White-edged Flatsedge	p		p	p				p			
Cyperus hystricinus	Bristly Flatsedge											
Cyperus lecontei	Le Conte's Flatsedge											p
Cyperus neotropicalis	American Lipocarpha			p	p				p	p		

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Cyperus ochraceus	Pond Flatsedge		p									
Cyperus refractus	Reflexed Flatsedge				p	p	p					
Cyperus thyrsiflorus	Southcentral Flatsedge											
Cyprinella callistia	Alabama Shiner											
Cyprinella galactura	Whitetail Shiner											
Cyprinella spiloptera	Spotfin Shiner											
Cyprinella whipplei	Steelcolor Shiner											
Cypripedium kentuckiense	Kentucky Yellow Lady's-slipper											
Cyprogenia aberti	Western Fanshell											
Dalea mountjoyae	White-tassels	p		p								
Decodon verticillatus	Hairy Swamp Loosestrife	p			p					p		
Deirochelys reticularia miaria	Western Chicken Turtle											
Deirochelys reticularia reticularia	Eastern Chicken Turtle											
Delphinium tricorne	Dwarf Larkspur											
Deparia acrostichoides	Silvery Spleenwort											
Dermochelys coriacea	Atlantic Leatherback Sea Turtle											
Desmodium ochroleucum	Creamflower Tick-trefoil				p							
Desmodium tenuifolium	Slim-leaf Tick-trefoil											
Desmognathus pascagoula	Pascagoula Dusky Salamander											
Desmognathus valentinei	Valentine's Southern Dusky Salamander											
Diaperia prolifera var. *prolifera*	Big-head Evax				p	p						
Dicentra cucullaria	Dutchman's Breeches											
Dichanthelium cryptanthum	Hidden-flower Witchgrass				p				p			
Dichanthelium curtifolium	Shortleaf Witchgrass			p	p							
Dichanthelium erectifolium	Erect-leaf Witchgrass											

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Dichanthelium nudicaule	Naked-stemmed Panic Grass			p								
Dichanthelium wrightianum	Wright's Witchgrass			p								
Didiplis diandra	Water-purslane	p							p	p		
Didymoglossum membranaceum	Scale-edge Bristle Fern											
Didymoglossum petersii	Dwarf Filmy-fern											
Diphasiastrum digitatum	Fan Club-moss				p	p						
Dirca palustris	Eastern Leatherwood											
Drepanolejeunea mosenii	a liverwort											
Drymarchon couperi	Eastern Indigo Snake											
Dryobates borealis	Red-cockaded Woodpecker											
Dryopteris australis	Southern Woodfern											
Dryopteris celsa	Log Fern											
Dryopteris ludoviciana	Southern Shield Wood-fern			p								
Echinodorus berteroi	Upright Burhead				p							
Egretta caerulea	Little Blue Heron								p	p		
Egretta rufescens	Reddish Egret										p	
Egretta tricolor	Tricolored Heron								p			
Elanoides forficatus	Swallow-tailed Kite											
Eleocharis albida	White Spikerush											
Eleocharis ambigens	Obscure Spikerush											
Eleocharis atropurpurea	Purple Spikerush											
Eleocharis bicolor	Small Spikerush											
Eleocharis cellulosa	Carolina Spikerush								p	p		
Eleocharis coloradoensis	Dwarf Spikerush		p		p							
Eleocharis compressa	Flat-stem Spikerush				p							

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Eleocharis elliptica	Slender Spikerush											
Eleocharis elongata	Slim Spikerush			p								
Eleocharis erythropoda	Bald Spikerush				p							
Eleocharis geniculata	Capitate Spikerush											
Eleocharis intermedia	Matted Spikerush											
Eleocharis lanceolata	Lance-like Spikerush				p							
Eleocharis macrostachya	Creeping Spikerush		p		p							
Eleocharis melanocarpa	Black-fruit Spikerush								p			
Eleocharis microcarpa var. *microcarpa*	Small-fruit Spikerush	p		p								
Eleocharis ovata	Ovate Spikerush				p							
Eleocharis palustris	Creeping Spikerush	p	p		p							
Eleocharis parvula	Small Spikerush				p				p	p		
Eleocharis radicans	Rooted Spikerush	p										
Eleocharis robbinsii	Robbins Spikerush								p			
Eleocharis rostellata	Beaked Spikerush											
Eleocharis tenuis var. *pseudoptera*	Slender Spikerush											
Eleocharis tenuis var. *tenuis*	Slender Spikerush											
Eleocharis tricostata	Three-angle Spikerush			p								
Eleocharis wolfii	Wolf's Spikerush	p										
Elimia cylindracea	Cylinder Elimia											
Elionurus tripsacoides	Pan-american Balsamscale											
Ellipsaria lineolata	Butterfly											
Elliptio arca	Alabama Spike											
Elliptio arctata	Delicate Spike											
Elymus villosus	Hairy Wild Rye		p		p							

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Enallagma concisum	Cherry Bluet											
Enallagma davisi	Sandhill Bluet											
Enallagma pallidum	Pale Bluet											
Enallagma pollutum	Florida Bluet											
Endotropis lanceolata	Lance-leaved Buckthorn				p	p						
Enemion biternatum	False Rue-anemone											
Enneacanthus gloriosus	Bluespotted Sunfish											
Epinephelus itajara	Atlantic Goliath Grouper											p
Epioblasma brevidens	Cumberlandian Combshell											
Epioblasma penita	Southern Combshell											
Epioblasma triquetra	Snuffbox											
Epitheca spinosa	Robust Baskettail											
Equisetum arvense	Field Horsetail				p							
Eretmochelys imbricata	Hawksbill Sea Turtle											p
Erigenia bulbosa	Harbinger-of-Spring											
Eriocaulon decangulare var. *latifolium*	Panhandle Pipewort											
Eriocaulon texense	Texas Pipewort			p								
Eryngium aquaticum	Marsh Rattlesnake-master											
Eryngium hookeri	Hooker's Coyote-thistle				p							
Eryngium species 1	Mocassin-master											
Erynnis martialis	Mottled Dusky Wing											
Erythrodiplax umbrata	Band-winged Dragonlet											
Erythronium albidum	White Trout-lily											
Erythronium americanum ssp. *harperi*	Yellow Trout-lily											
Etheostoma asprigene	Mud Darter											

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Etheostoma blennioides	Greenside Darter											
Etheostoma duryi	Black Darter											
Etheostoma faulkneri	Yoknapatawpha Darter											
Etheostoma flabellare	Fantail Darter											
Etheostoma jessiae	Blueside Darter											
Etheostoma kennicotti	Stripetail Darter											
Etheostoma lachneri	Tombigbee Darter											
Etheostoma nigripinne	Blackfin Darter											
Etheostoma raneyi	Yazoo Darter											
Etheostoma rupestre	Rock Darter											
Etheostoma simoterum	Snubnose Darter											
Etheostoma zonifer	Backwater Darter								p			
Eumorpha intermedia	Intermediate Sphinx											
Eupatorium lancifolium	Lanceleaf Thoroughwort											
Euphagus carolinus	Rusty Blackbird											
Euphorbia discoidalis	Summer Spurge				p							
Euphorbia inundata var. *inundata*	Florida Pine Spurge			p								
Euphyes arpa	Palmetto Skipper											
Euphyes bayensis	Bay St. Louis Skipper											
Euphyes dukesi dukesi	Dukes' Skipper											
Euphyes pilatka	Palatka Skipper											
Euploca convolvulacea	Bindweed Heliotrope											
Eurycea longicauda longicauda	Longtail Salamander											
Eurycea lucifuga	Cave Salamander											
Eurycea sphagnicola	Bog Dwarf Salamander											

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Eurynia dilatata	Spike											
Eustachys glauca	Saltmarsh Finger-grass			p								
Eustoma exaltatum	Tall Prairie-gentian		p	p								
Eutrichota gopheri	Gopher Tortoise Burrow Fly	p		p	p	p	p	p				
Falco sparverius paulus	Southeastern American Kestrel				p			p				
Farancia erytrogramma	Rainbow Snake											
Faxonius erichsonianus	Reticulate Crayfish											
Faxonius etnieri	Ets Crayfish											
Faxonius hartfieldi	Yazoo Crayfish											
Faxonius jonesi	Sucarnoochee River Crayfish											
Faxonius mississippiensis	Mississippi Crayfish											
Faxonius palmeri	Gray-Speckled Crayfish											
Faxonius placidus	Bigclaw Crayfish											
Faxonius validus	Powerful Crayfish											
Faxonius wrighti	Hardin Crayfish											
Faxonius yanahlindus	Spinywrist Crayfish											
Fissidens amoenus	Hall's Fissidens Moss					p						
Forestiera ligustrina	Upland Swamp Privet											
Fraxinus quadrangulata	Blue Ash											
Frullania donnellii	a liverwort											
Fuirena longa	Coastal-plain Umbrella-sedge			p					p			
Fundulus blairae	Western Starhead Topminnow											
Fundulus dispar	Northern Starhead Topminnow											
Fundulus euryzonus	Broadstripe Topminnow											
Fundulus jenkinsi	Saltmarsh Topminnow											

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Gaillardia aestivalis var. *flavovirens*	Lanceleaf Blanket Flower											
Galactia floridana	Florida Milkpea											
Galearis spectabilis	Showy Orchis											
Galium bermudense	Coastal Bedstraw											
Gelochelidon nilotica	Gull-billed Tern										p	
Gentiana catesbaei	Elliott's Gentian											
Gentianella occidentalis	Stiff Gentian											
Geothlypis formosa	Kentucky Warbler					p						
Gomphus australis	Clearlake Clubtail											
Gomphus dilatatus	Blackwater Clubtail											
Gomphus geminatus	Twin-striped Clubtail											
Gomphus hodgesi	Hodges' Clubtail											
Goodyera pubescens	Downy Rattlesnake-plantain											
Gopherus polyphemus	Gopher Tortoise	p		p	p	p	p	p				
Graptemys flavimaculata	Yellow-blotched Map Turtle											
Graptemys geographica	Common Map Turtle											
Graptemys gibbonsi	Pascagoula Map Turtle											
Graptemys nigrinoda	Black-knobbed Map Turtle									p		
Graptemys oculifera	Ringed Map Turtle											
Graptemys pearlensis	Pearl River Map Turtle											
Graptemys pulchra	Alabama Map Turtle											
Gratiola floridana	Florida Hedge-hyssop											
Gratiola ramosa	Branched Hedge-hyssop			p								
Gryllotalpa major	Prairie Mole Cricket											
Gymnocladus dioicus	Kentucky Coffeetree		p									

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Gymnocthebius maureenae	Maureen's Gymnocthebius Minute Moss Beetle											
Gyrinophilus porphyriticus	Spring Salamander											
Habenaria quinqueseta	Michaux's Orchid											
Hackelia virginiana	Virginia Stickseed											
Haematopus palliatus	American Oystercatcher										p	
Halodule wrightii	Shoal-grass											
Halophila engelmannii	Engelmann's Sea-grass											
Hamamelis ovalis	Running Witch-hazel											
Hamiota perovalis	Orange-nacre Mucket											
Haploperla chukcho	Chukcho Stonefly											
Hedeoma drummondii var. *drummondii*	Drummond Pennyroyal											
Helanthium tenellum	Dwarf Burhead								p	p		
Helenium brevifolium	Shortleaf Sneezeweed			p								
Helianthus debilis ssp. *tardiflorus*	Gulf Coast Beach Sunflower											p
Helianthus decapetalus	Thinleaf Sunflower											
Helianthus verticillatus	Whorled Sunflower				p	p						
Helmitheros vermivorum	Worm-eating Warbler											
Helopicus bogaloosa	Masked Springfly											
Hemidactylium scutatum	Four-toed Salamander											
Hepatica acutiloba	Sharp-lobed Hepatica											
Herbertia lahue	Herbertia			p	p	p						
Hesperapis oraria	Gulf Coast Solitary Bee											
Hesperia attalus	Dotted Skipper											
Heterandria formosa	Least Killifish											
Heteranthera dubia	Grassleaf Mud-plaintain											

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Heteranthera missouriensis	Missouri Mud-plantain											
Heterodon simus	Southern Hognose Snake											
Heuchera macrorhiza	Giant Alumroot											
Heuchera parviflora	Little-flower Alumroot											
Hexalectris spicata	Crested Coralroot			p	p							
Hexastylis harperi	Large-flowered Heartleaf	p										
Hibiscus coccineus	Brilliant Hibiscus			p								
Hieracium venosum	Rattlesnake Hawkweed				p							
Hippocampus erectus	Lined Seahorse											
Hobbseus attenuatus	Pearl Rivulet Crayfish											
Hobbseus cristatus	Crested Rivulet Crayfish											
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish											
Hobbseus petilus	Tombigbee Rivulet Crayfish											
Hobbseus prominens	Prominence Rivulet Crayfish											
Hobbseus valleculus	Choctaw Rivulet Crayfish											
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish											
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly											
Hottonia inflata	Featherfoil	p								p		
Hybopsis amnis	Pallid Shiner									p		
Hydrastis canadensis	Golden-seal											
Hydroperla fugitans	Austin Springfly											
Hydrophyllum appendiculatum	Appendage Waterleaf											
Hydrophyllum macrophyllum	Large-leaf Water-leaf											
Hydroptila cretosa	A Caddisfly											
Hydroptila holzenthali	A Caddisfly											

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Hydroptila homochitta	A Caddisfly											
Hydroptila molsonae	Molson's Microcaddisfly											
Hydroptila poirrieri	A Caddisfly											
Hydroptila tusculum	A Caddisfly											
Hylocichla mustelina	Wood Thrush					p						
Hymenocallis choctawensis	Florida Panhandle Spider-lily			p								
Hymenocallis occidentalis var. *eulae*	Woodland Spider-lily				p							
Hypericum canadense	Canadian St. John's-wort			p					p			
Hypericum myrtifolium	Myrtle-leaved St. Johnswort			p								
Hypoxis curtissii	Curtiss' Yellow Star-grass											
Ichthyomyzon castaneus	Chestnut Lamprey									p		
Ichthyomyzon unicuspis	Silver Lamprey											
Ictiobus niger	Black Buffalo									p		
Ilex cassine	Dahoon Holly			p								
Ipomoea brasiliensis	Railroad Morning-glory											
Ipomoea macrorhiza	Large-stem Morning-glory		p	p								
Iresine diffusa	Felicidad			p								
Iris brevicaulis	Lamance Iris											
Iris giganticaerulea	Giant Blue Iris											
Ischnura prognata	Furtive Forktail											
Isoetes appalachiana	Appalachian Quillwort	p			p							
Isoetes louisianensis	Louisiana Quillwort			p								
Isoetes melanopoda spp. *melanopoda*	Blackfoot Quillwort			p	p							
Isoetes melanopoda spp. *silvatica*	Eastern Blackfoot Quillwort			p	p							
Isoetes mississippiensis	Mississippi Quillwort			p								

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Isoetes valida	Strong Quillwort											
Isogenoides varians	A Stonefly											
Isonychia berneri	A Mayfly											
Isurus oxyrinchus	Shortfin Mako Shark											
Ixobrychus exilis	Least Bittern							p				
Juglans cinerea	Butternut											
Juncus interior	Inland Rush				p							
Juniperus silicicola	Southern Red Cedar		p									
Lacunicambarus dalyae	Jewel Mudbug			p								
Lacunicambarus freudensteini	Banded Mudbug			p								
Lacunicambarus mobilensis	Lonesome Gravedigger			p								
Lacunicambarus polychromatus	Paintedhand Mudbug											
Lampropeltis calligaster calligaster	Prairie Kingsnake				p		p	p				
Lampropeltis calligaster rhombomaculata	Mole Kingsnake				p	p	p	p				
Lampropeltis triangulum	Red Milk Snake											
Lampsilis fasciola	Wavy-rayed Lampmussel											
Lampsilis hydiana	Louisiana Fatmucket											
Lampsilis ovata	Pocketbook											
Lanius ludovicianus ludovicianus	Loggerhead Shrike	p		p	p			p				
Lanius ludovicianus migrans	Migrant Loggerhead Shrike	p		p	p			p				
Lapara phaeobrachycerous	Gulf Pine Sphinx											
Lasionycteris noctivagans	Silver-haired Bat	p										
Lasiurus cinereus	Hoary Bat	p				p						
Lasiurus intermedius	Northern Yellow Bat	p										
Lasmigona alabamensis	Alabama Heelsplitter											

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Lasmigona complanata	White Heelslpitter											
Lasmigona costata	Flutedshell											
Laterallus jamaicensis	Black Rail											
Lejeunea bermudiana	a liverwort											
Lejeunea cladogyna	a liverwort	p	p									
Lejeunea floridana	a liverwort											
Lejeunea laetivirens	a liverwort											
Lepidochelys kempii	Kemp's Ridley Sea Turtle											p
Lepidostoma morsei	Morse's Little Plain Brown Sedge											
Leptolucania ommata	Pygmy Killifish											
Lethenteron appendix	American Brook Lamprey											
Leuctra colemanorum	Yalobusha Needlefly											
Leuctra hicksi	Cypress Needlefly											
Liatris elegantula	Blazing-Star											
Ligumia recta	Black Sandshell											
Ligusticum canadense	Nondo Lovage											
Lilaeopsis carolinensis	Carolina Lilaeopsis	p	p	p	p				p			
Lilium iridollae	Panhangle Lily											
Lilium michiganense	Michigan Lily											
Limnodromus griseus	Short-billed Dowitcher							p	p		p	
Limnothlypis swainsonii	Swainson's Warbler					p						
Limosa fedoa	Marbled Godwit										p	
Lindera melissifolia	Pondberry											
Lindera subcoriacea	Bog Spicebush											
Linum floridanum var. *chrysocarpum*	Yellow-fruited Flax			p								

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Linum macrocarpum	Spring Hill Flax											
Liodytes rigida deltae	Delta Crayfish Snake											
Liodytes rigida sinicola	Gulf Crayfish Snake											
Lithasia armigera	Armored Rocksnail											
Lithasia hubrichti	Big Black Rocksnail											
Lithasia lima	Warty Rocksnail											
Lithasia verrucosa	Varicose Rocksnail											
Lithobates areolatus	Crawfish Frog				p			p	p			
Lithobates heckscheri	River Frog											
Lithobates sevosus	Dusky Gopher Frog			p								
Lithospermum caroliniense	Golden Puccoon											
Lithospermum latifolium	American Gromwell											
Lobelia boykinii	Boykin's Lobelia											
Ludwigia alata	Winged Seedbox											
Lupinus perennis ssp. *gracilis*	Sundail Lupine	p			p							
Luziola bahiensis	Brazilian Loziola			p								
Lycium carolinianum	Carolina Wolf-berry											
Lycopodioides ludovicianum	Gulf Spike-moss											
Lycopus amplectens	Sessile-leaved Bugleweed			p					p			
Lythrurus fasciolaris	Scarlet Shiner											
Machimus polyphemi	Gopher Tortoise Robber Fly	p		p	p	p	p	p				
Macranthera flammea	Flame Flower			p								
Macrhybopsis meeki	Sicklefin Chub											
Macrochelys temminckii	Alligator Snapping Turtle								p	p		
Macromia alleghaniensis	Allegheny River Cruiser											

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Macromitrium richardii	Richard's Macromitrium Moss			p	p							
Magnolia tripetala	Umbrella Magnolia											
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin	p										
Malus ioensis	Iowa Crabapple			p	p							
Manta birostris	Giant Manta Ray											p
Marshallia angustifolia	Slim-leaf Barbara's-buttons	p		p	p							
Marshallia trinervia	Broadleaf Barbara's-buttons			p	p							
Marsilea vestita	Marsilea vestita				p		p					
Matelea baldwyniana	Baldwin's Milkvine											
Matelea decipiens	Old-field Milkvine											
Matelea obliqua	Climbing Milkweed		p		p							
Medionidus acutissimus	Alabama Moccasinshell											
Megalops atlanticus	Tarpon											
Melanerpes erythrocephalus	Red-headed Woodpecker	p										
Mertensia virginica	Virginia Bluebells											
Metzgeria uncigera	a liverwort											
Micrurus fulvius	Eastern Coral Snake											
Mimulus ringens var. *ringens*	Square-stem Monkeyflower	p			p							
Miniellus boops	Bigeye Shiner											
Miniellus melanostomus	Blackmouth Shiner											
Miniellus sabinae	Sabine Shiner											
Mirabilis albida	Pale Umbrella-wort				p							
Mirabilis linearis	Narrowleaf Four-o'clock				p							
Mitreola angustifolia	Narrowleaf Miterwort											
Mobula hypostoma	Atlantic Pygmy Devil Ray											

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Mobula tarapacana	Sicklefin Devil Ray											
Moxostoma anisurum	Silver Redhorse											
Moxostoma breviceps	Smallmouth Redhorse									p		
Moxostoma carinatum	River Redhorse											
Moxostoma duquesnei	Black Redhorse											
Muhlenbergia glabrifloris	Inland Muhly											
Muhlenbergia sylvatica	Woodland Muhly											
Muhlenbergia tenuiflora	Slender Muhly											
Mycteria americana	Wood Stork								p			
Myotis austroriparius	Southeastern Myotis	p	p									
Myotis grisescens	Gray Bat		p							p		
Myotis septentrionalis	Northern Long-eared Bat	p	p			p				p		
Myotis sodalis	Indiana Bat		p							p		
Myriophyllum laxum	Loose Water-milfoil											
Myriopteris alabamensis	Alabama Lipfern				p							
Myriopteris lanosa	Hairy Lipfern											
Nabalus asper	Rough Rattlesnake-root					p						
Nabalus barbatus	Barbed Rattlesnake-root											
Nannothemis bella	Elfin Skimmer											
Narcine bancroftii	Caribbean Electric Ray											
Necturus maculosus	Common Mudpuppy									p		
Negaprion brevirostris	Lemon Shark										p	
Nehalennia gracilis	Sphagnum Sprite											
Nemastylis geminiflora	Prairie Pleatleaf		p		p							
Nemocapnia carolina	Southern Snowfly											

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Neogale frenata	Long-tailed Weasel	p			p	p	p					
Neonympha helicta	Helicta Satyr											
Neonympha mitchellii	Mitchell's Satyr											
Neoperla coxi	A Stonefly											
Neotrichia alabamensis	A Caddisfly											
Nerodia clarkii clarkii	Gulf Salt Marsh Snake	p										
Nestronia umbellula	Nestronia				p							
Neurocordulia yamaskanensis	Stygian Shadowdragon											
Neviusia alabamensis	Alabama Snow-wreath											
Nicrophorus americanus	American Burying Beetle											
Nothonotus rubrus	Bayou Darter											
Nothonotus rufilineatus	Redline Darter											
Notropis micropteryx	Highland Shiner											
Noturus exilis	Slender Madtom											
Noturus flavus	Stonecat											
Noturus gladiator	Piebald Madtom											
Noturus munitus	Frecklebelly Madtom											
Nuphar lutea ssp. ulvacea	West Florida Cow-Lily											
Nyctanassa violacea	Yellow-crowned Night-Heron							p	p			
Nycticorax nycticorax	Black-crowned Night-Heron							p	p			
Nymphaea mexicana	Banana Water-lily								p			
Nymphoides aquatica	Big Floating-heart								p			
Nymphoides cordata	Floating-heart								p			
Obovaria arkansasensis	Southern Hickorynut											
Obovaria c.f. unicolor	Undescribed Hickorynut											

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Obovaria subrotunda	Round Hickorynut											
Obovaria unicolor	Alabama Hickorynut											
Oecetis daytona	A Caddisfly											
Oenothera capillifolia ssp. *capillifolia*	Berlandier's Sundrops											
Oenothera grandiflora	Large-flowered Evening-primrose				p							
Oenothera heterophylla ssp. *orientalis*	Alabama Evening-primrose				p							
Oenothera patriciae	Plains Gaura											
Oenothera triloba	Stemless Evening-primrose				p	p						
Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle	p		p	p	p	p	p				
Ophiogomphus australis	Southern Snaketail											
Ophisaurus attenuatus	Slender Glass Lizard			p	p	p	p	p				
Ophisaurus mimicus	Mimic Glass Lizard											
Opuntia macrorhiza	Twisted-spine Prickly-pear						p					
Orthochilus ecristatus	Giant Orchid				p	p						
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly											
Orthotrichum exiguum	Small Wood-bark Moss		p									
Oxalis grandis	Great Yellow Woodsorrel											
Oxalis macrantha	Tufted Yellow Woodsorrel											
Packera aurea	Golden Groundsel				p							
Packera paupercula var. *paupercula*	Balsam Ragwort											
Packera tomentosa	Woolly Groundsel				p	p						
Palafoxia callosa	Small Palafoxia				p	p						
Palhinhaea cernua	Nodding Clubmoss			p								
Panax quinquefolius	American Ginseng											

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Papaipema maritima	Maritime Sunflower Borer											
Papaipema sp. *5*	Rare Cane Borer Moth											
Paracymus seclusus	Seclusive Water Scavenger Beetle								p			
Parkesia motacilla	Louisiana Waterthrush											
Parnassia grandifolia	Largeleaf Grass-of-parnassus											
Paronychia baldwinii ssp. *riparia*	Perennial Dune Whitlow-wort											
Paronychia erecta var. *corymbosa*	Beach Sand-squares											p
Paronychia erecta var. *erecta*	Beach Sand-squares											p
Paronychia patula	Pineland Nailwort								p			
Paspalum monostachyum	Gulfdune Paspalum											
Passerina ciris	Painted Bunting						p					
Pellaea atropurpurea	Purple-stem Cliff-brake											
Penstemon canescens	Gray Beardtongue											
Penstemon pallidus	Pale Beardtongue											
Penstemon tenuis	Sharp-sepal Beardtongue											
Percina aurora	Pearl Darter											
Percina evides	Gilt Darter											
Percina kathae	Mobile Logperch											
Percina lenticula	Freckled Darter											
Percina phoxocephala	Slenderhead Darter											
Percina uranidea	Stargazing Darter											
Perideridia americana	Eastern Eulophus				p?							
Perimyotis subflavus	Tricolored Bat	p	p			p			p	p		
Perlesta lagoi	A Stonefly											
Peromyscus polionotus	Oldfield Mouse			p	p		p					

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Persicaria hirsuta	Hairy Smartweed											
Peucaea aestivalis	Bachman's Sparrow					p	p					
Phacelia bipinnatifida	Fernleaf Phacelia											
Phacelia hirsuta	Hairy Scorpionweed				p	p						
Phacelia purshii	Miami-mist											
Phacelia ranunculacea	Blue Scorpionweed											
Phacelia strictiflora var. *robbinsii*	Prairie Scorpion-weed			p	p							
Phaseolus sinuatus	Sandhill Bean											
Phenacobius mirabilis	Suckermouth Minnow											
Philadelphus hirsutus	Streambank Mock-orange											
Philadelphus inodorus	Scentless Mock Orange											
Philonthus testudo	Western Gopher Tortoise Rove Beetle	p		p	p	p	p	p				
Phlox amplifolia	Largeleaf Phlox											
Physalis arenicola	Cypress-head Ground-cherry											p
Physaria gracilis ssp. *gracilis*	Spreading Bladder-pod				p	p						
Pieris phillyreifolia	Climbing Fetter-bush											
Pinguicula planifolia	Chapman's Butterwort			p								
Pinguicula pumila	Dwarf Butterwort			p								
Pinus clausa	Sand Pine					p						
Pinus virginiana	Virginia Pine				p	p	p					
Piranga olivacea	Scarlet Tanager (breeding population)											
Pituophis melanoleucus lodingi	Black Pine Snake			p								
Pituophis melanoleucus melanoleucus	Northern Pine Snake											
Pityopsis pinifolia	Taylor County Silk-grass			p								
Plagiochila floridana	Florida Leafy Liverwort											

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Plagiochila invisa	a liverwort											
Plagiochila virginica var. *virginica*	a liverwort											
Plantago cordata	Heartleaf Plantain				p							
Platalea ajaja	Roseate Spoonbill							p	p			
Platanthera conspicua	Large White-fringe Orchid			p								
Platanthera integra	Yellow Fringeless Orchid											
Platanthera integrilabia	White Fringeless Orchid	p			p							
Platanthera lacera	Green-fringed Orchid			p	p	p				p		
Platanthera nivea	Snowy Orchid											
Platanthera peramoena	Purple Fringeless Orchid											
Platygobio gracilis	Flathead Chub											
Plestiodon anthracinus	Coal Skink			p		p						
Plethobasus cyphyus	Sheepnose											
Plethodon ventralis	Southern Zigzag Salamander											
Plethodon websteri clade A	Webster's Salamander Clade A											
Plethodon websteri clade B	Webster's Salamander Clade B											
Pleurobema beadleianum	Mississippi Pigtoe											
Pleurobema curtum	Black Clubshell											
Pleurobema decisum	Southern Clubshell											
Pleurobema perovatum	Ovate Clubshell											
Pleurobema riddellii	Louisiana Pigtoe											
Pleurobema sintoxia	Round Pigtoe											
Pleurobema taitianum	Heavy Pigtoe											
Pleurocera vestita	Brook Hornsnail											
Pleuronaia barnesiana	Tennessee Pigtoe											

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Pleuronaia dolabelloides	Slabside Pearlymussel											
Pluvialis dominica	American Golden-Plover				p			p	p			
Pogonomyrmex badius	Florida Harvester Ant	p		p	p	p	p	p				
Polanisia tenuifolia	Slenderleaf Clammy-weed											
Polygonella americana	Southern Jointweed											
Polyodon spathula	Paddlefish									p		
Polytaenia nuttallii	Prairie Parsley		p		p	p						
Ponthieva racemosa	Shadow-witch Orchid											
Porphyrio martinicus	Purple Gallinule							p				
Potamilus alatus	Pink Heelsplitter									p		
Potamilus capax	Fat Pocketbook											
Potamilus inflatus	Inflated Heelsplitter											
Potamogeton epihydrus	Nuttall's Pondweed			p					p	p		
Potamogeton pusillus	Slender Pondweed			p	p				p	p		
Primula meadia	Shootingstar											
Pristis pectinata	Smalltooth Sawfish										p	
Pristis pristis	Largtooth Sawfish										p	
Procambarus ablusus	Hatchie River Crayfish											
Procambarus barbiger	Jackson Prairie Crayfish	p		p	p			p				
Procambarus bivittatus	Ribbon Crayfish											
Procambarus fitzpatricki	Spinytail Crayfish			p								
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish	p		p	p			p				
Procambarus hagenianus vesticeps	Egyptian Crayfish	p		p	p			p				
Procambarus lagniappe	Lagniappe Crayfish											
Procambarus lecontei	Mobile Crayfish											

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Procambarus lylei	Shutispear Crayfish											
Procambarus mancus	Lame Crayfish											
Procambarus penni	Pearl Blackwater Crayfish											
Procambarus planirostris	Flatnose Crayfish											
Procambarus shermani	Gulf Crayfish			p								
Procambarus viaeviridis	Vernal Crayfish											
Protonotaria citrea	Prothonotary Warbler											
Prunus alabamensis	Alabama Black Cherry											
Pseudacris collinsorum	Collinses' Mountain Chorus Frog											
Pseudacris ornata	Ornate Chorus Frog											
Pseudemys alabamensis	Alabama Red-bellied Turtle	p										
Pseudiron centralis	White Sand-river Mayfly											
Pseudodontoides subvexus	Southern Creekmussel											
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper											
Pseudotriton montanus	Mud Salamander											
Pseudotriton ruber	Red Salamander											
Pteronotropis welaka	Bluenose Shiner											
Ptilimnium costatum	Eastern Bishopweed											
Ptychobranchus fasciolaris	Kidneyshell											
Puma concolor coryi	Florida Panther											
Pycnanthemum flexuosum	Narrowleaf Mountainmint			p								
Pycnanthemum pilosum	Whorled Mountainmint					p						
Quadrula nobilis	Gulf Mapleleaf											
Quadrula rumphiana	Ridged Mapleleaf									p		
Quercus arkansana	Arkansas Oak											

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Quercus austrina	Bluff Oak											
Quercus macrocarpa var. *macrocarpa*	Bur Oak											
Quercus minima	Dwarf Live Oak											
Quercus myrtifolia	Myrtle-leaf Oak											
Quercus oglethorpensis	Oglethorpe's Oak											
Quercus palustris	Pin Oak				p	p						
Quiscalus quiscula	Common Grackle	p										
Radula sullivantii	a liverwort											
Rallus elegans	King Rail							p				
Ranunculus flabellaris	Yellow Water-crowfoot	p			p							
Ranunculus septentrionalis	Carolina Buttercup									p		
Raptoheptagenia cruenta	Wallace's Deepwater Mayfly											
Regina septemvittata	Queen Snake											
Rhadinaea flavilata	Pine Woods Snake											
Rhinichthys obtusus	Blacknose Dace											
Rhinoptera brasiliensis	Brazilian Cownose Ray										p	
Rhodobryum roseum	Rose Moss											
Rhododendron alabamense	Alabama Rhododendron				p							
Rhododendron arborescens	Smooth Azalea											
Rhododendron austrinum	Orange Azalea											
Rhododendron periclymenoides	Pink Azalea											
Rhynchosia latifolia	Prairie Rhynchosia				p							
Rhynchospora baldwinii	Baldwin's Beakrush			p								
Rhynchospora brachychaeta	West Indies Beakrush											
Rhynchospora careyana	Broad-fruit Horned Beakrush			p					p			

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Rhynchospora cephalantha var. *attenuata*	Small-bunched Beaksedge											
Rhynchospora crinipes	Hairy-peduncled Beakrush											
Rhynchospora curtissii	Curtiss' Beakrush											
Rhynchospora decurrens	Swamp-forest Beakrush											
Rhynchospora distans	Fasciculate Beakrush			p								
Rhynchospora divergens	White-seeded Beakrush				p							
Rhynchospora fernaldii	Fernald's Beakrush											
Rhynchospora galeana	Short-bristle Baldrush											
Rhynchospora harperi	Harper's Beakrush											
Rhynchospora harveyi	Harvey's Beakrush			p								
Rhynchospora leptocarpa	Slender-fruit Beaksedge											
Rhynchospora marliniana	Marlin's Beaksedge											
Rhynchospora perplexa	Pineland Beakrush			p								
Rhynchospora pinetorum	Small's Beakrush											
Rhynchospora pleiantha	Brown Beakrush											
Rhynchospora torreyana	Torrey's Beakrush											
Rhynchospora tracyi	Tracy Beakrush											
Rhynchospora wrightiana	Wright's Beakrush											
Riccia warnstorfii	a liverwort									p		
Riparia riparia	Bank Swallow (breeding population)								p			
Rorippa aquatica	Lake-cress				p					p		
Rudbeckia grandiflora var. *alismifolia*	Rough Coneflower				p	p						
Rudbeckia subtomentosa	Sweet Coneflower					p						
Ruellia noctiflora	Night-flowering Wild-petunia			p								
Ruellia pinetorum	Pine Barren Ruellia											

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Rynchops niger	Black Skimmer										p	
Sabatia campestris	Prairie Pink	p	p	p	p							
Sabatia decandra	Bartram's Rose-gentian			p								
Sabulina patula	Pitcher's Stitchwort				p							
Sageretia minutiflora	Tiny-leaved Buckthorn											
Sagittaria chapmanii	Chapman's Arrowhead			p	p							
Sagittaria isoetiformis	Slender Arrow-head								p			
Salix caroliniana	Carolina Willow				p							
Salvia chapmanii	Chapman's Sage				p							
Sapindus marginatus	Florida Soapberry											
Sarracenia alabamensis ssp. *wherryi*	Wherry's Sweet Pitcher-plant			p								
Sarracenia leucophylla	Whitetop Pitcherplant			p								
Sarracenia rosea	Purple Pitcherplant			p								
Scaphirhynchus albus	Pallid Sturgeon											
Scaphirhynchus platorynchus	Shovelnose Sturgeon											
Scaphirhynchus suttkusi	Alabama Sturgeon											
Sceptridium jenmanii	Alabama Grapefern			p	p							
Sceptridium lunarioides	Winter Grape-fern	p	p	p	p	p						
Schisandra glabra	Bay Starvine											
Schizachyrium maritimum	Gulf Bluestem											
Schizachyrium scoparium ssp. *divergens*	Eastern Little Bluestem			p	p							
Schizachyrium stoloniferum	Creeping Bluestem											
Schoenoplectiella purshiana	Weakstalk Bulrush											
Schoenoplectus americanus	Three-square Bulrush		p									
Schoenoplectus deltarum	Delta Bulrush											

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Schoenoplectus subterminalis	Swaying Rush											
Schwalbea americana	Chaffseed											
Scirpus divaricatus	Spreading Bulrush											
Scirpus lineatus	Drooping Bulrush											
Scleria elliottii	Broad-leaved Hairy Nutrush			p	p	p						
Scleria georgiana	Georgia Nutrush	p		p								
Scleria nitida	Shining Nutrush											
Scleria verticillata	Low Nutrush			p								
Sclerolepis uniflora	Pink Bogbutton											
Scolopax minor	American Woodcock				p		p					
Scutellaria glabriuscula	Georgia Skullcap											
Scutellaria leonardii	Shale-barren Skullcap											
Sedum pulchellum	Rock Stonecrop											
Sedum ternatum	Wood Stonecrop											
Seiurus aurocapilla	Ovenbird (breeding population)											
Senega ambigua	Whorled Milkwort					p						
Senega appendiculata	Swamp Milkwort											
Senega balduinii	White Milkwort											
Senega curtissii	Curtiss' Milkwort					p						
Senega hookeri	Hooker's Milkwort											
Senega leptostachys	Georgia Milkwort											
Setaria corrugata	Coast Bristle Grass											
Setodes dixiensis	A Caddisfly											
Setophaga cerulea	Cerulean Warbler											
Setophaga discolor	Prairie Warbler					p	p					

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Shipsa rotunda	Intrepid Forestfly											
Sideroxylon reclinatum ssp. *reclinatum*	Florida Bumelia											
Silene ovata	Ovate Catchfly											
Silene regia	Royal Catchfly											
Silphium confertifolium	Black Belt Rosinweed											
Silphium integrifolium var. *gattingeri*	Gattinger's Rosinweed											
Silphium pinnatifidum	Tansy Rosinweed											
Silphium simpsonii	Simpson's Rosinweed											
Silphium terebinthinaceum var. *luciae-brauniae*	Lucy Braun's Prairie Dock				p	p						
Sitta pusilla	Brown-headed Nuthatch					p						
Smilax hugeri	Huger's Carrion-flower											
Smilax pulverulenta	Downy Carrion-flower				p							
Solanum pseudogracile	Glowing Nightshade			p	p							
Solidago auriculata	Eared Goldenrod											
Solidago brachyphylla	Dixie Goldenrod			p								
Solidago flaccidifolia	Appalachian Goldenrod											
Solidago juncea	Early Goldenrod				p	p						
Solidago rigidiuscula	Showy Goldenrod											
Solidago sphacelata	Autumn Goldenrod											
Somatochlora georgiana	Coppery Emerald											
Somatochlora provocans	Treetop Emerald											
Sophronanthe hispida	Pineland Hedge-Hyssop			p								
Sorex longirostris	Southeastern Shrew			p		p	p					
Speyeria diana	Diana											
Sphaerocarpos donnellii	a liverwort	p	p	p	p	p				p		

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Sphaerosporoceros adscendens	a hornwort				p	p						
Sphagnum carolinianum	Carolina Peatmoss			p	p							
Sphagnum cyclophyllum	Circular-leaf Peatmoss			p					p			
Sphagnum fitzgeraldii	Fitzgerald's Peatmoss								p			
Sphenopholis penyslvanica	Swamp Wedgescale				p	p						
Sphyrna lewini	Scalloped Hammerhead											p
Sphyrna mokarran	Great Hammerhead											p
Spilogale putorius	Eastern Spotted Skunk	p			p	p	p					
Spinadis simplex	Wallace's Deepwater Mayfly											
Spiraea tomentosa	Steeplebush					p						
Spiranthes brevilabris	Texas Ladies'-tresses											
Spiranthes eatonii	Eaton's Ladies'-tresses											
Spiranthes floridana	Florida Ladies'-tresses			p								
Spiranthes lacera var. *gracilis*	Southern Slender Ladies'-tresses		p	p	p	p						
Spiranthes longilabris	Giant Spiral Ladies'-tresses			p								
Spiranthes magnicamporum	Great Plains Ladies'-tresses											
Spiranthes ovalis var. *ovalis*	Lesser Ladies'-tresses											
Spizella pusilla	Field Sparrow			p	p		p					
Sporobolus ozarkanus	Ozark Dropseed											
Stellaria corei	Tennessee Chickweed											
Stellaria pubera	Giant Chickweed			p	p							
Stenanthium gramineum	Eastern Featherbells											
Stenanthium texanum	Pine Barren Deathcamas											
Sterna hirundo	Common Tern (breeding population)											
Sternula antillarum antillarum	Coastal Least Tern										p	

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Sternula antillarum athalassos	Interior Least Tern								p			
Stewartia ovata	Mountain Camellia											
Stizostedion canadense	Sauger									p		
Stizostedion sp. cf. *vitreum*	Southern Walleye											
Strophitus pascagoulaensis	Pascagoula Creekshell											
Strophitus radiatus	Rayed Creekshell											
Strophitus undulatus	Creeper											
Sturnella magna	Eastern Meadowlark				p							
Stylisma aquatica	Water Southern Morning-glory											
Stylisma pickeringii ssp. *pattersonii*	Pickering Morning-glory			p	p							
Stylisma pickeringii ssp. *pickeringii*	Pickering Morning-glory			p	p							
Stylogomphus albistylus	Eastern Least Clubtail											
Stylurus potulentus	Yellow-sided Clubtail											
Stylurus townesi	Townes' Clubtail											
Swida alternifolia	Alternate-leaf Dogwood											
Symphyotrichum ericoides var. *ericoides*	White Heath Aster				p	p						
Symphyotrichum oblongifolium	Aromatic Aster											
Symphyotrichum oolentangiense	Sky Blue Aster											
Symphyotrichum pratense	Barrens Silky Aster				p							
Symphyotrichum puniceum var. *puniceum*	Purple-stem Aster											
Symphyotrichum puniceum var. *scabricaule*	Rough-stem Aster											
Syngonanthus flavidulus	Yellow Pipewort			p								
Syringodium filiforme	Manatee-grass											
Tachopteryx thoreyi	Gray Petaltail											
Taenidia integerrima	Yellow Pimpernel											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.8	19.9	19.1
Scientific Name	**Common Name**	URBAN AND SUBURBAN LANDS	BUILDINGS, BRIDGES, OVERPASSES, ETC.	UTILITY RIGHT-OF-WAYS	HAY AND PASTURE LANDS	CULTIVATED FOREST	SHRUBLANDS	AGRICULTURE/ AQUACULTURE FIELDS	IMPOUNDMENTS	LARGE IMPOUNDMENTS	MAN-MADE BEACHES	ARTIFICIAL REEFS
Tetraloniella albata	White-clothed Longhorn											
Thalasseus maximus	Royal Tern										p	
Thalasseus sandvicensis	Sandwich Tern										p	
Thalassia testudina	Turtle-grass											
Thalia dealbata	Powdery Thalia				p							
Thalictrum debile	Southern Meadowrue											
Thalictrum dioicum	Early Meadowrue											
Thalictrum macrostylum	Small-leaf Meadowrue			p	p							
Thelesperma filifolium	Stiff Greenthread				p	p						
Theliderma cylindrica cylindrica	Rabbitsfoot											
Theliderma metanevra	Monkeyface											
Thryomanes bewickii	Bewick's Wren	p	p				p					
Tiarella cordifolia	Heart-leaved Foam-flower				p							
Tomostima cuneifolia	Wedgeleaf Whitlow-grass				p							
Tomostima reptans	Carolina Whitlow-grass											
Tortula porteri	Porter's Screw Moss		p									
Toxolasma lividum	Purple Lilliput											
Trachyxiphium hypnaceum	Trachyxiphium Moss											
Tradescantia ernestiana	Ernest's Spider-wort											
Tradescantia hirsuticaulis	Hairy-stem Spiderwort											
Trautvetteria applanata	Ozark Tassel-rue											
Trichechus manatus latirostris	Florida Manatee											
Tridens carolinianus	Carolina Fluff Grass				p							
Tridens chapmanii	Chapman's Redtop			p								
Trifolium carolinianum	Carolina Clover	p		p	p	p						

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.8	19.9	19.1
Scientific Name	**Common Name**	URBAN AND SUBURBAN LANDS	BUILDINGS, BRIDGES, OVERPASSES, ETC.	UTILITY RIGHT-OF-WAYS	HAY AND PASTURE LANDS	CULTIVATED FOREST	SHRUBLANDS	AGRICULTURE/ AQUACULTURE FIELDS	IMPOUNDMENTS	LARGE IMPOUNDMENTS	MAN-MADE BEACHES	ARTIFICIAL REEFS
Trifolium reflexum	Buffalo Clover				p	p						
Triglochin striata	Arrow-grass											
Trillium flexipes	Drooping Trillium											
Trillium foetidissimum	Fetid Trillium											
Trillium ludovicianum	Louisiana Trillium											
Trillium pusillum var. *ozarkanum*	Ozark Least Trillium											
Tringa flavipes	Lesser Yellowlegs							p	p		p	
Tringa semipalmata	Willet										p	
Triphora trianthophoros var. *trianthophorus*	Nodding Pogonia											
Ulmus serotina	September Elm											
Uniomerus declivis	Tapered Pondhorn											
Ursus americanus	Black Bear	p										
Ursus americanus luteolus	Louisiana Black Bear	p										
Utricularia olivacea	Piedmont Bladderwort	p							p	p		
Utricularia purpurea	Purple Bladderwort			p					p			
Utterbackiana hartfieldorum	Cypress Floater									p		
Uvularia floridana	Florida Bellwort											
Vaccinium pallidum	Early Lowbush Blueberry											
Vaccinium tenellum	Small Black Blueberry											
Vandenboschia boschiana	Appalachian Bristle Fern											
Verbena xutha	Gulf Vervain			p	p							
Vermivora chrysoptera	Golden-winged Warbler											
Veronicastrum virginicum	Culver's-root					p						
Viburnum acerifolium	Mapleleaf Viburnum											
Villosa vanuxemensis	Mountain Creekshell											

Mississippi Species of Greatest Conservation Need (SGCN) x Habitats Table		19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.8	19.9	19.1
Scientific Name	**Common Name**	URBAN AND SUBURBAN LANDS	BUILDINGS, BRIDGES, OVERPASSES, ETC.	UTILITY RIGHT-OF-WAYS	HAY AND PASTURE LANDS	CULTIVATED FOREST	SHRUBLANDS	AGRICULTURE/ AQUACULTURE FIELDS	IMPOUNDMENTS	LARGE IMPOUNDMENTS	MAN-MADE BEACHES	ARTIFICIAL REEFS
Vireo gilvus	Warbling Vireo											
Vittaria appalachiana	Appalachian Vittaria											
Xyris chapmanii	Chapman's Yellow-eyed-grass											
Xyris drummondii	Drummond's Yellow-eyed-grass			p								
Xyris flabelliformis	Savannah Yellow-eyed-grass											
Xyris louisianica	Kral's Yellow-eyed Grass	p		p					p			
Xyris scabrifolia	Harper's Yellow-eyed Grass	p							p			
Xyris serotina	Acid-swamp Yellow-eyed-grass											
Yeatesia viridiflora	Green-flower Yeatesia			p	p							
Zapus hudsonius	Meadow Jumping Mouse			p	p		p					
Zephyranthes simpsonii	Rainlily			p	p							

APPENDIX 4

Crosswalk of Habitat Types & Subtypes with Ecological Community Types Table A4.1

Habitat #	Habitat Name	Subtype #	Subtype Name	ES Code	Ecological System Name
1	Dry-Mesic Upland Forests/Woodlands	1.1	Dry-Mixed Hardwood and Pine Forests	CES203.483	East Gulf Coastal Plain Dry Upland Hardwood Forest
1	Dry-Mesic Upland Forests/Woodlands	1.1	Dry-Mixed Hardwood and Pine Forests	CES203.560	Southern Coastal Plain Dry Upland Hardwood Forest
1	Dry-Mesic Upland Forests/Woodlands	1.1	Dry-Mixed Hardwood and Pine Forests	CES203.494	Southern Coastal Plain Oak Dome and Hammock
1	Dry-Mesic Upland Forests/Woodlands	1.1	Dry-Mixed Hardwood and Pine Forests	CES203.506	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest
1	Dry-Mesic Upland Forests/Woodlands	1.1	Dry-Mixed Hardwood and Pine Forests	CES203.557	East Gulf Coastal Plain Southern Loblolly-Hardwoods Flatwoods
1	Dry-Mesic Upland Forests/Woodlands	1.2	Longleaf Pine Forest	CES203.496	East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland
2	Mesic Upland Forests	2.1	Mesic Upland Forests	CES203.477	East Gulf Coast Plain Northern Mesic Hardwood Slope Forest
2	Mesic Upland Forests	2.1	Mesic Upland Forests	CES203.482	East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland
2	Mesic Upland Forests	2.1	Mesic Upland Forests	CES203.481	East Gulf Coastal Plain Northern Loess Bluff Forest
2	Mesic Upland Forests	2.1	Mesic Upland Forests	CES203.556	East Gulf Coastal Plain Southern Loess Bluff Forest
2	Mesic Upland Forests	2.1	Mesic Upland Forests	CES203.476	Southern Coastal Plain Mesic Slope Forest
2	Mesic Upland Forests	2.1	Mesic Upland Forests	CES203.502	Southern Coastal Plain Limestone Forest
3	Rock Outcrops and Caves	3.1	Rock Outcrops	NA	no equivalent
3	Rock Outcrops and Caves	3.1	Rock Outcrops	CES202.357	Southern Interior Sinkhole Wall
3	Rock Outcrops and Caves	3.1	Rock Outcrops	CES203.492	East Gulf Coastal Plain Dry Chalk Bluff

Habitat #	Habitat Name	Subtype #	Subtype Name	ES Code	Ecological System Name
3	Rock Outcrops and Caves	3.1	Rock Outcrops	CES203.398	Southeastern Coastal Plain Cliff
3	Rock Outcrops and Caves	3.2	Caves	NA	no equivalent
4	Floodplain Forests	4.1	Floodplain Forest	CES203.195	Mississippi River Low Floodplain (Bottomland) Forest
4	Floodplain Forests	4.1	Floodplain Forest	CES203.196	Mississippi River High Floodplain (Bottomland) Forest
4	Floodplain Forests	4.1	Floodplain Forest	CES203.490	Mississippi River Bottomland Depression
4	Floodplain Forests	4.1	Floodplain Forest	CES203.190	Mississippi River Riparian Forest
4	Floodplain Forests	4.1	Floodplain Forest	CES203.489	East Gulf Coastal Plain Large River Floodplain Forest
4	Floodplain Forests	4.1	Floodplain Forest	CES203.599	East Gulf Coastal Plain Small Stream and River Floodplain Forest
4	Floodplain Forests	4.1	Floodplain Forest	CES203.493	Southern Coastal Plain Blackwater River Floodplain Forest
4	Floodplain Forests	4.1	Floodplain Forest	NA	no equivalent
5	Swamp Forests	5.1	Bald Cypress/Gum Swamp Forest	CES203.251	Southern Coastal Plain Nonriverine Cypress Dome
5	Swamp Forests	5.1	Bald Cypress/Gum Swamp Forest	CES203.384	Southern Coastal Plain Nonriverine Basin Swamp
5	Swamp Forests	5.2	Small Stream Swamp Forests	CES203.505	Southern Coastal Plain Seepage Swamp and Baygall
6	Wet Pine Savannas and Flatwoods	6.1	Slash Pine Flatwoods	CES203.375	East Gulf Coastal Plain Near-Coast Pine Flatwoods
6	Wet Pine Savannas and Flatwoods	6.2	Wet Pine Savannas	CES203.192	East Gulf Coastal Plain Savanna and Wet Prairie
7	Bogs and Seepages	7.1	Pitcherplant Bogs	CES203.078	Southern Coastal Plain Herbaceous Seep and Bog

Habitat #	Habitat Name	Subtype #	Subtype Name	ES Code	Ecological System Name
7	Bogs and Seepages	7.2	Seepages	CES203.554	East Gulf Coastal Plain Northern Seepage Swamp
8	Prairies and Glades	8.1	Blackland Prairie and Woodlands	CES203.478	Southern Coastal Plain Blackland Prairie and Woodland
9	Herbaceous Freshwater Marshes	9.1	Inland Freshwater Marsh	NA	no equivalent
10	Natural Lakes and Ponds	10.1	Oxbow lakes	NA	no equivalent
10	Natural Lakes and Ponds	10.2	Ephemeral ponds	CES203.558	East Gulf Coastal Plain Depression Pond
10	Natural Lakes and Ponds	10.2	Ephemeral ponds	NA	no equivalent
10	Natural Lakes and Ponds	10.3	Beaver ponds	NA	no equivalent
11	Mississippi River and Associated Drainages	11.1	Mississippi River	NA	no equivalent
11	Mississippi River and Associated Drainages	11.2	MS Alluvial Plain	NA	no equivalent
11	Mississippi River and Associated Drainages	11.3	Upper Coastal Plain, Yazoo	NA	no equivalent
11	Mississippi River and Associated Drainages	11.4	Big Black River	NA	no equivalent
12	Northeast Mississippi Drainages	12.1	Northeast Hills, Tennessee River Drainage	NA	no equivalent
12	Northeast Mississippi Drainages	12.2	Tombigbee Drainage	NA	no equivalent
12	Northeast Mississippi Drainages	12.3	Lower MS North Drainage (Hatchie and Wolf)	NA	no equivalent
13	Pearl River Drainages	13.1	Upper Coastal Plain, Pearl River	NA	no equivalent
13	Pearl River Drainages	13.2	Lower Coastal Plain, Pearl	NA	no equivalent

Habitat #	Habitat Name	Subtype #	Subtype Name	ES Code	Ecological System Name
14	Southeast Mississippi Drainages	14.1	Pascagoula Drainage	NA	no equivalent
14	Southeast Mississippi Drainages	14.2	Coastal Rivers	NA	no equivalent
15	Southwest Mississippi Drainages	15.1	Lake Ponchartrain	NA	no equivalent
15	Southwest Mississippi Drainages	15.2	Lower MS South Drainage	NA	no equivalent
16	Maritime and Estuarine Fringe	16.1	Beach and Dune	CES203.266	Florida Panhandle Beach Vegetation
16	Maritime and Estuarine Fringe	16.1	Beach and Dune	NA	no equivalent
16	Maritime and Estuarine Fringe	16.1	Beach and Dune	CES203.500	East Gulf Coastal Plain Dune and Coastal Grassland
16	Maritime and Estuarine Fringe	16.2	Maritime Woodlands	CES203.503	East Gulf Coastal Plain Maritime Forest
16	Maritime and Estuarine Fringe	16.2	Maritime Woodlands	CES203.299	East Gulf Coastal Plain Freshwater Tidal Wooded Swamp
16	Maritime and Estuarine Fringe	16.3	Coastal Wetlands	CES203.258	Southeastern Coastal Plain Interdunal Wetlands
16	Maritime and Estuarine Fringe	16.4	Estuarine Marshes	CES203.303	North-Central Gulf of Mexico Salt and Brackish Tidal Marsh
16	Maritime and Estuarine Fringe	16.4	Estuarine Marshes	CES203.067	Mississippi Sound Fresh and Oligohaline Tidal Marsh
16	Maritime and Estuarine Fringe	16.5	Salt Pannes	NA	no equivalent
16	Maritime and Estuarine Fringe	16.6	Shell Middens and Estuarine Shrublands	NA	no equivalent
17	Estuary and Mississippi Sound (Inside or Associated with	17.1	Estuarine Bays, Lakes and Tidal Streams	NA	no equivalent
17	Estuary and Mississippi Sound (Inside or Associated with	17.2	Seagrass Beds	NA	no equivalent

Habitat #	Habitat Name	Subtype #	Subtype Name	ES Code	Ecological System Name
17	Estuary and Mississippi Sound (Inside or Associated with	17.3	Mollusk Reefs	NA	no equivalent
17	Estuary and Mississippi Sound (Inside or Associated with	17.4	Mississippi Sound	NA	no equivalent
17	Estuary and Mississippi Sound (Inside or Associated with	17.5	Barrier Island passes	NA	no equivalent
18	Marine Habitats (Outside Barrier Islands)	18.1	Marine Habitats (Smooth Bottoms)	NA	no equivalent
18	Marine Habitats (Outside Barrier Islands)	18.2	Hard Bottoms and Oceanic Reefs	NA	no equivalent
19	Artificial Habitats	19.1	Urban and Suburban Lands	NA	no equivalent
19	Artificial Habitats	19.2	Buildings, Bridges, Overpasses, etc.	NA	no equivalent
19	Artificial Habitats	19.3	Utility Right-of-ways	NA	no equivalent
19	Artificial Habitats	19.4	Hay and Pasture Lands	NA	no equivalent
19	Artificial Habitats	19.5	Cultivated Forest	NA	no equivalent
19	Artificial Habitats	19.6	Shrublands	NA	no equivalent
19	Artificial Habitats	19.7	Agriculture/Aquaculture Fields	NA	no equivalent
19	Artificial Habitats	19.8	Impoundments	NA	no equivalent
19	Artificial Habitats	19.8	Large Impoundments	NA	no equivalent
19	Artificial Habitats	19.9	Man-made Beaches	NA	no equivalent
19	Artificial Habitats	19.10	Artificial Reefs	NA	no equivalent

APPENDIX 5

Habitat Reference Sites in Mississippi

The habitat reference for Mississippi's SWAP are summarized below for the NatureServe Terrestrial Ecological Systems. The purpose is to provide a representative example of most habitats described in the state plan. This is not a comprehensive list of the habitats found on each reference site.

Table A5.1. Habitat Reference Sites in Mississippi.

Type	Code	Habitat Subtype	Subtype code	NS TES	NS TES Code	Reference Site
Dry-Mesic Upland Forests/Wood lands	1	Dry Mixed Hardwood and Pine Forests	1.1	EGCP Northern Dry Upland Hardwood Forest	CES203.483	Grenada Lake [USCOE]
Dry-Mesic Upland Forests/Wood lands	1	Dry Mixed Hardwood and Pine Forests	1.1	SCP Dry Upland Hardwood Forest	CES203.560	Mars Hill Sandhill [De Soto NF]
Dry-Mesic Upland Forests/Woodlands	1	Dry Mixed Hardwood and Pine Forests	1.1	SPC Oak Dome and Hammock	CES203.494	Bellefontaine Point [MS-DMR]
Dry-Mesic Upland Forests/Wood lands	1	Dry Mixed Hardwood and Pine Forests	1.1	EGCP Interior Short-leaf Pine-Oak Forest	CES203.506	Enid Lake [USCOE]
Dry-Mesic Upland Forests/Woodlands	1	Longleaf Pine Forests	1.2	EGCP Interior Upland Longleaf Pine Woodland	CES203.496	De Soto NF
Mesic Upland Forests	2	Mesic Upland Forests	2.1	EGCP Northern Mesic Hardwood Slope Forest	CES203.477	George P. Cossar SP [MDWFP]
Mesic Upland Forests	2	Mesic Upland Forests	2.1	EGCP North-ern Loess Plain Oak-Hickory Upland	CES203.482	Sardis Lake [USCOE]
Mesic Upland Forests	2	Mesic Upland Forests	2.1	EGCP Northern Loess Bluff Forest	CES203.481	Hillside NWR [USFWS]
Mesic Upland Forests	2	Mesic Upland Forests	2.1	EGCP Southern Loess Bluff Forest	CES203.556	Clark Creek NA [MDWFP]
Mesic Upland Forests	2	Mesic Upland Forests	2.1	SCP Mesic Slope Forest	CES203.476	Wyatt Hills [De Soto NF]

Type	Code	Habitat Subtype	Subtype code	NS TES	NS TES Code	Reference Site
Mesic Upland Forests	2	Mesic Upland Forests	2.1	SCP Limestone Forest	CES203.502	Swaggart's Bluff [Bienville NF]
Mesic Upland Forests	2	Mesic Upland Forests	2.1	EGCP Southern Loblolly-Hardwood Flatwoods	CES203.557	Sam D. Hamilton Noxubee NWR
Rock Outcrops and Caves	3	Rock Outcrops	3.1	Rock outcrops	NA	Clark Creek NA [MDWFP]
Rock Outcrops and Caves	3	Rock Outcrops	3.1	Southern Interior Sinkhole Wall	CES202.357	Tishomingo SP [MDWFP]
Rock Outcrops and Caves	3	Rock Outcrops	3.1	EGCP Dry Chalk Bluff	CES203.492	Osborne Prairie [Friends of Osborne Prairie]
Rock Outcrops and Caves	3	Rock Outcrops	3.1	SCP Cliff	CES203.398	Mahorner Road Boat Launch, Noxubee County [MDWFP]
Rock Outcrops and Caves	3	Caves	3.2	Caves	NA	No public access
Floodplain Forests	4	Floodplain Forests	4.1	MS River Low Floodplain (Bottomland) Forest	CES203.195	Green Ash-Overcup Oak-Sweetgum Research Natural Area [Delta NF] / Sunflower WMA [Delta NF]
Floodplain Forests	4	Floodplain Forests	4.1	MS River High Floodplain (Bottomland) Forest	CES203.196	Yazoo NWR / Sunflower WMA [Delta NF]
Floodplain Forests	4	Floodplain Forests	4.1	MS River Bottomland Depression	CES203.490	Mathews Brake NWR
Floodplain Forests	4	Floodplain Forests	4.1	MS River Riparian Forest	CES203.190	Shipland WMA
Floodplain Forests	4	Floodplain Forests	4.1	EGCP Large River Floodplain Forest	CES203.489	Pascagoula River WMA [MDWFP]
Floodplain Forests	4	Floodplain Forests	4.1	EGCP Small Stream and River Floodplain Forest	CES203.559	Sam D. Hamilton Noxubee NWR
Floodplain Forests	4	Floodplain Forests	4.1	SCP Blackwater River Floodplain Forest	CES203.493	Black Creek Natural Area [De Soto NF]

Type	Code	Habitat Subtype	Subtype code	NS TES	NS TES Code	Reference Site
Floodplain Forests	4	Floodplain Forests	4.1	Sandbars	NA	Riverfront WMA [MDWFP]
Swamp Forests	5	Bald Cypress/ Gum Swamp Forests	5.1	SCP Nonriverine Basin Swamp	CES203.384	Grand Bay NERR and NWR
Swamp Forests	5	Bald Cypress/ Gum Swamp Forests	5.1	SCP Nonriver-ine Cypress Dome	CES203.251	Grand Bay NERR and NWR
Swamp Forests	5	Small Stream Swamp Forests	5.2	SCP Seepage Swamp and Baygall	CES203.505	Deep Creek tributarys [De Soto NF]
Wet Pine Savan-nas and Flatwoods	6	Wet Pine Savannas	6.1	EGCP Savannas and Wet Prairies	CES203.192	Grand Bay NERR and NWR/ MS Sandhill Crane NWR
Wet Pine Savan-nas and Flatwoods	6	Slash Pine Flatwoods	6.2	EGCP Near-Coast Pine Flatwoods	CES203.375	Grand Bay NERR and NWR/ MS Sandhill Crane NWR
Bogs and Seepages	7	Pitcherplant Bogs	7.1	SCP Herbaceous Seeps and Bogs	CES203.078	Grand Bay NERR and NWR/ MS Sand-hill Crane NWR / Buttercup
Bogs and Seepages	7	Seepages	7.2	EGCP Northern Seepage Swamp	CES203.554	Tishomingo SP [MDWFP]
Prairies and Glades	8	Prairies and Glades	8.1	SCP Blackland Prai-rie and Woodlands	CES203.478	Harrell Hill Botanical Area [Bienville NF] & Black Prairie WMA
Herbaceous Freshwater Marshes	9	Herbaceous Freshwater Marshes	9.1	Inland Freshwater Marsh	NA	Paul B. Johnson SP [MDWFP]
Natural Lakes and Ponds	10	Oxbow Lakes	10.1	Oxbow lakes	NA	Mathews Brake NWR
Natural Lakes and Ponds	10	Ephemeral (Temporary) Ponds	10.2	Ephemeral pools	NA	Mars Hill Sandhill [De Soto NF]
Natural Lakes and Ponds	10	Ephemeral (Temporary) Ponds	10.2	EGCP Depression Ponds	CES203.558	Mars Hill Sandhill [De Soto NF]
Natural Lakes and Ponds	10	Beaver Ponds	10.3	Beaver ponds	NA	Sam D. Hamilton Noxubee NWR

Type	Code	Habitat Subtype	Subtype code	NS TES	NS TES Code	Reference Site
Maritime and Estuarine Fringe	11	Beach and Dune	11.1	Florida Panhandle Beach Vegetation	CES203.266	Gulf Islands National Seashore
Maritime and Estuarine Fringe	11	Beach and Dune	11.1	Mainland Natural Beaches	NA	Grand Bay NERR and NWR
Maritime and Estuarine Fringe	11	Beach and Dune	11.1	EGCP Dune and Coastal Grassland	CES203.500	Gulf Islands National Seashore
Maritime and Estuarine Fringe	11	Maritime Woodlands	11.2	EGCP Maritime Forest	CES203.503	Gulf Islands National Seashore
Maritime and Estuarine Fringe	11	Maritime Woodlands	11.2	EGCP Freshwater Tidal Swamp	CES203.299	Gulf Islands National Seashore
Maritime and Estuarine Fringe	11	Coastal Wetlands	11.3	SCP Interdunal Wetlands	CES203.258	Gulf Islands National Seashore
Maritime and Estuarine Fringe	11	Estuarine Marshes	11.4	North-Central GoMx Salt and Brackish Tidal Marshes	CES203.303	Grand Bay NERR and NWR / Hancock County Marsh Coastal Preserve [MS-DMR]
Maritime and Estuarine Fringe	11	Estuarine Marshes	11.4	Mississippi Sound Fresh and Oligohaline Marshes	CES203.067	Grand Bay NERR and NWR
Maritime and Estuarine Fringe	11	Salt Flats and Pannes	11.5	Southern Salt Flat and Panne	NA	Grand Bay NERR and NWR
Maritime and Estuarine Fringe	11	Shell Middens and Estuarine Shrublands	11.6	Shell middens and Estuarine Shrublands	NA	Grand Bay NERR and NWR
Estuary and Mississippi Sound	12	Estuarine Bays, Lakes, and Tidal Streams	12.1	Estuarine bays, lakes and tidal streams	NA	Grand Bay NERR and NWR
Estuary and Mississippi Sound	12	Seagrass Beds	12.2	Northern GoMx Seagrass Bed	CES203.263	Gulf Islands National Seashore
Estuary and Mississippi Sound	12	Mollusk Reefs	12.3	Mollusk reefs	NA	No public access

Type	Code	Habitat Subtype	Subtype code	NS TES	NS TES Code	Reference Site
Estuary and Mississippi Sound	12	Mississippi Sound	12.4	Mississippi Sound	NA	
Estuary and Mississippi Sound	12	Barrier Island Passes	12.5	Barrier Island passes	NA	
Marine Habitats	13	Marine Habitats (Smooth Bottoms)	13.1	Marine habitats (smooth bottoms)	NA	
Marine Habitats	13	Hard Bottoms and Reefs	13.2	Hard bottoms and oceanic reefs	NA	
Artificial Habitats	14	Artificial Habitats	14.1	Urban and suburban lands	NA	
Artificial Habitats	14	Artificial Habitats	14.2	Buildings, bridges, overpasses, etc.	NA	
Artificial Habitats	14	Artificial Habitats	14.3	Utility right-of-ways	NA	
Artificial Habitats	14	Artificial Habitats	14.4	Hay and pasture lands	NA	
Artificial Habitats	14	Artificial Habitats	14.5	Cultivated Forest	NA	
Artificial Habitats	14	Artificial Habitats	14.6	Shrublands	NA	
Artificial Habitats	14	Artificial Habitats	14.7	Agriculture/ Aqua culture Fields	NA	
Artificial Habitats	14	Artificial Habitats	14.8	Impoundments	NA	
Artificial Habitats	14	Artificial Habitats	14.9	Man-made beaches	NA	
Artificial Habitats	14	Artificial Habitats	14.10	Artificial reefs	NA	

Type	Code	Habitat Subtype	Subtype code	NS TES	NS TES Code	Reference Site
Streams	15	Streams	15.1	Mississippi River	NA	Great River Road SP [MDWFP]
Streams	15	Streams	15.2	MS Alluvial Plain	NA	Delta NF
Streams	15	Streams	15.3	Upper Coastal Plain, Yazoo	NA	Boat Ramps at: Coldwater River: 1.Crenshaw Ramp, 2. Snow's Landing at Beale Street, 3. Marks Boat Ramp, 4. Campbell White Landing at Hwy 322 Yalobusha River: 1. Hwy 8, Malmaison WMA boat ramp Yazoo River: 1. Powell's Landing at Belzoni, 2. Yazoo City Landing
Streams	15	Streams	15.4	Big Black River	NA	Boat Ramps at: 1. Hwy 407, 2. Hwy 35, 3. Hwy 12, 4. Hwy 14, 5. Hwy 16, 6. Hwy 49, 7. Hwy 61
Streams	15	Streams	15.5	Northeast Hills, Tennessee River Drainage	NA	Divide Section WMA [MDWFP]
Streams	15	Streams	15.6	Tombigbee Drainage	NA	Canal Section WMA [MDWFP]
Streams	15	Streams	15.7	Lower MS North Drainage (Hatchie and Wolf)	NA	Wolf River [Holly Springs NF]
Streams	15	Streams	15.8	Upper Coastal Plain, Pearl River	NA	Nanih Waiya WMA [MDWFP]
Streams	15	Streams	15.9	Lower Coastal Plain, Pearl	NA	Old River WMA [MDWFP]
Streams	15	Streams	15.10	Pascagoula Drainage	NA	Pascagoula River Coastal Preserve [MS-DMR]

Type	Code	Habitat Subtype	Subtype code	NS TES	NS TES Code	Reference Site
Streams	15	Streams	15.11	Coastal Rivers	NA	Wolf River Coastal Preserve [MS-DMR]
Streams	15	Streams	15.12	Lake Ponchartrain	NA	Road crossings at: Beaver Creek at Hwy 24, Hwy 48 West Fork Wagoner Creek at Hwy 24, Hwy 48 West Fork Amite River at Hwy 567, Hwy 24, Hwy 48 East Fork Amite River at Hwy 570, Hwy 24, Hwy 584 Tickfaw River at Hwy 568, Hwy 584 Tangipahoa River at Hwy 98, Percy Quinn State Park, I-55, Hwy 51
Streams	15	Streams	15.13	Lower MS South Drainage	NA	Sandy Creek WMA [MDWFP] / Homochitto NF

APPENDIX 6

Interpreting NatureServe Conservation Status Ranks

Conservation Status Ranks are referenced for the SGCN lists in Chapter 4 and the descriptions of conditions for each habitat subtype in Chapter 5. Below is an explanation of these terms.

The **conservation status of a species or community** is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = Global), N = National, and S = Subnational/State). The numbers have the following meaning:

1 = Critically imperiled

2 = Imperiled

3 = Vulnerable to extirpation or extinction

4 = Apparently secure

5 = Demonstrably widespread, abundant, and secure

For example, G1 would indicate that a species is critically imperiled across its entire range (i.e., globally). In this sense the species as a whole is regarded as being at very high risk of extinction. A rank of S3 would indicate the species is vulnerable and at moderate risk within a particular state or province, even though it may be more secure elsewhere. Extinct or missing species and ecological communities are designated with either an "X" (presumed extinct or extirpated) if there is no expectation that they still survive, or an "H" (possibly extinct or extirpated) if they are known only from historical records but there is a chance they may still exist. Other variants and qualifiers are used to add information or indicate any range of uncertainty. See the following conservation status rank definitions for complete descriptions of ranks and qualifiers.

Status Assessment Criteria

Use of standard criteria and rank definitions makes NatureServe conservation status ranks comparable across organism types and political boundaries. Thus, G1 has the same basic meaning whether applied to a salamander, a moss species, or a forest community. Similarly, an S1 has the same meaning whether applied to a species or community in Manitoba, Minnesota, or Mississippi. This standardization in turn allows NatureServe scientists to use the subnational ranks assigned by local natural heritage programs to help determine and refine global conservation status ranks. Status assessments are based on a combination of quantitative and qualitative information. Criteria for assigning ranks serve as *guidelines*, however, rather than arithmetic rules. The assessor's overall knowledge of the species or community allows them to weigh each factor in relation to the others, and to consider all pertinent information. The general factors considered in assessing species and ecological communities are similar, but the relative weight given to each factor differs.

For species, the following factors are considered in assessing conservation status:

- Total number and condition of occurrences (e.g., populations)
- Population size range extent and area of occupancy
- Short- and long-term trends in the above factors
- Scope, severity, and immediacy of threats
- Number of protected and managed occurrences
- Intrinsic vulnerability
- Environmental specificity

For **ecological communities**, the association level generally is the classification unit assessed and ranked (see *Classification of Ecological Communities* at www.natureserve.org for an explanation of the classification hierarchy). Only global conservation status ranks are currently available for ecological communities on NatureServe Explorer. The primary factors for assessing community status are: Species known in an area only from historical records are ranked as either H (possibly extirpated/possibly extinct) or X (presumed extirpated/presumed extinct). Other codes, rank variants, and qualifiers are also allowed in order to add information about the element or indicate uncertainty. See the lists of conservation status rank definitions for complete descriptions of ranks and qualifiers.

- Total number of occurrences (e.g., forest stands)
- Total acreage occupied by the community.

Secondary factors include the geographic range over which the community occurs, threats, and integrity of the occurrences. Because detailed information on these factors may not be available, especially for poorly understood or inventoried communities, preliminary assessments are often based on the following:

- Geographic range over which the community occurs
- Long-term trends across this range
- Short-term trend (i.e., threats)
- Degree of site/environmental specificity exhibited by the community
- Imperilment or rarity across the range as indicated by subnational ranks assigned by local natural heritage programs.

Relationship to Other Status Designations

NatureServe conservation status ranks are a valuable complement to legal status designations assigned by government agencies such as the USFWS and the National Marine Fisheries Service in administering the U.S. Endangered Species Act (ESA), and the Canadian Wildlife Service in administering the Species at Risk Act (SARA). NatureServe status ranks, and the documentation that support them, are often used by such agencies in making official determinations, particularly in the identification of candidates for legal protection. Because NatureServe assessment procedures and subsequent lists of imperiled and vulnerable species have different criteria, evidence requirements, purposes, and taxonomic coverage than official lists of endangered and threatened species, they do not necessarily coincide.

The IUCN Red List of threatened species is similar in concept to NatureServe's global conservation status assessments. Due to the independent development of these two systems, however, minor differences exist in their respective criteria and implementation. Recent studies indicate that when applied by experienced assessors using comparable information, the outputs from the two systems are generally concordant.

NatureServe is an active participant in the IUCN Red List Programme, and in the region covered by NatureServe Explorer, NatureServe status ranks and their underlying documentation often form a basis for Red List threat assessments.

Below are the list and definitions of the NatureServe ranks. For more information, visit www.natureserve.org.

GLOBAL RANK	DEFINITIONS
GX	**Presumed Extinct** (species) — Not located despite intensive searches and virtually no likelihood of rediscovery. **Presumed Collapsed** (ecosystem) — Collapsed throughout its range, due to loss of key dominant and characteristic taxa and/or elimination of the sites and ecological processes on which the type depends.
GH	**Possibly Extinct** (species) or **Possibly Collapsed** (ecosystem) — Known from only historical occurrences but still some hope of rediscovery. Examples of evidence include (1) that a species has not been documented in approximately 20-40 years in human-dominated landscapes despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is extinct or collapsed throughout its range.
G1	**Critically Imperiled** — At very high risk of extinction or collapse due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
G2	**Imperiled** — At high risk of extinction or collapse due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
G3	**Vulnerable** — At moderate risk of extinction or collapse due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
G4	**Apparently Secure** — At fairly low risk of extinction or collapse due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
G5	**Secure** — At very low risk or extinction or collapse due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.

Variant Global Conservation Status Rank

RANK	DEFINITION
G#G#	**Range Rank** — A numeric range rank (e.g., G2G3, G1G3) is used to indicate uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).
GU	**Unrankable** — Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible (when the range of uncertainty is three consecutive ranks or less), a range rank (e.g., G2G3) should be used to delineate the limits (range) of uncertainty.
GNR	**Unranked** — Global rank not yet assessed.
GNA	**Not Applicable** — A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities. A global conservation status rank may be not applicable for several reasons, related to its relevance as a conservation target. For species, typically the species is a hybrid without conservation value, or of domestic origin. For ecosystems, the type is typically non-native (e.g. many ruderal vegetation types), agricultural (e.g. pasture, orchard) or developed (e.g. lawn, garden, golf course).

Global Rank Qualifiers

RANK	DEFINITION
?	**Inexact Numeric Rank** — Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status Ranks or GX or GH.
Q	**Questionable taxonomy that may reduce conservation priority** — Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The "Q" modifier is only used at a global level and not at a national or subnational level.
C	**Captive or Cultivated Only** — Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The "C" modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to "Extinct in the Wild (EW) in IUCN's Red List terminology (IUCN 2001).

Infraspecific Taxon Global Conservation Status Ranks

RANK	DEFINITION
T#	**Infraspecific Taxon** (trinomial) — The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species, for example, a G1T2 subrank should not occur. A vertebrate animal population (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

National (N) and Subnational (S) Conservation Status Ranks

RANK	DEFINITION
NX **SX**	**Presumed Extirpated** — Species or ecosystem is believed to be extirpated from the jurisdiction (i.e., nation, or state/province). Not located despite intensive searches of historical sites and other appropriate habitats, and virtually no likelihood that it will be rediscovered. [equivalent to "Regionally Extinct" in IUCN Red List terminology]
NH **SH**	**Possibly Extirpated** — Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years in human-dominated landscapes despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.
N1 **S1**	**Critically Imperiled** — At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
N2 **S2**	**Imperiled** — At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
N3 **S3**	**Vulnerable** — At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
N4 **S4**	**Apparently Secure** — At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
N5 **S5**	**Secure** — At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

Variant National and Subnational Conservation Status Ranks

RANK	DEFINITION
N# **S#**	**Range Rank** — A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem. Ranges cannot skip more than two ranks (e.g., SU is used rather than S1S4).
NU **SU**	**Unrankable** — Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
NNR **SNR**	**Unranked** — National or subnational conservation status not yet assessed.
NNA **SNA**	**Not Applicable** — A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., long distance aerial and aquatic migrants, hybrids without conservation value, and non-native species or ecosystems.
Not Provided	Species or ecosystem is known to occur in this nation or state/province. Contact the appropriate NatureServe network program for assignment of conservation status.

Rank Qualifier

RANK	DEFINITION
N#? **S#?**	**Inexact Numeric Rank** — Denotes inexact numeric rank; this should not be used with any of the Variant National or Subnational Conservation Status Ranks, or NX, SX, NH, or SH.

Breeding Status Qualifiers

RANK	DEFINITION
B	**Breeding** — Conservation status refers to the breeding population of the species in the nation or state/province
N	**Non-breeding** — Conservation status refers to the non-breeding population of the species in the nation or state/province.
M	**Migrant** — Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the nation or state/province.

APPENDIX 7

Location of Eight Required Elements

In 2001, Congress established the State Wildlife Grants (SWG) program and the related Wildlife Conservation and Restoration Program (WCRP). To make the best use of federal funds from the WCRP and SWG program, Congress mandated each state and territory to develop a SWAP to guide conservation investments at the state level. In the authorizing legislation, Congress identified eight required elements to be addressed in each state's SWAP and directed that the plans must identify and be focused on the Species of Greatest Conservation Need (SGCN) yet address the full array of wildlife and wildlife-related issues.

Below is a list of the eight required elements and the chapters and appendices where each element is addressed in this 2025 SWAP update:

Required Element 1: Species - Information on the distribution and abundance of species of wildlife, including low and declining populations as the state fish and wildlife agency deems appropriate, that are indicative of the diversity and health of the state's wildlife. (Chapters 4, 5, 7, Appendix 3, 8).

Required Element 2: Habitats - Descriptions of extent and condition of habitats and community types essential to conservation of species identified in (1). (Chapters 4, 5, Appendix 5).

Required Element 3: Threats - Descriptions of problems which may adversely affect species identified in (1) or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats. (Chapters 5, 6, 7, 8, Appendix 11, 12).

Required Element 4: Conservation Actions - Descriptions of conservation actions proposed to conserve the identified species and habitats and priorities for implementing such actions. (Chapters 5, 6, 7, 8, Appendix 11).

Required Element 5: Monitoring Species and Effectiveness - Proposed plans for monitoring species identified in (1) and their habitats, for monitoring the effectiveness of the conservation actions proposed in (4), and for adapting these conservation actions to respond appropriately to new information or changing conditions. (Chapter 8, Appendix 12).

Required Element 6: Review and Revision - Descriptions of procedures to review the plan at intervals not to exceed ten years. (Chapter 9).

Required Element 7: Partnerships with Land Management Agencies and Tribes - Plans for coordinating the development, implementation, review, and revision of the plan with federal, state, and local agencies and Indian tribes that manage significant land and water areas within the state or administer programs that significantly affect the conservation of identified species and habitats (Chapter 9, Appendix 1 and 2).

Required Element 8: Public Participation - Broad public participation is an essential element of developing and implementing these plans, the projects that are carried out while these plans are developed, and the species in greatest need of conservation (Appendix 1 and 2).

APPENDIX 8

Mississippi Species of Greatest Conservation Need Conservation Status Rankings

Family	Scientific Name	Common Name	MSConcern Level	Global Rank	State Rank	Federal Status	State Status	RSGCN	IUCN	Partners In Flight
Mussels										
Unionidae	*Actinonaias ligamentina*	Mucket	2) High	G5	S1		LE		LC - Least Concern	
Unionidae	*Utterbackiana hartfieldorum*	Cypress Floater	3) Moderate	G4	S3			2) High		
Unionidae	*Arcidens confragosus*	Rock Pocketbook	2) High	G4	S2				LC - Least Concern	
Unionidae	*Cyclonaias tuberculata*	Purple Wartyback	2) High	G5	S2		LE		NT - Near Threatened	
Unionidae	*Cyprogenia aberti*	Western Fanshell	4) Data Deficient	G2G3	SX	LT		3) Moderate	DD - Data deficient	
Unionidae	*Ellipsaria lineolata*	Butterfly	2) High	G4G5	S2				NT - Near Threatened	
Unionidae	*Elliptio arca*	Alabama Spike	1) Highest	G2G3	S1	PT		2) High	DD - Data Deficient	
Unionidae	*Elliptio arctata*	Delicate Spike	1) Highest	G2G3 Q	S1	PT	LE	2) High		
Unionidae	*Eurynia dilatata*	Spike	2) High	G5	S1		LE		LC - Least Concern	
Unionidae	*Epioblasma brevidens*	Cumberlandian Combshell	1) Highest	G1	S1	LE, XN	LE	1) Very High	CR - Critically Endangered	
Unionidae	*Epioblasma penita*	Southern Combshell	1) Highest	G1	S1	LE	LE	1) Very High	CR - Critically Endangered	
Unionidae	*Epioblasma triquetra*	Snuffbox	1) Highest	G3	SX	LE	LE	1) Very High	EN - Endan-gered	
Unionidae	*Pleuronaia barnesiana*	Tennessee Pigtoe	1) Highest	G2G3	S1	PP		2) High	LC - Least Concern	
Unionidae	*Lampsilis fasciola*	Wavy-rayed Lampmussel	2) High	G5	S1				LC - Least Concern	
Unionidae	*Lampsilis ovata*	Pocketbook	2) High	G5	S2				LC - Least Concern	
Unionidae	*Hamiota perovalis*	Orange-nacre Mucket	1) Highest	G1	S1	LT	LE	3) Moderate	NT - Near Threatened	
Unionidae	*Lampsilis hydiana*	Louisiana Fatmucket	2) High	G4	S2				LC - Least Concern	

Family	Scientific Name	Common Name	MSConcern Level	Global Rank	State Rank	Federal Status	State Status	RSGCN	IUCN	Partners In Flight
Unionidae	*Lasmigona alabamensis*	Alabama Heelsplitter	2) High	G3	S2					
Unionidae	*Lasmigona complanata*	White Heelslpitter	3) Moderate	G5	S3				LC - Least Concern	
Unionidae	*Lasmigona costata*	Flutedshell	2) High	G5	S2					
Unionidae	*Pleuronaia dolabelloides*	Slabside Pearlymussel	1) Highest	G2	S1	LE	LE	2) High	EN - Endangered	
Unionidae	*Ligumia recta*	Black Sandshell	1) Highest	G4G5	S1				NT - Near Threatened	
Unionidae	*Medionidus acutissimus*	Alabama Moccasinshell	1) Highest	G2	S1	LT	LE	2) High	EN - Endangered	
Unionidae	*Obovaria subrotunda*	Round Hickorynut	1) Highest	G4	S1	LT	LE	2) High	EN - Endangered	
Unionidae	*Obovaria unicolor*	Alabama Hickorynut	1) Highest	G3	S1	PP		2) High	NT - Near Threatened	
Unionidae	*Obovaria arkansasensis*	Southern Hickorynut	2) High	G3	S1			2) High	VU - Vulnerable	
Unionidae	*Plethobasus cyphyus*	Sheepnose	1) Highest	G3	S1	LE	LE	1) Very High	EN - Endangered	
Unionidae	*Pleurobema beadleianum*	Mississippi Pigtoe	2) High	G2G3	S3				LC - Least Concern	
Unionidae	*Pleurobema curtum*	Black Clubshell	4) Data Deficient	G1	SX	LE	LE		CR -Critically Endangered	
Unionidae	*Pleurobema perovatum*	Ovate Clubshell	1) Highest	G1	S1	LE	LE	1) Very High	EX - Extinct	
Unionidae	*Pleurobema riddellii*	Louisiana Pigtoe	1) Highest	G1	S1	PP		1) Very High	NT - Near Threatened	
Unionidae	*Pleurobema taitianum*	Heavy Pigtoe	4) Data Deficient	G1	SX	LE	LE	2) High?	EN - Endangered	
Unionidae	*Pleurobema decisum*	Southern Clubshell	1) Highest	G2	S1	LE	LE	2) High	EN - Endangered	
Unionidae	*Pleurobema sintoxia*	Round Pigtoe	1) Highest	G2G3	S1		LE	2) High	NT - Near Threatened	
Unionidae	*Potamilus alatus*	Pink Heelsplitter	3) Moderate	G5	S3				LC - Least Concern	
Unionidae	*Potamilus capax*	Fat Pocketbook	1) Highest	G2	S1	LE	LE	1) Very High	VU - Vulnerable	
Unionidae	*Potamilus inflatus*	Inflated Heelsplitter	1) Highest	G1G2 Q	S1	LT	LE	2) High	EN - Endangered	

Family	Scientific Name	Common Name	MSConcern Level	Global Rank	State Rank	Federal Status	State Status	RSGCN	IUCN	Partners In Flight
Unionidae	*Ptychobranchus fasciolaris*	Kidneyshell	2) High	G4G5	S1		LE		NT - Near Threatened	
Unionidae	*Theliderma cylindrica cylindrica*	Rabbitsfoot	1) Highest	G3G4T 3	S1	LT	LE	2) High	NT - Near Threatened	
Unionidae	*Quadrula rumphiana*	Ridged Mapleleaf	2) High	G4	S2				LC - Least Concern	
Unionidae	*Quadrula nobilis*	Gulf Mapleleaf	3) Moderate	G4	S3					
Unionidae	*Theliderma metanevra*	Monkeyface	4) Data Deficient	G4	SX		LE			
Unionidae	*Pseudodontoides subvexus*	Southern Creek-mussel	2) High	G3	S2			3) Moderate	NT - Near Threatened	
Unionidae	*Strophitus undulatus*	Creeper	2) High	G5	S1					
Unionidae	*Strophitus radiatus*	Rayed Creekshell	1) Highest	G2	S2			2) High	NT - Near Threatened	
Unionidae	*Strophitus pascagoulaensis*	Pascagoula Creekshell	2) High	GNR	S2					
Unionidae	*Toxolasma lividum*	Purple Lilliput	1) Highest	G3	S1				LC - Least Concern	
Unionidae	*Uniomerus declivis*	Tapered Pondhorn	3) Moderate	G5	S3					
Unionidae	*Villosa vanuxemensis*	Mountain Creekshell	2) High	G4	S1			2) High		
Unionidae	*Obovaria c.f.unicolor*	Undescribed Hickorynut	1) Highest		S1	PT				
Snails										
Gastropoda	*Elimia cylindracea*	Cylinder Elimia	1) Highest	G2	S1					
Gastropoda	*Lithasia armigera*	Armored Rocksnail	2) High	G3	S1				VU - Vulnerable	
Gastropoda	*Lithasia hubrichti*	Big Black Rocksnail	1) Highest	GX	S1					
Gastropoda	*Lithasia lima*	Warty Rocksnail	1) Highest	G2	S1				DD - Data Deficient	
Gastropoda	*Lithasia verrucosa*	Varicose Rocksnail	2) High	G4	S2				LC - Least Concern	
Gastropoda	*Pleurocera vestita*	Brook Hornsnail	4) Data Deficient	G3	SU					

Family	Scientific Name	Common Name	MSConcern Level	Global Rank	State Rank	Federal Status	State Status	RSGCN	IUCN	Partners In Flight
Crayfishes										
Cambaridae	*Cambarus girardianus*	Tanback Crayfish	2) High	G5	S2				LC - Least Concern	
Cambaridae	*Cambarus rusticiformis*	Depression Crayfish	2) High	G5	S1				LC - Least Concern	
Cambaridae	*Cambarus striatus*	Ambiguous Crayfish	4) Data Deficient	G5	S5					
Cambaridae	*Lacunicambarus polychromatus*	Paintedhand Mudbug	4)Moderate	G5	S3				LC- Least Concern	
Cambaridae	*Lacunicambarus mobilensis*	Lonesome Grave-digger	2) High	G3	S2					
Cambaridae	*Lacunicambarus freudensteini*	Banded Mudbug	1) Highest	G1	S1					
Cambaridae	*Lacunicambarus dalyae*	Jewel Mudbug	3) Moderate	GNR	S3					
Cambaridae	*Cambarellus diminutus*	Least Crayfish	2) High	G3	S2			2) High	DD - Data Deficient	
Cambaridae	*Cambarellus lesliei*	Angular Dwarf Crayfish	2) High	G3	S2			2) High	LC - Least Concern	
Cambaridae	*Faxonius placidus*	Bigclaw Crayfish	2) High	G5	S2				LC - Least Concern	
Cambaridae	*Faxonius erichsonianus*	Reticulate Crayfish	3) Moderate	G5	S3				LC - Least Concern	
Cambaridae	*Faxonius etnieri*	Ets Crayfish	4) Data Deficient	G4G5	SU				LC - Least Concern	
Cambaridae	*Faxonius wrighti*	Hardin Crayfish	1) Highest	G2	S1	PT		2) High	VU - Vulnerable	
Cambaridae	*Faxonius mississippiensis*	Mississippi Crayfish	3) Moderate	G3	S3				DD - Data Deficient	
Cambaridae	*Faxonius validus*	Powerful Crayfish	2) High	G5	S2				LC - Least Concern	
Cambaridae	*Faxonius hartfieldi*	Yazoo Crayfish	1) Highest	G2	S1			2) High	VU - Vulnerable	
Cambaridae	*Faxonius jonesi*	Sucarnoochee River Crayfish	3) Moderate	G3	S3			3) Moderate	DD - Data Deficient	
Cambaridae	*Faxonius palmeri*	Gray-Speckled Crayfish	4) Data Deficient	G5	S5				LC - Least Concern	
Cambaridae	*Faxonius yanahlindus*	Spinywrist Crayfish	2) High	GNR	S2					

Family	Scientific Name	Common Name	MSConcern Level	Global Rank	State Rank	Federal Status	State Status	RSGCN	IUCN	Partners In Flight
Cambaridae	*Hobbseus attenuatus*	Pearl Rivulet Crayfish	1) Highest	G2	S2			2) High	DD - Data Deficient	
Cambaridae	*Hobbseus petilus*	Tombigbee Rivulet Crayfish	3) Moderate	G2	S3	PT		2) High	DD - Data Deficient	
Cambaridae	*Hobbseus orconectoides*	Oktibbeha Rivulet Crayfish	1) Highest	G1	S1	PT		1) Very High	EN - Endangered	
Cambaridae	*Hobbseus valleculus*	Choctaw Rivulet Crayfish	1) Highest	G1	S1			1) Very High	EN - Endangered	
Cambaridae	*Hobbseus cristatus*	Crested Rivulet Crayfish	1) Highest	G3	S2	PT		2) High	DD - Data Deficient	
Cambaridae	*Hobbseus prominens*	Prominence Rivulet Crayfish	3) Moderate	G4G5	S3				LC - Least Concern	
Cambaridae	*Hobbseus yalobushensis*	Yalobusha Rivulet Crayfish	1) Highest	G2	S2	PT		2) High	EN - Endangered	
Cambaridae	*Procambarus bivittatus*	Ribbon Crayfish	2) High	G5	S2				LC - Least Concern	
Cambaridae	*Procambarus barbiger*	Jackson Prairie Crayfish	2) High	G2?	S2	PT		2) High	DD - Data Deficient	
Cambaridae	*Procambarus fitzpatricki*	Spinytail Crayfish	1) Highest	G2?	S2			2) High	LC - Least Concern	
Cambaridae	*Procambarus lecontei*	Mobile Crayfish	3) Moderate	G3G4	S3			3) Moderate	LC - Least Concern	
Cambaridae	*Procambarus lagniappe*	Lagniappe Crayfish	1) Highest	G2	S2			2) High	NT - Near Threatened	
Cambaridae	*Procambarus lylei*	Shutispear Crayfish	2) High	G2	S2			2) High	EN - Endangered	
Cambaridae	*Procambarus ablusus*	Hatchie River Crayfish	3) Moderate	G4	S3				LC - Least Concern	
Cambaridae	*Procambarus penni*	Pearl Blackwater Crayfish	3) Moderate	G3	S3			2) High	DD - Data Deficient	
Cambaridae	*Procambarus viaeviridis*	Vernal Crayfish	3) Moderate	G5	S3			2) High	LC - Least Concern	
Cambaridae	*Procambarus hagenianus hagenianus*	Southeastern Prairie Crayfish	4) Data Deficient	G4G5T 4	SU				LC - Least Concern	
Cambaridae	*Procambarus hagenianus vesticeps*	Egyptian Crayfish	3) Moderate	G4G5T 3	S3				LC - Least Concern	
Cambaridae	*Procambarus mancus*	Lame Crayfish	2) High	G4	S2				LC - Least Concern	

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Cambaridae	*Procambarus planirostris*	Flatnose Crayfish	3) Moderate	G4	S3			3) Moderate	LC - Least Concern	
Cambaridae	*Procambarus shermani*	Gulf Crayfish	2) High	G4	S2				LC - Least Concern	
Cambaridae	*Creaserinus fodiens*	Digger Crayfish	4) Data deficient	G5	S5				LC - Least Concern	
Cambaridae	*Creaserinus danielae*	Speckled Burrowing Crayfish	1) Highest	G2	S2	PT		2) High	NT - Near Threatened	
Cambaridae	*Creaserinus burrisi*	Burris' Burrowing Crayfish	2) High	G3	S2			2) High	DD - Data Deficient	
Cambaridae	*Creaserinus gordoni*	Camp Shelby Burrowing Crayfish	1) Highest	G1	S1		LE	1) Very High	NT - Near Threatened	
Arachnids										
Ixodidae	*Amblyomma tuberculatum*	Gopher Tortoise Tick	2) High	G3?	S1					
Lycosidae	*Arctosa sanctaerosae*	Santa Rosa Wolf Spider	4) Data Deficient	G3	SU					
Insects										
Carabidae	*Cicindela marginipennis*	Cobblestone Tiger Beetle	4) Data Deficient	G3	SH				VU - Vulnerable	
Carabidae	*Cicindela nigrior*	Autumn Tiger Beetle	3) Moderate	G2G3	S2S3					
Scarabaeidae	*Aphodius troglodytes*	Aphodius Tortoise Commensal Scarab Beetle	2) High	G2G3	S1				NE - Not evaluated	
Scarabaeidae	*Onthophagus polyphemi*	Onthophagus TortoiseCommensal Scarab Beetle	2) High	G2G3	S1S2				NE - Not evaluated	
Silphidae	*Nicrophorus americanus*	American Burying Beetle	4) Data Deficient	G3	SX	LE	LE		CR -Critically Endangered	
Hydraenidae	*Gymnocthebius maureenae*	Maureen's GymnocthebiusMinute Moss Beetle	2) High	G1G3	S1S3					
Hydrophilidae	*Paracymus seclusus*	Seclusive Water Scavenger Beetle	2) High	G1G3	S1S3				NE - Not evaluated	
Staphylinidae	*Philonthus testudo*	Western Gopher Tortoise Rove Beetle	2) High	G2	S1					

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Histeridae	*Chelyoxenus xerobatis*	Gopher Tortoise Hister Beetle	2) High	G2G3	S1S3					
Asilidae	*Machimus polyphemi*	Gopher Tortoise Robber Fly	2) High	G2	S1					
Anthomyiidae	*Eutrichota gopheri*	Gopher Tortoise Burrow Fly	2) High	G2G3	S2					
Oligoneuriidae	*Homoeoneuria cahabensis*	CahabaSand-filtering Mayfly	3) Moderate	G3	S1S3				NE - Not evaluated	
Pseudironidae	*Pseudiron centralis*	White Sand-river Mayfly	3) Moderate	G5	S3					
Baetiscidae	*Baetisca escambiensis*	A Mayfly	4) Data Deficient	G2G3	SU					
Isonychiidae	*Isonychia berneri*	A Mayfly	4) Data Deficient	G2G3	SU					
Heptageniidae	*Spinadis simplex*	Wallace's Deepwater Mayfly	2) High	G3	S2					
Heptageniidae	*Raptoheptagenia cruenta*	Wallace's Deepwater Mayfly	2) High	G4	S2					
Baetidae	*Acentrella alachua*	A Mayfly	4) Data Deficient	G3G4	SU					
Apidae	*Bombus pensylvanicus*	American Bumblebee	3) Moderate	G3G4	S3	PT		3) Moderate	VU - Vulnerable	
Apidae	*Bombus variabilis*	Variable Cuckoo Bumble Bee	1) Very High	G1G2	S1	PT		1) Very High	CR -Critically Endangered	
Apidae	*Bombus fraternus*	Southern Plains Bumble Bee	2) High	G2G4	S2			3) Moderate	EN - Endan-gered	
Formicidae	*Pogonomyrmex badius*	Florida Harvester Ant	2) High	G5	S2					
Melittidae	*Hesperapis oraria*	Gulf Coast Solitary Bee	4) Data Deficient	G1	SU					
Apideae	*Tetraloniella albata*	A Long-horned Bee	4) Data Deficient	GNR	SU					
Colletidae	*Caupolicana electa*	A Plasterer Bee	4) Data Deficient	G2	SU					
Tineidae	*Ceratophaga vicinella*	Gopher Tortoise Shell Moth	4) Data Deficient	G1G3	SU					
Hesperiidae	*Erynnis martialis*	Mottled Dusky Wing	4) Data Deficient	G3	SU					

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Hesperiidae	*Hesperia attalus*	Dotted Skipper	4) Data Deficient	G3G4	SU					
Hesperiidae	*Atrytone arogos arogos*	Arogos Skipper	3) Moderate	G2G3T 1T2	S2S3				EN - Endangered	
Hesperiidae	*Euphyes arpa*	Palmetto Skipper	4) Data Deficient	G3	SU					
Hesperiidae	*Euphyes pilatka*	Palatka Skipper	3) Moderate	G3	S1S3					
Hesperiidae	*Euphyes dukesi dukesi*	Dukes' Skipper	4) Data Deficient	G3G4T 3	SU					
Hesperiidae	*Euphyes bayensis*	Bay St. Louis Skipper	2) High	G2G3	S1					
Hesperiidae	*Atrytonopsis loammi*	Loammi Skipper	4) Data Deficient	G2	SU					
Hesperiidae	*Amblyscirtes reversa*	Reversed Roadside Skipper	3) Moderate	G3G4	S1S3					
Hesperiidae	*Amblyscirtes alternata*	Least Florida Skipper	4) Data Deficient	G2G3	SU					
Nymphalidae	*Speyeria diana*	Diana	4) Data Deficient	G2G3	SU					
Nymphalidae	*Neonympha mitchellii*	Mitchell's Satyr	1) Very High	G2	S1	LE	LE			
Nymphalidae	*Neonympha helicta*	Helicta Satyr	4) Data Deficient	G3G4	SU					
Saturniidae	*Automeris louisiana*	Louisiana Eyed Silkmoth	4) Data Deficient	G1G3	SU					
Sphingidae	*Lapara phaeobrachycerous*	Gulf Pine Sphinx	4) Data Deficient	G3G4	SU					
Sphingidae	*Eumorpha intermedia*	Intermediate Sphinx	4) Data Deficient	G3G4	SU					
Erebidae	*Catocala delilah*	Delilah Underwing	4) Data Deficient	G3G4	SU					
Erebidae	*Catocala miranda*	A Noctuid Moth	4) Data Deficient	G3G4	SU					
Erebidae	*Catocala atocala*	Brou's Underwing	4) Data Deficient	G3G4	SU					
Noctuidae	*Bagisara brouana*	A Noctuid Moth	4) Data Deficient	G3	SU					

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Noctuidae	*Papaipema maritima*	Maritime Sunflower Borer	4) Data Deficient	G3	SU					
Noctuidae	*Papaipema sp. 5*	Rare Cane Borer Moth	4) Data Deficient	G1G2	SU					
Petaluridae	*Tachopteryx thoreyi*	Gray Petaltail	3) Moderate	G4	S2				LC - Least Concern	
Cordulegastridae	*Cordulegaster erronea*	Tiger Spiketail	2) High	G4	S1				LC - Least Concern	
Cordulegastridae	*Cordulegaster bilineata*	Brown Spiketail	3) Moderate	G5	S2				LC - Least Concern	
Gomphidae	*Gomphus dilatatus*	Blackwater Clubtail	3) Moderate	G5	S1				LC - Least Concern	
Gomphidae	*Gomphus australis*	Clearlake Clubtail	2) High	G4	S1				LC - Least Concern	
Gomphidae	*Gomphus hodgesi*	Hodges' Clubtail	2) High	G3	S2				NT - Near Threatened	
Gomphidae	*Gomphus geminatus*	Twin-striped Clubtail	2) High	G3G4	S1				LC - Least Concern	
Gomphidae	*Stylogomphus albistylus*	Eastern Least Clubtail	3) Moderate	G5	S1				LC - Least Concern	
Gomphidae	*Ophiogomphus australis*	Southern Snaketail	1) Very High	G1G2	S1				NT - Near Threatened	
Aeshnidae	*Aeshna umbrosa*	Shadow Darner	3) Moderate	G5	S2				LC - Least Concern	
Macromiidae	*Macromia alleghaniensis*	Allegheny River Cruiser	3) Moderate	G4	S2				LC - Least Concern	
Corduliidae	*Epitheca spinosa*	Robust Baskettail	2) High	G4	S1				LC - Least Concern	
Corduliidae	*Neurocordulia yamaskanensis*	Stygian Shadowdragon	3) Moderate	G5	S1				LC - Least Concern	
Corduliidae	*Somatochlora georgiana*	Coppery Emerald	3) Moderate	G3G4	S2				DD - Data Deficient	
Corduliidae	*Somatochlora provocans*	Treetop Emerald	3) Moderate	G4	S2				LC - Least Concern	
Libellulidae	*Celithemis amanda*	Amanda's Pennant	3) Moderate	G5	S2				LC - Least Concern	
Libellulidae	*Erythrodiplax umbrata*	Band-winged Dragonlet	3) Moderate	G5	S1				LC - Least Concern	
Libellulidae	*Nannothemis bella*	Elfin Skimmer	3) Moderate	G4G5	S1				LC - Least Concern	

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Coenagrionidae	*Enallagma concisum*	Cherry Bluet	3) Moderate	G4	S2				LC - Least Concern	
Coenagrionidae	*Enallagma pallidum*	Pale Bluet	3) Moderate	G4	S2				LC - Least Concern	
Coenagrionidae	*Enallagma davisi*	Sandhill Bluet	3) Moderate	G5	S1				LC - Least Concern	
Coenagrionidae	*Enallagma pollutum*	Florida Bluet	3) Moderate	G5	S2				LC - Least Concern	
Coenagrionidae	*Ischnura prognata*	Furtive Forktail	3) Moderate	G4	S2				LC - Least Concern	
Coenagrionidae	*Nehalennia gracilis*	Sphagnum Sprite	3) Moderate	G5	S2				LC - Least Concern	
Coenagrionidae	*Amphiagrion saucium*	Eastern Red Damsel	3) Moderate	G5	S2				LC - Least Concern	
Gomphidae	*Stylurus potulentus*	Yellow-sided Clubtail	1) Very High	G2	S1				VU - Vulnerable	
Gomphidae	*Stylurus townesi*	Townes' Clubtail	2) High	G3	S1				LC - Least Concern	
Gomphidae	*Arigomphus lentulus*	Stillwater Clubtail	3) Moderate	G5	S1				LC - Least Concern	
Gomphidae	*Arigomphus villosipes*	Unicorn Clubtail	3) Moderate	G5	S2				LC - Least Concern	
Gryllotalpidae	*Gryllotalpa major*	Prairie Mole Cricket	4) Data Deficient	G3	SH				DD - Data deficient	
Acrididae	*Pseudopomala brachyptera*	Short-winged Toothpick Grass-hopper	2) High	G5	S1					
Capniidae	*Allocapnia aurora*	Aurora Snowfly	4) Data Deficient	G5	SU					
Capniidae	*Allocapnia polemistis*	Black Warrior Snowfly	4) Data Deficient	G3	SU					
Capniidae	*Nemocapnia carolina*	Southern Snowfly	4) Data Deficient	G5	SU					
Leuctridae	*Leuctra hicksi*	Cypress Needlefly	4) Data Deficient	GNR	SU					
Leuctridae	*Leuctra colemanorum*	Yalobusha Needlefly	3) Moderate	GNR	S3					
Nemouridae	*Amphinemura alabama*	Alabama Forestfly	4) Data Deficient	G3	SU					

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Nemouridae	*Shipsa rotunda*	Intrepid Forestfly	4) Data Deficient	G5	SU					
Chloroperlidae	*Alloperla natchez*	Natchez Stonefly	4) Data Deficient	G2	S2					
Chloroperlidae	*Haploperla chukcho*	Chukcho Stonefly	2) High	G2	S2					
Perlidae	*Attaneuria ruralis*	Giant Stone	4) Data Deficient	G4	SU					
Perlidae	*Perlesta lagoi*	A Stonefly	4) Data Deficient	G3	SU					
Perlidae	*Neoperla coxi*	A Stonefly	4) Data Deficient	G3	SU					
Perlodidae	*Helopicus bogaloosa*	Masked Springfly	4) Data Deficient	G3G4	SU					
Perlodidae	*Hydroperla fugitans*	Austin Springfly	2) High	G3	S2					
Perlodidae	*Isogenoides varians*	A Stonefly	4) Data Deficient	G3G4	SU					
Lepidostomatidae	*Lepidostoma morsei*	Morse's Little Plain Brown Sedge	4) Data Deficient	G2G3	SU					
Philopotamidae	*Chimarra falculata*	A Caddisfly	4) Data Deficient	G3G4	SU					
Sericostomatidae	*Agarodes libalis*	Spring-loving Psiloneuran Caddisfly	4) Data Deficient	G3	SU					
Sericostomatidae	*Agarodes stannardi*	Stannard's Agarodes Caddisfly	4) Data Deficient	G2	S1S2					
Hydropsychidae	*Cheumatopsyche petersi*	Peters'Cheumatopsyche Caddisfly	4) Data Deficient	G3	SU					
Leptoceridae	*Ceracleaspongillovorax*	A Caddisfly	4) Data Deficient	G3G4	SU					
Leptoceridae	*Oecetis daytona*	A Caddisfly	4) Data Deficient	G3	SU					
Hydroptilidae	*Hydroptila molsonae*	Molson's Microcaddisfly	4) Data Deficient	G2	SU					
Hydroptilidae	*Hydroptila cretosa*	A Caddisfly	4) Data Deficient	G1G2	SU					
Hydroptilidae	*Hydroptila holzenthali*	A Caddisfly	4) Data Deficient	G1	SU					

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Hydroptilidae	*Hydroptila homochitta*	A Caddisfly	4) Data Deficient	G1	SU					
Hydroptilidae	*Hydroptila poirrieri*	A Caddisfly	4) Data Deficient	G2	SU					
Hydroptilidae	*Orthotrichia dentata*	Dentate Orthotrichian Microcaddisfly	4) Data Deficient	G2G3	SU					
Hydroptilidae	*Neotrichia alabamensis*	A Caddisfly	4) Data Deficient	G3G4	SU					
Hydroptilidae	*Hydroptila tusculum*	A Caddisfly	4) Data Deficient	G3G4	SU					
Leptoceridae	*Setodes dixiensis*	A Caddisfly	4) Data Deficient	G3G4	SU					
Fishes										
Petromyzontidae	*Ichthyomyzon castaneus*	Chestnut Lamprey	3) Moderate	G4	S3				LC - Least Concern	
Petromyzontidae	*Ichthyomyzon unicuspis*	Silver Lamprey	2) High	G5	S1				LC - Least Concern	
Petromyzontidae	*Lethenteron appendix*	American Brook Lamprey	2) High	G4	S2			2) High	LC - Least Concern	
Cottidae	*Cottus carolinae*	Banded Sculpin	3) Moderate	G5	S3				LC - Least Concern	
Acipenseridae	*Acipenser fulvescens*	Lake Sturgeon	2) High	G3G4	S2			2) High	EN - Endangered	
Acipenseridae	*Acipenser desotoi*	Gulf Sturgeon	1) Highest	G3T2	S1	LT	LE	2) High	VU - Vulnerable (species level)	
Acipenseridae	*Scaphirhynchus albus*	Pallid Sturgeon	1) Highest	G2	S1	LE	LE	1) Very High	CR -Critically Endangered	
Acipenseridae	*Scaphirhynchus platorynchus*	Shovelnose Sturgeon	3) Moderate	G4	S3	LT	LE	2) High	VU - Vulnerable	
Acipenseridae	*Scaphirhynchus suttkusi*	Alabama Sturgeon	4) Data Deficient	G1	SX	LE	LE	1) Very High	CR -Critically Endangered	
Polyodontidae	*Polyodon spathula*	Paddlefish	3) Moderate	G4	S3				VU - Vulnerable	
Lepisosteidae	*Atractosteus spatula*	Alligator Gar	2) High	G3G4	S2			3) Moderate	LC - Least Concern	
Anguillidae	*Anguilla rostrata*	American Eel	4) Data Deficient	G4	SU			1) Very High	EN - Endangered	

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Alosidae	*Alosa alabamae*	Alabama Shad	1) Highest	G2G3	S1	PT		1) Very High	NT - Near Threatened	
Alosidae	*Alosa chrysochloris*	Skipjack Herring	4) Data Deficient	SU	G5				LC - Least Concern	
Leuciscidae	*Clinostomus funduloides*	Rosyside Dace	3) Moderate	G5	S3				LC - Least Concern	
Leuciscidae	*Hybopsis amnis*	Pallid Shiner	3) Moderate	G4	S3			2) High	LC - Least Concern	
Leuciscidae	*Miniellus boops*	Bigeye Shiner	3) Moderate	G5	S2		LE (Proposed removal)		LC - Least Concern	
Leuciscidae	*Alburnops candidus*	Silverside Shiner	2) High	G4	S2			2) High	LC - Least Concern	
Leuciscidae	*Alburnops chalybaeus*	Ironcolor Shiner	2) High	G4	S1		LE	2) High	LC - Least Concern	
Leuciscidae	*Alburnops edwardraneyi*	Fluvial Shiner	1) Highest	G4	S1			1) Very High	LC - Least Concern	
Leuciscidae	*Miniellus sabinae*	Sabine Shiner	2) High	G4	S2			3) Moderate	LC - Least Concern	
Leuciscidae	*Miniellus melanostomus*	Blackmouth Shiner	1) Highest	G2	S1			1) Very High	VU - Vulnerable	
Leuciscidae	*Notropis micropteryx*	Highland Shiner	3) Moderate	G5	S3				LC - Least Concern	
Leuciscidae	*Phenacobius mirabilis*	Suckermouth Minnow	4) Data Deficient	G5	SH		LE		LC - Least Concern	
Leuciscidae	*Chrosomus erythrogaster*	Southern Redbelly Dace	2) High	G5	S2		LE		LC - Least Concern	
Leuciscidae	*Rhinichthys obtusus*	Blacknose Dace	2) High	G5	S1				LC - Least Concern	
Leuciscidae	*Cyprinella callistia*	Alabama Shiner	3) Moderate	G5	S3				LC - Least Concern	
Leuciscidae	*Cyprinella galactura*	Whitetail Shiner	2) High	G5	S1				LC - Least Concern	
Leuciscidae	*Cyprinella spiloptera*	Spotfin Shiner	3) Moderate	G5	S3				LC - Least Concern	
Leuciscidae	*Cyprinella whipplei*	Steelcolor Shiner	3) Moderate	G5	S3				LC - Least Concern	
Leuciscidae	*Lythrurus fasciolaris*	Scarlet Shiner	3) Moderate	G5	S3				LC - Least Concern	
Leuciscidae	*Macrhybopsis meeki*	Sicklefin Chub	1) Highest	G3	S1			2) High	LC - Least Concern	

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Leuciscidae	*Platygobio gracilis*	Flathead Chub	4) Data Deficient	G5	SH			3) Moderate	LC - Least Concern	
Leuciscidae	*Pteronotropis welaka*	Bluenose Shiner	2) High	G3G4	S2			2) High	VU - Vulnerable	
Catostomidae	*Catostomus commersonii*	White Sucker	4) Data Deficient	G5	SX					
Catostomidae	*Cycleptus elongatus*	Blue Sucker	3) Moderate	G3G4	S3			2) High	LC - Least Concern	
Catostomidae	*Cycleptus meridionalis*	Southeastern Blue Sucker	3) Moderate	G3G4	S3			2) High	LC - Least Concern	
Catostomidae	*Ictiobus niger*	Black Buffalo	3) Moderate	G5	S3				LC - Least Concern	
Catostomidae	*Moxostoma anisurum*	Silver Redhorse	2) High	G5	S1				LC - Least Concern	
Catostomidae	*Moxostoma carinatum*	River Redhorse	3) Moderate	G4	S3				LC - Least Concern	
Catostomidae	*Moxostoma duquesnei*	Black Redhorse	3) Moderate	G5	S1				LC - Least Concern	
Catostomidae	*Moxostoma breviceps*	Smallmouth Redhorse	2) High	G5	S1				LC - Least Concern	
Ictaluridae	*Noturus flavus*	Stonecat	2) High	G5	S2				LC - Least Concern	
Ictaluridae	*Noturus munitus*	Frecklebelly Madtom	3) Moderate	G3	S3		LE (Proposed removal)	2) High	VU - Vulnerable	
Ictaluridae	*Noturus exilis*	Slender Madtom	4) Data Deficient	G5	S1		LE		LC - Least Concern	
Ictaluridae	*Noturus gladiator*	Piebald Madtom	1) Highest	G3	S1	PT	LE	1) Very High	NT - Near Threatened	
Fundulidae	*Fundulus jenkinsi*	Saltmarsh Topminnow	2) High	G3	S3			2) High	VU - Vulnerable	
Fundulidae	*Fundulus dispar*	Northern Starhead Topminnow	3) Moderate	G4	S3			3) Moderate	LC - Least Concern	
Fundulidae	*Fundulus euryzonus*	Broadstripe Topminnow	2) High	G3	S2			3) Moderate	VU - Vulnerable	
Fundulidae	*Fundulus blairae*	Western Starhead Topminnow	3) Moderate	G4	S3				LC - Least Concern	
Fundulidae	*Leptolucania ommata*	Pygmy Killifish	4) Data Deficient	G5	SH				LC - Least Concern	

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Poeciliidae	*Heterandria formosa*	Least Killifish	3) Moderate	G5	S3				LC - Least Concern	
Centrarchidae	*Ambloplites rupestris*	Rock Bass	2) High	G5	S1				LC - Least Concern	
Centrarchidae	*Enneacanthus gloriosus*	Bluespotted Sunfish	3) Moderate	G5	S3				LC - Least Concern	
Percidae	*Crystallaria asprella*	Crystal Darter	3) Moderate	G3	S3		LE (Proposed removal)	2) High	VU - Vulnerable	
Percidae	*Ammocrypta clara*	Western Sand Darter	4) Data Deficient	G3	SH			2) High	VU - Vulnerable	
Percidae	*Etheostoma asprigene*	Mud Darter	3) Moderate	G4	S3				LC - Least Concern	
Percidae	*Etheostoma raneyi*	Yazoo Darter	1) Highest	G2	S1			2) High	NT - Near Threatened	
Percidae	*Etheostoma blennioides*	Greenside Darter	3) Moderate	G5	S3		LE (Proposed removal)		LC - Least Concern	
Percidae	*Etheostoma duryi*	Black Darter	3) Moderate	G4	S3			2) High	LC - Least Concern	
Percidae	*Etheostoma flabellare*	Fantail Darter	3) Moderate	G5	S2				LC - Least Concern	
Percidae	*Etheostoma jessiae*	Blueside Darter	3) Moderate	G4	S3			3) Moderate	LC - Least Concern	
Percidae	*Etheostoma kennicotti*	Stripetail Darter	3) Moderate	G4G5	S2				LC - Least Concern	
Percidae	*Nothonotus rubrus*	Bayou Darter	1) Highest	G1	S1	LT	LE	3) Moderate	EN - Endangered	
Percidae	*Nothonotus rufilineatus*	Redline Darter	3) Moderate	G5	S3				LC - Least Concern	
Percidae	*Etheostoma rupestre*	Rock Darter	3) Moderate	G4	S3			3) Moderate	LC - Least Concern	
Percidae	*Etheostoma simoterum*	Snubnose Darter	2) High	G3	S2				LC - Least Concern	
Percidae	*Etheostoma zonifer*	Backwater Darter	2) High	G4	S1			2) High	LC - Least Concern	
Percidae	*Etheostoma faulkneri*	Yoknapatawpha Darter	1) Highest	G2	S1				LC - Least Concern	
Percidae	*Etheostoma nigripinne*	Blackfin Darter	2) High	G4	S3				LC - Least Concern	

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Percidae	*Etheostoma lachneri*	Tombigbee Darter	3) Moderate	G4	S3				LC - Least Concern	
Percidae	*Percina evides*	Gilt Darter	2) High	G4	S2				LC - Least Concern	
Percidae	*Percina lenticula*	Freckled Darter	1) Highest	G2	S1			2) High	NT - Near Threatened	
Percidae	*Percina phoxocephala*	Slenderhead Darter	2) High	G5	S1		LE		LC - Least Concern	
Percidae	*Percina uranidea*	Stargazing Darter	4) Data Deficient	G3	SU			2) High	VU - Vulnerable	
Percidae	*Percina aurora*	Pearl Darter	1) Highest	G1	S1	LT	LE	1) Very High	EN - Endangered	
Percidae	*Percina kathae*	Mobile Logperch	3) Moderate	G4	S3				LC - Least Concern	
Percidae	*Stizostedion canadense*	Sauger	2) High	G5	S2				LC - Least Concern	
Percidae	*Stizostedion sp. cf.vitreum*	Southern Walleye	4) Data Deficient	G3	S1			1) Very High	EN - Endangered	
Marine Fishes										
Megalopidae	*Megalops atlanticus*	Tarpon	4) Data Deficient	G5	S3			2) High	DD - Data Deficient	
Syngnathidae	*Hippocampus erectus*	Lined Seahorse	4) Data Deficient	GNR	SU			2) High	VU - Vulnerable	
Sparidae	*Archosargus rhomboidalis*	Western Atlantic Seabream	4) Data Deficient	GNR	SP				LC - Least Concern	
Epinephelidae	*Epinephelus itajara*	Atlantic Goliath Grouper	4) Data Deficient	G3	SU			1) Very High	EN - Endangered	
Odontaspididae	*Carcharias taurus*	Sand Tiger Shark	4) Data Deficient	G3	SP				CR -Critically Endangered	
Lamnidae	*Isurus oxyrinchus*	Shortfin Mako Shark	4) Data Deficient	GNR	SU			2) High	EN - Endangered	
Carcharhinidae	*Carcharhinus acronotus*	Blacknose Shark	3) Moderate	GNR	S3				EN - Endangered	
Carcharhinidae	*Carcharhinus plumbeus*	Sandbar Shark	2) High	G4	S2			2) High	EN - Endangered	
Carcharhinidae	*Carcharhinus porosus*	Smalltail Shark	4) Data Deficient	GNR	SU	PT			CR -Critically Endangered	

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Carcharhinidae	*Negaprion brevirostris*	Lemon Shark	2) High	G3	S2				VU - Vulnerable	
Sphyrnidae	*Sphyrna lewini*	Scalloped Hammerhead	2) High	G4	S2	LE	LE		CR -Critically Endangered	
Sphyrnidae	*Sphyrna mokarran*	Great Hammerhead	2) High	G3	S2				CR -Critically Endangered	
Pristidae	*Pristis pectinata*	Smalltooth Sawfish	1) Highest	G2	S1	LE			CR -Critically Endangered	
Pristidae	*Pristis pristis*	Largetooth Sawfish	4) Data Deficient	G2	SH	LE	LE		CR -Critically Endangered	
Narcinidae	*Narcine bancroftii*	Caribbean Electric Ray	2) High	GNR	S2			1) Very High	LC - Least Concern	
Myliobatiade	*Aetobatus narinari*	Whitespotted Eagle Ray	2) High	G4	S2	PT			EN - Endangered	
Rhinopteridae	*Rhinoptera brasiliensis*	Brazilian Cownose Ray	3) Moderate	GNR	S3				VU - Vulnerable	
Myliobatidae	*Manta birostris*	Giant Manta Ray	4) Data Deficient	G3	SP	LT	LE	2) High	EN - Endangered	
Mobulidae	*Mobula hypostoma*	Atlantic Pygmy Devil Ray	4) Data Deficient	GNR	SP				EN - Endangered	
Mobulidae	*Mobula tarapacana*	Sicklefin Devil Ray	4) Data Deficient	GNR	SP				EN - Endangered	
Amphibians										
Plethodontidae	*Desmognathus pascagoula*	Pascagoula Dusky Salamander	4) Data Deficient	?	SU					
Ambystomatidae	*Ambystoma texanum*	Smallmouth Salamander	3) Moderate	G5	S3				LC - Least Concern	
Ambystomatidae	*Ambystoma tigrinum*	Tiger Salamander	4) Data Deficient	G5	S1				LC - Least Concern	
Amphiumidae	*Amphiuma pholeter*	One-toed Amphiuma	1) Highest	G3	S1		LE	2) High	NT - Near Threatened	
Cryptobranchidae	*Cryptobranchus alleganiensis*	Hellbender	1) Highest	G3	S1	PP	LE	1) Very High	VU - Vulnerable	
Plethodontidae	*Aneides aeneus*	Green Salamander	2) High	G3G4	S1		LE	2) High	NT - Near Threatened	

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Plethodontidae	*Desmognathus valentinei*	Valentine's Southern Dusky Salamander	4) Data Deficient	GNR	S3			3) Moderate	LC - Least Concern	
Plethodontidae	*Eurycea longicauda longicauda*	Longtail Salamander	2) High	G5T5	S2				LC - Least Concern	
Plethodontidae	*Eurycea lucifuga*	Cave Salamander	2) High	G5	S1		LE		LC - Least Concern	
Plethodontidae	*Eurycea sphagnicola*	Bog Dwarf Salamander	4) Data Deficient	G1G2	SU			2) High	LC - Least Concern	
Plethodontidae	*Gyrinophilus porphyriticus*	Spring Salamander	2) High	G5	S1		LE		LC - Least Concern	
Plethodontidae	*Hemidactylium scutatum*	Four-toed Salamander	2) High	G5	S2				LC - Least Concern	
Plethodontidae	*Plethodon ventralis*	Southern Zigzag Salamander	2) High	G4	S2			3) Moderate	LC - Least Concern	
Plethodontidae	*Plethodon websteri clade A*	Webster's Salamander Clade A	2) High	G3G4	S2			2) High	LC - Least Concern	
Plethodontidae	*Plethodon websteri clade B*	Webster's Salamander Clade B	2) High	G3G4	S2			2) High	LC - Least Concern	
Plethodontidae	*Pseudotriton montanus*	Mud Salamander	2) High	G5	S2			3) Moderate	LC - Least Concern	
Plethodontidae	*Pseudotriton ruber*	Red Salamander	3) Moderate	G5	S3				LC - Least Concern	
Proteidae	*Necturus maculosus*	Common Mudpuppy	4) Data Deficient	G5	SU				LC - Least Concern	
Hylidae	*Pseudacris ornata*	Ornate Chorus Frog	1) Highest	G4	S1			2) High	LC - Least Concern	
Hylidae	*Pseudacris collinsorum*	Collinses' Mountain Chorus Frog	4) Data Deficient	GNR	S2				LC - Least Concern	
Ranidae	*Lithobates areolatus*	Crawfish Frog	2) High	G4	S2			2) High	LC - Least Concern	
Ranidae	*Lithobates heckscheri*	River Frog	1) Highest	G5	S1			2) High	LC - Least concern	
Ranidae	*Lithobates sevosus*	Dusky Gopher Frog	1) Highest	G1	S1	LE	LE	1) Very High	CR -Critically endangered	

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Reptiles										
Chelydridae	*Macrochelys temminckii*	Alligator Snapping Turtle	1) Highest	G3	S3	PP		2) High	VU - Vulnerable	
Emydidae	*Deirochelys reticularia miaria*	Western Chicken Turtle	1) Highest	G5T5	S1	PT		2) High		
Emydidae	*Deirochelys reticularia reticularia*	Eastern Chicken Turtle	1) Data Deficient	G5T5	S3					
Emydidae	*Graptemys flavimaculata*	Yellow-blotched Map Turtle	2) High	G2G3	S2	LT	LE	1) Very High	VU - Vulnerable	
Emydidae	*Graptemys geographica*	Common Map Turtle	2) High	G5	S1				LC - Least Concern	
Emydidae	*Graptemys nigrinoda*	Black-knobbed Map Turtle	3) Moderate	G3	S2		LE	2) High	LC - Least Concern	
Emydidae	*Graptemys oculifera*	Ringed Map Turtle	2) High	G2	S2	LT	LE	2) High	VU - Vulnerable	
Emydidae	*Graptemys pulchra*	Alabama Map Turtle	1) Highest	G4	S2	LT	LE	3) Moderate	NT - Near Threatened	
Emydidae	*Graptemys gibbonsi*	Pascagoula Map Turtle	2) High	G2G3	S2	LT	LE	1) Very High	EN - Endangered	
Emydidae	*Graptemys pearlensis*	Pearl River Map Turtle	1) Highest	G2G3	S1	LT	LE	2) High	EN - Endangered	
Emydidae	*Malaclemys terrapin pileata*	Mississippi Diamondback Terrapin	1) Highest	G4T3	S2			2) High	VU - Vulnerable	
Emydidae	*Pseudemys alabamensis*	AlabamaRed-bellied Turtle	1) Highest	G1	S1	LE	LE	1) Very High	EN - Endangered	
Testudinidae	*Gopherus polyphemus*	Gopher Tortoise	1) Highest	G3	S1	LT	LE	2) High	VU - Vulnerable	
Anguidae	*Ophisaurus attenuatus*	Slender Glass Lizard	2) High	G5	S2			2) High	LC - Least Concern	
Anguidae	*Ophisaurus mimicus*	Mimic Glass Lizard	4) Data Deficient	G3	SH			2) High	LC - Least Concern	
Scincidae	*Plestiodon anthracinus*	Coal Skink	2) High	G5	S3S4			2) High	LC - Least Concern	
Colubridae	*Drymarchon couperi*	Eastern Indigo Snake	4) Data Deficient	G3	SX	LT	LE	1) Very High	LC - Least Concern	
Colubridae	*Farancia erytrogramma*	Rainbow Snake	2) High	G4	S2		LE	2) High	LC - Least Concern	

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Colubridae	*Heterodon simus*	Southern Hognose Snake	4) Data Deficient	G2	SH		LE	2) High	VU - Vulnerable	
Colubridae	*Lampropeltis calligaster calligaster*	Prairie Kingsnake	2) High	G5	S3				LC - Least Concern (species level)	
Colubridae	*Lampropeltis calligaster rhombomaculata*	Mole Kingsnake	2) High	G5	S3				LC - Least Concern (species level)	
Colubridae	*Lampropeltis triangulum*	Red Milk Snake	2) High	G5	S3				LC - Least Concern	
Colubridae	*Coluber flagellum flagellum*	Eastern Coachwhip	3) Moderate	G5T5	S3				LC - Least Concern (species level)	
Colubridae	*Nerodia clarkii clarkii*	Gulf Salt Marsh Snake	2) High	G4T3	S2			3) Moderate	LC - Least Concern (species level)	
Colubridae	*Pituophis melanoleucus lodingi*	Black Pine Snake	1) Highest	G4T1?	S2	LT	LE	2) High	LC - Least Concern (species level)	
Colubridae	*Pituophis melanoleucus melanoleucus*	Northern Pine Snake	4) Data Deficient	G4T4	SU			2) High	LC - Least Concern (species level)	
Colubridae	*Liodytes rigida deltae*	Delta Crayfish Snake	2) High	G5T4Q	S2				LC - Least Concern (species level)	
Colubridae	*Liodytes rigida sinicola*	Gulf Crayfish Snake	3) Moderate	G5T5	S3				LC - Least Concern (species level)	
Colubridae	*Regina septemvittata*	Queen Snake	2) High	G5	S2				LC - Least Concern	
Colubridae	*Rhadinaea flavilata*	Pine Woods Snake	2) High	G4	S2			2) High	LC - Least Concern	
Elapidae	*Micrurus fulvius*	Eastern Coral Snake	2) High	G5	S3			2) High	LC - Least Concern	
Viperidae	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	2) High	G3	S3			2) High	LC - Least Concern	

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Marine Reptiles										
Cheloniidae	*Caretta caretta*	Loggerhead Sea Turtle	2) High	G3	S1B	LT	LE	2) High	VU - Vulnerable	
Cheloniidae	*Chelonia mydas*	Green Sea Turtle	3) Moderate	G3	SNA	LT	LE	2) High	EN - Endangered	
Cheloniidae	*Eretmochelys imbricata*	Hawksbill Sea Turtle	4) Data Deficient	G3	SNA	LE	LE	1) Very High	CR -Critically Endangered	
Cheloniidae	*Lepidochelys kempii*	Kemp's Ridley Sea Turtle	1) Highest	G1	S1N,S 1B	LE	LE	1) Very High	CR -Critically Endangered	
Dermochelydae	*Dermochelys coriacea*	Atlantic Leatherback Sea Turtle	3) Moderate	G2	SNA	LE	LE	1)Very High	VU - Vulnerable	
Birds										
Ardeidae	*Botaurus lentiginosus*	American Bittern	2) High	G5	S1N				LC - Least Concern	
Ardeidae	*Ixobrychus exilis*	Least Bittern	2) High	G4G5	S2B			3) Moderate	LC - Least Concern	
Ardeidae	*Egretta caerulea*	Little Blue Heron	2) High	G5	S2B,S 2N			3) Moderate	LC - Least Concern	
Ardeidae	*Egretta tricolor*	Tricolored Heron	3) Moderate	G5	S2				LC - Least Concern	
Ardeidae	*Egretta rufescens*	Reddish Egret	2) High	G4	S2N			2) High	NT - Near Threatened	Yellow-R
Ardeidae	*Nycticorax nycticorax*	Black-crowned Night-Heron	3) Moderate	G5	S2B,S 4N				LC - Least Concern	
Ardeidae	*Nyctanassa violacea*	Yellow-crowned Night-Heron	3) Moderate	G5	S4B,S 2N			3) Moderate	LC - Least Concern	
Threskiornithidae	*Platalea ajaja*	Roseate Spoonbill	1) Highest	G5	S1B,S 2N			2) High	LC - Least Concern	
Ciconiidae	*Mycteria americana*	Wood Stork	1) Highest	G4	S2N	LT	LE	2) High	LC - Least Concern	
Anatidae	*Anas fulvigula*	Mottled Duck	1) Highest	G4	S2			2) High	LC - Least Concern	Red
Anatidae	*Anas acuta*	Northern Pintail	3) Moderate	G5	S4N				LC - Least Concern	

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Anatidae	*Aythya affinis*	Lesser Scaup	3) Moderate	G5	S4N				LC - Least Concern	
Accipitridae	*Elanoides forficatus*	Swallow-tailed Kite	1) Highest	G5	S2B		LE	1) Very High	LC - Least Concern	
Accipitridae	*Accipiter striatus*	Sharp-shinned Hawk (breeding population)	2) High	G5	S1?B, S3N				LC - Least Concern	
Accipitridae	*Aquila chrysaetos*	Golden Eagle	2) High	G5	S1N				LC - Least Concern	
Falconidae	*Falco sparverius paulus*	Southeastern American Kestrel	1) Highest	G5T4	S2			2) High	LC - Least Concern (species level)	
Odontophoridae	*Colinus virginianus*	Northern Bobwhite	2) High	G4G5	S3			2) High	NT - Near Threatened	CBSD
Rallidae	*Coturnicops noveboracensis*	Yellow Rail	2) High	G4	S2N			2) High	LC - Least Concern	Yellow-R
Rallidae	*Laterallus jamaicensis*	Black Rail	1) Highest	G3	S1	LT	LE	1) Very High	EN - Endangered	Red
Rallidae	*Rallus elegans*	King Rail	2) High	G4	S2			2) High	NT - Near Threatened	Yellow-D
Rallidae	*Porphyrio martinicus*	Purple Gallinule	3) Moderate	G5	S2B				LC - Least Concern	
Gruidae	*Antigone canadensis pulla*	Mississippi Sandhill Crane	1) Highest	G5T1	S1	LE	LE	2) High	LC - Least Concern (species level)	
Charadriidae	*Pluvialis dominica*	American Golden-Plover	2) High	G5	S3M				LC - Least Concern	Yellow-D
Charadriidae	*Charadrius nivosus*	Snowy Plover	1) Highest	G3	S2		LE	2) High	NT - Near Threatened	Yellow-D
Charadriidae	*Charadrius wilsonia*	Wilson's Plover	1) Highest	G5	S1			2) High	LC - Least Concern	Yellow-R
Charadriidae	*Charadrius melodus*	Piping Plover	1) Highest	G3	S2N	LT	LE	2) High	NT - Near Threatened	Red
Haematopodidae	*Haematopus palliatus*	American Oystercatcher	1) Highest	G5	S2			2) High	LC - Least Concern	Yellow-R
Scolopacidae	*Tringa flavipes*	Lesser Yellowlegs	2) High	G5	S4N				LC - Least Concern	Yellow-D
Scolopacidae	*Tringa semipalmata*	Willet	3) Moderate	G5	S4B,S 4N			2) High	LC - Least Concern	Yellow-D
Scolopacidae	*Limosa fedoa*	Marbled Godwit	2) High	G5	S2N				LC - Least Concern	Yellow-D

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Scolopacidae	*Calidris canutus*	Red Knot	1) Highest	G4	S2N	LT	LE	2) High	NT - Near Threatened	Yellow-D
Scolopacidae	*Calidris pusilla*	Semipalmated Sandpiper	2) High	G5	S4M				NT - Near Threatened	Yellow-D
Scolopacidae	*Calidris melanotos*	Pectoral Sandpiper	2) High	G5	S4M				LC - Least Concern	Yellow-D
Scolopacidae	*Calidris subruficollis*	Buff-breasted Sandpiper	2) High	G4	S2M				NT - Near Threatened	
Scolopacidae	*Limnodromus griseus*	Short-billed Dowitcher	3) Moderate	G5	S5N				LC - Least Concern	Yellow-D
Scolopacidae	*Scolopax minor*	American Woodcock	3) Moderate	G5	S3?B, S4N			3) Moderate	LC - Least Concern	
Laridae	*Gelochelidon nilotica*	Gull-billed Tern	1) Highest	G5	S1B			2) High	LC - Least Concern	
Laridae	*Thalasseus sandvicensis*	Sandwich Tern	1) Highest	G5	S2B			2) High	LC - Least Concern	
Laridae	*Sterna hirundo*	Common Tern (breeding population)	1) Highest	G5	S1B				LC - Least Concern	CBSD
Laridae	*Sternula antillarum athalassos*	Interior Least Tern	2) High	G4T3	S3B		LE (Proposed removal)	2) High	LC - Least Concern (species level)	Yellow-D (species level)
Laridae	*Sternula antillarum antillarum*	Coastal Least Tern	1) Highest	G4	S3B			2) High	LC - Least Concern (species level)	Yellow-D (species level)
Laridae	*Thalasseus maximus*	Royal Tern	2) High	G5	S1B,S 4N			3) Moderate	LC - Least Concern	
Laridae	*Chlidonias niger*	Black Tern	3) Moderate	G4G5	S3M				LC - Least Concern	CBSD
Laridae	*Rynchops niger*	Black Skimmer	1) Highest	G5	S2B,S 3N			2) High	LC - Least Concern	Yellow-D
Columbidae	*Columbina passerina*	Common Ground Dove	3) Moderate	G5	S2				LC - Least Concern	
Cuculidae	*Coccyzus americanus*	Yellow-billed Cuckoo	3) Moderate	G5	S5B			2) High	LC - Least Concern	CBSD
Strigidae	*Asio flammeus*	Short-eared Owl	3) Moderate	G5	S2N				LC - Least Concern	CBSD
Caprimulgidae	*Chordeiles minor*	Common Nighthawk	3) Moderate	G5	S4B				LC - Least Concern	CBSD
Caprimulgidae	*Antrostomus carolinensis*	Chuck-will's-widow	3) Moderate	G5	S4B			3) Moderate	NT - Near Threatened	CBSD

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Caprimulgidae	*Antrostomus vociferus*	EasternWhip-poor-will	1) Highest	G5	S2?B			2) High	NT - Near Threatened	Yellow-D
Apodidae	*Chaetura pelagica*	Chimney Swift	2) High	G4G5	S5B			3) Moderate	VU - Vulnerable	Yellow-D
Picidae	*Melanerpes erythrocephalus*	Red-headed Woodpecker	3) Moderate	G5	S4				LC - Least Concern	Yellow-D
Picidae	*Dryobates borealis*	Red-cockaded Woodpecker	1) Highest	G3	S1	LT	LE	1) Very High	NT - Near Threatened	Red
Picidae	*Campephilus principalis*	Ivory-billed Woodpecker	1) Highest	GX	SX	LE	LE			
Hirundinidae	*Riparia riparia*	Bank Swallow (breeding population)	2) High	G5	S1?B				LC - Least Concern	CBSD
Sittidae	*Sitta pusilla*	Brown-headed Nuthatch	3) Moderate	G4	S3			3) Moderate	LC - Least Concern	
Troglodytidae	*Thryomanes bewickii*	Bewick's Wren	1) Highest	G5T2(T. b.bewickii)	S1		LE		LC - Least Concern	
Troglodytidae	*Cistothorus palustris marianae*	Marian's Marsh Wren	2) High	G5T3	S3			2) High	LC - Least Concern (species level)	
Turdidae	*Hylocichla mustelina*	Wood Thrush	2) High	G4	S5B			3) Moderate	LC - Least Concern	Yellow-D
Laniidae	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	2) High	G4T4	S2			2) High	NT - Near Threatened (species level)	CBSD (species level)
Laniidae	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	3) Moderate	G4T3	S3N			2) High	NT - Near Threatened (species level)	CBSD (species level)
Vireonidae	*Vireo gilvus*	Warbling Vireo	2) High	G5	S1B				LC - Least Concern	
Parulidae	*Vermivora chrysoptera*	Golden-winged Warbler	1) Highest	G4	S2M			2) High	NT - Near Threatened	Red
Parulidae	*Setophaga discolor*	Prairie Warbler	2) High	G5	S4B			3) Moderate	LC - Least Concern	Yellow-D
Parulidae	*Setophaga cerulea*	Cerulean Warbler	2) High	G4	S2M			2) High	NT - Near Threatened	Yellow-D
Parulidae	*Protonotaria citrea*	Prothonotary Warbler	2) High	G5	S5B			3) Moderate	LC - Least Concern	Yellow-D
Parulidae	*Helmitheros vermivorum*	Worm-eating Warbler	2) High	G5	S2B			3) Moderate	LC - Least Concern	

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Parulidae	*Limnothlypis swainsonii*	Swainson's Warbler	2) High	G4	S3B			2) High	LC - Least Concern	
Parulidae	*Seiurus aurocapilla*	Ovenbird (breeding population)	2) High	G5	S1B				LC - Least Concern	
Parulidae	*Parkesia motacilla*	Louisiana Waterthrush	2) High	G5	S2S3 B			3) Moderate	LC - Least Concern	
Parulidae	*Geothlypis formosa*	Kentucky Warbler	2) High	G5	S4B			3) Moderate	LC - Least Concern	Yellow-D
Cardinalidae	*Piranga olivacea*	Scarlet Tanager (breeding population)	3) Moderate	G5	S2?B				LC - Least Concern	
Cardinalidae	*Passerina ciris*	Painted Bunting	2) High	G5	S3B			2) High	LC - Least Concern	
Passerellidae	*Peucaea aestivalis*	Bachman's Sparrow	2) High	G3	S3			1) Very High	NT - Near Threatened	Red
Passerellidae	*Spizella pusilla*	Field Sparrow	3) Moderate	G5	S4B,S 5N				LC - Least Concern	CBSD
Passerellidae	*Ammodramus savannarum*	Grasshopper Sparrow	2) High	G5	S3B,S 3N			2) High	LC - Least Concern	CBSD
Passerellidae	*Centronyx henslowii*	Henslow's Sparrow	1) Highest	G4	S2N			2) High	LC - Least Concern	Yellow-D
Passerellidae	*Ammospiza leconteii*	LeConte's Sparrow	2) High	G5	S3N			2) High	LC - Least Concern	Yellow-D
Passerellidae	*Ammospiza maritima*	Seaside Sparrow	1) Highest	G4	S2			2) High	LC - Least Concern	Yellow-R
Passerellidae	*Ammospiza nelsoni*	Nelson's Sparrow	1) Highest	G5	S2N			2) High	LC - Least Concern	
Icteridae	*Sturnella magna*	Eastern Meadowlark	3) Moderate	G5	S4			2) High	NT - Near Threatened	CBSD
Icteridae	*Euphagus carolinus*	Rusty Blackbird	2) High	G4	S2N			2) High	VU - Vulnerable	CBSD
Icteridae	*Quiscalus quiscula*	Common Grackle	3) Moderate	G5	S5B,S 5N				NT - Near Threatened	CBSD

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Mammals										
Soricidae	*Sorex longirostris*	Southeastern Shrew	2) High	G5	S2				LC - Least Concern	
Vespertilionidae	*Myotis austroriparius*	Southeastern Myotis	3) Moderate	G4	S3			3) Moderate	LC - Least Concern	
Vespertilionidae	*Myotis grisescens*	Gray Bat	1) Highest	G3G4	S1B	LE	LE	3) Moderate	VU - Vulnerable	
Vespertilionidae	*Myotis sodalis*	Indiana Bat	1) Highest	G2	S1B	LE	LE	1) Very High	NT - Near Threatened	
Vespertilionidae	*Myotis septentrionalis*	NorthernLong-eared Bat	1) Highest	G2G3	S1	LE	LE	1) Very High	NT - Near Threatened	
Vespertilionidae	*Lasionycteris noctivagans*	Silver-haired Bat	3) Moderate	G3G4	S3				LC - Least Concern	
Vespertilionidae	*Perimyotis subflavus*	Tricolored Bat	2) High	G3G4	S3	PP		2) High	VU - Vulnerable	
Vespertilionidae	*Lasiurus cinereus*	Hoary Bat	3) Moderate	G3G4	S3			2) High	LC - Least Concern	
Vespertilionidae	*Lasiurus intermedius*	Northern Yellow Bat	3) Moderate	G5	S2			2) High	LC - Least Concern	
Vespertilionidae	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	2) High	G3G4	S3			2) High	LC - Least Concern	
Cricetidae	*Peromyscus polionotus*	Oldfield Mouse	2) High	G5	S2	(PS)		1) Very High	LC - Least Concern	
Dipodidae	*Zapus hudsonius*	Meadow Jumping Mouse	2) High	G5	S1	(PS)			LC - Least Concern	
Canidae	*Canis rufus*	Red Wolf	4) Data Deficient	G1Q	SX	LE	LE	1) Very High	CR -Critically Endangered	
Ursidae	*Ursus americanus*	Black Bear	2) High	G5	S2		LE		LC - Least Concern	
Ursidae	*Ursus americanus luteolus*	Louisiana Black Bear	1) Highest	G5T2	S2		LE	3) Moderate	LC - Least Concern	
Mustelidae	*Neogale frenata*	Long-tailed Weasel	3) Moderate	G5	S3				LC - Least Concern	
Mephitidae	*Spilogale putorius*	Eastern Spotted Skunk	1) Highest	G4	S1			2) High	VU - Vulnerable	
Felidae	*Puma concolor coryi*	Florida Panther	4) Data Deficient	G5T1	SX	LE	LE	1) Very High	LC - Least Concern	

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Marine Mammals										
Trichechidae	*Trichechus manatus latirostris*	Florida Manatee	1) Highest	G2G3	S1	LT	LE	2) High	VU - Vulnerable	
Plants										
Anthocerotaceae	*Sphaerosporoceros adscendens*	a hornwort	1) Highest	G3?	S1					
Anthocerotaceae	*Anthoceros punctatus*	a hornwort	2) High	G2G3	S2					
Lejeuneaceae	*Cololejeunea setiloba*	a liverwort	1) Highest	G2?	S1					
Cephaloziellaceae	*Cylindrocolea rhizantha*	a liverwort	2) High	G3?	S2					
Lejeuneaceae	*Drepanolejeunea mosenii*	a liverwort	1) Highest	G1	S1					
Jubulaceae	*Frullania donnellii*	a liverwort	1) Highest	G3?	S1					
Lejeuneaceae	*Lejeunea bermudiana*	a liverwort	1) Highest	G3G4	S1					
Lejeuneaceae	*Lejeunea cladogyna*	a liverwort	3) Moderate	G3?	S3					
Lejeuneaceae	*Lejeunea floridana*	a liverwort	2) High	G2G3	S2					
Lejeuneaceae	*Lejeunea laetivirens*	a liverwort	2) High	G5	S2					
Metzgeriaceae	*Metzgeria uncigera*	a liverwort	3) Moderate	G3	S3					
Plagiochilaceae	*Plagiochila floridana*	Florida Leafy Liverwort	2) High	G2?	S2					
Plagiochilaceae	*Plagiochila invisa*	a liverwort	1) Highest	G1	S1					
Plagiochilaceae	*Plagiochila virginica* var. *virginica*	a liverwort	1) Highest	G4T3	S1					
Radulaceae	*Radula sullivantii*	a liverwort	3) Moderate	G3	S3					
Ricciaceae	*Riccia warnstorfii*	a liverwort	1) Highest	G1G3 Q	S1					

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Sphaerocar-paceae	*Sphaerocarpos donnellii*	a liverwort	2) High	G2G3	S2					
Archidiaceae	*Archidium hallii*	Hall's Archidium Moss	1) Highest	G3?	S1					
Bruchiaceae	*Bruchia ravenelii*	Ravenel's Bruchia Moss	3) Moderate	G3?	S3?					
Dicranaceae	*Campylopus angustiretis*	Campylopus Moss	1) Highest	G2?	S1					
Cryphaeaceae	*Cryphaea ravenelii*	Ravenel's Cryphaea Moss	1) Highest	G3?	S1					
Pottiaceae	*Tortula porteri*	Porter's Screw Moss	1) Highest	G3?	S1?					
Fissidentaceae	*Fissidens amoenus*	Hall's Fissidens Moss	2) High	G2	S2					
Orthotrichaceae	*Macromitrium richardii*	Richard's Macromitrium Moss	1) Highest	G2G4	S1					
Orthotrichaceae	*Orthotrichum exiguum*	Small Wood-bark Moss	3) Moderate	G3?	S3?					
Bryaceae	*Rhodobryum roseum*	Rose Moss	1) Highest	G5	S1?					
Sphagnaceae	*Sphagnumcyclophyllum*	Circular-leaf Peatmoss	3) Moderate	G3	S3					
Sphagnaceae	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss	1) Highest	G3	S1					
Sphagnaceae	*Sphagnum carolinianum*	Carolina Peatmoss	3) Moderate	G3	S3					
Hypnaceae	*Callicladium haldanianum*	Beautiful Branch Moss	1) Highest	G5	S1					
Pilotrichaceae	*Trachyxiphium hypnaceum*	Trachyxiphium Moss	1) Highest	G2?	S1?					
Ranunculaceae	*Clematis subreticulata*	Alabama Leatherflower	3) Moderate	GNR	S2					
Rosaceae	*Crataegus mohrii*	Mohr's Hawthorn	1) Highest	GNA	S1					
Cyperaceae	*Eleocharis bicolor*	Small Spikerush	4) Data Deficient	GNR	S1					
Apiaceae	*Eryngium species 1*	Mocassin-master	3) Moderate	GNR	S1					

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Acanthaceae	*Ruellia noctiflora*	Night-flowering Wild-petunia	2) High	G3?	S2			2) High		
Acanthaceae	*Ruellia pinetorum*	Pine Barren Ruellia	3) Moderate	G5T3T 4	S2S3			3) Moderate		
Acanthaceae	*Yeatesia viridiflora*	Green-flower Yeatesia	2) High	G3G5	S1			4) Low		
Aceraceae	*Acer leucoderme*	Chalk Maple	2) High	G5	S1			4) Low		
Amaranthaceae	*Amaranthus australis*	Southern Amaranth	3) Moderate	G5	S1			4) Low		
Amaranthaceae	*Iresine diffusa*	Felicidad	1) Highest	G4G5	S1			4) Low		
Apiaceae	*Erigenia bulbosa*	Harbinger-of-Spring	2) High	G5	S1			4) Low		
Apiaceae	*Eryngium aquaticum*	MarshRattle-snake-master	3) Moderate	G4	S1			4) Low		
Apiaceae	*Eryngium hookeri*	Hooker'sCoyote-thistle	1) Highest	G3G5	S1S2			4) Low		
Apiaceae	*Ligusticum canadense*	Nondo Lovage	2) High	G4	S1			4) Low		
Apiaceae	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	3) Moderate	G3G5	S2			3) Moderate		
Apiaceae	*Perideridia americana*	Eastern Eulophus	2) High	G4	S1S2			3) Moderate		
Apiaceae	*Polytaenia nuttallii*	Prairie Parsley	2) High	G5	S2			4) Low		
Apiaceae	*Ptilimnium costatum*	Eastern Bishopweed	2) High	G4	S1			3) Moderate		
Apiaceae	*Taenidia integerrima*	Yellow Pimpernel	1) Highest	G5	S1			4) Low		
Apocynaceae	*Amsonia ludoviciana*	Louisiana Bluestar	4) Data Deficient	G3	SX					
Aquifoliaceae	*Ilex cassine*	Dahoon Holly	2) High	G5	S2			4) Low		
Araliaceae	*Aralia racemosa*	American Spikenard	2) High	G5	S1			4) Low		
Araliaceae	*Panax quinquefolius*	American Ginseng	3) Moderate	G3G4	S3			3) Moderate		
Aristolochiaceae	*Hexastylis harperi*	Large-flowered Heartleaf	2) High	G4T3	S1			2) High		

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Apocynaceae	*Asclepias hirtella*	Green Milkweed	2) High	G5	S2			4) Low		
Apocynaceae	*Asclepias incarnata*	Swamp Milkweed	2) High	G5	S1			4) Low		
Apocynaceae	*Asclepias purpurascens*	Purple Milkweed	4) Data Deficient	G5?	SH			4) Low		
Apocynaceae	*Matelea baldwyniana*	Baldwin's Milkvine	1) Highest	G3	S1			3) Moderate		
Apocynaceae	*Matelea decipiens*	Old-field Milkvine	3) Moderate	G5	S1			4) Low		
Apocynaceae	*Matelea obliqua*	Climbing Milkweed	3) Moderate	G4?	S2			4) Low		
Asteraceae	*Amphiachyris dracunculoides*	Broom-snakeroot	1) Highest	G4G5	S1			4) Low		
Asteraceae	*Balduina angustifolia*	Coastal Plain Honey-comb-head	2) High	G5	S2			4) Low		
Asteraceae	*Bidens trichosperma*	Tickseed Sunflower	4) Data Deficient	G5	SU			4) Low		
Asteraceae	*Boltonia apalachicolensis*	Apalachicola Doll's - Daisy	1) Highest	G2Q	S1			1) Very High		
Asteraceae	*Cirsium lecontei*	Leconte's Thistle	3) Moderate	G3	S3			3) Moderate		
Asteraceae	*Cirsium muticum*	Swamp Thistle	4) Data Deficient	G5	SP			4) Low		
Asteraceae	*Coreopsis nudata*	Georgia Tickseed	2) High	G3?	S1S2			3) Moderate		
Asteraceae	*Eupatorium lancifolium*	Lanceleaf Thoroughwort	4) Data Deficient	G3?	SP			3) Moderate		
Asteraceae	*Diaperia prolifera* var. *prolifera*	Big-head Evax	3) Moderate	G5	S1			4) Low		
Asteraceae	*Gaillardia aestivalis* var. *flavovirens*	Lanceleaf Blanket Flower	2) High	G5T3T 5	S1			4) Low		
Asteraceae	*Helenium brevifolium*	Shortleaf Sneezeweed	3) Moderate	G4	S2S3			3) Moderate		
Asteraceae	*Helianthus debilis* ssp. *tardiflorus*	Gulf Coast Beach Sunflower	4) Data Deficient	G5T3	SP			3) Moderate		
Asteraceae	*Helianthus decapetalus*	Thinleaf Sunflower	2) High	G5	S2			4) Low		

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Asteraceae	*Helianthus verticillatus*	Whorled Sunflower	1) Highest	G1	S1	LE		1) Very High		
Asteraceae	*Hieracium venosum*	Rattlesnake Hawkweed	1) Highest	G5	S1			4) Low		
Asteraceae	*Liatris elegantula*	Blazing-Star	2) High	GNR	S1			4) Low		
Asteraceae	*Marshallia angustifolia*	Slim-leaf Barbara's-buttons	3) Moderate	G4T4Q	S2			4) Low		
Asteraceae	*Marshallia trinervia*	Broadleaf Barbara's-buttons	3) Moderate	G3	S3			3) Moderate		
Asteraceae	*Palafoxia callosa*	Small Palafoxia	2) High	G4G5	S1			4) Low		
Asteraceae	*Pityopsis pinifolia*	Taylor County Silk-grass	4) Data Deficient	G4	SP			4) Low		
Asteraceae	*Nabalus asper*	Rough Rattlesnake-root	2) High	G4?	S2			3) Moderate		
Asteraceae	*Nabalus barbatus*	Barbed Rattlesnake-root	1) Highest	G3	S1			3) Moderate		
Asteraceae	*Rudbeckia grandiflora* var. *alismifolia*	Rough Coneflower	1) Highest	G5	S1			4) Low		
Asteraceae	*Rudbeckia subtomentosa*	Sweet Coneflower	1) Highest	G5	S1			4) Low		
Asteraceae	*Sclerolepis uniflora*	Pink Bogbutton	1) Highest	G4	S1			4) Low		
Asteraceae	*Packera aurea*	Golden Groundsel	2) High	G5	S2			4) Low		
Asteraceae	*Packera paupercula* var. *paupercula*	Balsam Ragwort	2) High	G5TN R	S1			4) Low		
Asteraceae	*Packera tomentosa*	Woolly Groundsel	2) High	G4G5	S1			4) Low		
Asteraceae	*Silphiumintegrifolium* var. *gattingeri*	Gattinger's Rosinweed	3) Moderate	G5TN RQ	S2			4) Low		
Asteraceae	*Silphiumpinnatifidum*	Tansy Rosinweed	2) High	G3Q	S1			3) Moderate		
Asteraceae	*Silphium simpsonii*	Simpson's Rosinweed	2) High	G3?Q	S1			3) Moderate		
Asteraceae	*Silphium terebinthinaceum* var. *luciae-brauniae*	Lucy Braun's Prairie Dock	3) Moderate	G4G5T 3?Q	SU			3) Moderate		

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Asteraceae	*Silphiumconfertifolium*	Black Belt Rosinweed	2) High	GNR	S1			4) Low		
Asteraceae	*Solidago auriculata*	Eared Goldenrod	2) High	G4	S1			3) Moderate		
Asteraceae	*Solidago juncea*	Early Goldenrod	2) High	G5	S1S2			4) Low		
Asteraceae	*Solidago rigidiuscula*	Showy Goldenrod	3) Moderate	G5T4	S2			4) Low		
Asteraceae	*Solidago sphacelata*	Autumn Goldenrod	2) High	G4G5	S1			4) Low		
Asteraceae	*Solidago flaccidifolia*	Appalachian Goldenrod	2) High	G5	S1			4) Low		
Asteraceae	*Solidago brachyphylla*	Dixie Goldenrod	2) High	G3G4	S1			3) Moderate		
Asteraceae	*Thelesperma filifolium*	Stiff Greenthread	2) High	G4G5	S1			4) Low		
Asteraceae	*Arnoglossum reniforme*	GreatIndian-plantain	2) High	G4	S1			3) Moderate		
Asteraceae	*Symphyotrichum ericoides* var. *ericoides*	White Heath Aster	3) Moderate	G5T5	S2			4) Low		
Asteraceae	*Symphyotrichum pratense*	Barrens Silky Aster	2) High	G4?	S1			3) Moderate		
Asteraceae	*Symphyotrichum puniceum* var. *puniceum*	Purple-stem Aster	2) High	G5T5	S2			4) Low		
Asteraceae	*Symphyotrichum puniceum* var. *scabricaule*	Rough-stem Aster	4) Data Deficient	G5T2	SP			1) Very High		
Asteraceae	*Symphyotrichum oblongifolium*	Aromatic Aster	4) Data Deficient	G5	SH			4) Low		
Asteraceae	*Symphyotrichum oolentangiense*	Sky Blue Aster	2) High	G5	S1			4) Low		
Boraginaceae	*Hackelia virginiana*	Virginia Stickseed	2) High	G5	S2			4) Low		
Boraginaceae	*Euploca convolvulacea*	Bindweed Heliotrope	1) Highest	G5	S1			4) Low		
Boraginaceae	*Lithospermum caroliniense*	Golden Puccoon	2) High	G4G5	S1			4) Low		
Boraginaceae	*Lithospermum latifolium*	American Gromwell	2) High	G4	S1			4) Low		

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Boraginaceae	*Mertensia virginica*	Virginia Bluebells	1) Highest	G5	S1			4) Low		
Brassicaceae	*Borodinia canadensis*	Sicklepod	3) Moderate	G5	S2			4) Low		
Brassicaceae	*Arabidopsis lyrata* ssp. *lyrata*	Lyreleaf Rockcress	4) Data Deficient	G5	SH			4) Low		
Brassicaceae	*Arabis patens*	Spreading Rockcress	1) Highest	G3	S1			2) High		
Brassicaceae	*Rorippa aquatica*	Lake-cress	2) High	G4?	S1			3) Moderate	LC - Least Concern	
Brassicaceae	*Cardamine angustata*	Slender Toothwort	3) Moderate	G5	S2			4) Low		
Brassicaceae	*Cardamine diphylla*	Two-leaf Toothwort	3) Moderate	G5	S1S2			4) Low		
Brassicaceae	*Tomostima cuneifolia*	Wedgeleaf Whitlow-grass	3) Moderate	G5	S1			4) Low		
Brassicaceae	*Tomostima reptans*	Carolina Whitlow-grass	3) Moderate	G5	S1			4) Low		
Brassicaceae	*Physaria gracilis* ssp.*gracilis*	Spreading Bladder-pod	1) Highest	G5	S1			4) Low		
Cactaceae	*Opuntia macrorhiza*	Twisted-spine Prick-ly-pear	2) High	G5	S1			4) Low		
Campanulaceae	*Lobelia boykinii*	Boykin's Lobelia	1) Highest	G2G3	S1			2) High		
Caryophyllaceae	*Sabulina patula*	Pitcher's Stitchwort	2) High	G4	S1			4) Low		
Caryophyllaceae	*Paronychia baldwinii* ssp. *riparia*	Perennial Dune Whitlow-wort	2) High	G5T4	S1			4) Low		
Caryophyllaceae	*Paronychia erecta* var. *corymbosa*	Beach Sand-squares	3) Moderate	G3G4T 2T4	S1S2			3) Moderate		
Caryophyllaceae	*Paronychia erecta* var. *erecta*	Beach Sand-squares	3) Moderate	G3G4T NR	S1S2			4) Low		
Caryophyllaceae	*Paronychia patula*	Pineland Nailwort	2) High	G3G4	S1			3) Moderate		
Caryophyllaceae	*Silene ovata*	Ovate Catchfly	2) High	G3	S1S2			3) Moderate		
Caryophyllaceae	*Silene regia*	Royal Catchfly	4) Data Deficient	G3	SH			3) Moderate		

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Caryophyllaceae	*Stellaria corei*	Tennessee Chickweed	1) Highest	G4	S1			4) Low		
Caryophyllaceae	*Stellaria pubera*	Giant Chickweed	3) Moderate	G5	S2			4) Low		
Ceratophyllaceae	*Ceratophyllum echinatum*	Prickly Hornwort	1) Highest	G4	S1			3) Moderate		
Cistaceae	*Crocanthemum arenicola*	Coastal-sand Frostweed	2) High	G3	S1S2			3) Moderate		
Hypericaceae	*Hypericum canadense*	Canadian St. John's-wort	2) High	G5	S2			4) Low		
Hypericaceae	*Hypericum myrtifolium*	Myrtle-leaved St. Johnswort	2) High	G4G5	S2			4) Low		
Convolvulaceae	*Convolvulus catesbyanus*	Catesby's Bindweed	2) High	G4	S1			4) Low		
Convolvulaceae	*Ipomoea macrorhiza*	Large-stem Morning-glory	1) Highest	G3	S1			3) Moderate		
Convolvulaceae	*Ipomoea brasiliensis*	Railroad Morning-glory	2) High	G5	S1			4) Low		
Convolvulaceae	*Stylisma aquatica*	Water Southern Morning-glory	1) Highest	G4	S1			3) Moderate		
Convolvulaceae	*Stylisma pickeringii* ssp. *pattersonii*	Pickering Morning-glory	2) High	G4T4	S1S2			4) Low		
Convolvulaceae	*Stylisma pickeringii* ssp. *pickeringii*	Pickering Morning-glory	2) High	G4T3	S1S2			3) Moderate		
Cornaceae	*Swida alternifolia*	Alternate-leaf Dogwood	2) High	G5	S2			4) Low		
Cleomaceae	*Polanisia tenuifolia*	Slenderleaf Clammy-weed	2) High	G5	S1			4) Low		
Viburnaceae	*Viburnum acerifolium*	Mapleleaf Viburnum	1) Highest	G5	S1			4) Low		
Crassulaceae	*Sedum pulchellum*	Rock Stonecrop	1) Highest	G5	S1			4) Low		
Crassulaceae	*Sedum ternatum*	Wood Stonecrop	2) High	G5	S1			4) Low		
Convolvulaceae	*Cuscuta glomerata*	Clustered Dodder	4) Data Deficient	G5	SH			4) Low		
Ericaceae	*Pieris phillyreifolia*	Climbing Fetter-bush	2) High	G4	S1			4) Low		

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Ericaceae	*Rhododendron alabamense*	Alabama Rhodo-dendron	2) High	G4	S1			4) Low		
Ericaceae	*Rhododendron arborescens*	Smooth Azalea	2) High	G4G5	S1S2			4) Low		
Ericaceae	*Rhododendron austrinum*	Orange Azalea	3) Moderate	G3	S2			3) Moderate		
Ericaceae	*Rhododendron periclymenoides*	Pink Azalea	2) High	G5	S1			4) Low		
Ericaceae	*Vaccinium pallidum*	Early Lowbush Blueberry	3) Moderate	G5	S2			4) Low		
Ericaceae	*Vaccinium tenellum*	Small Black Blueberry	3) Moderate	G5	S1			4) Low		
Euphorbiaceae	*Euphorbia inundata* var. *inundata*	Florida Pine Spurge	2) High	G4G5	S1S2			4) Low		
Euphorbiaceae	*Euphorbia discoidalis*	Summer Spurge	1) Highest	G4	S1			4) Low		
Fabaceae	*Apios priceana*	Price's Potato-bean	1) Highest	G3	S1	LT		3) Moderate		
Fabaceae	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch	2) High	G5	S2			4) Low		
Fabaceae	*Astragalus distortus* var. *engelmannii*	Engelmann's Bent Milk-vetch	1) Highest	G5T4	S1			4) Low		
Fabaceae	*Astragalus obcordatus*	Florida Milkvetch	1) Highest	G3G4	S1			3) Moderate		
Fabaceae	*Baptisia nuttalliana*	Nuttall's Wild Indigo	1) Highest	G5	S1			4) Low		
Fabaceae	*Baptisia sphaerocarpa*	Green Wild Indigo	2) High	G4G5	S2			4) Low		
Fabaceae	*Cladrastis kentukea*	Yellowwood	3) Moderate	G4	S2			3) Moderate		
Fabaceae	*Dalea mountjoyae*	White-tassels	3) Moderate	G5T3	S2S3			3) Moderate		
Fabaceae	*Desmodium ochroleucum*	Creamflower Tick-trefoil	1) Highest	G2G3	S1			2) High		
Fabaceae	*Desmodium tenuifolium*	Slim-leaf Tick-trefoil	3) Moderate	G4	S2			4) Low		
Fabaceae	*Gymnocladus dioicus*	Kentucky Coffeetree	3) Moderate	G5	S1S2			4) Low		

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Fabaceae	*Lupinus perennis* ssp.*gracilis*	Sundial Lupine	2) High	G5TN R	S1			4) Low		
Fabaceae	*Phaseolus sinuatus*	Sandhill Bean	4) Data Deficient	G5T3?	SH			3) Moderate		
Fabaceae	*Rhynchosia latifolia*	Prairie Rhynchosia	2) High	G5	S2			4) Low		
Fabaceae	*Trifolium carolinianum*	Carolina Clover	1) Highest	GNR	S1			4) Low		
Fabaceae	*Trifolium reflexum*	Buffalo Clover	4) Data Deficient	G3G4	SH			3) Moderate		
Fabaceae	*Chamaecrista horizontalis*	Florida Senna	1) Highest	G2	S1			1) Very High		
Fagaceae	*Castanea dentata (nut-bearing only)*	American Chestnut	1) Highest	G3	S1			3) Moderate	CR - Critically Endangered	
Fagaceae	*Quercus arkansana*	Arkansas Oak	4) Data Deficient	G3	SP			3) Moderate	VU - Vulnerable	
Fagaceae	*Quercus austrina*	Bluff Oak	2) High	G4?	S2					
Fagaceae	*Quercus macrocarpa* var. *macrocarpa*	Bur Oak	2) High	G5	S2			4) Low		
Fagaceae	*Quercus minima*	Dwarf Live Oak	2) High	G5	S1			4) Low		
Fagaceae	*Quercus myrtifolia*	Myrtle-leaf Oak	2) High	G5	S2			4) Low		
Fagaceae	*Quercus oglethorpensis*	Oglethorpe's Oak	2) High	G3	S2			3) Moderate	EN - Endangered	
Fagaceae	*Quercus palustris*	Pin Oak	2) High	G5	S2?			4) Low		
Fumariaceae	*Dicentra cucullaria*	Dutchman's Breeches	2) High	G5	S1			4) Low		
Gentianaceae	*Eustoma exaltatum*	Tall Prairie-gentian	2) High	G5T4T 5	S1			4) Low		
Gentianaceae	*Gentiana catesbaei*	Elliott's Gentian	1) Highest	G5	S1			4) Low		
Gentianaceae	*Gentianella occidentalis*	Stiff Gentian	1) Highest	G5	S1			4) Low		
Gentianaceae	*Sabatia decandra*	Bartram's Rose-gentian	2) High	G4G5	S1			4) Low		

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Gentianaceae	*Sabatia campestris*	Prairie Pink	3) Moderate	G5?	S2			4) Low		
Haloragaceae	*Myriophyllum laxum*	Loose Water-milfoil	2) High	G3	S1			3) Moderate		
Hamameli-daceae	*Hamamelis ovalis*	Running Witch-hazel	2) High	G2G3	S1			2) High		
Hydrangeaceae	*Philadelphus hirsutus*	Streambank Mock-orange	1) Highest	G5?	S1			4) Low		
Hydrangeaceae	*Philadelphus inodorus*	Scentless Mock Orange	3) Moderate	G4G5	S2			4) Low		
Hippo-castanaceae	*Aesculus glabra* var.*glabra*	Ohio Buckeye	3) Moderate	G5	S2			4) Low		
Hydrophyllaceae	*Hydrophyllum appendiculatum*	Appendage Waterleaf	1) Highest	G5	S1			4) Low		
Hydrophyllaceae	*Hydrophyllum macrophyllum*	Large-leaf Water-leaf	1) Highest	G5	S1			4) Low		
Hydrophyllaceae	*Phacelia bipinnatifida*	Fernleaf Phacelia	2) High	G5	S1			4) Low		
Hydrophyllaceae	*Phacelia hirsuta*	Hairy Scorpionweed	1) Highest	G5?	S1			4) Low		
Hydrophyllaceae	*Phacelia purshii*	Miami-mist	2) High	G5	S1			4) Low		
Hydrophyllaceae	*Phacelia ranunculacea*	Blue Scorpionweed	1) Highest	G4	S1			4) Low		
Hydrophyllaceae	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed	3) Moderate	G5T4	S1			4) Low		
Juglandaceae	*Carya laciniosa*	Big Shellbark Hickory	2) High	G5	S2			4) Low		
Juglandaceae	*Juglans cinerea*	Butternut	2) High	G3	S2			3) Moderate	EN - Endangered	
Lamiaceae	*Clinopodium arkansanum*	Low Calamint	1) Highest	G5	S1					
Lamiaceae	*Collinsonia anisata*	Anise Horsebalm	2) High	GNR	S1					
Lamiaceae	*Collinsonia punctata*	Spotted-leaf Horse-balm	2) High	G3?	S1			3) Moderate		
Lamiaceae	*Conradina canescens*	Blue-sage	1) Highest	G5	S1			4) Low		

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Lamiaceae	*Cunila origanoides*	Common Dittany	2) High	G5	S1			4) Low		
Lamiaceae	*Hedeoma drummondii* var. *drummondii*	Drummond Pennyroyal	2) High	G5	S1			4) Low		
Lamiaceae	*Lycopus amplectens*	Sessile-leaved Bugleweed	3) Moderate	G5	S1			4) Low		
Lamiaceae	*Pycnanthemum flexuosum*	Narrowleaf Mountainmint	2) High	G5	S1			4) Low		
Lamiaceae	*Pycnanthemum pilosum*	Whorled Mountainmint	2) High	G5T5	S1			4) Low		
Lamiaceae	*Salvia chapmanii*	Chapman's Sage	1) Highest	GNR	S1					
Lamiaceae	*Scutellaria glabriuscula*	Georgia Skullcap	1) Highest	G2	S1			1) Very High		
Lamiaceae	*Scutellaria leonardii*	Shale-barren Skullcap	1) Highest	G4T4	S1			3) Moderate		
Lauraceae	*Lindera melissifolia*	Pondberry	1) Highest	G3	S2	LE		2) High		
Lauraceae	*Lindera subcoriacea*	Bog Spicebush	2) High	G3	S2			3) Moderate		
Linaceae	*Linum floridanum* var. *chrysocarpum*	Yellow-fruited Flax	3) Moderate	G5?T3?	S2S3			3) Moderate		
Linaceae	*Linum macrocarpum*	Spring Hill Flax	1) Highest	G2	S2			1) Very High		
Lentibulariaceae	*Pinguicula planifolia*	Chapman's Butterwort	3) Moderate	G3?	S2S3			3) Moderate		
Lentibulariaceae	*Pinguicula pumila*	Dwarf Butterwort	2) High	G4	S1			3) Moderate		
Lentibulariaceae	*Utricularia olivacea*	Piedmont Bladderwort	2) High	G4	S1			3) Moderate	LC - Least Concern	
Lentibulariaceae	*Utricularia purpurea*	Purple Bladderwort	3) Moderate	G5	S2			4) Low		
Loganiaceae	*Mitreola angustifolia*	Narrowleaf Miterwort	2) High	G4G5	S1					
Lythraceae	*Cuphea viscosissima*	Blue Waxweed	2) High	G5?	S1			4) Low		
Lythraceae	*Decodon verticillatus*	Hairy Swamp Loose-strife	3) Moderate	G5	S2			4) Low		

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Lythraceae	*Didiplis diandra*	Water-purslane	4) Data Deficient	G3G4	SH					
Magnoliaceae	*Magnolia tripetala*	Umbrella Magnolia	1) Highest	G5	S1			4) Low		
Malvaceae	*Callirhoe triangulata*	Clustered Poppy-mallow	2) High	G3	S1			2) High		
Malvaceae	*Hibiscus coccineus*	Brilliant Hibiscus	3) Moderate	G4?	S1S2			4) Low		
Menyanthaceae	*Nymphoides aquatica*	Big Floating-heart	3) Moderate	G5	S2			4) Low		
Menyanthaceae	*Nymphoides cordata*	Floating-heart	3) Moderate	G5	S1S2			4) Low		
Nyctaginaceae	*Mirabilis albida*	Pale Umbrella-wort	2) High	G5	S2			4) Low		
Nyctaginaceae	*Mirabilis linearis*	Narrowleaf Four-o'clock	2) High	G5	S1			4) Low		
Nymphaeaceae	*Nuphar lutea* ssp. *ulvacea*	West Florida Cow-Lily	2) High	G5T2T 3	S1			2) High		
Nymphaeaceae	*Nymphaea mexicana*	Banana Water-lily	4) Data Deficient	G3G4	SH			3) Moderate		
Oleaceae	*Forestiera ligustrina*	Upland Swamp Privet	3) Moderate	G4G5	S1S2			4) Low		
Oleaceae	*Fraxinus quadrangulata*	Blue Ash	2) High	G5	S1			4) Low		
Onagraceae	*Oenothera capillifolia* ssp. *capillifolia*	Berlandier's Sundrops	3) Moderate	G5T4T 5	S1			4) Low		
Onagraceae	*Oenothera patriciae*	Plains Gaura	4) Data Deficient	G4G5	SH			4) Low		
Onagraceae	*Ludwigia alata*	Winged Seedbox	3) Moderate	G3G5	S2			4) Low		
Onagraceae	*Oenothera grandiflora*	Large-flowered Evening-primrose	3) Moderate	G3G5	S1			4) Low		
Onagraceae	*Oenothera triloba*	Stemless Evening-primrose	3) Moderate	G4	S1			4) Low		
Onagraceae	*Oenothera heterophylla* ssp. *orientalis*	Alabama Evening-primrose	4) Data Deficient	G4TU	SH			4) Low		
Orobanchaceae	*Conopholis americana*	American Cancer-root	1) Highest	G5	S1			4) Low		

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Orobanchaceae	*Aphyllon uniflorum*	One-flowered Broomrape	1) Highest	G5	S1?			4) Low		
Oxalidaceae	*Oxalis grandis*	Great Yellow Woodsorrel	2) High	G4G5	S1			4) Low		
Oxalidaceae	*Oxalis macrantha*	Tufted Yellow Woodsorrel	3) Moderate	G2G4	S1			3) Moderate		
Polygalaceae	*Senega balduinii*	White Milkwort	2) High	G4	S1			4) Low		
Polygalaceae	*Senega curtissii*	Curtiss' Milkwort	2) High	G5	S1			4) Low		
Polygalaceae	*Senega hookeri*	Hooker's Milkwort	2) High	G3	S2			3) Moderate		
Polygalaceae	*Senega appendiculata*	Swamp Milkwort	2) High	G4G5	S2			4) Low		
Polygalaceae	*Senega leptostachys*	Georgia Milkwort	2) High	G3G4	S1S2			3) Moderate		
Polygalaceae	*Senega ambigua*	Whorled Milkwort	2) High	G5T5?	S1			4) Low		
Polygonaceae	*Polygonella americana*	Southern Jointweed	2) High	G5	S1			4) Low		
Polygonaceae	*Persicaria hirsuta*	Hairy Smartweed	4) Data Deficient	G3G4	SH			3) Moderate		
Polemoniaceae	*Phlox amplifolia*	Largeleaf Phlox	2) High	G3G5	S2			4) Low		
Plantaginaceae	*Plantago cordata*	Heartleaf Plantain	2) High	G4	S1			3) Moderate	LC - Least Concern	
Primulaceae	*Primula meadia*	Shootingstar	2) High	G5	S2			4) Low		
Primulaceae	*Hottonia inflata*	Featherfoil	2) High	G4	S1			3) Moderate		
Ericaceae	*Chimaphila maculata*	Spotted Wintergreen	3) Moderate	G5	S2			4) Low		
Ranunculaceae	*Actaea racemosa*	Black Bugbane	2) High	G3G4	S1S2			3) Moderate		
Ranunculaceae	*Anemone caroliniana*	Carolina Anemone	2) High	G5	S2			4) Low		
Ranunculaceae	*Anemone quinquefolia*	Wood Anemone	2) High	G5	S1			4) Low		
Ranunculaceae	*Aquilegia canadensis*	Wild Columbine	1) Highest	G5	S1			4) Low		

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Ranunculaceae	*Clematis glaucophylla*	White-leaved Leather-flower	3) Moderate	G4?	S1S2			3) Moderate		
Ranunculaceae	*Delphinium tricorne*	Dwarf Larkspur	3) Moderate	G5	S2			4) Low		
Ranunculaceae	*Hepatica acutiloba*	Sharp-lobed Hepatica	3) Moderate	G5T5	S1			4) Low		
Ranunculaceae	*Hydrastis canadensis*	Golden-seal	1) Highest	G3G4	S1			3) Moderate	VU - Vulnerable	
Ranunculaceae	*Enemion biternatum*	False Rue-anemone	1) Highest	G5	S1			4) Low		
Ranunculaceae	*Ranunculus flabellaris*	YellowWater-crowfoot	2) High	G5	S1			4) Low		
Ranunculaceae	*Ranunculus septentrionalis*	Carolina Buttercup	2) High	GNR	S2					
Ranunculaceae	*Thalictrum debile*	SouthernMeadowrue	2) High	G2G3	S1S2			2) High		
Ranunculaceae	*Thalictrum dioicum*	Early Meadowrue	1) Highest	G5	S1			4) Low		
Ranunculaceae	*Thalictrum macrostylum*	Small-leaf Meadowrue	2) High	G3G4	S1			3) Moderate		
Ranunculaceae	*Trautvetteria applanata*	Ozark Tassel-rue	1) Highest	G5	S1			4) Low		
Rhamnaceae	*Endotropis lanceolata*	Lance-leaved Buckthorn	2) High	G5	S2			4) Low		
Rhamnaceae	*Sageretia minutiflora*	Tiny-leaved Buckthorn	3) Moderate	G3G4	S2			3) Moderate		
Rosaceae	*Agrimonia incisa*	Incised Groovebur	3) Moderate	G3	S2			3) Moderate		
Rosaceae	*Crataegus brachyacantha*	Blueberry Hawthorn	1) Highest	G4	S1?			4) Low		
Rosaceae	*Crataegus mendosa*	Albertville Hawthorn	1) Highest	G3Q	S1			3) Moderate		
Rosaceae	*Crataegus mollis* var. *meridionalis*	Gallion Hawthorn	1) Highest	G3G5 Q	S1			4) Low		
Rosaceae	*Crataegus triflora*	Three-flowered Hawthorn	2) High	G2G3	S2			2) High		
Rosaceae	*Crataegus ashei*	Ashe's Hawthorn	1) Highest	G2	S1S2			1) Very High		
Rosaceae	*Malus ioensis*	Iowa Crabapple	2) High	G4G5	S1			4) Low		

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Rosaceae	*Neviusia alabamensis*	Alabama Snow-wreath	1) Highest	G3	S1			2) High		
Rosaceae	*Prunus alabamensis*	Alabama Black Cherry	4) Data Deficient	G4	SP			4) Low		
Rosaceae	*Spiraea tomentosa*	Steeplebush	4) Data Deficient	G5	SH			4) Low		
Rubiaceae	*Galium bermudense*	Coastal Bedstraw	2) High	G5	S2?			4) Low		
Salicaceae	*Salix caroliniana*	Carolina Willow	2) High	G5	S1			4) Low		
Santalaceae	*Nestronia umbellula*	Nestronia	2) High	G4	S1			4) Low		
Sarraceniaceae	*Sarracenia leucophylla*	Whitetop Pitcherplant	2) High	G3	S2			3) Moderate	VU - Vulnerable	
Sarraceniaceae	*Sarracenia rosea*	Purple Pitcherplant	1) Highest	G3	S1			3) Moderate	NT - Near Threatened	
Sarraceniaceae	*Sarracenia alabamensis* ssp. *wherryi*	Wherry's Sweet Pitch-er-plant	1) Highest	G3T3	S1			3) Moderate	EN - Endangered	
Saxifragaceae	*Heuchera parviflora*	Little-flower Alumroot	1) Highest	G4	S1			4) Low		
Saxifragaceae	*Heuchera macrorhiza*	Giant Alumroot	2) High	G5T4Q	S1					
Parnassiaceae	*Parnassia grandifolia*	LargeleafGrass-of-par-nassus	2) High	G3	S2			3) Moderate		
Saxifragaceae	*Tiarella cordifolia*	Heart-leaved Foam-flower	3) Moderate	G5	S2			4) Low		
Schisandraceae	*Schisandra glabra*	Bay Starvine	3) Moderate	G3	S3			3) Moderate		
Orobanchaceae	*Agalinis homalantha*	San AntonioFalse-fox-glove	1) Highest	G5	S1			4) Low		
Orobanchaceae	*Agalinis linifolia*	Flaxleaf False Foxglove	2) High	G4?	S2			4) Low		
Orobanchaceae	*Agalinis oligophylla*	Ridge-stem False-fox-glove	3) Moderate	G4	S2			4) Low		
Orobanchaceae	*Agalinis skinneriana*	Pale False Foxglove	1) Highest	G3G4	S1			3) Moderate		
Orobanchaceae	*Agalinis filicaulis*	Thread-stem False Foxglove	3) Moderate	G3	S2S3			3) Moderate		

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Orobanchaceae	*Agalinis auriculata*	Earleaf False Foxglove	1) Highest	G3	S2			3) Moderate		
Orobanchaceae	*Castilleja coccinea*	ScarletIndian-paint-brush	2) High	G5	S1			4) Low		
Plantaginaceae	*Chelone lyonii*	Pink Turtlehead	1) Highest	G4	S1			3) Moderate		
Plantaginaceae	*Chelone obliqua* var.*obliqua*	Red Turtlehead	4) Data Deficient	G4T3T 4Q	SH			3) Moderate		
Plantaginaceae	*Gratiola floridana*	Florida Hedge-hyssop	1) Highest	G3G4	S1			4) Low		
Plantaginaceae	*Gratiola ramosa*	Branched Hedge-hyssop	1) Highest	G4G5	S1			4) Low		
Plantaginaceae	*Sophronanthe hispida*	Pineland Hedge-Hyssop	2) High	G3G5	S2			4) Low		
Orobanchaceae	*Macranthera flammea*	Flame Flower	3) Moderate	G3	S3			3) Moderate		
Phrymaceae	*Mimulus ringens* var.*ringens*	Square-stem Monkey-flower	2) High	G5	S1			4) Low		
Plantaginaceae	*Penstemon canescens*	Gray Beardtongue	3) Moderate	G4	S1			4) Low		
Plantaginaceae	*Penstemon pallidus*	Pale Beardtongue	2) High	G5	S1			4) Low		
Plantaginaceae	*Penstemon tenuis*	Sharp-sepal Beard-tongue	3) Moderate	G4	S2			4) Low		
Orobanchaceae	*Schwalbea americana*	Chaffseed	4) Data Deficient	G2	SH	LE		1) Very High		
Plantaginaceae	*Veronicastrum virginicum*	Culver's-root	3) Moderate	G4	S1S2			3) Moderate		
Solanaceae	*Lycium carolinianum*	Carolina Wolf-berry	2) High	G4	S1			3) Moderate		
Solanaceae	*Physalis arenicola*	Cypress-head Ground-cherry	4) Data Deficient	G3?	SH			3) Moderate		
Solanaceae	*Calliphysalis carpenteri*	Carpenter's Ground-cherry	1) Highest	G3	S1			3) Moderate		
Solanaceae	*Solanumpseudogracile*	GlowingNightshade	2) High	G4	S2			4) Low		
Sapindaceae	*Sapindus marginatus*	Florida Soapberry	2) High	G5	S1			4) Low		

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Sapotaceae	*Sideroxylonreclinatum* ssp. *reclinatum*	Florida Bumelia	2) High	G4G5T NR	S1			4) Low		
Theaceae	*Stewartia ovata*	Mountain Camellia	1) Highest	G4	S1			4) Low		
Thymelaeaceae	*Dirca palustris*	Eastern Leatherwood	2) High	G4	S2			3) Moderate		
Ulmaceae	*Ulmus serotina*	September Elm	3) Moderate	G4	S2			4) Low		
Verbenaceae	*Avicennia germinans*	Black Mangrove	1) Highest	G5	S1			4) Low		
Verbenaceae	*Verbena xutha*	Gulf Vervain	3) Moderate	G5	S2			4) Low		
Cupressaceae	*Chamaecyparis thyoides*	Atlantic White Cedar	2) High	G4	S2			4) Low		
Cupressaceae	*Juniperus silicicola*	Southern Red Cedar	2) High	G5T4T 5	S2			4) Low		
Pinaceae	*Pinus clausa*	Sand Pine	1) Highest	G4	S1			4) Low		
Pinaceae	*Pinus virginiana*	Virginia Pine	3) Moderate	G5	S2			4) Low		
Alismataceae	*Alisma subcordatum*	Broad-leaved Water-plantain	1) Highest	G5	S1			4) Low		
Alismataceae	*Helanthium tenellum*	Dwarf Burhead	3) Moderate	G5?	S1S2			3) Moderate		
Alismataceae	*Echinodorus berteroi*	Upright Burhead	1) Highest	G5	S1			4) Low		
Alismataceae	*Sagittaria chapmanii*	Chapman's Arrowhead	2) High	G3?	S1			3) Moderate		
Alismataceae	*Sagittaria isoetiformis*	Slender Arrow-head	1) Highest	G3	S1			3) Moderate		
Burmanniaceae	*Burmannia biflora*	Northern Burmannia	2) High	G4G5	S1			3) Moderate		
Cannaceae	*Canna flaccida*	Bandana-of-the-Everglades	1) Highest	G4?	S1			4) Low		
Commelinaceae	*Tradescantia ernestiana*	Ernest's Spider-wort	2) High	G3G4 Q	S1			3) Moderate		
Commelinaceae	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort	2) High	G5	S1			4) Low		
Cymodoceaceae	*Halodule wrightii*	Shoal-grass	2) High	G5	S1			4) Low		

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Cymodoceaceae	*Syringodium filiforme*	Manatee-grass	2) High	G4	S1			4) Low		
Cyperaceae	*Bulbostylis ciliatifolia*	Capillary Hairsedge	2) High	G5	S1			4) Low		
Cyperaceae	*Carex alata*	Broadwing Sedge	2) High	G5	S1			4) Low		
Cyperaceae	*Carex albursina*	White Bear Sedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Carex baltzellii*	Baltzell's Sedge	1) Highest	G3	S1			3) Moderate		
Cyperaceae	*Carex bullata* var. *greenei*	Button Sedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Carex communis*	Fibrous-root Sedge	1) Highest	G5T5	S1			4) Low		
Cyperaceae	*Carex comosa*	Bristly Sedge	2) High	G5	S1			4) Low		
Cyperaceae	*Carex crawei*	Crawe's Sedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Carex dasycarpa*	Velvet Sedge	1) Highest	G4?	S1			4) Low		
Cyperaceae	*Carex elliottii*	Elliott's Sedge	4) Data Deficient	G4?	SP			4) Low		
Cyperaceae	*Carex exilis*	Coast Sedge	2) High	G5	S2			4) Low		
Cyperaceae	*Carex fissa* var. *aristata*	Hammock Sedge	1) Highest	G4?T4?	S1			4) Low		
Cyperaceae	*Carex fissa* var. *fissa*	Hammock Sedge	1) Highest	G4?T3 T4	S1			3) Moderate		
Cyperaceae	*Carex frankii*	Frank's Sedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Carex gracilescens*	Slender Sedge	3) Moderate	G5?	S1S2			4) Low		
Cyperaceae	*Carex gravida*	Heavy-fruited Sedge	3) Moderate	G5	S1S2			4) Low		
Cyperaceae	*Carex grayi*	Asa Gray's Sedge	3) Moderate	G4G5	S2			4) Low		
Cyperaceae	*Carex hyalina*	Tissue Sedge	3) Moderate	G4	S1S2			4) Low		

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Cyperaceae	*Carex jamesii*	Nebraska Sedge	3) Moderate	G5	S1S2			4) Low		
Cyperaceae	*Carex laxiflora*	Broad Loose-flower Sedge	1) Highest	G5T5	S1			4) Low		
Cyperaceae	*Carex mesochorea*	Midland Sedge	2) High	G4G5	S1			4) Low		
Cyperaceae	*Carex mitchelliana*	Mitchell's Sedge	3) Moderate	G4	S2			4) Low		
Cyperaceae	*Carex normalis*	Greater Straw Sedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Carex oligocarpa*	Eastern Few-fruit Sedge	1) Highest	G4G5	S1			4) Low		
Cyperaceae	*Carex oxylepis* var. *pubescens*	Sharp-scale Sedge	3) Moderate	G5?T3	S2S3			3) Moderate		
Cyperaceae	*Carex prasina*	Drooping Sedge	2) High	G4	S1			4) Low		
Cyperaceae	*Carex radiata*	Stellate Sedge	3) Moderate	G5	S2			4) Low		
Cyperaceae	*Carex scoparia*	Broom Sedge	2) High	G5	S2			4) Low		
Cyperaceae	*Carex seorsa*	Weak Stellate Sedge	2) High	G5	S1S2			4) Low		
Cyperaceae	*Carex stipata* var. *maxima*	Stalk-grain Sedge	3) Moderate	G5T5?	S1			4) Low		
Cyperaceae	*Carex torta*	Twisted Sedge	2) High	G5	S1			4) Low		
Cyperaceae	*Carex verrucosa*	Warty Sedge	2) High	G4	S1S2			4) Low		
Cyperaceae	*Carex virescens*	Ribbed Sedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Carex striata* var. *striata*	Southern Peatland Sedge	1) Highest	G5T5	S1			4) Low		
Cyperaceae	*Carex impressinervia*	Impressed-nerved Sedge	1) Highest	G2	S1			1) Very High		
Cyperaceae	*Carex grisea*	Inflated Narrowleaf Sedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Carex molestiformis*	Ozark Plateau Sedge	3) Moderate	G4	S1			3) Moderate		

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Cyperaceae	*Carex superata*	Limestone Forest Sedge	2) High	G4?	S1			4) Low		
Cyperaceae	*Carex reznicekii*	Reznicek's Sedge	3) Moderate	G5	S2			4) Low		
Cyperaceae	*Cladium mariscoides*	Twig Rush	2) High	G5	S1			4) Low		
Cyperaceae	*Cyperus articulatus*	Jointed Flatsedge	2) High	G4G5	S1			4) Low		
Cyperaceae	*Cyperus elegans*	Sticky Flatsedge	2) High	G5	S1			4) Low		
Cyperaceae	*Cyperus engelmannii*	Slender Sand Flatsedge	1) Highest	G4Q	S1			4) Low		
Cyperaceae	*Cyperus lecontei*	Le Conte's Flatsedge	2) High	G4?	S1			4) Low		
Cyperaceae	*Cyperus ochraceus*	Pond Flatsedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Cyperus refractus*	Reflexed Flatsedge	1) Highest	G5	S1			4) Low		
Cyperaceae	*Cyperus drummondii*	Green Flatsedge	3) Moderate	G5TN R	S1S2			4) Low		
Cyperaceae	*Cyperus bipartitus*	Shining Flatsedge	3) Moderate	G5	S1			4) Low		
Cyperaceae	*Cyperus flavicomus*	White-edged Flatsedge	3) Moderate	G5	S2			4) Low		
Cyperaceae	*Cyperus hystricinus*	Bristly Flatsedge	3) Moderate	G4	S1S2			3) Moderate		
Cyperaceae	*Cyperus thyrsiflorus*	Southcentral Flatsedge	2) High	G5	S1			4) Low		
Cyperaceae	*Eleocharis albida*	White Spikerush	1) Highest	G4G5	S1			4) Low		
Cyperaceae	*Eleocharis atropurpurea*	Purple Spikerush	1) Highest	G4G5	S1			4) Low		
Cyperaceae	*Eleocharis cellulosa*	Carolina Spikerush	3) Moderate	G4G5	S2			4) Low		
Cyperaceae	*Eleocharis elliptica*	Slender Spikerush	2) High	G5	S1			4) Low		
Cyperaceae	*Eleocharis elongata*	Slim Spikerush	2) High	G5?	S1			4) Low		
Cyperaceae	*Eleocharis erythropoda*	Bald Spikerush	2) High	G5	S1			4) Low		

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Cyperaceae	*Eleocharis ambigens*	Obscure Spikerush	1) Highest	G4G5	S2			4) Low		
Cyperaceae	*Eleocharis geniculata*	Capitate Spikerush	2) High	G5	S1			4) Low		
Cyperaceae	*Eleocharis intermedia*	Matted Spikerush	1) Highest	G5	S1			4) Low		
Cyperaceae	*Eleocharis lanceolata*	Lance-like Spikerush	1) Highest	G4G5	S1			4) Low		
Cyperaceae	*Eleocharis macrostachya*	Creeping Spikerush	3) Moderate	G5	S2			4) Low		
Cyperaceae	*Eleocharis melanocarpa*	Black-fruit Spikerush	1) Highest	G4	S1			3) Moderate		
Cyperaceae	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	3) Moderate	G5TN R	S2			4) Low		
Cyperaceae	*Eleocharis parvula*	Small Spikerush	1) Highest	G5	S1			4) Low		
Cyperaceae	*Eleocharis radicans*	Rooted Spikerush	1) Highest	G5	S1			4) Low		
Cyperaceae	*Eleocharis robbinsii*	Robbins Spikerush	3) Moderate	G4G5	S2			3) Moderate	LC - Least Concern	
Cyperaceae	*Eleocharis rostellata*	Beaked Spikerush	3) Moderate	G5	S1			4) Low		
Cyperaceae	*Eleocharis tenuis* var. *pseudoptera*	Slender Spikerush	4) Data Deficient	G5T5?	SP			4) Low		
Cyperaceae	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	2) High	G5T5	S2			4) Low		
Cyperaceae	*Eleocharis tricostata*	Three-angle Spikerush	1) Highest	G4	S1			4) Low		
Cyperaceae	*Eleocharis wolfii*	Wolf's Spikerush	2) High	G3G5	S1			3) Moderate		
Cyperaceae	*Eleocharis compressa*	Flat-stem Spikerush	2) High	G4	S1			4) Low		
Cyperaceae	*Eleocharis ovata*	Ovate Spikerush	2) High	G5	S1			4) Low		
Cyperaceae	*Eleocharis coloradoensis*	Dwarf Spikerush	1) Highest	G4	S1			4) Low		
Cyperaceae	*Eleocharis palustris*	Creeping Spikerush	4) Data Deficient	G5	S1			4) Low		
Cyperaceae	*Fuirena longa*	Coastal-plain Umbrella-sedge	2) High	G3G4	S1			3) Moderate		

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Cyperaceae	*Cyperus neotropicalis*	American Lipocarpha	3) Moderate	G5	S1S2			4) Low		
Cyperaceae	*Rhynchospora baldwinii*	Baldwin's Beakrush	3) Moderate	G4	S2			4) Low		
Cyperaceae	*Rhynchospora brachychaeta*	West Indies Beakrush	1) Highest	GNR	S1			4) Low		
Cyperaceae	*Rhynchospora galeana*	Short-bristle Baldrush	2) High	G3?	S1			3) Moderate		
Cyperaceae	*Rhynchospora careyana*	Broad-fruit Horned Beakrush	2) High	G4?Q	S1			4) Low		
Cyperaceae	*Rhynchospora cephalantha* var. *attenuata*	Small-bunched Beaksedge	1) Highest	G5T3?	S1			3) Moderate		
Cyperaceae	*Rhynchospora crinipes*	Hairy-peduncled Beakrush	2) High	G3	S1			3) Moderate		
Cyperaceae	*Rhynchospora curtissii*	Curtiss' Beakrush	2) High	G4	S1			4) Low		
Cyperaceae	*Rhynchospora decurrens*	Swamp-forest Beakrush	1) Highest	G3G4	S1			4) Low		
Cyperaceae	*Rhynchospora divergens*	White-seeded Beakrush	1) Highest	G4	S1			3) Moderate		
Cyperaceae	*Rhynchospora distans*	Fasciculate Beakrush	3) Moderate	G5T4?	S2			4) Low		
Cyperaceae	*Rhynchospora fernaldii*	Fernald's Beakrush	1) Highest	G3G4	S1			3) Moderate		
Cyperaceae	*Rhynchospora harperi*	Harper's Beakrush	1) Highest	G4?	S1			3) Moderate		
Cyperaceae	*Rhynchospora harveyi*	Harvey's Beakrush	2) High	G4	S2			3) Moderate		
Cyperaceae	*Rhynchospora perplexa*	Pineland Beakrush	2) High	G5	S1			4) Low		
Cyperaceae	*Rhynchospora pleiantha*	Brown Beakrush	1) Highest	G2G3	S1			2) High		
Cyperaceae	*Rhynchospora torreyana*	Torrey's Beakrush	1) Highest	G4	S1			4) Low		
Cyperaceae	*Rhynchospora tracyi*	Tracy Beakrush	1) Highest	G4	S1			4) Low		
Cyperaceae	*Rhynchospora wrightiana*	Wright's Beakrush	2) High	G5	S2			4) Low		

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Cyperaceae	*Rhynchospora leptocarpa*	Slender-fruit Beaksedge	2) High	G3	S1			3) Moderate		
Cyperaceae	*Rhynchospora pinetorum*	Small's Beakrush	3) Moderate	G5?T3 T4	S2			3) Moderate		
Cyperaceae	*Rhynchospora marliniana*	Marlin's Beaksedge	1) Highest	GNR	S1					
Cyperaceae	*Schoenoplectus americanus*	Three-square Bulrush	2) High	G5	S1			4) Low		
Cyperaceae	*Scirpus divaricatus*	Spreading Bulrush	3) Moderate	G4	S2			3) Moderate		
Cyperaceae	*Scirpus lineatus*	Drooping Bulrush	3) Moderate	G4	S1S2			4) Low		
Cyperaceae	*Schoenoplectiella purshiana*	Weakstalk Bulrush	2) High	G4G5	S2			4) Low		
Cyperaceae	*Schoenoplectus subterminalis*	Swaying Rush	1) Highest	G5	S1			4) Low		
Cyperaceae	*Scleria elliottii*	Broad-leaved Hairy Nutrush	3) Moderate	G5TN R	S2			4) Low		
Cyperaceae	*Scleria georgiana*	Georgia Nutrush	3) Moderate	G4	S2			4) Low		
Cyperaceae	*Scleria verticillata*	Low Nutrush	3) Moderate	G5	S1			4) Low		
Cyperaceae	*Scleria nitida*	Shining Nutrush	3) Moderate	GNR	S1					
Eriocaulaceae	*Eriocaulon decangulare* var. *latifolium*	Panhandle Pipewort	3) Moderate	G5TN R	S1			4) Low		
Eriocaulaceae	*Eriocaulon texense*	Texas Pipewort	3) Moderate	G4	S2S3			3) Moderate		
Eriocaulaceae	*Syngonanthus flavidulus*	Yellow Pipewort	2) High	G5	S2			4) Low		
Hydrocharitaceae	*Halophila engelmannii*	Engelmann's Sea-grass	2) High	G3G5	S1			4) Low		
Hydrocharitaceae	*Thalassia testudina*	Turtle-grass	2) High	G4G5	S1			4) Low		
Iridaceae	*Alophia drummondii*	Purple Pleat-leaf	1) Highest	G4	S1			4) Low		
Iridaceae	*Herbertia lahue*	Herbertia	3) Moderate	G4G5	S2			4) Low		

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Iridaceae	*Iris brevicaulis*	Lamance Iris	3) Moderate	G4	S1			3) Moderate	LC - Least Concern	
Iridaceae	*Iris giganticaerulea*	Giant Blue Iris	1) Highest	G3	S1			3) Moderate		
Iridaceae	*Nemastylis geminiflora*	Prairie Pleatleaf	2) High	G4	S2			4) Low		
Juncaginaceae	*Triglochin striata*	Arrow-grass	2) High	G5	S1			4) Low		
Juncaceae	*Juncus interior*	Inland Rush	2) High	G4	S1			4) Low		
Agavaceae	*Camassia scilloides*	Wild Hyacinth	2) High	G5	S2			4) Low		
Liliaceae	*Erythronium albidum*	White Trout-lily	2) High	G5	S2			4) Low		
Liliaceae	*Erythroniumamericanum* ssp. *harperi*	Yellow Trout-lily	3) Moderate	G5T4T 5	S1S2			4) Low		
Amaryllidaceae	*Hymenocallis occidentalis* var. *eulae*	Woodland Spider-lily	2) High	G4?TN R	S1					
Amaryllidaceae	*Hymenocallis choctawensis*	Florida Panhandle Spider-lily	3) Moderate	G3G4	S1			3) Moderate		
Hypoxidaceae	*Hypoxis curtissii*	Curtiss' Yellow Star-grass	1) Highest	G4?	S1			4) Low		
Liliaceae	*Lilium michiganense*	Michigan Lily	1) Highest	G5	S1			4) Low		
Liliaceae	*Lilium iridollae*	Panhangle Lily	2) High	G3	S1			3) Moderate		
Melanthiaceae	*Stenanthium gramineum*	Eastern Featherbells	2) High	G4G5	S1			4) Low		
Melanthiaceae	*Stenanthium texanum*	Pine Barren Death-camas	2) High	G3	S1			3) Moderate		
Trilliaceae	*Trillium flexipes*	Drooping Trillium	1) Highest	G5	S1			4) Low		
Trilliaceae	*Trilliumfoetidissimum*	Fetid Trillium	3) Moderate	G3	S3			3) Moderate	LC - Least Concern	
Trilliaceae	*Trilliumludovicianum*	Louisiana Trillium	3) Moderate	G4	S1S2			4) Low		
Trilliaceae	*Trillium pusillum* var. *ozarkanum*	Ozark Least Trillium	1) Highest	G4T3	S1			3) Moderate		

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Colchicaceae	*Uvularia floridana*	Florida Bellwort	2) High	G3	S1			3) Moderate		
Amaryllidaceae	*Zephyranthes simpsonii*	Rainlily	2) High	G2G3	S1			2) High		
Marantaceae	*Thalia dealbata*	Powdery Thalia	1) Highest	G4	S1			3) Moderate		
Orchidaceae	*Aplectrum hyemale*	Puttyroot	1) Highest	G5	S1			4) Low		
Orchidaceae	*Calopogon barbatus*	Bearded Grass-pink	2) High	G4?	S2			4) Low		
Orchidaceae	*Calopogon multiflorus*	Many-flowered Grass-pink	1) Highest	G2G3	S1			2) High	LC - Least Concern	
Orchidaceae	*Calopogon oklahomensis*	Oklahoma Grass-pink	1) Highest	G2	S1			1) Very High		
Orchidaceae	*Cypripedium kentuckiense*	Kentucky Yellow Lady's-slipper	4) Data Deficient	G3	SH			2) High	VU - Vulnerable	
Orchidaceae	*Galearis spectabilis*	Showy Orchis	1) Highest	G5	S1			4) Low		
Orchidaceae	*Goodyera pubescens*	DownyRattle-snake-plantain	2) High	G5	S1			4) Low		
Orchidaceae	*Habenaria quinqueseta*	Michaux's Orchid	4) Data Deficient	G4G5	SP			4) Low		
Orchidaceae	*Hexalectris spicata*	Crested Coralroot	3) Moderate	G5	S2			4) Low		
Orchidaceae	*Platanthera conspicua*	Large White-fringe Orchid	2) High	G5T4	S2			3) Moderate		
Orchidaceae	*Platanthera integrilabia*	White Fringeless Orchid	2) High	G2G3	S1	LT		2) High	NT - Near Threatened	
Orchidaceae	*Platanthera lacera*	Green-fringed Orchid	2) High	G5	S1S2			4) Low		
Orchidaceae	*Aspidogyne querceticola*	Low Erythrodes	1) Highest	G3G5	S1			4) Low		
Orchidaceae	*Ponthieva racemosa*	Shadow-witch Orchid	3) Moderate	G5	S2			4) Low		
Orchidaceae	*Orthochilus ecristatus*	Giant Orchid	2) High	G2G3	S1			2) High	DD - Data Deficient	
Orchidaceae	*Spiranthes floridana*	Florida Ladies'-tresses	1) Highest	G1	S1			1) Very High		

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Orchidaceae	*Spiranthes brevilabris*	TexasLadies'-tresses	1) Highest	G1G2	S1			1) Very High		
Orchidaceae	*Spiranthes lacera* var.*gracilis*	Southern Slender Ladies'-tresses	2) High	G5T4T 5	S2			4) Low		
Orchidaceae	*Spiranthes longilabris*	Giant Spiral Ladies'-tresses	2) High	G3	S1S2			3) Moderate		
Orchidaceae	*Spiranthes magnicamporum*	Great Plains Ladies'-tresses	3) Moderate	G3G4	S2			3) Moderate		
Orchidaceae	*Spiranthes ovalis* var. *ovalis*	LesserLadies'-tresses	3) Moderate	G5?T3 T4?	S2S3			3) Moderate		
Orchidaceae	*Spiranthes eatonii*	Eaton's Ladies'-tresses	1) Highest	G3Q	S1			3) Moderate		
Orchidaceae	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia	2) High	G4?T4?	S2			4) Low		
Orchidaceae	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia	3) Moderate	G3?	S3			3) Moderate		
Orchidaceae	*Cleistesiopsis bifaria*	Appalachian Small Spreading Pogonia	1) Highest	G3G4	S1			3) Moderate		
Poaceae	*Andropogon tracyi*	Tracy's Bluestem	2) High	G4?	S2			4) Low		
Poaceae	*Andropogon dealbatus*	Wetland White Bluestem	3) Moderate	GNR	S1S2			4) Low		
Poaceae	*Andropogon perangustatus*	Narrow-leaved Bluestem	3) Moderate	GNR	S1S2			4) Low		
Poaceae	*Aristida mohrii*	Mohr's Three-awn Grass	1) Highest	G3	S1			1) Very High		
Poaceae	*Aristida tenuispica*	Southern Arrowfeather	3) Moderate	G5T5	S2			4) Low		
Poaceae	*Aristida simpliciflora*	Southern Three-awn Grass	3) Moderate	G3G4	S2			3) Moderate		
Poaceae	*Aristida spiciformis*	Pine Barren Three-awn Grass	3) Moderate	G4	S1			4) Low		
Poaceae	*Aristida beyrichiana*	Southern Wiregrass	3) Moderate	G5?	S2			4) Low		
Poaceae	*Chasmanthium nitidum*	Shiny Spikegrass	3) Moderate	G3G4	S1			4) Low		
Poaceae	*Coelorachis cylindrica*	Pitted Jointgrass	1) Highest	G4G5	S1					

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Poaceae	*Dichanthelium erectifolium*	Erect-leaf Witchgrass	3) Moderate	G4	S2			4) Low		
Poaceae	*Dichanthelium wrightianum*	Wright's Witchgrass	2) High	G4	S1S2			4) Low		
Poaceae	*Dichanthelium curtifolium*	Shortleaf Witchgrass	2) High	G4T3?	S2			2) High		
Poaceae	*Dichanthelium cryptanthum*	Hidden-flower Witchgrass	2) High	G3Q	S1			4) Low		
Poaceae	*Elionurus tripsacoides*	Pan-american Balsamscale	4) Data Deficient	G5?	SH			4) Low		
Poaceae	*Elymus villosus*	Hairy Wild Rye	2) High	G5	S2			4) Low		
Poaceae	*Eustachys glauca*	Saltmarsh Finger-grass	2) High	G4	S2			4) Low		
Poaceae	*Luziola bahiensis*	Brazilian Loziola	3) Moderate	G4G5	S1			4) Low		
Poaceae	*Muhlenbergia glabrifloris*	Inland Muhly	2) High	G4?	S1			3) Moderate		
Poaceae	*Muhlenbergia sylvatica*	Woodland Muhly	3) Moderate	G5	S2			4) Low		
Poaceae	*Muhlenbergia tenuiflora*	Slender Muhly	3) Moderate	G5	S1S2			4) Low		
Poaceae	*Dichanthelium nudicaule*	Naked-stemmed Panic Grass	3) Moderate	G3Q	S3			3) Moderate		
Poaceae	*Paspalummonostachyum*	Gulfdune Paspalum	2) High	G4?	S1			4) Low		
Poaceae	*Schizachyrium maritimum*	Gulf Bluestem	3) Moderate	G3G4 Q	S2			3) Moderate		
Poaceae	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	2) High	G5T5	S1			4) Low		
Poaceae	*Schizachyrium stoloniferum*	Creeping Bluestem	2) High	G3G4 Q	S1			3) Moderate		
Poaceae	*Setaria corrugata*	Coast Bristle Grass	2) High	G5?	S1			4) Low		
Poaceae	*Sphenopholis penyslvanica*	Swamp Wedgescale	2) High	G4	S1			4) Low		
Poaceae	*Sporobolus ozarkanus*	Ozark Dropseed	2) High	G5T5?	S2			4) Low		

Family	Scientific Name	Common Name	MSConcern Level	Global Rank	State Rank	Federal Status	State Status	RSGCN	IUCN	Partners In Flight
Poaceae	*Tridens carolinianus*	Carolina Fluff Grass	3) Moderate	G3G4	S2S3			3) Moderate		
Poaceae	*Tridens chapmanii*	Chapman's Redtop	3) Moderate	G5T3	S2			3) Moderate		
Pontederiaceae	*Heteranthera dubia*	Grassleaf Mud-plaintain	2) High	G5	S1			4) Low		
Pontederiaceae	*Heteranthera missouriensis*	Missouri Mud-plantain	3) Moderate	G3G4	S1			3) Moderate		
Potamoget-onaceae	*Potamogeton epihydrus*	Nuttall's Pondweed	2) High	G5	S1			4) Low		
Potamoget-onaceae	*Potamogeton pusillus*	Slender Pondweed	2) High	G5T5	S1			4) Low		
Smilacaceae	*Smilax hugeri*	Huger's Carrion-flower	4) Data Deficient	G4	SP			4) Low		
Smilacaceae	*Smilax pulverulenta*	Downy Carrion-flower	2) High	G4G5	S1			4) Low		
Xyridaceae	*Xyris flabelliformis*	SavannahYel-low-eyed-grass	2) High	G4	S1			4) Low		
Xyridaceae	*Xyris serotina*	Acid-swamp Yellow-eyed-grass	3) Moderate	G3G4	S1			3) Moderate		
Xyridaceae	*Xyris louisianica*	Kral's Yellow-eyed Grass	2) High	G2G3	S1			2) High		
Xyridaceae	*Xyris chapmanii*	Chapman's Yellow-eyed-grass	3) Moderate	G3	S2			3) Moderate		
Xyridaceae	*Xyris scabrifolia*	Harper'sYellow-eyed Grass	3) Moderate	G3	S3			3) Moderate		
Pteridaceae	*Adiantum capillus-veneris*	Southern Maiden-hair-fern	3) Moderate	G5	S2			4) Low		
Pteridaceae	*Myriopteris alabamensis*	Alabama Lipfern	1) Highest	G5	S1			4) Low		
Pteridaceae	*Myriopteris lanosa*	Hairy Lipfern	2) High	G5	S1S2			4) Low		
Pteridaceae	*Pellaea atropurpurea*	Purple-stem Cliff-brake	2) High	G5	S1			4) Low		
Aspleniaceae	*Aspleniumpinnatifidum*	Lobed Spleenwort	1) Highest	G4	S1			4) Low		
Aspleniaceae	*Asplenium resiliens*	Black-stem Spleenwort	1) Highest	G5	S1			4) Low		

Family	Scientific Name	Common Name	MSConcern Level	Global Rank	State Rank	Federal Status	State Status	RSGCN	IUCN	Partners In Flight
Aspleniaceae	*Asplenium rhizophyllum*	Walking-fern Spleenwort	1) Highest	G5	S1			4) Low		
Aspleniaceae	*Asplenium trichomanes*	Maidenhair Spleenwort	1) Highest	G5	S1			4) Low		
Aspleniaceae	*Asplenium x kentuckiense*	Kentucky Spleenwort	1) Highest	GNA	S1			4) Low		
Dryopteridaceae	*Deparia acrostichoides*	Silvery Spleenwort	2) High	G5	S1S2			4) Low		
Dryopteridaceae	*Dryopteris celsa*	Log Fern	1) Highest	G4	S1			3) Moderate		
Dryopteridaceae	*Dryopteris ludoviciana*	Southern Shield Wood-fern	2) High	G5	S1			4) Low		
Dryopteridaceae	*Dryopteris australis*	Southern Woodfern	2) High	GNA	S1			4) Low		
Equisetaceae	*Equisetum arvense*	Field Horsetail	1) Highest	G5	S1S2			4) Low		
Hymenophyllaceae	*Vandenboschia boschiana*	Appalachian Bristle Fern	1) Highest	G4	S1			3) Moderate		
Hymenophyllaceae	*Didymoglossum membranaceum*	Scale-edge Bristle Fern	4) Data Deficient	G5	SX					
Hymenophyllaceae	*Didymoglossum petersii*	Dwarf Filmy-fern	2) High	G4	S1			3) Moderate		
Isoetaceae	*Isoetes louisianensis*	Louisiana Quillwort	2) High	G2G3	S2	LE		2) High		
Isoetaceae	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort	2) High	G5TN R	S2					
Isoetaceae	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort	2) High	G5TN R	S2					
Isoetaceae	*Isoetes valida*	Strong Quillwort	2) High	G4?	S1			4) Low		
Isoetaceae	*Isoetes appalachiana*	Appalachian Quillwort	2) High	G4	S1S2			4) Low		
Isoetaceae	*Isoetes mississippiensis*	Mississippi Quillwort	1) Highest	G1	S1			1) Very High		
Lycopodiaceae	*Diphasiastrum digitatum*	Fan Club-moss	2) High	G5	S2			4) Low		
Lycopodiaceae	*Palhinhaea cernua*	Nodding Clubmoss	3) Moderate	G5	S2			4) Low		

Family	Scientific Name	Common Name	MSConcern Level	Global Rank	State Rank	Federal Status	State Status	RSGCN	IUCN	Partners In Flight
Marsileaceae	*Marsilea vestita*	Hairy Water-fern	2) High	G5	S1			4) Low		
Ophioglossaceae	*Sceptridium jenmanii*	Alabama Grapefern	2) High	G3G4	S1S2			3) Moderate		
Ophioglossaceae	*Sceptridium lunarioides*	Winter Grape-fern	3) Moderate	G4?	S2			3) Moderate		
Pteridaceae	*Ceratopteris pteridoides*	Floating Antler Fern	1) Highest	G5?	S1			4) Low		
Selaginellaceae	*Lycopodioides ludovicianum*	Gulf Spike-moss	3) Moderate	G3G4	S1S2			3) Moderate		
Vittariaceae	*Vittaria appalachiana*	Appalachian Vittaria	1) Highest	G4	S1			4) Low		
Xyridaceae	*Xyris drummondii*	Drummond's Yellow-eyed-grass	3) Moderate	G3G4	S2					
Cyperaceae	*Schoenoplectus deltarum*	Delta Bulrush	3) Moderate	G3G4	S1					
Fabaceae	*Galactia floridana*	Florida Milkpea	3) Moderate	G3G4	S1			3) Moderate		
Apiaceae	*Cicuta maculata* var. *bolanderi*	Bolander's Water-hemlock	4) Data Deficient	G5T3T 4	SNR			3) Moderate		
Orchidaceae	*Platanthera integra*	Yellow Fringeless Orchid	3) Moderate	G3G4	S3					
Orchidaceae	*Platanthera nivea*	Snowy Orchid	3) Moderate	G3G4	S3					
Orchidaceae	*Platanthera peramoena*	Purple Fringeless Orchid	3) Moderate	G5	S2S3					
Lamiaceae	*Agastache nepetoides*	YellowGiant-hyssop	1) Highest	G5	S1					

APPENDIX 9

Past State Wildlife Grant and Section 6 Investments

Table A9.1. State Wildlife Grant and Section 6 Investments in Mississippi from 2015 - 2025.

Grant Number	Fiscal Year	Grant Investments (2015-2025)	Citations
State Wildlife Grants			
T-23-R	**2015**	Black Bear Ecology and Distribution, Paddlefish Restoration, SGCN Surveys: Oldfield Mouse, Mitchell's Satyr, Eastern Spotted Skunk, Ringed Sawback, SGCN Crayfish, SGCN Frogs, Pearl Darter, Nightjar, SGCN Shorebirds, Eastern Hellbender, Webster's Salamander, Gopher Tortoise, Biological Collections Curation	Feist SM, Mann TM, Mann DL. 2015. Primer Note: Development and characterization of 12 microsatellite loci for Webster's salamander, *Plethodon websteri.* Funded by USFWS, State Wildlife Grant Fisheries. 2015. Restoration of Paddlefish stocks in the Pascagoula watershed. Funded by USFWS, State Wildlife Grants Rummel R. 2015b. Study of Mississippi Black Bear (*Ursus americanus*) ecology and distribution. Funded by USFWS, State Wildlife Grant
T-24-R	**2016**	Black Bear Ecology and Distribution, Paddlefish Restoration, SGCN Aquatic Organisms eDNA, SGCN surveys: Pearl Blackwater Crayfish, Cockscomb Crayfish, Oldfield Mouse, Biological Collections Curation	Feist SM, Jones RL. 2016. Using genetics to differentiate, and clarify distribution of, *Procambarus penni* and *Procambarus clemmeri* in Mississippi. Funded by USFWS, State Wildlife Grant Hardesty. 2016. Evaluation and restoration of Paddlefish stocks in the Pascagoula watershed. Funded by USFWS, State Wildlife Grants Rummel R. 2016a. Study of Mississippi (*Ursus americanus*) ecology and distribution. Funded by USFWS, State Wildlife Grants
T-25-R	**2017**	Black Bear Ecology and Distribution, Paddlefish Restoration, Alligator Snapping Turtle eDNA, SGCN surveys: SGCN Crayfish, Swallow-tailed Kite, SGCN Fishes, Ironcolor Shiner, Frecklebelly Madtom, Webster's Salamander, Oldfield Mouse, Biological Collections Curation	Riecke D. 2018. Evaluation and restoration of Paddlefish stocks in the Pascagoula watershed. Funded by USFWS, State Wildlife Grants. Rummel R. 2018. Study of Mississippi Black Bear (*Ursus americanus*) ecology and distribution. Funded by USFWS, State Wildlife Grants. Wagner MD, Daun N, Hood N, Tomlin W, Duplessis M. 2018. Status survey for frecklebelly madtom (*Noturus munitus*) in the Pearl River drainage. Funded by USFWS, State Wildlife Grants.
T-26-R	**2018**	Paddlefish Restoration, Alligator Snapping Turtle eDNA SGCN surveys: SGCN Crayfish, Ironcolor Shiner, Frecklebelly Madtom, Webster's Salamander, Oldfield Mouse, Grey Petaltail Dragonfly, Appalachian Brown Butterfly, Biological Collections Curation	Feist S, Richardson D. 2018. Detection of alligator snapping turtle using eDNA on National Wildlife Refuges in Mississippi. Funded by USFWS, State Wildlife Grant Feist SM, Jones RL, Copley JL, Pearson LS, Berry GA, Qualls CP. (2018) Development and validation of an environmental DNA (eDNA) method for detection of alligator snapping turtle (Macrochelys temminckii). Chelonian Conservation and Biology, 17(2): 271 – 279

T-27-R	**2018**	SGCN Surveys: Ironcolor Shiner, Frecklebelly Madtom, Webster's Salamander, SGCN Mussels, Eastern Spotted Skunk, Gray Petaltail Dragonfly, Appalachina BrownButterfly, SGCN birds	Wagner MD. 2019. Status survey for Frecklebelly madtom (*Noturus munitus*) in the Tombigbee River drainage. Funded by USFWS, State Wildlife Grant.
T-28-R	**2020**	Swallow-Tailed Kite SGCN Surveys: Ironcolor Shiner, Frecklebelly Madtom, Webster's Salamander, Green Salamander, Cave Salamander, Spring Salamander, Eastern Hellbender SGCN Small Mammals, Mitchell's Satyr, SGCN Bats, Loggerhead Shrike	Green SR, Coulson JO. 2020. Conserving the Swallow-Tailed Kite during its re-expansion in central Mississippi. Funded by USFWS, State Wildlife Grants Selman W, Watkins B, King B, Hamby T, Robinson B, Parker P. 2022. Population status of four species of rare salamanders in northeastern Mississippi. Funded by USFWS, State Wildlife Grants Wagner MD, Ellwanger RJ.,Hurst IN, Ziegelbauer MJ. 2020. Status survey for *Notropis chalybaeus* in coastal Mississippi. Funded by USFWS, State Wildlife Grant
T-29-R	**2021**	SGCN Surveys: Bandfin Darter, Webster's Salamander, SGCN Small Mammals, Mitchell's Satyr, Eastern Spotted Skunk, SGCN Bats	Cross K. 2021. Distribution and relative abundance of the Eastern spotted skunk (*Spilogale putorius*). Funded by USFWS, State Wildlife Grant Teal CN, Pounder DL, Fast KM, Scott ME, Davidson TJ, Sandel MW. 2024. An assessment of Tombigbee Darter status in wadeable streams using backpack electroshifing. Funded by USFWS, State Wildlife Grants Phillips N, Schaefer J. 2024 Environmental DNA Surveys for Piebald Madtom, *Noturus gladiator*, in Mississippi. Funded by USFWS, State Wildlife Grants
T-30-R	**2022**	Western Chicken Turtle, Black-knobbed Sawback, Alabama Map turtle, Pearl River Map Turtle, Ringed Map turtle, SGCN Surveys: Bandfin Darter, Webster's Salamander, Mitchell's Satyr, SCGN Small Mammals, Eastern Spotted Skunk, SGCN Bats, Bluenose Shiner	Cross K and Creely J. 2022. Distribution and relative abundance of the Eastern spotted skunk (*Spilogale putorius*). Funded by USFWS, State Wildlife Grants. Devros N, Jaunsen M, Qualls C. 2023. Abundance of *Graptemys oculifera* (Ringed Sawback) and *Graptemys pearlensis* (Pearl River Map Turtle) in the Pearl River drainage of Mississippi. Funded by USFWS, State Wildlife Grants. Ellwanger RJ, and CR Rezac. 2022. Survey for Bandfin Darter (*Etheostoma zonistium*) in tributaries of the Mississippi River, Mississippi. Funded by USFWS, State Wildlife Grants. Ellwanger RJ, Rezac CR, Creely JC, Humphries ML, Hurst IN, and CP Flaherty. 2023. Survey of fish communities within Tennessee River tributaries in Mississippi. Funded by USFWS, State Wildlife Grants. Phillips NM, Huerta-Beltran BL, Weber HK, Dias PJ, Humphreys EM, Qualls CP, Pearson LS. 2023 eDNA surveys for the petitioned Western Chicken Turtle (*Deirochelys reticularia miaria*) in Western Mississippi. Funded by USFWS, State Wildlife Grants. Rezac CR, Ellwanger RJ, Duplessis MA, Winslow JR, Shake AJ, Flaherty CP, and DA Schumann. 2023. Using Detection, and Occupancy Modeling to assess the Status of Bluenose Shiner (*Pteronotropis welaka*) in Mississippi and Louisiana. Funded by USFWS, State Wildlife Grants. Selman WS. 2023. Distribution and abundance of Graptemys species (*G. nigrinoda and G. pulchra*) in the Tombigbee River System of Northeastern Mississippi. Funded by USFWS, State Wildlife Grants.

T-31-R	**2023**	Crawfish Frog, Mountain Chorus Frog, SGCN Migrant Shorebirds, Eastern Hellbender eDNA SGCN Surveys: SGCN migratory birds, Webster's Salamander, Mitchell's Satyr, Eastern Spotted Skunk, Long-Tailed Weasel, Meadow Jumping Mouse, SGCN bats, SGCN fish	
T-32-R	**2024**	Paddlefish, Bayou Darter, Tricolor Bat, Northern Long-Eared Bat, SGCN surveys: Lonesome Gravedigger, Banded Mudbug, Spotted Skunk, Long Tailed Weasel, Meadow Jumping Mouse, SGCN Small Mammals, SGCN Migratory Birds, SGCN bees, Piebald Madtom, SGCN mussels	Cross K, Creely J. 2024. AHDriFT surveys for small mammals and herpetofauna. Funded by USFWS, State Wildlife Grants. Cross K, Creely J. 2024. Locate new Oldfield Mice (*Peromyscus polionotus*) populations based upon geology. Funded by USFWS, State Wildlife Grants. Ellwanger RJ and MD Wagner. 2024. Survey for Piebald Madtom (*Noturus gladiator*) in the Big Black River, Mississippi. Funded by USFWS, State Wildlife Grants. Rezac CR, Ellwanger RJ, Humphries ML, Wagner HN, Field-Rezac EK, Stewart NI. 2025. Status, distribution of two burrowing crayfish (*Lacunicambarus*) from southeastern Mississippi. Funded by USFWS, State Wildlife Grants.
T-33-R	**2025**	Paddlefish, Bayou Darter, Florida Harvester Ant, Western Chicken Turtle, SGCN Migrant Shorebirds SGCN surveys: SGCN small mammals, SGCN reptiles and amphibians, Rafinesque's Big-Eared Bat, Southeastern Myotis	
Section 6			
E-1-30	**2015**	Dusky Gopher Frog, Louisiana Black Bear	Lee. JR. 2015. Mississippi Gopher Frog Translocation, Funded by USFWS, Section 6. Rummel R. Continuation of Louisiana Black Bear (*Ursus americanus luteolus*) telemetry study. Funded by USFWS, Section 6.
E-1-31	**2016**	Dusky Gopher Frog, Louisiana Black Bear, Mitchell's Satyr, Yellow-blotched Sawback	Brown G, Huntzinger CC, Qualls CP. 2017. Population assessment of the Yellow-Blotched Sawback turtle in the Pascagoula River system. Funded by USFWS, Section 6.Lee JR. 2017. Mississippi Dusky Gopher Frog translocation. Funded by USFWS, Section 6. Peyton JS. 2017. Monitoring and management for the federally endangered Mitchell's Satyr butterfly at John Bell Williams WMA. Funded by USFWS, Section 6. Rummel R. 2017. Continuation of Louisiana Black Bear (*Ursus americanus*) telemetry study. Funded by USFWS, Section 6.

E-1-32	**2017**	Dusky Gopher Frog, Louisiana Black Bear, Mitchell's Satyr, Alligator Snapping Turtle, Piebald Madtom, Snail Darter, Gopher Tortoise	Lee JR. 2018. Dusky Gopher Frog rearing, translocation, and monitoring. Funded by USFWS, Section 6. Rummel R. 2018b. Continuation of Louisiana Black Bear (*Ursus americanus luteolus*) telemetry study. Funded by USFWS, Section 6. Johanson REB, Wagner M. 2020. Range-wide assessment of genetic diversity in the imperiled Piebald Madtom, Noturus gladiator, with implications for its conservation. Funded by USFWS, Section 6. Pearson L, Berry G, Qualls C. 2018. Distribution and relative abundance of Alligator Snapping Turtles in the Pascagoula River system. Funded by USFWS, Section 6. Peyton S. 2018. Monitoring and management for the federally endangered Mitchell's Satyr butterfly at John Bell WMA. Funded by USFWS, Section 6. Qualls C. 2019. Increasing genetic diversity in the Mississippi Gopher Tortoises to assess its impacts on egg hatching success and offspring fitness. Funded by USFWS, Section 6.
E-1-33	**2018**	Dusky Gopher Frog, Alligator Snapping Turtle, Gopher Tortoise, Pascagoula Map Turtle, Pearl River Map Turtle, Eastern Black Rail	Hodges N. Effects of habitat management on forage nutrient absorption in Gopher Tortoises (*Gopherus polyphemus*) of south Mississippi. Funded by USFWS, Section 6. Lee JR. 2019. Mississippi Gopher Frog translocation. Funded by USFWS, Section 6. Pearson L, Berry G, Qualls C. 2018. Status of the alligator snapping turtle (*Macrochelys temminckii*) in south and central Mississippi. Funded by USFWS, Section 6. Pearson L, Selman W, Kreiser B, Lindeman PV, Jones RL. 2020. Conservation genetics of two imperiled *Graptemys* species (*G. gibbonsi* and *G. pearlensis*) petitioned for federal listing. Funded by USFWS, Section 6. Woodrey MS, Kappes PJ, Sukiennik MJ. 2022. A preliminary status assessment of the eastern Black Rail (*Laterallus jamaicensis jamaicensis*) in Mississippi: Historic records and current surveys. Funded by USFWS, Section 6.
E-1-34	**2019**	Dusky Gopher Frog, Alligator Snapping Turtle, Pearl Darter, Gopher Tortoise	Hodges N. 2021. Effects of habitat management on forage nutrient absorption in Gopher Tortoises (*Gopherus polyphemus*) of south Mississippi. Funded by USFWS, Section 6. Lee JR. 2019b. Dusky Gopher Frog Translocation. Funded by USFWS, Section 6. Pearson L, Berry G, Haralson L, Qualls C. 2019. Status of the Alligator Snapping Turtle (*Macrochelys temminckii*) in the Pascagoula, Pearl, Big Black, and Tombigbee Drainages of Mississippi. Funded by USFWS, Section 6. Schaefer J, Kresier B, Barrett S, Clark S. 2020. Ecology and population structure of Pearl Darter (*Percina aurora*) populations in the Pascagoula Drainage, Mississippi. Funded by USFWS, Section 6.

E-1-35	**2020**	Dusky Gopher Frog, Alligator Snapping Turtle, SGCN mussels, Northern Long-Eared Bat, Indiana Bat	Cross K and Creely J. 2023. Distribution of the Northern long-eared bat (*Myotis septentrionalis*), Indiana bat (*Myotis sodalis*), and Gray bat (*Myotis grisescens*) in Mississippi. Funded by USFWS, Section 6. Lee JR. 2020. Mississippi Dusky Gopher Frog Translocation. Funded by USFWS, Section 6. Pearson L, Berry G, Haralson L, Qualls C. 2020. Status of the Alligator Snapping Turtle (*Macrochelys temminckii*) in Mississippi. Funded by USFWS, Section 6. Wagner MD, Ellwanger RJ. 2020. The distribution and status of freshwater mussels in the Bear Creek watershed in Mississippi. Funded by USFWS, Section 6.
E-1-36	**2021**	Dusky Gopher Frog, Western Chicken Turtle, Saltmarsh Topminnow, Pearl Darter, Alligator Snapping Turtle	Ellwanger RJ, Rezac CR, Chaffins BH. 2021. Range Gap Survey for Pearl Darter (*Percina aurora*) in the Chickasawhay River System in Mississippi. Funded by USFWS, Section 6. Lee JR. 2021. Mississippi Gopher Frog Translocation. Funded by USFWS Section 6. Pearson L, Berry G, Haralson L, Qualls C, Kreiser B. 2021. Population genetics of the Alligator Snapping Turtle (*Macrochelys temminckii*) in Mississippi. Funded by USFWS Section 6. Phillips N. 2021 Comprehensive eDNA surveys for the Western Chicken Turtle (*Deirochelys reticularia miaria*) in Western Mississippi. Funded by USFWS Section 6. Rezac CR, Ellwanger RJ, Chaffins BH. 2022. An assessment of Saltmarsh Topminnow status across the Mississippi coast utilizing boat electrofishing. Funded by USFWS, Section 6.
E-1-37	**2022**	Dusky Gopher Frog, Pearl Darter, Alabama Hickorynut, Inflated Heelsplitter	Ellwanger RJ, Rezac CR, Shake AJ, and Jack C. Creely. 2023. Survey of freshwater mussels (Unionidae) of the Pearl River System, Mississippi. Funded by USFWS, Section 6. Lee JR. 2022. Mississippi Gopher Frog Translocation. Funded by USFWS, Section 6. Schaefer J, Phillips N, Kreiser B. 2024. Seining, eDNA and larval surveys for Pearl Darter (*Percina aurora*) in the Pearl River and Historically undersampled areas of the Pascagoula Basin. Funded by USFWS, Section 6
E-1-38	**2023**	Dusky Gopher Frog, Pearl River Map Turtle, Ringed Map Turtle, Bayou Darter, Sheepsnose, Rabbitsfoot, Pyramid Pigtoe, Round Hickorynut	Ellwanger RJ, Rezac CR, Humphries ML, Fairchild QN, Hurst IN, and CP Flaherty. 2024. Mollusk Survey of the Big Sunflower River, Mississippi. Funded by USFWS, Section 6.
E-1-39	**2024**	Dusky Gopher Frog, Tricolored Bat, Gopher Tortoise	
E-1-40	**2025**	Dusky Gopher Frog, Alabama Shad, Alabama Red-Bellied Turtle, Gopher Tortoise, Jackson Prairie Crayfish	

Table A9.2. State Wildlife Grant Investments from 2003 - 2014.

State Wildlife Grant #	Year	State Wildlife Grant Investments in Mississippi from 2003 -2014
T-1	**2/11/2003**	Paddlefish population and movement assessment on Tennessee-Tombigbee Waterway
T-2	**2/1/2003**	Population assessment of Gulf Coast Strain Walleye in Tennessee-Tombigbee Waterway
T-3	**6/5/2003**	Black Bear Population Assessment; Black Bear Movement Assessment; Black Bear Translocation; Natural Heritage Database Digitization; Tilapia (potential threat to SGCN) Dispersal Mechanisms in Mississippi; Conservation Strategy Planning; SGCN Surveys: SGCN Bats, Alligator Gar, SGCN Fishes in Tennessee-Tombigbee Waterway
T-4	**2/1/2004**	Gulf Coast Strain Walleye Hatchery Facility Construction
T-5	**1/1/2005**	Natural Heritage Database Management, Conservation Strategy and Development; SGCN Surveys: Glass Lizard, Black Pine Snake; Biological Collections Curation
T-6	**1/1/2007**	State Comprehensive Wildlife Conservation Strategy Development; State Comprehensive Wildlife Conservation Strategy Implementation; SGCN Population Genetics: Starhead Topminnow, Western Starhead Topminnow; SGCN Surveys: Spotted Skunk, Long-Tailed Weasel; Biological Collections Curation
T-7-HM	**1/1/2008**	Habitat Characteristics and Reproductive Biology of SGCN Saltmarsh Topminnow
T-8-1-R	**1/8/2008**	State Comprehensive Conservation Strategy Planning; State Comprehensive Conservation Strategy Implementation; State Comprehensive Wildlife Conservation Strategy Coordination; Population Structure and Feeding Habits of SGCN Alabama Shad; SGCN Surveys: Swallow- Tailed Kite, Oldfield Mouse, Eastern Spotted Skunk; SGCN Surveys on State-Owned Lands; Biological Collections Curation
T-9-R	**7/1/2009**	State Comprehensive Wildlife Conservation Strategy Development; State Comprehensive Wildlife Conservation Strategy Implementation; SGCN Surveys: Spotted Skunk, Long-Tailed Weasel; Biological Collections Curation
T-10-R	**1/1/2009**	Cogongrass Control in SGCN Habitats; Incorporation of GIS and Remote Sensing Into State Comprehensive Wildlife Conservation Strategy

State Wildlife Grant #	Year	State Wildlife Grant Investments in Mississippi from 2003 -2014
T-11-P	**7/1/2009**	State Comprehensive Wildlife Conservation Strategy Revision
T-12-R	**1/1/2009**	SGCN Yazoo Darter Population Status, Habitat Use and Reproductive Biology
T-13-R	**1/1/2010**	Continued Investigation of GIS and Remote Sensing Applications to the State Comprehensive Wildlife Conservation Strategy
T-14	**7/1/2010**	State Comprehensive Wildlife Conservation Strategy Development; State Comprehensive Wildlife Conservation Strategy Implementation; SGCN Bat Surveys on State-Owned Lands; Gopher Tortoise Relocation; Biological Collections Curation; SGCN Surveys: Bald Eagle, Gopher Tortoise, Oldfield Mouse, Webster's Salamander, SGCN Shore Birds, Nightjar, Frecklebelly Madtom, Pearl Darter, Alabama Shad, Southern Redbelly Dace, Piebald Madtom, Diamondback Terrapin, Alabama Red-belly Turtle
T-15-R	**1/1/2010**	Monitoring of SGCN Swallow-Tailed Kite Pre-Migration Roosts
T-16	**4/15/2011**	Black Bear Population Assessment; Black Bear Movement Assessment; Black Bear Translocation; Paddlefish Rearing, Stocking and Monitoring; White-nose Syndrome in SGCN Bats Monitoring and Testing; SGCN Surveys: Ironcolor Shiner, Piebald Madtom, Gopher Tortoise, Webster's Salamander, Spotted Skunk, Oldfield Mouse, SGCN Crayfishes, SGCN Mussels, Hellbender, SGCN Shore Birds; Biological Collections Curation
T-17	**10/1/2012**	Black Bear Population Assessment; Black Bear Movement Assessment; Black Bear Translocation; Paddlefish Rearing, Stocking and Monitoring; White-nose Syndrome in SGCN Bats Monitoring and Testing; SGCN Surveys: Ironcolor Shiner, Piebald Madtom, Gopher Tortoise, Webster's Salamander, Spotted Skunk, Oldfield Mouse, SGCN Crayfishes, SGCN Mussels, Hellbender, SGCN Shore Birds; Biological Collections Curation
T-18	**10/1/2013**	Black Bear Population Assessment; Black Bear Movement Assessment; Black Bear Transloca- tion; Paddlefish Rearing, Stocking and Monitoring; White-nose Syndrome in SGCN Bats Monitoring and Testing; SGCN Surveys: Ironcolor Shiner, Gopher Tortoise, Webster's Salamander, Spotted Skunk, Oldfield Mouse, SGCN Crayfishes, SGCN Mussels, Hellbender, SGCN Shore Birds; Biological Collections Curation

APPENDIX 10

1. SGCN Potential List. Consider specific groups of species as **potential** SGCN at the beginning of the revision process, with the understanding that some species could be added or removed from the SGCN list during later stages of the revision. The potential list should start with the current 2015 SWAP list of SGCN for your state or territory. The list should then be supplemented with any additional species from the following groups:

- **a.** Endangered, Threatened, and Candidate Species currently listed by the U.S. Fish and Wildlife Service or the National Oceanic and Atmospheric Administration.
- **b.** NatureServe G1-G2 species, including any species with rounded ranks within this range (i.e., include G2G3 species and G1G3 species).
- **c.** Regional Species of Greatest Conservation Need
- **d.** State Listed Species
- **e.** NatureServe S1-S2 species, including any species with rounded ranks within this range (i.e., include S2S3 and S1S3 species).
- **f.** U.S. Fish and Wildlife Service at-Risk species. The USFWS defines 'at risk species' as species that are petitioned, a candidate or proposed for listing under the U.S. Endangered Species Act. While this category overlaps partly with item a, the at-risk finder is useful for identifying these species in your state or territory.
- **g.** IUCN Red list species ranked as CR (critically endangered), EN (endangered), and VU (vulnerable) at the global scale of assessment.
- **h.** Partner's In Flight Category of Continental Importance: Red Watchlist, Yellow Watchlist, and Common Birds in Steep Decline.

This recommendation is for the groups of species that all states should consider **at a minimum**, some states may want to consider additional groups of species in their assessment of SGCN. For example, several states indicated that they are also planning to include S3 species in their assessment, while other states indicated that including all S3 species would not be feasible.

2. Historic and Extirpated Species. Species considered by experts or ranked by NatureServe as SX (extirpated), or SH (historic) should be considered for inclusion in the species assessment on a case-by-case basis. For example, a state may want to include historic species that could potentially be rediscovered through additional surveys, especially if re-discovered populations would be valuable for conservation. Similarly, species that are likely to be reintroduced or could recolonize restored habitats should also be considered for inclusion in the assessment.

3. Uncertain and Data Deficient species. Species that are considered data deficient by experts or ranked (SU unrankable) by NatureServe should be considered for inclusion in the species assessment on a case-by-case basis. If there is an expectation that a data deficient species may be imperiled in the state, including it in the species assessment may help identify targeted research needs that could be later addressed through SGCN funding.

4. Undescribed Species. There should be strong evidence for including undescribed species in the assessment. Examples of such data include publications, reports that include genetic or morphological data, or recognition of the taxon by a professional society or conservation organization. Further, there should be some expectation that the undescribed species is in need of conservation.

5. Additional SGCN. During the revision process, your species experts may want to add species to the assessment. This should include recently described species, species with emerging threats or any other species with significant conservation needs that were not captured on the potential SGCN list.

6. *Assessing Conservation Status. Coordinate with your state's NatureServe Program Office (NSPO) to obtain the most recent rarity ranks for species you are including in your assessment. If state rarity ranks have not been recently updated (within a few years), work with your NSPO to update rarity ranks using the NatureServe ranking methodology. The SWAP revision process is a good opportunity to engage experts and organize the data needed for ranking. If existing NSPO staff are not completing the ranking, provide opportunities for your staff or species experts to participate in an upcoming training session. Keep in mind that experts can override the rank calculator with sufficient justification. Further, it is preferable to determine an SU rank (unrankable) when NatureServe ranking factors are poorly estimated.

7. Southeastern SGCN Database. Utilize the Southeastern SGCN database developed by the subcommittee to complete your species assessment. The database will include standard terminology, threats, NatureServe ranking factors, and conservation actions and will be available on or before October 1st, 2022. If your state already has an SGCN database that it prefers to use, consider adopting data fields and definitions included in the SGCN database where feasible. An additional document describing the database is in preparation.

8. *Prioritize SGCN. After completing the species assessment, utilize the SGCN priority tier reference guide (Table 1) to assign SGCN species to one of four priority levels: Highest Conservation Concern, High Conservation Concern, Moderate Conservation Concern, and Data Deficient. If species do not meet any of the reference criteria, think carefully about whether they should be designated as SGCN. A species may merit prioritization by meeting any one of the listed reference criteria. However, prioritization should be based on an overall synthesis of the priority tier definition and the most suitable criteria for assessing the status of a particular SGCN. Deviation from reference criteria may be appropriate for certain SGCN.

9. *Document Your Process. Describe the process you used to identify, evaluate, and prioritize SGCN within your SWAP so that your results are clearly understood and repeatable. Please document any deviations from the recommendations presented in this document.

Figure A 10.1. Priority tier reference guide that may be used to help assign SGCN to priority tiers.

Priority Tier	Definition	Reference Criteria
Highest Conservation Concern	Critically imperiled species that may become extirpated from my state in the near future unless conservation efforts are continued or enhanced. The population(s) in my state are very important to the global conservation of the species.	-G1-G2 -RSGCN Very High or High AND S1-S2 -ESA E -ESA T or C AND S1-S2 -IUCN CR or EN AND S1-S2 PIF Red Watchlist Species
High Conservation Concern	Imperiled species that may continue to decline in my state unless conservation efforts are continued or enhanced. The population(s) in my state are important to the global or regional conservation of the species.	-G3-G4 AND S1-S2 -G5 AND S1 -RSGCN Mod AND S1-S2 -RSGCN Very High or HIGH AND S3 -ESA T or C AND S3 -IUCN CR or EN AND S3 -IUCN VU AND S1-S2 PIF Yellow Watchlist Species
Moderate Conservation Concern	Species that may be currently stable but of long-term conservation concern due to increasing or emerging threats or species that are currently stable but are representative of an ecosystem or community in need of conservation or species that are currently stable but represented by a strong population or unique genetic diversity that is worthy of conservation within my state.	G3 AND S3 RSGCN Mod and S3 IUCN VU and S3 PIF CBSD
Data Deficient	Species that may be imperiled, but lack of information on their conservation status, taxonomy, life history, and threats precludes the identification of conservation actions.	Any G Rank AND SU SH or SX species that may be rediscovered IUCN Data Deficient

SGCN Priority Tier	Definition
1 **Highest Conservation Concern**	Critically imperiled species that may become extirpated from my state in the near future unless conservation efforts are continued or enhanced. The population(s) in my state are very important to the global conservation of the species.
2 **High Conservation Concern**	Imperiled species that may continue to decline in my state unless conservation efforts are continued or enhanced. The population(s) in my state are important to the global or regional conservation of the species.
3 **Moderate Conservation Concern**	Species that may be currently stable but of long-term conservation concern due to increasing or emerging threats or species that are currently stable but are representative of an ecosystem or community in need of conservation or species that are currently stable but represented by a strong population or unique genetic diversity that is worthy of conservation within my state.
4 **Data Deficient**	Species that may be imperiled, but lack of information on their conservation status, taxonomy, life history, and threats precludes the identification of conservation actions.

Table A10.1 Mississippi Species of Greatest Conservation Need with State and Federal Ranks and Status and Regional Species of Greatest Conservation Need Ranks

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Mussels								
Unionidae	2	*Actinonaias ligamentina*	Mucket	G5	S1		LE	
Unionidae	2	*Arcidens confragosus*	Rock Pocketbook	G4	S2			
Unionidae	2	*Cyclonaias tuberculata*	Purple Wartyback	G5	S2		LE	
Unionidae	4	*Cyprogenia aberti*	Western Fanshell	G2G3	SX	LT		3
Unionidae	2	*Ellipsaria lineolata*	Butterfly	G4G5	S2			
Unionidae	1	*Elliptio arca*	Alabama Spike	G2G3	S1	PT		2
Unionidae	1	*Elliptio arctata*	Delicate Spike	G2G3Q	S1	PT	LE	2
Unionidae	1	*Epioblasma brevidens*	Cumberlandian Combshell	G1	S1	LE, XN	LE	1
Unionidae	1	*Epioblasma penita*	Southern Combshell	G1	S1	LE	LE	1
Unionidae	1	*Epioblasma triquetra*	Snuffbox	G3	SX	LE	LE	1
Unionidae	2	*Eurynia dilatata*	Spike	G5	S1		LE	
Unionidae	1	*Hamiota perovalis*	Orange-nacre Mucket	G1	S1	LT	LE	3
Unionidae	2	*Lampsilis fasciola*	Wavy-rayed Lampmussel	G5	S1			
Unionidae	2	*Lampsilis hydiana*	Louisiana Fatmucket	G4	S2			
Unionidae	2	*Lampsilis ovata*	Pocketbook	G5	S2			
Unionidae	2	*Lasmigona alabamensis*	Alabama Heelsplitter	G3	S2			
Unionidae	3	*Lasmigona complanata*	White Heelslpitter	G5	S3			
Unionidae	2	*Lasmigona costata*	Flutedshell	G5	S2			
Unionidae	1	*Ligumia recta*	Black Sandshell	G4G5	S1		C	

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Unionidae	1	*Medionidus acutissimus*	Alabama Moccasinshell	G2	S1	LT	LE	2
Unionidae	2	*Obovaria arkansasensis*	Southern Hickorynut	G3	S1			2
Unionidae	1	*Obovaria sp.*	Undescribed Hickorynut		S1	PT	C	
Unionidae	1	*Obovaria subrotunda*	Round Hickorynut	G4	S1	LT	LE	2
Unionidae	1	*Obovaria unicolor*	Alabama Hickorynut	G3	S1	PP		2
Unionidae	1	*Plethobasus cyphyus*	Sheepnose	G3	S1	LE	LE	1
Unionidae	2	*Pleurobema beadleianum*	Mississippi Pigtoe	G2G3	S3			
Unionidae	4	*Pleurobema curtum*	Black Clubshell	G1	SX	LE	LE	
Unionidae	1	*Pleurobema decisum*	Southern Clubshell	G2	S1	LE	LE	2
Unionidae	1	*Pleurobema perovatum*	Ovate Clubshell	G1	S1	LE	LE	1
Unionidae	1	*Pleurobema riddellii*	Louisiana Pigtoe	G1	S1	PP		1
Unionidae	1	*Pleurobema sintoxia*	Round Pigtoe	G2G3	S1		LE	2
Unionidae	4	*Pleurobema taitianum*	Heavy Pigtoe	G1	SX	LE	LE	2
Unionidae	1	*Pleuronaia barnesiana*	Tennessee Pigtoe	G2G3	S1	PP		2
Unionidae	1	*Pleuronaia dolabelloides*	Slabside Pearlymussel	G2	S1	LE	LE	2
Unionidae	3	*Potamilus alatus*	Pink Heelsplitter	G5	S3			
Unionidae	1	*Potamilus capax*	Fat Pocketbook	G2	S1	LE	LE	1
Unionidae	1	*Potamilus inflatus*	Inflated Heelsplitter	G1G2Q	S1	LT	LE	2
Unionidae	2	*Pseudodontoides subvexus*	Southern Creekmussel	G3	S2			3

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Unionidae	2	*Ptychobranchus fasciolaris*	Kidneyshell	G4G5	S1		LE	
Unionidae	3	*Quadrula nobilis*	Gulf Mapleleaf	G4	S3			
Unionidae	2	*Quadrula rumphiana*	Ridged Mapleleaf	G4	S2			
Unionidae	2	*Strophitus pascagoulaensis*	Pascagoula Creekshell	GNR	S2			
Unionidae	1	*Strophitus radiatus*	Rayed Creekshell	G2	S2			2
Unionidae	2	*Strophitus undulatus*	Creeper	G5	S1			
Unionidae	1	*Theliderma cylindrica cylindrica*	Rabbitsfoot	G3G4T 3	S1	LT	LE	2
Unionidae	4	*Theliderma metanevra*	Monkeyface	G4	SX		LE	
Unionidae	1	*Toxolasma lividum*	Purple Lilliput	G3	S1			
Unionidae	3	*Uniomerus declivis*	Tapered Pondhorn	G5	S3			
Unionidae	3	*Utterbackiana hartfieldorum*	Cypress Floater	G4	S3			2
Unionidae	2	*Villosa vanuxemensis*	Mountain Creekshell	G4	S1			2
Snails								
Gastropoda	1	*Elimia cylindracea*	Cylinder Elimia	G2	S1			
Gastropoda	2	*Lithasia armigera*	Armored Rocksnail	G3	S1			
Gastropoda	1	*Lithasia hubrichti*	Big Black Rocksnail	GX	S1		C	
Gastropoda	1	*Lithasia lima*	Warty Rocksnail	G2	S1			
Gastropoda	2	*Lithasia verrucosa*	Varicose Rocksnail	G4	S2			
Gastropoda	4	*Pleurocera vestita*	Brook Hornsnail	G3	SU			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Crayfishes								
Cambaridae	2	*Cambarellus diminutus*	Least Crayfish	G3	S2			2
Cambaridae	2	*Cambarellus lesliei*	Angular Dwarf Crayfish	G3	S2			2
Cambaridae	2	*Cambarus girardianus*	Tanback Crayfish	G5	S2			
Cambaridae	2	*Cambarus rusticiformis*	Depression Crayfish	G5	S1			
Cambaridae	4	*Cambarus striatus*	Ambiguous Crayfish	G5	S5			
Cambaridae	2	*Creaserinus burrisi*	Burris' Burrowing Crayfish	G3	S2			2
Cambaridae	1	*Creaserinus danielae*	Speckled Burrowing Crayfish	G2	S2	PT		2
Cambaridae	4	*Creaserinus fodiens*	Digger Crayfish	G5	S5			
Cambaridae	1	*Creaserinus gordoni*	Camp Shelby Burrowing Crayfish	G1	S1		LE	1
Cambaridae	3	*Faxonius erichsonianus*	Reticulate Crayfish	G5	S3			
Cambaridae	4	*Faxonius etnieri*	Ets Crayfish	G4G5	SU			
Cambaridae	1	*Faxonius hartfieldi*	Yazoo Crayfish	G2	S1		C	2
Cambaridae	3	*Faxonius jonesi*	Sucarnoochee River Crayfish	G3	S3			3
Cambaridae	3	*Faxonius mississippiensis*	Mississippi Crayfish	G3	S3			
Cambaridae	4	*Faxonius palmeri*	Gray-Speckled Crayfish	G5	S5			
Cambaridae	2	*Faxonius placidus*	Bigclaw Crayfish	G5	S2			
Cambaridae	2	*Faxonius validus*	Powerful Crayfish	G5	S2			
Cambaridae	1	*Faxonius wrighti*	Hardin Crayfish	G2	S1	PT		2
Cambaridae	2	*Faxonius yanahlindus*	Spinywrist Crayfish	GNR	S2			
Cambaridae	1	*Hobbseus attenuatus*	Pearl Rivulet Crayfish	G2	S2			2
Cambaridae	1	*Hobbseus cristatus*	Crested Rivulet Crayfish	G3	S2	PT		2
Cambaridae	1	*Hobbseus orconectoides*	Oktibbeha Rivulet Crayfish	G1	S1	PT	C	1

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Cambaridae	3	*Hobbseus petilus*	Tombigbee Rivulet Crayfish	G2	S3	PT		2
Cambaridae	3	*Hobbseus prominens*	Prominence Rivulet Crayfish	G4G5	S3			
Cambaridae	1	*Hobbseus valleculus*	Choctaw Rivulet Crayfish	G1	S1			1
Cambaridae	1	*Hobbseus yalobushensis*	Yalobusha Rivulet Crayfish	G2	S2	PT		2
Cambaridae	3	*Lacunicambarus dalyae*	Jewel Mudbug	GNR	S3			
Cambaridae	1	*Lacunicambarus freudensteini*	Banded Mudbug	G1	S1		C	
Cambaridae	2	*Lacunicambarus mobilensis*	Lonesome Gravedigger	G3	S2			
Cambaridae	3	*Lacunicambarus polychromatus*	Paintedhand Crayfish	G5	S3			
Cambaridae	3	*Procambarus ablusus*	Hatchie River Crayfish	G4	S3			
Cambaridae	2	*Procambarus barbiger*	Jackson Prairie Crayfish	G2?	S2	PT		2
Cambaridae	2	*Procambarus bivittatus*	Ribbon Crayfish	G5	S2			
Cambaridae	1	*Procambarus fitzpatricki*	Spinytail Crayfish	G2?	S2			2
Cambaridae	4	*Procambarus hagenianus hagenianus*	Southeastern Prairie Crayfish	G4G5T 4	SU			
Cambaridae	3	*Procambarus hagenianus vesticeps*	Egyptian Crayfish	G4G5T 3	S3			
Cambaridae	1	*Procambarus lagniappe*	Lagniappe Crayfish	G2	S2			2
Cambaridae	3	*Procambarus lecontei*	Mobile Crayfish	G3G4	S3			3
Cambaridae	2	*Procambarus lylei*	Shutispear Crayfish	G2	S2			2
Cambaridae	2	*Procambarus mancus*	Lame Crayfish	G4	S2			
Cambaridae	3	*Procambarus penni*	Pearl Blackwater Crayfish	G3	S3			2
Cambaridae	3	*Procambarus planirostris*	Flatnose Crayfish	G4	S3			3
Cambaridae	2	*Procambarus shermani*	Gulf Crayfish	G4	S2			
Cambaridae	3	*Procambarus viaeviridis*	Vernal Crayfish	G5	S3			2

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Arachnids								
Ixodidae	2	*Amblyomma tuberculatum*	Gopher Tortoise Tick	G3?	S1			
Lycosidae	4	*Arctosa sanctaerosae*	Santa Rosa Wolf Spider	G3	SU			
Insects								
Baetidae	4	*Acentrella alachua*	A Mayfly	G3G4	SU			
Baetiscidae	4	*Baetisca escambiensis*	A Mayfly	G2G3	SU			
Heptageniidae	2	*Raptoheptagenia cruenta*	Wallace's Deepwater Mayfly	G4	S2			
Heptageniidae	2	*Spinadis simplex*	Wallace's Deepwater Mayfly	G3	S2			
Isonychiidae	4	*Isonychia berneri*	A Mayfly	G2G3	SU			
Oligoneuriidae	3	*Homoeoneuria cahabensis*	Cahaba Sand-filtering Mayfly	G3	S1S3			
Pseudironidae	3	*Pseudiron centralis*	White Sand-river Mayfly	G5	S3			
Aeshnidae	3	*Aeshna umbrosa*	Shadow Darner	G5	S2			
Coenagrionidae	3	*Amphiagrion saucium*	Eastern Red Damsel	G5	S2			
Coenagrionidae	3	*Enallagma concisum*	Cherry Bluet	G4	S2			
Coenagrionidae	3	*Enallagma davisi*	Sandhill Bluet	G5	S1			
Coenagrionidae	3	*Enallagma pallidum*	Pale Bluet	G4	S2			
Coenagrionidae	3	*Enallagma pollutum*	Florida Bluet	G5	S2			
Coenagrionidae	3	*Ischnura prognata*	Furtive Forktail	G4	S2			
Coenagrionidae	3	*Nehalennia gracilis*	Sphagnum Sprite	G5	S2			
Cordulegastridae	3	*Cordulegaster bilineata*	Brown Spiketail	G5	S2			
Cordulegastridae	2	*Cordulegaster erronea*	Tiger Spiketail	G4	S1			
Corduliidae	2	*Epitheca spinosa*	Robust Baskettail	G4	S1			
Corduliidae	3	*Neurocordulia yamaskanensis*	Stygian Shadowdragon	G5	S1			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Corduliidae	3	*Somatochlora georgiana*	Coppery Emerald	G3G4	S2			
Corduliidae	3	*Somatochlora provocans*	Treetop Emerald	G4	S2			
Gomphidae	3	*Arigomphus lentulus*	Stillwater Clubtail	G5	S1			
Gomphidae	3	*Arigomphus villosipes*	Unicorn Clubtail	G5	S2			
Gomphidae	2	*Gomphus australis*	Clearlake Clubtail	G4	S1			
Gomphidae	3	*Gomphus dilatatus*	Blackwater Clubtail	G5	S1			
Gomphidae	2	*Gomphus geminatus*	Twin-striped Clubtail	G3G4	S1			
Gomphidae	2	*Gomphus hodgesi*	Hodges' Clubtail	G3	S2			
Gomphidae	1	*Ophiogomphus australis*	Southern Snaketail	G1G2	S1			
Gomphidae	3	*Stylogomphus albistylus*	Eastern Least Clubtail	G5	S1			
Gomphidae	1	*Stylurus potulentus*	Yellow-sided Clubtail	G2	S1			
Gomphidae	2	*Stylurus townesi*	Townes' Clubtail	G3	S1			
Libellulidae	3	*Celithemis amanda*	Amanda's Pennant	G5	S2			
Libellulidae	3	*Erythrodiplax umbrata*	Band-winged Dragonlet	G5	S1			
Libellulidae	3	*Nannothemis bella*	Elfin Skimmer	G4G5	S1			
Macromiidae	3	*Macromia alleghaniensis*	Allegheny River Cruiser	G4	S2			
Petaluridae	3	*Tachopteryx thoreyi*	Gray Petaltail	G4	S2			
Leuctridae	3	*Leuctra colemanorum*	Yalobusha Needlefly	GNR	S3			
Leuctridae	4	*Leuctra hicksi*	Cypress Needlefly	GNR	SU			
Nemouridae	4	*Amphinemura alabama*	Alabama Forestfly	G3	SU			
Nemouridae	4	*Shipsa rotunda*	Intrepid Forestfly	G5	SU			
Perlidae	4	*Attaneuria ruralis*	Giant Stone	G4	SU			
Perlidae	4	*Neoperla coxi*	A Stonefly	G3	SU			
Perlidae	4	*Perlesta lagoi*	A Stonefly	G3	SU			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Perlodidae	4	*Helopicus bogaloosa*	Masked Springfly	G3G4	SU			
Perlodidae	2	*Hydroperla fugitans*	Austin Springfly	G3	S2			
Perlodidae	4	*Isogenoides varians*	A Stonefly	G3G4	SU			
Acrididae	2	*Pseudopomala brachyptera*	Short-winged Toothpick Grasshopper	G5	S1		C	
Gryllotalpidae	4	*Gryllotalpa major*	Prairie Mole Cricket	G3	SH			
Carabidae	4	*Cicindela marginipennis*	Cobblestone Tiger Beetle	G3	SH			
Carabidae	3	*Cicindela nigrior*	Autumn Tiger Beetle	G2G3	S2S3			
Histeridae	2	*Chelyoxenus xerobatis*	Gopher Tortoise Hister Beetle	G2G3	S1S3			
Hydraenidae	2	*Gymnocthebius maureenae*	Maureen's Gymnocthebius Minute Moss Beetle	G1G3	S1S3			
Hydrophilidae	2	*Paracymus seclusus*	Seclusive Water Scavenger Beetle	G1G3	S1S3			
Scarabaeidae	2	*Aphodius troglodytes*	Aphodius Tortoise Commensal Scarab Beetle	G2G3	S1			
Scarabaeidae	2	*Onthophagus polyphemi*	Onthophagus Tortoise Commensal Scarab Beetle	G2G3	S1S2			
Silphidae	4	*Nicrophorus americanus*	American Burying Beetle	G3	SX	LE	LE	
Staphylinidae	2	*Philonthus testudo*	Western Gopher Tortoise Rove Beetle	G2	S1			
Anthomyiidae	2	*Eutrichota gopheri*	Gopher Tortoise Burrow Fly	G2G3	S2			
Asilidae	2	*Machimus polyphemi*	Gopher Tortoise Robber Fly	G2	S1			
Apidae	2	*Bombus fraternus*	Southern Plains Bumble Bee	G2G4	S2			3
Apidae	3	*Bombus pensylvanicus*	American Bumblebee	G3G4	S3	PT		3
Apidae	1	*Bombus variabilis*	Variable Cuckoo Bumble Bee	G1G2	S1	PT		1
Apideae	4	*Tetraloniella albata*	A Long-horned Bee	GNR	SU			
Colletidae	4	*Caupolicana electa*	A Plasterer Bee	G2	SU			
Formicidae	2	*Pogonomyrmex badius*	Florida Harvester Ant	G5	S2			
Melittidae	4	*Hesperapis oraria*	Gulf Coast Solitary Bee	G1	SU			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Erebidae	4	*Catocala atocala*	Brou's Underwing	G3G4	SU			
Erebidae	4	*Catocala delilah*	Delilah Underwing	G3G4	SU			
Erebidae	4	*Catocala miranda*	A Noctuid Moth	G3G4	SU			
Hesperiidae	4	*Amblyscirtes alternata*	Least Florida Skipper	G2G3	SU			
Hesperiidae	3	*Amblyscirtes reversa*	Reversed Roadside Skipper	G3G4	S1S3			
Hesperiidae	3	*Atrytone arogos arogos*	Arogos Skipper	G2G3T 1T2	S2S3			
Hesperiidae	4	*Atrytonopsis loammi*	Loammi Skipper	G2	SU			
Hesperiidae	4	*Erynnis martialis*	Mottled Dusky Wing	G3	SU			
Hesperiidae	4	*Euphyes arpa*	Palmetto Skipper	G3	SU			
Hesperiidae	2	*Euphyes bayensis*	Bay St. Louis Skipper	G2G3	S1			
Hesperiidae	4	*Euphyes dukesi dukesi*	Dukes' Skipper	G3G4T 3	SU			
Hesperiidae	3	*Euphyes pilatka*	Palatka Skipper	G3	S1S3			
Hesperiidae	4	*Hesperia attalus*	Dotted Skipper	G3G4	SU			
Noctuidae	4	*Bagisara brouana*	A Noctuid Moth	G3	SU			
Noctuidae	4	*Papaipema maritima*	Maritime Sunflower Borer	G3	SU			
Noctuidae	4	*Papaipema sp. 5*	Rare Cane Borer Moth	G1G2	SU			
Nymphalidae	4	*Neonympha helicta*	Helicta Satyr	G3G4	SU			
Nymphalidae	1	*Neonympha mitchellii*	Mitchell's Satyr	G2	S1	LE	LE	
Nymphalidae	4	*Speyeria diana*	Diana	G2G3	SU			
Saturniidae	4	*Automeris louisiana*	Louisiana Eyed Silkmoth	G1G3	SU			
Sphingidae	4	*Eumorpha intermedia*	Intermediate Sphinx	G3G4	SU			
Sphingidae	4	*Lapara phaeobrachycerous*	Gulf Pine Sphinx	G3G4	SU			
Tineidae	4	*Ceratophaga vicinella*	Gopher Tortoise Shell Moth	G1G3	SU			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Capniidae	4	*Allocapnia aurora*	Aurora Snowfly	G5	SU			
Capniidae	4	*Allocapnia polemistis*	Black Warrior Snowfly	G3	SU			
Capniidae	4	*Nemocapnia carolina*	Southern Snowfly	G5	SU			
Chloroperlidae	4	*Alloperla natchez*	Natchez Stonefly	G2	S2			
Chloroperlidae	2	*Haploperla chukcho*	Chukcho Stonefly	G2	S2			
Hydropsychidae	4	*Cheumatopsyche petersi*	Peters' Cheumatopsyche Caddisfly	G3	SU			
Hydroptilidae	4	*Hydroptila cretosa*	A Caddisfly	G1G2	SU			
Hydroptilidae	4	*Hydroptila holzenthali*	A Caddisfly	G1	SU			
Hydroptilidae	4	*Hydroptila homochitta*	A Caddisfly	G1	SU			
Hydroptilidae	4	*Hydroptila molsonae*	Molson's Microcaddisfly	G2	SU			
Hydroptilidae	4	*Hydroptila poirrieri*	A Caddisfly	G2	SU			
Hydroptilidae	4	*Hydroptila tusculum*	A Caddisfly	G3G4	SU			
Hydroptilidae	4	*Neotrichia alabamensis*	A Caddisfly	G3G4	SU			
Hydroptilidae	4	*Orthotrichia dentata*	Dentate Orthotrichian Microcaddisfly	G2G3	SU			
Lepidostomatidae	4	*Lepidostoma morsei*	Morse's Little Plain Brown Sedge	G2G3	SU			
Leptoceridae	4	*Ceraclea spongillovorax*	A Caddisfly	G3G4	SU			
Leptoceridae	4	*Oecetis daytona*	A Caddisfly	G3	SU			
Leptoceridae	4	*Setodes dixiensis*	A Caddisfly	G3G4	SU			
Philopotamidae	4	*Chimarra falculata*	A Caddisfly	G3G4	SU			
Sericostomatidae	4	*Agarodes libalis*	Spring-loving Psiloneuran Caddisfly	G3	SU			
Sericostomatidae	4	*Agarodes stannardi*	Stannard's Agarodes Caddisfly	G2	S1S2			

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Fishes								
Petromyzontidae	3	*Ichthyomyzon castaneus*	Chestnut Lamprey	G4	S3			
Petromyzontidae	2	*Ichthyomyzon unicuspis*	Silver Lamprey	G5	S1			
Petromyzontidae	2	*Lethenteron appendix*	American Brook Lamprey	G4	S2			2
Lamnidae	4	*Isurus oxyrinchus*	Shortfin Mako Shark	GNR	SU			2
Odontaspididae	4	*Carcharias taurus*	Sand Tiger Shark	G3	SP			
Carcharhinidae	3	*Carcharhinus acronotus*	Blacknose Shark	GNR	S3			
Carcharhinidae	2	*Carcharhinus plumbeus*	Sandbar Shark	G4	S2			2
Carcharhinidae	4	*Carcharhinus porosus*	Smalltail Shark	GNR	SU	P		
Carcharhinidae	2	*Negaprion brevirostris*	Lemon Shark	G3	S2			
Sphyrnidae	2	*Sphyrna lewini*	Scalloped Hammerhead	G4	S2	LE	LE	
Sphyrnidae	2	*Sphyrna mokarran*	Great Hammerhead	G3	S2			
Narcinidae	2	*Narcine bancroftii*	Caribbean Electric Ray	GNR	S2			1
Pristidae	1	*Pristis pectinata*	Smalltooth Sawfish	G2	S1	P		
Pristidae	4	*Pristis pristis*	Largetooth Sawfish	G2	SH	LE	LE	
Myliobatiade	2	*Aetobatus narinari*	Whitespotted Eagle Ray	G4	S2	P		
Myliobatidae	4	*Manta birostris*	Giant Manta Ray	G3	SP	LT	LE	2
Rhinopteridae	3	*Rhinoptera brasiliensis*	Brazilian Cownose Ray	GNR	S3			
Mobulidae	4	*Mobula hypostoma*	Atlantic Pygmy Devil Ray	GNR	SP			
Mobulidae	4	*Mobula tarapacana*	Sicklefin Devil Ray	GNR	SP			
Acipenseridae	1	*Acipenser desotoi*	Gulf Sturgeon	G3T2	S1	LT	LE	2
Acipenseridae	2	*Acipenser fulvescens*	Lake Sturgeon	G3G4	S2		C	2
Acipenseridae	1	*Scaphirhynchus albus*	Pallid Sturgeon	G2	S1	LE	LE	1

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Acipenseridae	3	*Scaphirhynchus platorynchus*	Shovelnose Sturgeon	G4	S3	LT	LE	2
Acipenseridae	4	*Scaphirhynchus suttkusi*	Alabama Sturgeon	G1	SX	LE	LE	1
Polyodontidae	3	*Polyodon spathula*	Paddlefish	G4	S3			
Lepisosteidae	2	*Atractosteus spatula*	Alligator Gar	G3G4	S2			3
Megalopidae	4	*Megalops atlanticus*	Tarpon	G5	S3			2
Anguillidae	4	*Anguilla rostrata*	American Eel	G4	SU			1
Alosidae	1	*Alosa alabamae*	Alabama Shad	G2G3	S1	P		1
Alosidae	4	*Alosa chrysochloris*	Skipjack Herring	SU	G5			
Catostomidae	4	*Catostomus commersonii*	White Sucker	G5	SX			
Catostomidae	3	*Cycleptus elongatus*	Blue Sucker	G3G4	S3			2
Catostomidae	3	*Cycleptus meridionalis*	Southeastern Blue Sucker	G3G4	S3			2
Catostomidae	3	*Ictiobus niger*	Black Buffalo	G5	S3			
Catostomidae	2	*Moxostoma anisurum*	Silver Redhorse	G5	S1			
Catostomidae	2	*Moxostoma breviceps*	Smallmouth Redhorse	G5	S1			
Catostomidae	3	*Moxostoma carinatum*	River Redhorse	G4	S3			
Catostomidae	3	*Moxostoma duquesnei*	Black Redhorse	G5	S1			
Leuciscidae	2	*Alburnops candidus*	Silverside Shiner	G4	S2			2
Leuciscidae	2	*Alburnops chalybaeus*	Ironcolor Shiner	G4	S1		LE	2
Leuciscidae	1	*Alburnops edwardraneyi*	Fluvial Shiner	G4	S1		C	1
Leuciscidae	2	*Chrosomus erythrogaster*	Southern Redbelly Dace	G5	S2		LE	
Leuciscidae	3	*Clinostomus funduloides*	Rosyside Dace	G5	S3			
Leuciscidae	3	*Cyprinella callistia*	Alabama Shiner	G5	S3			
Leuciscidae	2	*Cyprinella galactura*	Whitetail Shiner	G5	S1			

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Leuciscidae	3	*Cyprinella spiloptera*	Spotfin Shiner	G5	S3			
Leuciscidae	3	*Cyprinella whipplei*	Steelcolor Shiner	G5	S3			
Leuciscidae	3	*Hybopsis amnis*	Pallid Shiner	G4	S3			2
Leuciscidae	3	*Lythrurus fasciolaris*	Scarlet Shiner	G5	S3			
Leuciscidae	1	*Macrhybopsis meeki*	Sicklefin Chub	G3	S1			2
Leuciscidae	3	*Miniellus boops*	Bigeye Shiner	G5	S2		LE*	
Leuciscidae	1	*Miniellus melanostomus*	Blackmouth Shiner	G2	S1			1
Leuciscidae	2	*Miniellus sabinae*	Sabine Shiner	G4	S2			3
Leuciscidae	3	*Notropis micropteryx*	Highland Shiner	G5	S3			
Leuciscidae	4	*Phenacobius mirabilis*	Suckermouth Minnow	G5	SH		LE	
Leuciscidae	4	*Platygobio gracilis*	Flathead Chub	G5	SH			3
Leuciscidae	2	*Pteronotropis welaka*	Bluenose Shiner	G3G4	S2			2
Leuciscidae	2	*Rhinichthys obtusus*	Blacknose Dace	G5	S1			
Ictaluridae	4	*Noturus exilis*	Slender Madtom	G5	S1		LE	
Ictaluridae	2	*Noturus flavus*	Stonecat	G5	S2			
Ictaluridae	1	*Noturus gladiator*	Piebald Madtom	G3	S1	PT	LE	1
Ictaluridae	3	*Noturus munitus*	Frecklebelly Madtom	G3	S3		LE*	2
Syngnathidae	4	*Hippocampus erectus*	Lined Seahorse	GNR	SU			2
Fundulidae	3	*Fundulus blairae*	Western Starhead Topminnow	G4	S3			
Fundulidae	3	*Fundulus dispar*	Northern Starhead Topminnow	G4	S3			3
Fundulidae	2	*Fundulus euryzonus*	Broadstripe Topminnow	G3	S2			3
Fundulidae	2	*Fundulus jenkinsi*	Saltmarsh Topminnow	G3	S3			2
Fundulidae	4	*Leptolucania ommata*	Pygmy Killifish	G5	SH			
Poeciliidae	3	*Heterandria formosa*	Least Killifish	G5	S3			

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Centrarchidae	2	*Ambloplites rupestris*	Rock Bass	G5	S1			
Centrarchidae	3	*Enneacanthus gloriosus*	Bluespotted Sunfish	G5	S3			
Cottidae	3	*Cottus carolinae*	Banded Sculpin	G5	S3			
Epinephelidae	4	*Epinephelus itajara*	Atlantic Goliath Grouper	G3	SU			1
Percidae	4	*Ammocrypta clara*	Western Sand Darter	G3	SH			2
Percidae	3	*Crystallaria asprella*	Crystal Darter	G3	S3		LE*	2
Percidae	3	*Etheostoma asprigene*	Mud Darter	G4	S3			
Percidae	3	*Etheostoma blennioides*	Greenside Darter	G5	S3		LE*	
Percidae	3	*Etheostoma duryi*	Black Darter	G4	S3			2
Percidae	1	*Etheostoma faulkneri*	Yoknapatawpha Darter	G2	S1		C	
Percidae	3	*Etheostoma flabellare*	Fantail Darter	G5	S2			
Percidae	3	*Etheostoma jessiae*	Blueside Darter	G4	S3			3
Percidae	3	*Etheostoma kennicotti*	Stripetail Darter	G4G5	S2			
Percidae	3	*Etheostoma lachneri*	Tombigbee Darter	G4	S3			
Percidae	2	*Etheostoma nigripinne*	Blackfin Darter	G4	S3			
Percidae	1	*Etheostoma raneyi*	Yazoo Darter	G2	S1			2
Percidae	3	*Etheostoma rupestre*	Rock Darter	G4	S3			3
Percidae	2	*Etheostoma simoterum*	Snubnose Darter	G3	S2			
Percidae	2	*Etheostoma zonifer*	Backwater Darter	G4	S1			2
Percidae	1	*Nothonotus rubrus*	Bayou Darter	G1	S1	LT	LE	3
Percidae	3	*Nothonotus rufilineatus*	Redline Darter	G5	S3			
Percidae	1	*Percina aurora*	Pearl Darter	G1	S1	LT	LE	1
Percidae	2	*Percina evides*	Gilt Darter	G4	S2			
Percidae	3	*Percina kathae*	Mobile Logperch	G4	S3			

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Percidae	1	*Percina lenticula*	Freckled Darter	G2	S1		C	2
Percidae	2	*Percina phoxocephala*	Slenderhead Darter	G5	S1		LE	
Percidae	4	*Percina uranidea*	Stargazing Darter	G3	SU			2
Percidae	2	*Stizostedion canadense*	Sauger	G5	S2			
Percidae	4	*Stizostedion sp. cf. vitreum*	Southern Walleye	G3	S1			1
Sparidae	4	*Archosargus rhomboidalis*	Western Atlantic Seabream	GNR	SP			
Amphibians								
Cryptobranchidae	1	*Cryptobranchus alleganiensis*	Hellbender	G3	S1	PE?	LE	1
Amphiumidae	1	*Amphiuma pholeter*	One-toed Amphiuma	G3	S1		LE	2
Ambystomatidae	3	*Ambystoma texanum*	Smallmouth Salamander	G5	S3			
Ambystomatidae	4	*Ambystoma tigrinum*	Tiger Salamander	G5	S1	PS		
Plethodontidae	2	*Aneides aeneus*	Green Salamander	G3G4	S1		LE	2
Plethodontidae	4	*Desmognathus pascagoula*	Pascagoula Dusky Salamander	?	SU			
Plethodontidae	4	*Desmognathus valentinei*	Valentine's Southern Dusky Salamander	GNR	S3			3
Plethodontidae	2	*Eurycea longicauda longicauda*	Longtail Salamander	G5T5	S2			
Plethodontidae	2	*Eurycea lucifuga*	Cave Salamander	G5	S1		LE	
Plethodontidae	4	*Eurycea sphagnicola*	Bog Dwarf Salamander	G1G2	SU			2
Plethodontidae	2	*Gyrinophilus porphyriticus*	Spring Salamander	G5	S1		LE	
Plethodontidae	2	*Hemidactylium scutatum*	Four-toed Salamander	G5	S2			
Plethodontidae	2	*Plethodon ventralis*	Southern Zigzag Salamander	G4	S2			3
Plethodontidae	2	*Plethodon websteri clade A*	Webster's Salamander Clade A	G3G4	S2			2
Plethodontidae	2	*Plethodon websteri clade B*	Webster's Salamander Clade B	G3G4	S2			2
Plethodontidae	2	*Pseudotriton montanus*	Mud Salamander	G5	S2			3

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Plethodontidae	3	*Pseudotriton ruber*	Red Salamander	G5	S3			
Proteidae	4	*Necturus maculosus*	Common Mudpuppy	G5	SU			
Hylidae	4	*Pseudacris collinsorum*	Collinses' Mountain Chorus Frog	GNR	S2			
Hylidae	1	*Pseudacris ornata*	Ornate Chorus Frog	G4	S1		C	2
Ranidae	2	*Lithobates areolatus*	Crawfish Frog	G4	S2			2
Ranidae	1	*Lithobates heckscheri*	River Frog	G5	S1		C	2
Ranidae	1	*Lithobates sevosus*	Dusky Gopher Frog	G1	S1	LE	LE	1
Reptiles								
Chelydridae	1	*Macrochelys temminckii*	Alligator Snapping Turtle	G3	S3	PP		2
Emydidae	1	*Deirochelys reticularia miaria*	Western Chicken Turtle	G5T5	S1	PT		2
Emydidae	4	*Deirochelys reticularia reticularia*	Eastern Chicken Turtle	G5T5	S3			
Emydidae	2	*Graptemys flavimaculata*	Yellow-blotched Map Turtle	G2G3	S2	LT	LE	1
Emydidae	2	*Graptemys geographica*	Northern Map Turtle	G5	S1			
Emydidae	2	*Graptemys gibbonsi*	Pascagoula Map Turtle	G2G3	S2	LT	LE	1
Emydidae	3	*Graptemys nigrinoda*	Black-knobbed Map Turtle	G3	S2		LE	2
Emydidae	2	*Graptemys oculifera*	Ringed Map Turtle	G2	S2	LT	LE	2
Emydidae	1	*Graptemys pearlensis*	Pearl River Map Turtle	G2G3	S1	LT	LE	2
Emydidae	1	*Graptemys pulchra*	Alabama Map Turtle	G4	S2	LT	LE	3
Emydidae	1	*Malaclemys terrapin pileata*	Mississippi Diamondback Terrapin	G4T3	S2			2
Emydidae	1	*Pseudemys alabamensis*	Alabama Red-bellied Turtle	G1	S1	LE	LE	1
Testudinidae	1	*Gopherus polyphemus*	Gopher Tortoise	G3	S1	LT	LE	2
Cheloniidae	2	*Caretta caretta*	Loggerhead Sea Turtle	G3	S1B	LT	LE	2
Cheloniidae	3	*Chelonia mydas*	Green Sea Turtle	G3	SNA	LT	LE	2

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Cheloniidae	4	*Eretmochelys imbricata*	Hawksbill Sea Turtle	G3	SNA	LE	LE	1
Cheloniidae	1	*Lepidochelys kempii*	Kemp's Ridley Sea Turtle	G1	S1N, S1 B	LE	LE	1
Dermochelydae	3	*Dermochelys coriacea*	Atlantic Leatherback Sea Turtle	G2	SNA	LE	LE	1
Scincidae	2	*Plestiodon anthracinus*	Coal Skink	G5	S3S4			2
Anguidae	2	*Ophisaurus attenuatus*	Slender Glass Lizard	G5	S2			2
Anguidae	4	*Ophisaurus mimicus*	Mimic Glass Lizard	G3	SH		C	2
Colubridae	3	*Coluber flagellum flagellum*	Eastern Coachwhip	G5T5	S3			
Colubridae	4	*Drymarchon couperi*	Eastern Indigo Snake	G3	SX	LT	LE	1
Colubridae	2	*Farancia erytrogramma*	Rainbow Snake	G4	S2		LE	2
Colubridae	4	*Heterodon simus*	Southern Hognose Snake	G2	SH		LE	2
Colubridae	2	*Lampropeltis calligaster calligaster*	Prairie Kingsnake	G5	S3			
Colubridae	2	*Lampropeltis calligaster rhombomaculata*	Mole Kingsnake	G5	S3			
Colubridae	2	*Lampropeltis triangulum*	Red Milk Snake	G5	S3			
Colubridae	2	*Liodytes rigida deltae*	Delta Crayfish Snake	G5T4Q	S2			
Colubridae	3	*Liodytes rigida sinicola*	Gulf Crayfish Snake	G5T5	S3			
Colubridae	2	*Nerodia clarkii clarkii*	Gulf Salt Marsh Snake	G4T3	S2			3
Colubridae	1	*Pituophis melanoleucus lodingi*	Black Pine Snake	G4T1?	S2	LT	LE	2
Colubridae	4	*Pituophis melanoleucus melanoleucus*	Northern Pine Snake	G4T4	SU			2
Colubridae	2	*Regina septemvittata*	Queen Snake	G5	S2			
Colubridae	2	*Rhadinaea flavilata*	Pine Woods Snake	G4	S2			2
Viperidae	2	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	G3	S3			2
Elapidae	2	*Micrurus fulvius*	Eastern Coral Snake	G5	S3			2

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Birds								
Anatidae	1	*Anas fulvigula*	Mottled Duck	G4	S2			2
Anatidae	3	*Anas acuta*	Northern Pintail	G5	S4N			
Anatidae	3	*Aythya affinis*	Lesser Scaup	G5	S4N			
Odontophoridae	2	*Colinus virginianus*	Northern Bobwhite	G4G5	S3			2
Columbidae	3	*Columbina passerina*	Common Ground Dove	G5	S2			
Cuculidae	3	*Coccyzus americanus*	Yellow-billed Cuckoo	G5	S5B			2
Caprimulgidae	3	*Chordeiles minor*	Common Nighthawk	G5	S4B			
Caprimulgidae	3	*Antrostomus carolinensis*	Chuck-will's-wid ow	G5	S4B			3
Caprimulgidae	1	*Antrostomus vociferus*	Eastern Whip-poor-will	G5	S2?B			2
Apodidae	2	*Chaetura pelagica*	Chimney Swift	G4G5	S5B			3
Rallidae	2	*Rallus elegans*	King Rail	G4	S2			2
Rallidae	3	*Porphyrio martinicus*	Purple Gallinule	G5	S2B			
Rallidae	2	*Coturnicops noveboracensis*	Yellow Rail	G4	S2N			2
Rallidae	1	*Laterallus jamaicensis*	Black Rail	G3	S1	LT	LE	1
Gruidae	1	*Antigone canadensis pulla*	Mississippi Sandhill Crane	G5T1	S1	LE	LE	2
Haematopodidae	1	*Haematopus palliatus*	American Oystercatcher	G5	S2			2
Charadriidae	2	*Pluvialis dominica*	American Golden-Plover	G5	S3M			
Charadriidae	1	*Charadrius melodus*	Piping Plover	G3	S2N	LT	LE	2
Charadriidae	1	*Charadrius wilsonia*	Wilson's Plover	G5	S1			2
Charadriidae	1	*Charadrius nivosus*	Snowy Plover	G3	S2		LE	2
Scolopacidae	2	*Limosa fedoa*	Marbled Godwit	G5	S2N			
Scolopacidae	1	*Calidris canutus*	Red Knot	G4	S2N	LT	LE	2

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Scolopacidae	2	*Calidris subruficollis*	Buff-breasted Sandpiper	G4	S2M			
Scolopacidae	2	*Calidris melanotos*	Pectoral Sandpiper	G5	S4M			
Scolopacidae	2	*Calidris pusilla*	Semipalmated Sandpiper	G5	S4M			
Scolopacidae	3	*Limnodromus griseus*	Short-billed Dowitcher	G5	S5N			
Scolopacidae	3	*Scolopax minor*	American Woodcock	G5	S3?B, S4 N			3
Scolopacidae	2	*Tringa flavipes*	Lesser Yellowlegs	G5	S4N			
Scolopacidae	3	*Tringa semipalmata*	Willet	G5	S4B, S4 N			2
Laridae	1	*Sternula antillarum antillarum*	Coastal Least Tern	G4	S3B			2
Laridae	2	*Sternula antillarum athalassos*	Interior Least Tern	G4T3	S3B		LE*	2
Laridae	1	*Gelochelidon nilotica*	Gull-billed Tern	G5	S1B			2
Laridae	3	*Chlidonias niger*	Black Tern	G4G5	S3M			
Laridae	1	*Sterna hirundo*	Common Tern (breeding population)	G5	S1B			
Laridae	2	*Thalasseus maximus*	Royal Tern	G5	S1B, S4 N			3
Laridae	1	*Thalasseus sandvicensis*	Sandwich Tern	G5	S2B			2
Laridae	1	*Rynchops niger*	Black Skimmer	G5	S2B, S3 N			2
Ciconiidae	1	*Mycteria americana*	Wood Stork	G4	S2N	LT	LE	2
Ardeidae	2	*Botaurus lentiginosus*	American Bittern	G5	S1N			
Ardeidae	2	*Ixobrychus exilis*	Least Bittern	G4G5	S2B			3
Ardeidae	2	*Egretta caerulea*	Little Blue Heron	G5	S2B, S2 N			3
Ardeidae	3	*Egretta tricolor*	Tricolored Heron	G5	S2			
Ardeidae	2	*Egretta rufescens*	Reddish Egret	G4	S2N			2
Ardeidae	3	*Nycticorax nycticorax*	Black-crowned Night-Heron	G5	S2B, S4 N			

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Ardeidae	3	*Nyctanassa violacea*	Yellow-crowned Night-Heron	G5	S4B, S2 N			3
Threskiornithidae	1	*Platalea ajaja*	Roseate Spoonbill	G5	S1B, S2 N			2
Accipitridae	1	*Elanoides forficatus*	Swallow-tailed Kite	G5	S2B		LE	1
Accipitridae	2	*Aquila chrysaetos*	Golden Eagle	G5	S1N			
Accipitridae	2	*Accipiter striatus*	Sharp-shinned Hawk (breeding population)	G5	S1?B, S3 N			
Strigidae	3	*Asio flammeus*	Short-eared Owl	G5	S2N			
Picidae	3	*Melanerpes erythrocephalus*	Red-headed Woodpecker	G5	S4			
Picidae	1	*Dryobates borealis*	Red-cockaded Woodpecker	G3	S1	LT	LE	1
Picidae	1	*Campephilus principalis*	Ivory-billed Woodpecker	GX	SX	LE	LE	
Falconidae	1	*Falco sparverius paulus*	Southeastern American Kestrel	G5T4	S2		C	2
Vireonidae	2	*Vireo gilvus*	Warbling Vireo	G5	S1B			
Laniidae	2	*Lanius ludovicianus ludovicianus*	Loggerhead Shrike	G4T4	S2			2
Laniidae	3	*Lanius ludovicianus migrans*	Migrant Loggerhead Shrike	G4T3	S3N			2
Hirundinidae	2	*Riparia riparia*	Bank Swallow (breeding population)	G5	S1?B			
Sittidae	3	*Sitta pusilla*	Brown-headed Nuthatch	G4	S3			3
Troglodytidae	1	*Thryomanes bewickii*	Bewick's Wren	G5T2	S1		LE	
Troglodytidae	2	*Cistothorus palustris marianae*	Marian's Marsh Wren	G5T3	S3			2
Turdidae	2	*Hylocichla mustelina*	Wood Thrush	G4	S5B			3
Passerellidae	2	*Peucaea aestivalis*	Bachman's Sparrow	G3	S3			1
Passerellidae	2	*Ammodramus savannarum*	Grasshopper Sparrow	G5	S3B, S3 N			2
Passerellidae	3	*Spizella pusilla*	Field Sparrow	G5	S4B, S5 N			
Passerellidae	2	*Ammospiza leconteii*	LeConte's Sparrow	G5	S3N			2

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Passerellidae	1	*Ammospiza maritima*	Seaside Sparrow	G4	S2			2
Passerellidae	1	*Ammospiza nelsoni*	Nelson's Sparrow	G5	S2N			2
Passerellidae	1	*Centronyx henslowii*	Henslow's Sparrow	G4	S2N			2
Icteridae	3	*Sturnella magna*	Eastern Meadowlark	G5	S4			2
Icteridae	2	*Euphagus carolinus*	Rusty Blackbird	G4	S2N			2
Icteridae	3	*Quiscalus quiscula*	Common Grackle	G5	S5B, S5 N			
Parulidae	2	*Seiurus aurocapilla*	Ovenbird (breeding population)	G5	S1B			
Parulidae	2	*Helmitheros vermivorum*	Worm-eating Warbler	G5	S2B			3
Parulidae	2	*Parkesia motacilla*	Louisiana Waterthrush	G5	S2S3B			3
Parulidae	1	*Vermivora chrysoptera*	Golden-winged Warbler	G4	S2M			2
Parulidae	2	*Protonotaria citrea*	Prothonotary Warbler	G5	S5B			3
Parulidae	2	*Limnothlypis swainsonii*	Swainson's Warbler	G4	S3B			2
Parulidae	2	*Geothlypis formosa*	Kentucky Warbler	G5	S4B			3
Parulidae	2	*Setophaga cerulea*	Cerulean Warbler	G4	S2M			2
Parulidae	2	*Setophaga discolor*	Prairie Warbler	G5	S4B			3
Cardinalidae	3	*Piranga olivacea*	Scarlet Tanager (breeding population)	G5	S2?B			
Cardinalidae	2	*Passerina ciris*	Painted Bunting	G5	S3B			2
Mammals								
Soricidae	2	*Sorex longirostris*	Southeastern Shrew	G5	S2			
Vespertilionidae	2	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	G3G4	S3			2
Vespertilionidae	3	*Lasionycteris noctivagans*	Silver-haired Bat	G3G4	S3			
Vespertilionidae	3	*Lasiurus cinereus*	Hoary Bat	G3G4	S3			2
Vespertilionidae	3	*Lasiurus intermedius*	Northern Yellow Bat	G5	S2			2

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Vespertilionidae	3	*Myotis austroriparius*	Southeastern Myotis	G4	S3			3
Vespertilionidae	1	*Myotis grisescens*	Gray Bat	G3G4	S1B	LE	LE	3
Vespertilionidae	1	*Myotis septentrionalis*	Northern Long-eared Bat	G2G3	S1	LE	LE	1
Vespertilionidae	1	*Myotis sodalis*	Indiana Bat	G2	S1B	LE	LE	1
Vespertilionidae	2	*Perimyotis subflavus*	Tricolored Bat	G3G4	S3	PP		2
Dipodidae	2	*Zapus hudsonius*	Meadow Jumping Mouse	G5	S1	(PS)		
Cricetidae	2	*Peromyscus polionotus*	Oldfield Mouse	G5	S2	(PS)		1
Canidae	4	*Canis rufus*	Red Wolf	G1Q	SX	LE	LE	1
Ursidae	2	*Ursus americanus*	Black Bear	G5	S2		LE	
Ursidae	1	*Ursus americanus luteolus*	Louisiana Black Bear	G5T2	S2		LE	3
Mustelidae	3	*Neogale frenata*	Long-tailed Weasel	G5	S3			
Mephitidae	1	*Spilogale putorius*	Eastern Spotted Skunk	G4	S1		C	2
Felidae	4	*Puma concolor coryi*	Florida Panther	G5T1	SX	LE	LE	1
Trichechidae	1	*Trichechus manatus latirostris*	Florida Manatee	G2G3	S1	LT	LE	2
Nonvascular Plants								
Cephaloziellaceae	2	*Cylindrocolea rhizantha*	a liverwort	G3?	S2			
Plagiochilaceae	2	*Plagiochila floridana*	Florida Leafy Liverwort	G2?	S2			
Plagiochilaceae	1	*Plagiochila invisa*	a liverwort	G1	S1			
Plagiochilaceae	1	*Plagiochila virginica* var. *virginica*	a liverwort	G4T3	S1			
Radulaceae	3	*Radula sullivantii*	a liverwort	G3	S3			
Jubulaceae	1	*Frullania donnellii*	a liverwort	G3?	S1			
Lejeuneaceae	1	*Drepanolejeunea mosenii*	a liverwort	G1	S1			
Lejeuneaceae	1	*Lejeunea bermudiana*	a liverwort	G3G4	S1			
Lejeuneaceae	3	*Lejeunea cladogyna*	a liverwort	G3?	S3			

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Lejeuneaceae	2	*Lejeunea floridana*	a liverwort	G2G3	S2			
Lejeuneaceae	2	*Lejeunea laetivirens*	a liverwort	G5	S2			
Lejeuneaceae	1	*Cololejeunea setiloba*	a liverwort	G2?	S1			
Metzgeriaceae	3	*Metzgeria uncigera*	a liverwort	G3	S3			
Sphaerocarpaceae	2	*Sphaerocarpos donnellii*	a liverwort	G2G3	S2			
Ricciaceae	1	*Riccia warnstorfii*	a liverwort	G1G3Q	S1			
Sphagnaceae	3	*Sphagnum carolinianum*	Carolina Peatmoss	G3	S3			
Sphagnaceae	3	*Sphagnum cyclophyllum*	Circular-leaf Peatmoss	G3	S3			
Sphagnaceae	1	*Sphagnum fitzgeraldii*	Fitzgerald's Peatmoss	G3	S1			
Archidiaceae	1	*Archidium hallii*	Hall's Archidium Moss	G3?	S1			
Fissidentaceae	2	*Fissidens amoenus*	Hall's Fissidens Moss	G2	S2			
Dicranaceae	1	*Campylopus angustiretis*	Campylopus Moss	G2?	S1			
Bruchiaceae	3	*Bruchia ravenelii*	Ravenel's Bruchia Moss	G3?	S3?			
Pottiaceae	1	*Tortula porteri*	Porter's Screw Moss	G3?	S1?			
Bryaceae	1	*Rhodobryum roseum*	Rose Moss	G5	S1?			
Orthotrichaceae	1	*Macromitrium richardii*	Richard's Macromitrium Moss	G2G4	S1			
Orthotrichaceae	3	*Orthotrichum exiguum*	Small Wood-bark Moss	G3?	S3?			
Pilotrichaceae	1	*Trachyxiphium hypnaceum*	Trachyxiphium Moss	G2?	S1?			
Hypnaceae	1	*Callicladium haldanianum*	Beautiful Branch Moss	G5	S1			
Cryphaeaceae	1	*Cryphaea ravenelii*	Ravenel's Cryphaea Moss	G3?	S1			
Anthocerotaceae	2	*Anthoceros punctatus*	a hornwort	G2G3	S2			
Anthocerotaceae	1	*Sphaerosporoceros adscendens*	a hornwort	G3?	S1			

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Vascular Plants								
Lycopodiaceae	2	*Diphasiastrum digitatum*	Fan Club-moss	G5	S2			4
Lycopodiaceae	3	*Palhinhaea cernua*	Nodding Clubmoss	G5	S2			4
Isoetaceae	2	*Isoetes appalachiana*	Appalachian Quillwort	G4	S1S2			4
Isoetaceae	2	*Isoetes louisianensis*	Louisiana Quillwort	G2G3	S2	LE		2
Isoetaceae	2	*Isoetes melanopoda* spp. *melanopoda*	Blackfoot Quillwort	G5TNR	S2			
Isoetaceae	2	*Isoetes melanopoda* spp. *silvatica*	Eastern Blackfoot Quillwort	G5TNR	S2			
Isoetaceae	1	*Isoetes mississippiensis*	Mississippi Quillwort	G1	S1			1
Isoetaceae	2	*Isoetes valida*	Strong Quillwort	G4?	S1			4
Selaginellaceae	3	*Lycopodioides ludovicianum*	Gulf Spike-moss	G3G4	S1S2			3
Equisetaceae	1	*Equisetum arvense*	Field Horsetail	G5	S1S2			4
Ophioglossaceae	2	*Sceptridium jenmanii*	Alabama Grapefern	G3G4	S1S2			3
Ophioglossaceae	3	*Sceptridium lunarioides*	Winter Grape-fern	G4?	S2			3
Hymenophyllaceae	4	*Didymoglossum membranaceum*	Scale-edge Bristle Fern	G5	SX			
Hymenophyllaceae	2	*Didymoglossum petersii*	Dwarf Filmy-fern	G4	S1			3
Hymenophyllaceae	1	*Vandenboschia boschiana*	Appalachian Bristle Fern	G4	S1			3
Marsileaceae	2	*Marsilea vestita*	Hairy Water-fern	G5	S1			4
Pteridaceae	3	*Adiantum capillus-veneris*	Southern Maidenhair-fern	G5	S2			4
Pteridaceae	1	*Ceratopteris pteridoides*	Floating Antler Fern	G5?	S1			4
Pteridaceae	1	*Myriopteris alabamensis*	Alabama Lipfern	G5	S1			4
Pteridaceae	2	*Myriopteris lanosa*	Hairy Lipfern	G5	S1S2			4
Pteridaceae	2	*Pellaea atropurpurea*	Purple-stem Cliff-brake	G5	S1			4
Vittariaceae	1	*Vittaria appalachiana*	Appalachian Vittaria	G4	S1			4

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Aspleniaceae	1	*Asplenium pinnatifidum*	Lobed Spleenwort	G4	S1			4
Aspleniaceae	1	*Asplenium resiliens*	Black-stem Spleenwort	G5	S1			4
Aspleniaceae	1	*Asplenium rhizophyllum*	Walking-fern Spleenwort	G5	S1			4
Aspleniaceae	1	*Asplenium trichomanes*	Maidenhair Spleenwort	G5	S1			4
Aspleniaceae	1	*Asplenium x kentuckiense*	Kentucky Spleenwort	GNA	S1			4
Dryopteridaceae	2	*Deparia acrostichoides*	Silvery Spleenwort	G5	S1S2			4
Dryopteridaceae	2	*Dryopteris australis*	Southern Woodfern	GNA	S1			4
Dryopteridaceae	1	*Dryopteris celsa*	Log Fern	G4	S1			3
Dryopteridaceae	2	*Dryopteris ludoviciana*	Southern Shield Wood-fern	G5	S1			4
Pinaceae	1	*Pinus clausa*	Sand Pine	G4	S1			4
Pinaceae	3	*Pinus virginiana*	Virginia Pine	G5	S2			4
Cupressaceae	2	*Chamaecyparis thyoides*	Atlantic White Cedar	G4	S2			4
Cupressaceae	2	*Juniperus silicicola*	Southern Red Cedar	G5T4T 5	S2			4
Nymphaeaceae	2	*Nuphar lutea* ssp. *ulvacea*	West Florida Cow-Lily	G5T2T 3	S1			2
Nymphaeaceae	4	*Nymphaea mexicana*	Banana Water-lily	G3G4	SH			3
Schisandraceae	3	*Schisandra glabra*	Bay Starvine	G3	S3			3
Aristolochiaceae	2	*Hexastylis harperi*	Large-flowered Heartleaf	G4T3	S1			2
Magnoliaceae	1	*Magnolia tripetala*	Umbrella Magnolia	G5	S1			4
Lauraceae	1	*Lindera melissifolia*	Pondberry	G3	S2	LE		2
Lauraceae	2	*Lindera subcoriacea*	Bog Spicebush	G3	S2			3
Alismataceae	1	*Alisma subcordatum*	Broad-leaved Water-plantain	G5	S1			4
Alismataceae	3	*Helanthium tenellum*	Dwarf Burhead	G5?	S1S2			3
Alismataceae	1	*Echinodorus berteroi*	Upright Burhead	G5	S1			4
Alismataceae	2	*Sagittaria chapmanii*	Chapman's Arrowhead	G3?	S1			3

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Alismataceae	1	*Sagittaria isoetiformis*	Slender Arrow-head	G3	S1			3
Hydrocharitaceae	2	*Halophila engelmannii*	Engelmann's Sea-grass	G3G5	S1			4
Hydrocharitaceae	2	*Thalassia testudina*	Turtle-grass	G4G5	S1			4
Juncaginaceae	2	*Triglochin striata*	Arrow-grass	G5	S1			4
Potamogetonaceae	2	*Potamogeton epihydrus*	Nuttall's Pondweed	G5	S1			4
Potamogetonaceae	2	*Potamogeton pusillus*	Slender Pondweed	G5T5	S1			4
Cymodoceaceae	2	*Halodule wrightii*	Shoal-grass	G5	S1			4
Cymodoceaceae	2	*Syringodium filiforme*	Manatee-grass	G4	S1			4
Burmanniaceae	2	*Burmannia biflora*	Northern Burmannia	G4G5	S1			3
Trilliaceae	1	*Trillium flexipes*	Drooping Trillium	G5	S1			4
Trilliaceae	3	*Trillium foetidissimum*	Fetid Trillium	G3	S3			3
Trilliaceae	3	*Trillium ludovicianum*	Louisiana Trillium	G4	S1S2			4
Trilliaceae	1	*Trillium pusillum* var. *ozarkanum*	Ozark Least Trillium	G4T3	S1			3
Melanthiaceae	2	*Stenanthium gramineum*	Eastern Featherbells	G4G5	S1			4
Melanthiaceae	2	*Stenanthium texanum*	Pine Barren Deathcamas	G3	S1			3
Colchicaceae	2	*Uvularia floridana*	Florida Bellwort	G3	S1			3
Smilacaceae	4	*Smilax hugeri*	Huger's Carrion-flower	G4	SP			4
Smilacaceae	2	*Smilax pulverulenta*	Downy Carrion-flower	G4G5	S1			4
Liliaceae	2	*Erythronium albidum*	White Trout-lily	G5	S2			4
Liliaceae	3	*Erythronium americanum* ssp. *harperi*	Yellow Trout-lily	G5T4T 5	S1S2			4
Liliaceae	2	*Lilium iridollae*	Panhangle Lily	G3	S1			3
Liliaceae	1	*Lilium michiganense*	Michigan Lily	G5	S1			4
Orchidaceae	1	*Aplectrum hyemale*	Puttyroot	G5	S1			4

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Orchidaceae	1	*Aspidogyne querceticola*	Low Erythrodes	G3G5	S1			4
Orchidaceae	2	*Calopogon barbatus*	Bearded Grass-pink	G4?	S2			4
Orchidaceae	1	*Calopogon multiflorus*	Many-flowered Grass-pink	G2G3	S1			2
Orchidaceae	1	*Calopogon oklahomensis*	Oklahoma Grass-pink	G2	S1			1
Orchidaceae	1	*Cleistesiopsis bifaria*	Appalachian Small Spreading Pogonia	G3G4	S1			3
Orchidaceae	3	*Cleistesiopsis oricamporum*	Small Coastal Plain Spreading Pogonia	G3?	S3			3
Orchidaceae	4	*Cypripedium kentuckiense*	Kentucky Yellow Lady's-slipper	G3	SH			2
Orchidaceae	1	*Galearis spectabilis*	Showy Orchis	G5	S1			4
Orchidaceae	2	*Goodyera pubescens*	Downy Rattlesnake-plant ain	G5	S1			4
Orchidaceae	4	*Habenaria quinqueseta*	Michaux's Orchid	G4G5	SP			4
Orchidaceae	3	*Hexalectris spicata*	Crested Coralroot	G5	S2			4
Orchidaceae	2	*Orthochilus ecristatus*	Giant Orchid	G2G3	S1			2
Orchidaceae	2	*Platanthera conspicua*	Large White-fringe Orchid	G5T4	S2			3
Orchidaceae	3	*Platanthera integra*	Yellow Fringeless Orchid	G3G4	S3			
Orchidaceae	2	*Platanthera integrilabia*	White Fringeless Orchid	G2G3	S1	LT		2
Orchidaceae	2	*Platanthera lacera*	Green-fringed Orchid	G5	S1S2			4
Orchidaceae	3	*Platanthera nivea*	Snowy Orchid	G3G4	S3			
Orchidaceae	3	*Platanthera peramoena*	Purple Fringeless Orchid	G5	S2S3			
Orchidaceae	3	*Ponthieva racemosa*	Shadow-witch Orchid	G5	S2			4
Orchidaceae	1	*Spiranthes brevilabris*	Texas Ladies'-tresses	G1G2	S1			1
Orchidaceae	1	*Spiranthes eatonii*	Eaton's Ladies'-tresses	G3Q	S1			3
Orchidaceae	1	*Spiranthes floridana*	Florida Ladies'-tresses	G1	S1			1
Orchidaceae	2	*Spiranthes lacera* var. *gracilis*	Southern Slender Ladies'-tresses	G5T4T 5	S2			4

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Orchidaceae	2	*Spiranthes longilabris*	Giant Spiral Ladies'-tresses	G3	S1S2			3
Hypoxidaceae	1	*Hypoxis curtissii*	Curtiss' Yellow Star-grass	G4?	S1			4
Orchidaceae	3	*Spiranthes magnicamporum*	Great Plains Ladies'-tresses	G3G4	S2			3
Orchidaceae	3	*Spiranthes ovalis* var. *ovalis*	Lesser Ladies'-tresses	G5?T3 T4?	S2S3			3
Orchidaceae	2	*Triphora trianthophoros* var. *trianthophorus*	Nodding Pogonia	G4?T4?	S2			4
Iridaceae	1	*Alophia drummondii*	Purple Pleat-leaf	G4	S1			4
Iridaceae	3	*Herbertia lahue*	Herbertia	G4G5	S2			4
Iridaceae	3	*Iris brevicaulis*	Lamance Iris	G4	S1			3
Iridaceae	1	*Iris giganticaerulea*	Giant Blue Iris	G3	S1			3
Iridaceae	2	*Nemastylis geminiflora*	Prairie Pleatleaf	G4	S2			4
Amaryllidaceae	3	*Hymenocallis choctawensis*	Florida Panhandle Spider-lily	G3G4	S1			3
Amaryllidaceae	2	*Hymenocallis occidentalis* var. *eulae*	Woodland Spider-lily	G4?TN R	S1			
Amaryllidaceae	2	*Zephyranthes simpsonii*	Rainlily	G2G3	S1			2
Agavaceae	2	*Camassia scilloides*	Wild Hyacinth	G5	S2			4
Commelinaceae	2	*Tradescantia ernestiana*	Ernest's Spider-wort	G3G4Q	S1			3
Commelinaceae	2	*Tradescantia hirsuticaulis*	Hairy-stem Spiderwort	G5	S1			4
Pontederiaceae	2	*Heteranthera dubia*	Grassleaf Mud-plaintain	G5	S1			4
Pontederiaceae	3	*Heteranthera missouriensis*	Missouri Mud-plantain	G3G4	S1			3
Cannaceae	1	*Canna flaccida*	Bandana-of-the-E verglades	G4?	S1			4
Marantaceae	1	*Thalia dealbata*	Powdery Thalia	G4	S1			3
Xyridaceae	3	*Xyris chapmanii*	Chapman's Yellow-eyed-gras s	G3	S2			3
Xyridaceae	3	*Xyris drummondii*	Drummond's Yellow-eyed-gras s	G3G4	S2			
Xyridaceae	2	*Xyris flabelliformis*	Savannah Yellow-eyed-gras s	G4	S1			4

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Xyridaceae	2	*Xyris louisianica*	Kral's Yellow-eyed Grass	G2G3	S1			2
Xyridaceae	3	*Xyris scabrifolia*	Harper's Yellow-eyed Grass	G3	S3			3
Xyridaceae	3	*Xyris serotina*	Acid-swamp Yellow-eyed-gras s	G3G4	S1			3
Eriocaulaceae	3	*Eriocaulon decangulare* var. *latifolium*	Panhandle Pipewort	G5TNR	S1			4
Eriocaulaceae	3	*Eriocaulon texense*	Texas Pipewort	G4	S2S3			3
Eriocaulaceae	2	*Syngonanthus flavidulus*	Yellow Pipewort	G5	S2			4
Juncaceae	2	*Juncus interior*	Inland Rush	G4	S1			4
Cyperaceae	2	*Bulbostylis ciliatifolia*	Capillary Hairsedge	G5	S1			4
Cyperaceae	2	*Carex alata*	Broadwing Sedge	G5	S1			4
Cyperaceae	1	*Carex albursina*	White Bear Sedge	G5	S1			4
Cyperaceae	1	*Carex baltzellii*	Baltzell's Sedge	G3	S1			3
Cyperaceae	1	*Carex bullata* var. *greenei*	Button Sedge	G5	S1			4
Cyperaceae	1	*Carex communis*	Fibrous-root Sedge	G5T5	S1			4
Cyperaceae	2	*Carex comosa*	Bristly Sedge	G5	S1			4
Cyperaceae	1	*Carex crawei*	Crawe's Sedge	G5	S1			4
Cyperaceae	1	*Carex dasycarpa*	Velvet Sedge	G4?	S1			4
Cyperaceae	4	*Carex elliottii*	Elliott's Sedge	G4?	SP			4
Cyperaceae	2	*Carex exilis*	Coast Sedge	G5	S2			4
Cyperaceae	1	*Carex fissa* var. *aristata*	Hammock Sedge	G4?T4?	S1			4
Cyperaceae	1	*Carex fissa* var. *fissa*	Hammock Sedge	G4?T3 T4	S1			3
Cyperaceae	1	*Carex frankii*	Frank's Sedge	G5	S1			4
Cyperaceae	3	*Carex gracilescens*	Slender Sedge	G5?	S1S2			4
Cyperaceae	3	*Carex gravida*	Heavy-fruited Sedge	G5	S1S2			4

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Cyperaceae	3	*Carex grayi*	Asa Gray's Sedge	G4G5	S2			4
Cyperaceae	1	*Carex grisea*	Inflated Narrowleaf Sedge	G5	S1			4
Cyperaceae	3	*Carex hyalina*	Tissue Sedge	G4	S1S2			4
Cyperaceae	1	*Carex impressinervia*	Impressed-nerved Sedge	G2	S1			1
Cyperaceae	3	*Carex jamesii*	Nebraska Sedge	G5	S1S2			4
Cyperaceae	1	*Carex laxiflora*	Broad Loose-flower Sedge	G5T5	S1			4
Cyperaceae	2	*Carex mesochorea*	Midland Sedge	G4G5	S1			4
Cyperaceae	3	*Carex mitchelliana*	Mitchell's Sedge	G4	S2			4
Cyperaceae	3	*Carex molestiformis*	Ozark Plateau Sedge	G4	S1			3
Cyperaceae	1	*Carex normalis*	Greater Straw Sedge	G5	S1			4
Cyperaceae	1	*Carex oligocarpa*	Eastern Few-fruit Sedge	G4G5	S1			4
Cyperaceae	3	*Carex oxylepis* var. *pubescens*	Sharp-scale Sedge	G5?T3	S2S3			3
Cyperaceae	2	*Carex prasina*	Drooping Sedge	G4	S1			4
Cyperaceae	3	*Carex radiata*	Stellate Sedge	G5	S2			4
Cyperaceae	3	*Carex reznicekii*	Reznicek's Sedge	G5	S2			4
Cyperaceae	2	*Carex scoparia*	Broom Sedge	G5	S2			4
Cyperaceae	2	*Carex seorsa*	Weak Stellate Sedge	G5	S1S2			4
Cyperaceae	3	*Carex stipata* var. *maxima*	Stalk-grain Sedge	G5T5?	S1			4
Cyperaceae	1	*Carex striata* var. *striata*	Southern Peatland Sedge	G5T5	S1			4
Cyperaceae	2	*Carex superata*	Limestone Forest Sedge	G4?	S1			4
Cyperaceae	2	*Carex torta*	Twisted Sedge	G5	S1			4
Cyperaceae	2	*Carex verrucosa*	Warty Sedge	G4	S1S2			4
Cyperaceae	1	*Carex virescens*	Ribbed Sedge	G5	S1			4
Cyperaceae	2	*Cladium mariscoides*	Twig Rush	G5	S1			4

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Cyperaceae	2	*Cyperus articulatus*	Jointed Flatsedge	G4G5	S1			4
Cyperaceae	3	*Cyperus bipartitus*	Shining Flatsedge	G5	S1			4
Cyperaceae	3	*Cyperus drummondii*	Green Flatsedge	G5TNR	S1S2			4
Cyperaceae	2	*Cyperus elegans*	Sticky Flatsedge	G5	S1			4
Cyperaceae	1	*Cyperus engelmannii*	Slender Sand Flatsedge	G4Q	S1			4
Cyperaceae	3	*Cyperus flavicomus*	White-edged Flatsedge	G5	S2			4
Cyperaceae	3	*Cyperus hystricinus*	Bristly Flatsedge	G4	S1S2			3
Cyperaceae	2	*Cyperus lecontei*	Le Conte's Flatsedge	G4?	S1			4
Cyperaceae	3	*Cyperus neotropicalis*	American Lipocarpha	G5	S1S2			4
Cyperaceae	1	*Cyperus ochraceus*	Pond Flatsedge	G5	S1			4
Cyperaceae	1	*Cyperus refractus*	Reflexed Flatsedge	G5	S1			4
Cyperaceae	2	*Cyperus thyrsiflorus*	Southcentral Flatsedge	G5	S1			4
Cyperaceae	1	*Eleocharis albida*	White Spikerush	G4G5	S1			4
Cyperaceae	1	*Eleocharis ambigens*	Obscure Spikerush	G4G5	S2			4
Cyperaceae	1	*Eleocharis atropurpurea*	Purple Spikerush	G4G5	S1			4
Cyperaceae	4	*Eleocharis bicolor*	Small Spikerush	GNR	S1			
Cyperaceae	3	*Eleocharis cellulosa*	Carolina Spikerush	G4G5	S2			4
Cyperaceae	1	*Eleocharis coloradoensis*	Dwarf Spikerush	G4	S1			4
Cyperaceae	2	*Eleocharis compressa*	Flat-stem Spikerush	G4	S1			4
Cyperaceae	2	*Eleocharis elliptica*	Slender Spikerush	G5	S1			4
Cyperaceae	2	*Eleocharis elongata*	Slim Spikerush	G5?	S1			4
Cyperaceae	2	*Eleocharis erythropoda*	Bald Spikerush	G5	S1			4
Cyperaceae	2	*Eleocharis geniculata*	Capitate Spikerush	G5	S1			4

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Cyperaceae	1	*Eleocharis intermedia*	Matted Spikerush	G5	S1			4
Cyperaceae	1	*Eleocharis lanceolata*	Lance-like Spikerush	G4G5	S1			4
Cyperaceae	3	*Eleocharis macrostachya*	Creeping Spikerush	G5	S2			4
Cyperaceae	1	*Eleocharis melanocarpa*	Black-fruit Spikerush	G4	S1			3
Cyperaceae	3	*Eleocharis microcarpa* var. *microcarpa*	Small-fruit Spikerush	G5TNR	S2			4
Cyperaceae	2	*Eleocharis ovata*	Ovate Spikerush	G5	S1			4
Cyperaceae	4	*Eleocharis palustris*	Creeping Spikerush	G5	S1			4
Cyperaceae	1	*Eleocharis parvula*	Small Spikerush	G5	S1			4
Cyperaceae	1	*Eleocharis radicans*	Rooted Spikerush	G5	S1			4
Cyperaceae	3	*Eleocharis robbinsii*	Robbins Spikerush	G4G5	S2			3
Cyperaceae	3	*Eleocharis rostellata*	Beaked Spikerush	G5	S1			4
Cyperaceae	4	*Eleocharis tenuis* var. *pseudoptera*	Slender Spikerush	G5T5?	SP			4
Cyperaceae	2	*Eleocharis tenuis* var. *tenuis*	Slender Spikerush	G5T5	S2			4
Cyperaceae	1	*Eleocharis tricostata*	Three-angle Spikerush	G4	S1			4
Cyperaceae	2	*Eleocharis wolfii*	Wolf's Spikerush	G3G5	S1			3
Cyperaceae	2	*Fuirena longa*	Coastal-plain Umbrella-sedge	G3G4	S1			3
Cyperaceae	3	*Rhynchospora baldwinii*	Baldwin's Beakrush	G4	S2			4
Cyperaceae	1	*Rhynchospora brachychaeta*	West Indies Beakrush	GNR	S1			4
Cyperaceae	2	*Rhynchospora careyana*	Broad-fruit Horned Beakrush	G4?Q	S1			4
Cyperaceae	1	*Rhynchospora cephalantha* var. *attenuata*	Small-bunched Beaksedge	G5T3?	S1			3
Cyperaceae	2	*Rhynchospora crinipes*	Hairy-peduncled Beakrush	G3	S1			3
Cyperaceae	2	*Rhynchospora curtissii*	Curtiss' Beakrush	G4	S1			4
Cyperaceae	1	*Rhynchospora decurrens*	Swamp-forest Beakrush	G3G4	S1			4

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Cyperaceae	3	*Rhynchospora distans*	Fasciculate Beakrush	G5T4?	S2			4
Cyperaceae	1	*Rhynchospora divergens*	White-seeded Beakrush	G4	S1			3
Cyperaceae	1	*Rhynchospora fernaldii*	Fernald's Beakrush	G3G4	S1			3
Cyperaceae	2	*Rhynchospora galeana*	Short-bristle Baldrush	G3?	S1			3
Cyperaceae	1	*Rhynchospora harperi*	Harper's Beakrush	G4?	S1			3
Cyperaceae	2	*Rhynchospora harveyi*	Harvey's Beakrush	G4	S2			3
Cyperaceae	2	*Rhynchospora leptocarpa*	Slender-fruit Beaksedge	G3	S1			3
Cyperaceae	1	*Rhynchospora marliniana*	Marlin's Beaksedge	GNR	S1			
Cyperaceae	2	*Rhynchospora perplexa*	Pineland Beakrush	G5	S1			4
Cyperaceae	3	*Rhynchospora pinetorum*	Small's Beakrush	G5?T3 T4	S2			3
Cyperaceae	1	*Rhynchospora pleiantha*	Brown Beakrush	G2G3	S1			2
Cyperaceae	1	*Rhynchospora torreyana*	Torrey's Beakrush	G4	S1			4
Cyperaceae	1	*Rhynchospora tracyi*	Tracy Beakrush	G4	S1			4
Cyperaceae	2	*Rhynchospora wrightiana*	Wright's Beakrush	G5	S2			4
Cyperaceae	2	*Schoenoplectiella purshiana*	Weakstalk Bulrush	G4G5	S2			4
Cyperaceae	2	*Schoenoplectus americanus*	Three-square Bulrush	G5	S1			4
Cyperaceae	3	*Schoenoplectus deltarum*	Delta Bulrush	G3G4	S1			
Cyperaceae	1	*Schoenoplectus subterminalis*	Swaying Rush	G5	S1			4
Cyperaceae	3	*Scirpus divaricatus*	Spreading Bulrush	G4	S2			3
Cyperaceae	3	*Scirpus lineatus*	Drooping Bulrush	G4	S1S2			4
Cyperaceae	3	*Scleria elliottii*	Broad-leaved Hairy Nutrush	G5TNR	S2			4
Cyperaceae	3	*Scleria georgiana*	Georgia Nutrush	G4	S2			4
Cyperaceae	3	*Scleria nitida*	Shining Nutrush	GNR	S1			

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Cyperaceae	3	*Scleria verticillata*	Low Nutrush	G5	S1			4
Poaceae	3	*Andropogon dealbatus*	Wetland White Bluestem	GNR	S1S2			4
Poaceae	3	*Andropogon perangustatus*	Narrow-leaved Bluestem	GNR	S1S2			4
Poaceae	2	*Andropogon tracyi*	Tracy's Bluestem	G4?	S2			4
Poaceae	3	*Aristida beyrichiana*	Southern Wiregrass	G5?	S2			4
Poaceae	1	*Aristida mohrii*	Mohr's Three-awn Grass	G3	S1			1
Poaceae	3	*Aristida simpliciflora*	Southern Three-awn Grass	G3G4	S2			3
Poaceae	3	*Aristida spiciformis*	Pine Barren Three-awn Grass	G4	S1			4
Poaceae	3	*Aristida tenuispica*	Southern Arrowfeather	G5T5	S2			4
Poaceae	3	*Chasmanthium nitidum*	Shiny Spikegrass	G3G4	S1			4
Poaceae	1	*Coelorachis cylindrica*	Pitted Jointgrass	G4G5	S1			
Poaceae	2	*Dichanthelium cryptanthum*	Hidden-flower Witchgrass	G3Q	S1			4
Poaceae	2	*Dichanthelium curtifolium*	Shortleaf Witchgrass	G4T3?	S2			2
Poaceae	3	*Dichanthelium erectifolium*	Erect-leaf Witchgrass	G4	S2			4
Poaceae	3	*Dichanthelium nudicaule*	Naked-stemmed Panic Grass	G3Q	S3			3
Poaceae	2	*Dichanthelium wrightianum*	Wright's Witchgrass	G4	S1S2			4
Poaceae	4	*Elionurus tripsacoides*	Pan-american Balsamscale	G5?	SH			4
Poaceae	2	*Elymus villosus*	Hairy Wild Rye	G5	S2			4
Poaceae	2	*Eustachys glauca*	Saltmarsh Finger-grass	G4	S2			4
Poaceae	3	*Luziola bahiensis*	Brazilian Loziola	G4G5	S1			4
Poaceae	2	*Muhlenbergia glabrifloris*	Inland Muhly	G4?	S1			3
Poaceae	3	*Muhlenbergia sylvatica*	Woodland Muhly	G5	S2			4
Poaceae	3	*Muhlenbergia tenuiflora*	Slender Muhly	G5	S1S2			4

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Poaceae	2	*Paspalum monostachyum*	Gulfdune Paspalum	G4?	S1			4
Poaceae	3	*Schizachyrium maritimum*	Gulf Bluestem	G3G4Q	S2			3
Poaceae	2	*Schizachyrium scoparium* ssp. *divergens*	Eastern Little Bluestem	G5T5	S1			4
Poaceae	2	*Schizachyrium stoloniferum*	Creeping Bluestem	G3G4Q	S1			3
Poaceae	2	*Setaria corrugata*	Coast Bristle Grass	G5?	S1			4
Poaceae	2	*Sphenopholis penysIvanica*	Swamp Wedgescale	G4	S1			4
Poaceae	2	*Sporobolus ozarkanus*	Ozark Dropseed	G5T5?	S2			4
Poaceae	3	*Tridens carolinianus*	Carolina Fluff Grass	G3G4	S2S3			3
Poaceae	3	*Tridens chapmanii*	Chapman's Redtop	G5T3	S2			3
Ceratophyllaceae	1	*Ceratophyllum echinatum*	Prickly Hornwort	G4	S1			3
Fumariaceae	2	*Dicentra cucullaria*	Dutchman's Breeches	G5	S1			4
Ranunculaceae	2	*Actaea racemosa*	Black Bugbane	G3G4	S1S2			3
Ranunculaceae	2	*Anemone caroliniana*	Carolina Anemone	G5	S2			4
Ranunculaceae	2	*Anemone quinquefolia*	Wood Anemone	G5	S1			4
Ranunculaceae	1	*Aquilegia canadensis*	Wild Columbine	G5	S1			4
Ranunculaceae	3	*Clematis glaucophylla*	White-leaved Leather-flower	G4?	S1S2			3
Ranunculaceae	3	*Clematis subreticulata*	Alabama Leatherflower	GNR	S2			
Ranunculaceae	3	*Delphinium tricorne*	Dwarf Larkspur	G5	S2			4
Ranunculaceae	1	*Enemion biternatum*	False Rue-anemone	G5	S1			4
Ranunculaceae	3	*Hepatica acutiloba*	Sharp-lobed Hepatica	G5T5	S1			4
Ranunculaceae	1	*Hydrastis canadensis*	Golden-seal	G3G4	S1			3
Ranunculaceae	2	*Ranunculus flabellaris*	Yellow Water-crowfoot	G5	S1			4
Ranunculaceae	2	*Ranunculus septentrionalis*	Carolina Buttercup	GNR	S2			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Ranunculaceae	2	*Thalictrum debile*	Southern Meadowrue	G2G3	S1S2			2
Ranunculaceae	1	*Thalictrum dioicum*	Early Meadowrue	G5	S1			4
Ranunculaceae	2	*Thalictrum macrostylum*	Small-leaf Meadowrue	G3G4	S1			3
Ranunculaceae	1	*Trautvetteria applanata*	Ozark Tassel-rue	G5	S1			4
Hamamelidaceae	2	*Hamamelis ovalis*	Running Witch-hazel	G2G3	S1			2
Saxifragaceae	2	*Heuchera macrorhiza*	Giant Alumroot	G5T4Q	S1			
Saxifragaceae	1	*Heuchera parviflora*	Little-flower Alumroot	G4	S1			4
Saxifragaceae	3	*Tiarella cordifolia*	Heart-leaved Foam-flower	G5	S2			4
Crassulaceae	1	*Sedum pulchellum*	Rock Stonecrop	G5	S1			4
Crassulaceae	2	*Sedum ternatum*	Wood Stonecrop	G5	S1			4
Haloragaceae	2	*Myriophyllum laxum*	Loose Water-milfoil	G3	S1			3
Fabaceae	1	*Apios priceana*	Price's Potato-bean	G3	S1	LT		3
Fabaceae	2	*Astragalus canadensis* var. *canadensis*	Canadian Milkvetch	G5	S2			4
Fabaceae	1	*Astragalus distortus* var. *engelmannii*	Engelmann's Bent Milk-vetch	G5T4	S1			4
Fabaceae	1	*Astragalus obcordatus*	Florida Milkvetch	G3G4	S1			3
Fabaceae	1	*Baptisia nuttalliana*	Nuttall's Wild Indigo	G5	S1			4
Fabaceae	2	*Baptisia sphaerocarpa*	Green Wild Indigo	G4G5	S2			4
Fabaceae	1	*Chamaecrista horizontalis*	Florida Senna	G2	S1			1
Fabaceae	3	*Cladrastis kentukea*	Yellowwood	G4	S2			3
Fabaceae	3	*Dalea mountjoyae*	White-tassels	G5T3	S2S3			3
Fabaceae	1	*Desmodium ochroleucum*	Creamflower Tick-trefoil	G2G3	S1			2
Fabaceae	3	*Desmodium tenuifolium*	Slim-leaf Tick-trefoil	G4	S2			4
Fabaceae	3	*Galactia floridana*	Florida Milkpea	G3G4	S1			3

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Fabaceae	3	*Gymnocladus dioicus*	Kentucky Coffeetree	G5	S1S2			4
Fabaceae	2	*Lupinus perennis* ssp. *gracilis*	Sundial Lupine	G5TNR	S1			4
Fabaceae	4	*Phaseolus sinuatus*	Sandhill Bean	G5T3?	SH			3
Fabaceae	2	*Rhynchosia latifolia*	Prairie Rhynchosia	G5	S2			4
Fabaceae	1	*Trifolium carolinianum*	Carolina Clover	GNR	S1			4
Fabaceae	4	*Trifolium reflexum*	Buffalo Clover	G3G4	SH			3
Polygalaceae	2	*Senega ambigua*	Whorled Milkwort	G5T5?	S1			4
Polygalaceae	2	*Senega appendiculata*	Swamp Milkwort	G4G5	S2			4
Polygalaceae	2	*Senega balduinii*	White Milkwort	G4	S1			4
Polygalaceae	2	*Senega curtissii*	Curtiss' Milkwort	G5	S1			4
Polygalaceae	2	*Senega hookeri*	Hooker's Milkwort	G3	S2			3
Polygalaceae	2	*Senega leptostachys*	Georgia Milkwort	G3G4	S1S2			3
Rosaceae	3	*Agrimonia incisa*	Incised Groovebur	G3	S2			3
Rosaceae	1	*Crataegus ashei*	Ashe's Hawthorn	G2	S1S2			1
Rosaceae	1	*Crataegus brachyacantha*	Blueberry Hawthorn	G4	S1?			4
Rosaceae	1	*Crataegus mendosa*	Albertville Hawthorn	G3Q	S1			3
Rosaceae	1	*Crataegus mohrii*	Mohr's Hawthorn	GNA	S1			
Rosaceae	1	*Crataegus mollis* var. *meridionalis*	Gallion Hawthorn	G3G5Q	S1			4
Rosaceae	2	*Crataegus triflora*	Three-flowered Hawthorn	G2G3	S2			2
Rosaceae	2	*Malus ioensis*	Iowa Crabapple	G4G5	S1			4
Rosaceae	1	*Neviusia alabamensis*	Alabama Snow-wreath	G3	S1			2
Rosaceae	4	*Prunus alabamensis*	Alabama Black Cherry	G4	SP			4
Rosaceae	4	*Spiraea tomentosa*	Steeplebush	G5	SH			4

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Rhamnaceae	2	*Endotropis lanceolata*	Lance-leaved Buckthorn	G5	S2			4
Rhamnaceae	3	*Sageretia minutiflora*	Tiny-leaved Buckthorn	G3G4	S2			3
Ulmaceae	3	*Ulmus serotina*	September Elm	G4	S2			4
Fagaceae	1	*Castanea dentata (nut-bearing only)*	American Chestnut	G3	S1			3
Fagaceae	4	*Quercus arkansana*	Arkansas Oak	G3	SP			3
Fagaceae	2	*Quercus austrina*	Bluff Oak	G4?	S2			
Fagaceae	2	*Quercus macrocarpa* var. *macrocarpa*	Bur Oak	G5	S2			4
Fagaceae	2	*Quercus minima*	Dwarf Live Oak	G5	S1			4
Fagaceae	2	*Quercus myrtifolia*	Myrtle-leaf Oak	G5	S2			4
Fagaceae	2	*Quercus oglethorpensis*	Oglethorpe's Oak	G3	S2			3
Fagaceae	2	*Quercus palustris*	Pin Oak	G5	S2?			4
Juglandaceae	2	*Carya laciniosa*	Big Shellbark Hickory	G5	S2			4
Juglandaceae	2	*Juglans cinerea*	Butternut	G3	S2			3
Parnassiaceae	2	*Parnassia grandifolia*	Largeleaf Grass-of-parnassu s	G3	S2			3
Oxalidaceae	2	*Oxalis grandis*	Great Yellow Woodsorrel	G4G5	S1			4
Oxalidaceae	3	*Oxalis macrantha*	Tufted Yellow Woodsorrel	G2G4	S1			3
Hypericaceae	2	*Hypericum canadense*	Canadian St. John's-wort	G5	S2			4
Hypericaceae	2	*Hypericum myrtifolium*	Myrtle-leaved St. Johnswort	G4G5	S2			4
Salicaceae	2	*Salix caroliniana*	Carolina Willow	G5	S1			4
Euphorbiaceae	1	*Euphorbia discoidalis*	Summer Spurge	G4	S1			4
Euphorbiaceae	2	*Euphorbia inundata* var. *inundata*	Florida Pine Spurge	G4G5	S1S2			4
Linaceae	3	*Linum floridanum* var. *chrysocarpum*	Yellow-fruited Flax	G5?T3?	S2S3			3
Linaceae	1	*Linum macrocarpum*	Spring Hill Flax	G2	S2			1

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Lythraceae	2	*Cuphea viscosissima*	Blue Waxweed	G5?	S1			4
Lythraceae	3	*Decodon verticillatus*	Hairy Swamp Loosestrife	G5	S2			4
Lythraceae	4	*Didiplis diandra*	Water-purslane	G3G4	SH			
Onagraceae	3	*Ludwigia alata*	Winged Seedbox	G3G5	S2			4
Onagraceae	3	*Oenothera capillifolia* ssp. *capillifolia*	Berlandier's Sundrops	G5T4T 5	S1			4
Onagraceae	3	*Oenothera grandiflora*	Large-flowered Evening-primrose	G3G5	S1			4
Onagraceae	4	*Oenothera heterophylla* ssp. *orientalis*	Alabama Evening-primrose	G4TU	SH			4
Onagraceae	4	*Oenothera patriciae*	Plains Gaura	G4G5	SH			4
Onagraceae	3	*Oenothera triloba*	Stemless Evening-primrose	G4	S1			4
Aceraceae	2	*Acer leucoderme*	Chalk Maple	G5	S1			4
Hippocastanaceae	3	*Aesculus glabra* var. *glabra*	Ohio Buckeye	G5	S2			4
Sapindaceae	2	*Sapindus marginatus*	Florida Soapberry	G5	S1			4
Malvaceae	2	*Callirhoe triangulata*	Clustered Poppy-mallow	G3	S1			2
Malvaceae	3	*Hibiscus coccineus*	Brilliant Hibiscus	G4?	S1S2			4
Thymelaeaceae	2	*Dirca palustris*	Eastern Leatherwood	G4	S2			3
Cistaceae	2	*Crocanthemum arenicola*	Coastal-sand Frostweed	G3	S1S2			3
Cleomaceae	2	*Polanisia tenuifolia*	Slenderleaf Clammy-weed	G5	S1			4
Brassicaceae	4	*Arabidopsis lyrata* ssp. *lyrata*	Lyreleaf Rockcress	G5	SH			4
Brassicaceae	1	*Arabis patens*	Spreading Rockcress	G3	S1			2
Brassicaceae	3	*Borodinia canadensis*	Sicklepod	G5	S2			4
Brassicaceae	3	*Cardamine angustata*	Slender Toothwort	G5	S2			4
Brassicaceae	3	*Cardamine diphylla*	Two-leaf Toothwort	G5	S1S2			4
Brassicaceae	1	*Physaria gracilis* ssp. *gracilis*	Spreading Bladder-pod	G5	S1			4

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Brassicaceae	2	*Rorippa aquatica*	Lake-cress	G4?	S1			3
Brassicaceae	3	*Tomostima cuneifolia*	Wedgeleaf Whitlow-grass	G5	S1			4
Brassicaceae	3	*Tomostima reptans*	Carolina Whitlow-grass	G5	S1			4
Santalaceae	2	*Nestronia umbellula*	Nestronia	G4	S1			4
Polygonaceae	4	*Persicaria hirsuta*	Hairy Smartweed	G3G4	SH			3
Polygonaceae	2	*Polygonella americana*	Southern Jointweed	G5	S1			4
Caryophyllaceae	2	*Paronychia baldwinii* ssp. *riparia*	Perennial Dune Whitlow-wort	G5T4	S1			4
Caryophyllaceae	3	*Paronychia erecta* var. *corymbosa*	Beach Sand-squares	G3G4T 2T4	S1S2			3
Caryophyllaceae	3	*Paronychia erecta* var. *erecta*	Beach Sand-squares	G3G4T NR	S1S2			4
Caryophyllaceae	2	*Paronychia patula*	Pineland Nailwort	G3G4	S1			3
Caryophyllaceae	2	*Sabulina patula*	Pitcher's Stitchwort	G4	S1			4
Caryophyllaceae	2	*Silene ovata*	Ovate Catchfly	G3	S1S2			3
Caryophyllaceae	4	*Silene regia*	Royal Catchfly	G3	SH			3
Caryophyllaceae	1	*Stellaria corei*	Tennessee Chickweed	G4	S1			4
Caryophyllaceae	3	*Stellaria pubera*	Giant Chickweed	G5	S2			4
Amaranthaceae	3	*Amaranthus australis*	Southern Amaranth	G5	S1			4
Amaranthaceae	1	*Iresine diffusa*	Felicidad	G4G5	S1			4
Nyctaginaceae	2	*Mirabilis albida*	Pale Umbrella-wort	G5	S2			4
Nyctaginaceae	2	*Mirabilis linearis*	Narrowleaf Four-o'clock	G5	S1			4
Cactaceae	2	*Opuntia macrorhiza*	Twisted-spine Prickly-pear	G5	S1			4
Hydrangeaceae	1	*Philadelphus hirsutus*	Streambank Mock-orange	G5?	S1			4
Hydrangeaceae	3	*Philadelphus inodorus*	Scentless Mock Orange	G4G5	S2			4
Cornaceae	2	*Swida alternifolia*	Alternate-leaf Dogwood	G5	S2			4

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Polemoniaceae	2	*Phlox amplifolia*	Largeleaf Phlox	G3G5	S2			4
Sapotaceae	2	*Sideroxylon reclinatum* ssp. *reclinatum*	Florida Bumelia	G4G5T NR	S1			4
Primulaceae	2	*Hottonia inflata*	Featherfoil	G4	S1			3
Primulaceae	2	*Primula meadia*	Shootingstar	G5	S2			4
Theaceae	1	*Stewartia ovata*	Mountain Camellia	G4	S1			4
Sarraceniaceae	1	*Sarracenia alabamensis* ssp. *wherryi*	Wherry's Sweet Pitcher-plant	G3T3	S1			3
Sarraceniaceae	2	*Sarracenia leucophylla*	Whitetop Pitcherplant	G3	S2			3
Sarraceniaceae	1	*Sarracenia rosea*	Purple Pitcherplant	G3	S1			3
Ericaceae	3	*Chimaphila maculata*	Spotted Wintergreen	G5	S2			4
Ericaceae	2	*Pieris phillyreifolia*	Climbing Fetter-bush	G4	S1			4
Ericaceae	2	*Rhododendron alabamense*	Alabama Rhododendron	G4	S1			4
Ericaceae	2	*Rhododendron arborescens*	Smooth Azalea	G4G5	S1S2			4
Ericaceae	3	*Rhododendron austrinum*	Orange Azalea	G3	S2			3
Ericaceae	2	*Rhododendron periclymenoides*	Pink Azalea	G5	S1			4
Ericaceae	3	*Vaccinium pallidum*	Early Lowbush Blueberry	G5	S2			4
Ericaceae	3	*Vaccinium tenellum*	Small Black Blueberry	G5	S1			4
Rubiaceae	2	*Galium bermudense*	Coastal Bedstraw	G5	S2?			4
Gentianaceae	2	*Eustoma exaltatum*	Tall Prairie-gentian	G5T4T 5	S1			4
Gentianaceae	1	*Gentiana catesbaei*	Elliott's Gentian	G5	S1			4
Gentianaceae	1	*Gentianella occidentalis*	Stiff Gentian	G5	S1			4
Gentianaceae	3	*Sabatia campestris*	Prairie Pink	G5?	S2			4
Gentianaceae	2	*Sabatia decandra*	Bartram's Rose-gentian	G4G5	S1			4
Loganiaceae	2	*Mitreola angustifolia*	Narrowleaf Miterwort	G4G5	S1			

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Apocynaceae	4	*Amsonia ludoviciana*	Louisiana Bluestar	G3	SX			
Apocynaceae	2	*Asclepias hirtella*	Green Milkweed	G5	S2			4
Apocynaceae	2	*Asclepias incarnata*	Swamp Milkweed	G5	S1			4
Apocynaceae	4	*Asclepias purpurascens*	Purple Milkweed	G5?	SH			4
Apocynaceae	1	*Matelea baldwyniana*	Baldwin's Milkvine	G3	S1			3
Apocynaceae	3	*Matelea decipiens*	Old-field Milkvine	G5	S1			4
Apocynaceae	3	*Matelea obliqua*	Climbing Milkweed	G4?	S2			4
Boraginaceae	1	*Euploca convolvulacea*	Bindweed Heliotrope	G5	S1			4
Boraginaceae	2	*Hackelia virginiana*	Virginia Stickseed	G5	S2			4
Boraginaceae	2	*Lithospermum caroliniense*	Golden Puccoon	G4G5	S1			4
Boraginaceae	2	*Lithospermum latifolium*	American Gromwell	G4	S1			4
Boraginaceae	1	*Mertensia virginica*	Virginia Bluebells	G5	S1			4
Hydrophyllaceae	1	*Hydrophyllum appendiculatum*	Appendage Waterleaf	G5	S1			4
Hydrophyllaceae	1	*Hydrophyllum macrophyllum*	Large-leaf Water-leaf	G5	S1			4
Hydrophyllaceae	2	*Phacelia bipinnatifida*	Fernleaf Phacelia	G5	S1			4
Hydrophyllaceae	1	*Phacelia hirsuta*	Hairy Scorpionweed	G5?	S1			4
Hydrophyllaceae	2	*Phacelia purshii*	Miami-mist	G5	S1			4
Hydrophyllaceae	1	*Phacelia ranunculacea*	Blue Scorpionweed	G4	S1			4
Hydrophyllaceae	3	*Phacelia strictiflora* var. *robbinsii*	Prairie Scorpion-weed	G5T4	S1			4
Convolvulaceae	2	*Convolvulus catesbyanus*	Catesby's Bindweed	G4	S1			4
Convolvulaceae	4	*Cuscuta glomerata*	Clustered Dodder	G5	SH			4
Convolvulaceae	2	*Ipomoea brasiliensis*	Railroad Morning-glory	G5	S1			4
Convolvulaceae	1	*Ipomoea macrorhiza*	Large-stem Morning-glory	G3	S1			3

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Convolvulaceae	1	*Stylisma aquatica*	Water Southern Morning-glory	G4	S1			3
Convolvulaceae	2	*Stylisma pickeringii* ssp. *pattersonii*	Pickering Morning-glory	G4T4	S1S2			4
Convolvulaceae	2	*Stylisma pickeringii* ssp. *pickeringii*	Pickering Morning-glory	G4T3	S1S2			3
Solanaceae	1	*Calliphysalis carpenteri*	Carpenter's Ground-cherry	G3	S1			3
Solanaceae	2	*Lycium carolinianum*	Carolina Wolf-berry	G4	S1			3
Solanaceae	4	*Physalis arenicola*	Cypress-head Ground-cherry	G3?	SH			3
Solanaceae	2	*Solanum pseudogracile*	Glowing Nightshade	G4	S2			4
Oleaceae	3	*Forestiera ligustrina*	Upland Swamp Privet	G4G5	S1S2			4
Oleaceae	2	*Fraxinus quadrangulata*	Blue Ash	G5	S1			4
Plantaginaceae	1	*Chelone lyonii*	Pink Turtlehead	G4	S1			3
Plantaginaceae	4	*Chelone obliqua* var. *obliqua*	Red Turtlehead	G4T3T 4Q	SH			3
Plantaginaceae	1	*Gratiola floridana*	Florida Hedge-hyssop	G3G4	S1			4
Plantaginaceae	1	*Gratiola ramosa*	Branched Hedge-hyssop	G4G5	S1			4
Plantaginaceae	3	*Penstemon canescens*	Gray Beardtongue	G4	S1			4
Plantaginaceae	2	*Penstemon pallidus*	Pale Beardtongue	G5	S1			4
Plantaginaceae	3	*Penstemon tenuis*	Sharp-sepal Beardtongue	G4	S2			4
Plantaginaceae	2	*Plantago cordata*	Heartleaf Plantain	G4	S1			3
Plantaginaceae	2	*Sophronanthe hispida*	Pineland Hedge-Hyssop	G3G5	S2			4
Plantaginaceae	3	*Veronicastrum virginicum*	Culver's-root	G4	S1S2			3
Acanthaceae	2	*Ruellia noctiflora*	Night-flowering Wild-petunia	G3?	S2			2
Acanthaceae	3	*Ruellia pinetorum*	Pine Barren Ruellia	G5T3T 4	S2S3			3
Acanthaceae	2	*Yeatesia viridiflora*	Green-flower Yeatesia	G3G5	S1			4
Lentibulariaceae	3	*Pinguicula planifolia*	Chapman's Butterwort	G3?	S2S3			3

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Lentibulariaceae	2	*Pinguicula pumila*	Dwarf Butterwort	G4	S1			3
Lentibulariaceae	2	*Utricularia olivacea*	Piedmont Bladderwort	G4	S1			3
Lentibulariaceae	3	*Utricularia purpurea*	Purple Bladderwort	G5	S2			4
Verbenaceae	1	*Avicennia germinans*	Black Mangrove	G5	S1			4
Verbenaceae	3	*Verbena xutha*	Gulf Vervain	G5	S2			4
Lamiaceae	1	*Agastache nepetoides*	Yellow Giant-hyssop	G5	S1			
Lamiaceae	1	*Clinopodium arkansanum*	Low Calamint	G5	S1			
Lamiaceae	2	*Collinsonia anisata*	Anise Horsebalm	GNR	S1			
Lamiaceae	2	*Collinsonia punctata*	Spotted-leaf Horse-balm	G3?	S1			3
Lamiaceae	1	*Conradina canescens*	Blue-sage	G5	S1			4
Lamiaceae	2	*Cunila origanoides*	Common Dittany	G5	S1			4
Lamiaceae	2	*Hedeoma drummondii* var. *drummondii*	Drummond Pennyroyal	G5	S1			4
Lamiaceae	3	*Lycopus amplectens*	Sessile-leaved Bugleweed	G5	S1			4
Lamiaceae	2	*Pycnanthemum flexuosum*	Narrowleaf Mountainmint	G5	S1			4
Lamiaceae	2	*Pycnanthemum pilosum*	Whorled Mountainmint	G5T5	S1			4
Lamiaceae	1	*Salvia chapmanii*	Chapman's Sage	GNR	S1			
Lamiaceae	1	*Scutellaria glabriuscula*	Georgia Skullcap	G2	S1			1
Lamiaceae	1	*Scutellaria leonardii*	Shale-barren Skullcap	G4T4	S1			3
Orobanchaceae	1	*Agalinis auriculata*	Earleaf False Foxglove	G3	S2			3
Phrymaceae	2	*Mimulus ringens* var. *ringens*	Square-stem Monkeyflower	G5	S1			4
Orobanchaceae	3	*Agalinis filicaulis*	Thread-stem False Foxglove	G3	S2S3			3
Orobanchaceae	1	*Agalinis homalantha*	San Antonio False-foxglove	G5	S1			4
Orobanchaceae	2	*Agalinis linifolia*	Flaxleaf False Foxglove	G4?	S2			4

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Orobanchaceae	3	*Agalinis oligophylla*	Ridge-stem False-foxglove	G4	S2			4
Orobanchaceae	1	*Agalinis skinneriana*	Pale False Foxglove	G3G4	S1			3
Orobanchaceae	1	*Aphyllon uniflorum*	One-flowered Broomrape	G5	S1?			4
Orobanchaceae	2	*Castilleja coccinea*	Scarlet Indian-paintbrush	G5	S1			4
Orobanchaceae	1	*Conopholis americana*	American Cancer-root	G5	S1			4
Orobanchaceae	3	*Macranthera flammea*	Flame Flower	G3	S3			3
Orobanchaceae	4	*Schwalbea americana*	Chaffseed	G2	SH	LE		1
Aquifoliaceae	2	*Ilex cassine*	Dahoon Holly	G5	S2			4
Campanulaceae	1	*Lobelia boykinii*	Boykin's Lobelia	G2G3	S1			2
Menyanthaceae	3	*Nymphoides aquatica*	Big Floating-heart	G5	S2			4
Menyanthaceae	3	*Nymphoides cordata*	Floating-heart	G5	S1S2			4
Asteraceae	1	*Amphiachyris dracunculoides*	Broom-snakeroot	G4G5	S1			4
Asteraceae	2	*Arnoglossum reniforme*	Great Indian-plantain	G4	S1			3
Asteraceae	2	*Balduina angustifolia*	Coastal Plain Honeycomb-head	G5	S2			4
Asteraceae	4	*Bidens trichosperma*	Tickseed Sunflower	G5	SU			4
Asteraceae	1	*Boltonia apalachicolensis*	Apalachicola Doll's-Daisy	G2Q	S1			1
Asteraceae	3	*Cirsium lecontei*	Leconte's Thistle	G3	S3			3
Asteraceae	4	*Cirsium muticum*	Swamp Thistle	G5	SP			4
Asteraceae	2	*Coreopsis nudata*	Georgia Tickseed	G3?	S1S2			3
Asteraceae	3	*Diaperia prolifera* var. *prolifera*	Big-head Evax	G5	S1			4
Asteraceae	4	*Eupatorium lancifolium*	Lanceleaf Thoroughwort	G3?	SP			3
Asteraceae	2	*Gaillardia aestivalis* var. *flavovirens*	Lanceleaf Blanket Flower	G5T3T 5	S1			4
Asteraceae	3	*Helenium brevifolium*	Shortleaf Sneezeweed	G4	S2S3			3

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Asteraceae	4	*Helianthus debilis* ssp. *tardiflorus*	Gulf Coast Beach Sunflower	G5T3	SP			3
Asteraceae	2	*Helianthus decapetalus*	Thinleaf Sunflower	G5	S2			4
Asteraceae	1	*Helianthus verticillatus*	Whorled Sunflower	G1	S1	LE		1
Asteraceae	1	*Hieracium venosum*	Rattlesnake Hawkweed	G5	S1			4
Asteraceae	2	*Liatris elegantula*	Blazing-Star	GNR	S1			4
Asteraceae	3	*Marshallia angustifolia*	Slim-leaf Barbara's-buttons	G4T4Q	S2			4
Asteraceae	3	*Marshallia trinervia*	Broadleaf Barbara's-buttons	G3	S3			3
Asteraceae	2	*Nabalus asper*	Rough Rattlesnake-root	G4?	S2			3
Asteraceae	1	*Nabalus barbatus*	Barbed Rattlesnake-root	G3	S1			3
Asteraceae	2	*Packera aurea*	Golden Groundsel	G5	S2			4
Asteraceae	2	*Packera paupercula* var. *paupercula*	Balsam Ragwort	G5TNR	S1			4
Asteraceae	2	*Packera tomentosa*	Woolly Groundsel	G4G5	S1			4
Asteraceae	2	*Palafoxia callosa*	Small Palafoxia	G4G5	S1			4
Asteraceae	4	*Pityopsis pinifolia*	Taylor County Silk-grass	G4	SP			4
Asteraceae	1	*Rudbeckia grandiflora* var. *alismifolia*	Rough Coneflower	G5	S1			4
Asteraceae	1	*Rudbeckia subtomentosa*	Sweet Coneflower	G5	S1			4
Asteraceae	1	*Sclerolepis uniflora*	Pink Bogbutton	G4	S1			4
Asteraceae	2	*Silphium confertifolium*	Black Belt Rosinweed	GNR	S1			4
Asteraceae	3	*Silphium integrifolium* var. *gattingeri*	Gattinger's Rosinweed	G5TNR Q	S2			4
Asteraceae	2	*Silphium pinnatifidum*	Tansy Rosinweed	G3Q	S1			3
Asteraceae	2	*Silphium simpsonii*	Simpson's Rosinweed	G3?Q	S1			3
Asteraceae	3	*Silphium terebinthinaceum* var. *luciae-brauniae*	Lucy Braun's Prairie Dock	G4G5T 3?Q	SU			3
Asteraceae	2	*Solidago auriculata*	Eared Goldenrod	G4	S1			3

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Asteraceae	2	*Solidago brachyphylla*	Dixie Goldenrod	G3G4	S1			3
Asteraceae	2	*Solidago flaccidifolia*	Appalachian Goldenrod	G5	S1			4
Asteraceae	2	*Solidago juncea*	Early Goldenrod	G5	S1S2			4
Asteraceae	3	*Solidago rigidiuscula*	Showy Goldenrod	G5T4	S2			4
Asteraceae	2	*Solidago sphacelata*	Autumn Goldenrod	G4G5	S1			4
Asteraceae	3	*Symphyotrichum ericoides* var. *ericoides*	White Heath Aster	G5T5	S2			4
Asteraceae	4	*Symphyotrichum oblongifolium*	Aromatic Aster	G5	SH			4
Asteraceae	2	*Symphyotrichum oolentangiense*	Sky Blue Aster	G5	S1			4
Asteraceae	2	*Symphyotrichum pratense*	Barrens Silky Aster	G4?	S1			3
Asteraceae	2	*Symphyotrichum puniceum* var. *puniceum*	Purple-stem Aster	G5T5	S2			4
Asteraceae	4	*Symphyotrichum puniceum* var. *scabricaule*	Rough-stem Aster	G5T2	SP			1
Asteraceae	2	*Thelesperma filifolium*	Stiff Greenthread	G4G5	S1			4
Viburnaceae	1	*Viburnum acerifolium*	Mapleleaf Viburnum	G5	S1			4
Araliaceae	2	*Aralia racemosa*	American Spikenard	G5	S1			4
Araliaceae	3	*Panax quinquefolius*	American Ginseng	G3G4	S3			3
Apiaceae	4	*Cicuta maculata* var. *bolanderi*	Bolander's Water-hemlock	G5T3T 4	SNR			3
Apiaceae	2	*Erigenia bulbosa*	Harbinger-of-Spri ng	G5	S1			4
Apiaceae	3	*Eryngium aquaticum*	Marsh Rattlesnake-maste r	G4	S1			4
Apiaceae	1	*Eryngium hookeri*	Hooker's Coyote-thistle	G3G5	S1S2			4
Apiaceae	3	*Eryngium species 1*	Mocassin-master	GNR	S1			
Apiaceae	2	*Ligusticum canadense*	Nondo Lovage	G4	S1			4
Apiaceae	3	*Lilaeopsis carolinensis*	Carolina Lilaeopsis	G3G5	S2			3
Apiaceae	2	*Perideridia americana*	Eastern Eulophus	G4	S1S2			3

Family	Tier	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	RSGCN
Apiaceae	2	*Polytaenia nuttallii*	Prairie Parsley	G5	S2			4
Apiaceae	2	*Ptilimnium costatum*	Eastern Bishopweed	G4	S1			3
Apiaceae	1	*Taenidia integerrima*	Yellow Pimpernel	G5	S1			4

APPENDIX 11

Table A11.1 Habitat and Sub-Habitat Types

Habitat Type	Sub-Habitat Type
1. Dry-Mesic Upland Forests/Woodlands	EGCP Interior Upland Longleaf Pine Woodland
	SPC Dry Upland Hardwood Forest
	EGCP Northern Dry Upland Hardwood Forest
	SCP Oak Dome and Hammock
	EGCP Interior Shortleaf Pine-Oak Forest
2. Mesic Upland Forests	EGCP Northern Loess Plain Oak-Hickory Upland
	EGCP Northern Loess Bluff Forest
	EGCP Southern Loess Bluff Forest
	EGCP Southern Loblolly-Hardwood Flatwoods
	SCP Limestone Forest
	SCP Mesic Slope Forest
	EGCP Northern Mesic Hardwood Slope Forest
3. Rock Outcrops and Caves	Caves
	Rock Outcrops
	Southern Interior Sinkhole Wall
	EGCP Dry Chalk Bluff
	Southeastern Coastal Plain Cliff
4. Floodplain Forests	Mississippi River Low Floodplain Forest
	Mississippi River High Floodplain Forest
	Mississippi River Depression Floodplain Forest
	Mississippi River Riparian Forest
	EGCP Large River Floodplain Forest
	EGCP Small Stream and River Floodplain
	SCP Blackwater River Floodplain Forest
	Sandbars
5. Swamp Forests	SCP Nonriverine Basin Swamp
	SCP Nonriverine Cypress Dome
	SCP Seepage Swamp and Baygall

Habitat Type	Sub-Habitat Type
6. Wet Pine Savannas/Flatwoods/Bogs	EGCP Near-Coast Pine Flatwoods
	EGCP Savanna and Wet Prairie
7. Bogs and Seepages	SCP Herbaceous Seep and Bog
	EGCP Northern Seepage Swamp
8. Prairies and Cedar Glades	SCP Blackland Prairie and Woodland
9. Herbaceous Freshwater Marsh	Inland Freshwater Marsh
10. Natural Lakes and Ponds	Beaver Ponds
	EGCP Depression Pond
	Ephemeral Pond
	Oxbow Lakes
11. Maritime and Estuarine Fringe	North-Central Gulf of Mexico Salt and Brackish Tidal Marsh
	Mississippi Sound Fresh and Oligohaline Tidal Marsh
	Florida Panhandle Beach Vegetation
	EGCP Dune and Coastal Grassland
	SCP Interdunal Wetland
	Mainland beaches
	EGCP Maritime Forest
	Shell middens and Estuarine Shrublands
	Salt Pannes
	EGCP Freshwater Tidal Wooded Swamp
12. Estuary and Mississippi Sound (Inside or Associated with Barrier Islands)	Barrier Island passes
	Estuarine bays, lakes and tidal streams
	Mississippi Sound (Smooth Bottom)
	Mollusk reefs
	North-Central Gulf of Mexico Salt and Brackish Tidal Marsh
	Northern Gulf of Mexico Seagrass Bed

Habitat Type	Sub-Habitat Type
13. Marine Habitats	Hard bottoms and oceanic reefs
	Marine habitats (smooth bottoms)
	Agriculatural/Aquacultural Fields
	Impoundments
	Artificial reefs
	Buildings, Bridges, and Overpasses, etc
	Hay and Pasture Lands
	Man-made beaches
	Cultivated Forests
	Shrublands
	Urban/Suburban Lands
	Utility Right-of-ways
14. Mississippi River and Associated Drainages	Mississippi River
	MS Alluvial Plain
	Upper Coastal Plain, Yazoo
	Big Black River
15. Northeast Mississippi Drainages	Northeast Hills, Tennessee River Drainage
	Tombigbee Drainage
	Lower MS North Drainage (Hatchie and Wolf)
16. Pearl River Drainages	Upper Coastal Plain, Pearl River
	Lower Coastal Plain, Pearl
17. Southeast Mississippi Drainages	Pascagoula Drainage
	Coastal Rivers
18. Southwest Mississippi River Drainages	Lake Ponchartrain
	Lower MS South Drainage

Table A11.2 Habitat Threats

	1 Residential & Commercial Development			2 Agriculture & Aquaculture				3 Energy Production & Mining			4 Transportation & Service Corridors				5 Biological Resource Use				6 Human Intrusions & Disturbance			7 Natural Systems Modification			8 Invasive and other Problematic Species & Genes			9 Pollution						10 Geologic Events			11 Climate Change and Severe Weather			
	11	12	13	21	22	23	24	31	32	33	41	42	43	44	51	52	53	54	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	101	102	103	111	112	113	114
Sub-habitat Type	Housing/Urban Areas	Commercial/Industrial Areas, Factories, Commercial Areas	Tourism & Recreation Areas	Annual & Perennial Non-Timber Crops	Wood & Pulp Plantations	Livestock Farming & Ranching	Marine & Freshwater Aquaculture	Oil & Gas Drilling	Mining & Quarrying	Renewable Energy	Roads & Railroads	Utility & Service Lines	Shipping Lanes	Flight Paths	Hunting/Collection Terrestrial Animals	Gathering Terrestrial Plants	Logging & Harvesting Wood	Fishing/Harvesting Aquatic Resources	Recreational Activities	War, Civil Unrest, Military Exercises	Work & Other Activities	Fire & Fire Suppression	Dams & Water Management/ Use	Other Ecosystem Modifications	Invasive Non-Native/Alien Species	Problematic Native Species	Introduced Genetic Material	Household Sewage/Urban Waste Water	Industrial/Military Effluents	Agriculture & Forestry Effluents	Garbage & Solid Wastes	Air-borne Pollutants	Excess Energy	Volcanoes	Earthquakes/Tsunamis	Avalanches/Landslides	Habitat Shifting	Droughts	Temperature Extremes	Storms & Flooding
EGCP Interior Upland Longleaf Pine Woodland	H	M		L	H			M	H	H	H	H			M	L	H		L			H			H	H											L	L		
SCP Dry Upland Hardwood Forest	H	M		L	H			M	M	L	H	H			M		H		L			H			H	M											L	L	L	M
EGCP Northern Dry Upland Hardwood Forest	M	L	M	L	H	L			H		M	L				M	H		L			H			H	M						L					L	L	L	L
SCP Oak Dome and Hammock	H	M	L		H	L			L	L	M								L						H												M			H
EGCP Interior Shortleaf Pine-Oak Forest	M	L	L		H			L	M	L	M	L					H		L			H			L	M	L					L					L	M	M	M
EGCP Northern Loess Plain Oak-Hickory Upland	H	H	M	H	H			L	L		H	L					H					H			M	L				L	L	L						H	L	
EGCP Northern Loess Bluff Forest	M				L				L		M					M	H								H					L	L	L				L		H	L	L
EGCP Southern Loess Bluff Forest	M				L				L		M					M	H								H					L	L	L				L		H	L	L
EGCP Southern Loblolly-Hardwood Flatwoods	M	L	L		H	L		L	L	L	L	L				L	M		L			H			M	M	L					L						H	L	L

	1 Residential & Commercial Development			2 Agriculture & Aquaculture				3 Energy Production & Mining			4 Transportation & Service Corridors				5 Biological Resource Use				6 Human Intrusions & Disturbance			7 Natural Systems Modification			8 Invasive and other Problematic Species & Genes			9 Pollution						10 Geologic Events			11 Climate Change and Severe Weather			
	11	12	13	21	22	23	24	31	32	33	41	42	43	44	51	52	53	54	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	101	102	103	111	112	113	114
Sub-habitat Type	Housing/Urban Areas	Commercial/Industrial Areas, Factories, Commercial Areas	Tourism & Recreation Areas	Annual & Perennial Non-Timber Crops	Wood & Pulp Plantations	Livestock Farming & Ranching	Marine & Freshwater Aquaculture	Oil & Gas Drilling	Mining & Quarrying	Renewable Energy	Roads & Railroads	Utility & Service Lines	Shipping Lanes	Flight Paths	Hunting/Collection Terrestrial Animals	Gathering Terrestrial Plants	Logging & Harvesting Wood	Fishing/Harvesting Aquatic Resources	Recreational Activities	War, Civil Unrest, Military Exercises	Work & Other Activities	Fire & Fire Suppression	Dams & Water Management/ Use	Other Ecosystem Modifications	Invasive Non-Native/Alien Species	Problematic Native Species	Introduced Genetic Material	Household Sewage/Urban Waste Water	Industrial/Military Effluents	Agriculture & Forestry Effluents	Garbage & Solid Wastes	Air-borne Pollutants	Excess Energy	Volcanoes	Earthquakes/Tsunamis	Avalanches/Landslides	Habitat Shifting	Droughts	Temperature Extremes	Storms & Flooding
SCP Limestone Forest	L				L	L		L	M							M	H						M	L	H			L		L	L					L	L	M	M	M
SCP Mesic Slope Forest	M				H	L			M		L					M	H		L						H					L							L	H	M	H
EGCP Northern Mesic Hardwood Slope Forest	M				H	L			M		L					M	H		L						H					L							L	H	M	H
Caves			L												L		L		H						H					L	M									
Rock Outcrops	H	L	L		H	M		L	H	L	H	M			L	L	H		M						H															
Southern Interior Sinkhole Wall	H	L	L		H	M		L	H	L	H	M			L	M	H		M						H															
EGCP Dry Chalk Bluff	L	L				L			M	H						L			L			H			H					L	M	L								
Southeastern Coastal Plain Cliff	L		H						M							L			H				L		H						L									M
Mississippi River Low Floodplain Forest	L	L		H		L			H		M				L	L	M	M	L				H	H	H					H	L	L				H	M	M	M
Mississippi River High Floodplain Forest	L	L		H		L	L		H		M				L	L	M	M	L				H	H	H					H	L	L				H	M	M	M

	1 Residential & Commercial Development			2 Agriculture & Aquaculture				3 Energy Production & Mining			4 Transportation & Service Corridors				5 Biological Resource Use				6 Human Intrusions & Disturbance			7 Natural Systems Modification			8 Invasive and other Problematic Species & Genes			9 Pollution						10 Geologic Events			11 Climate Change and Severe Weather			
	11	12	13	21	22	23	24	31	32	33	41	42	43	44	51	52	53	54	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	101	102	103	111	112	113	114
Sub-habitat Type	Housing/Urban Areas	Commercial/Industrial Areas, Factories, Commercial Areas	Tourism & Recreation Areas	Annual & Perennial Non-Timber Crops	Wood & Pulp Plantations	Livestock Farming & Ranching	Marine & Freshwater Aquaculture	Oil & Gas Drilling	Mining & Quarrying	Renewable Energy	Roads & Railroads	Utility & Service Lines	Shipping Lanes	Flight Paths	Hunting/Collection Terrestrial Animals	Gathering Terrestrial Plants	Logging & Harvesting Wood	Fishing/Harvesting Aquatic Resources	Recreational Activities	War, Civil Unrest, Military Exercises	Work & Other Activities	Fire & Fire Suppression	Dams & Water Management/ Use	Other Ecosystem Modifications	Invasive Non-Native/Alien Species	Problematic Native Species	Introduced Genetic Material	Household Sewage/Urban Waste Water	Industrial/Military Effluents	Agriculture & Forestry Effluents	Garbage & Solid Wastes	Air-borne Pollutants	Excess Energy	Volcanoes	Earthquakes/Tsunamis	Avalanches/Landslides	Habitat Shifting	Droughts	Temperature Extremes	Storms & Flooding
Mississippi River Riparian Forest	L	L	L			L				M		L	L		L			L	H				H	L	H				L								L	M		M
EGCP Large River Floodplain Forest	M	L	L	H	H	M			H		L	M				L	H	H	M				H	H	H			M	M	M	L						H	H	M	H
EGCP Small Stream and River Floodplain	L		L	L	H	L			H		M	M				L	H	L	M				H	H	H			M	M	M	M						H	M	M	M
Sandbars			H			H			H									H	H				H		H	H					M						H	M	M	M
Mississippi River Depression Floodplain Forest	L	L		H		L			H		M				L	L	M	M	L				H	H	H					H	L	L					H	M	M	M
SCP Blackwater River Floodplain Forest	L		L	L	H	L			H		M	M				L	H	L	M				H	H	H			M	M	M	M						H	M	M	M
SCP Nonriverine Basin Swamp	L				L						L					L	H					L	H		H					L	L						L	M		
SCP Nonriverine Cypress Dome					L						L					L	H		L			M	H		H					L	L						L	M		
SCP Seepage Swamp and Baygall	L				M	L					M					M	M					H	H	H	H	M		L		M							L	M	M	L
EGCP Near-Coast Pine Flatwoods	H	H			H	H				L	H					M	M		M			H	H		H	H											L			

	1 Residential & Commercial Development			2 Agriculture & Aquaculture				3 Energy Production & Mining			4 Transportation & Service Corridors				5 Biological Resource Use				6 Human Intrusions & Disturbance			7 Natural Systems Modification			8 Invasive and other Problematic Species & Genes			9 Pollution						10 Geologic Events			11 Climate Change and Severe Weather			
	11	12	13	21	22	23	24	31	32	33	41	42	43	44	51	52	53	54	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	101	102	103	111	112	113	114
Sub-habitat Type	Housing/Urban Areas	Commercial/Industrial Areas, Factories, Commercial Areas	Tourism & Recreation Areas	Annual & Perennial Non-Timber Crops	Wood & Pulp Plantations	Livestock Farming & Ranching	Marine & Freshwater Aquaculture	Oil & Gas Drilling	Mining & Quarrying	Renewable Energy	Roads & Railroads	Utility & Service Lines	Shipping Lanes	Flight Paths	Hunting/Collection Terrestrial Animals	Gathering Terrestrial Plants	Logging & Harvesting Wood	Fishing/Harvesting Aquatic Resources	Recreational Activities	War, Civil Unrest, Military Exercises	Work & Other Activities	Fire & Fire Suppression	Dams & Water Management/ Use	Other Ecosystem Modifications	Invasive Non-Native/Alien Species	Problematic Native Species	Introduced Genetic Material	Household Sewage/Urban Waste Water	Industrial/Military Effluents	Agriculture & Forestry Effluents	Garbage & Solid Wastes	Air-borne Pollutants	Excess Energy	Volcanoes	Earthquakes/Tsunamis	Avalanches/Landslides	Habitat Shifting	Droughts	Temperature Extremes	Storms & Flooding
EGCP Savanna and Wet Prairie	H	H			H	M				L	H	H				M	H		M			H	H		H	H											L	L		
SCP Herbaceous Seep and Bog	M	M			M						M	L				M	H		H			H	H		H	H											L	M	L	
EGCP Northern Seepage Swamp	M			L	H	L			L		H	H			L	L	H		L			M			H												L	M	L	
SCP Blackland Prairie and Woodland	H	H	L	H	L	L			M	H	M	L				L			M			H	H	H	H	H	L			M								L	L	
Inland Freshwater Marsh	H	M		H							L	L											H		H	M		M	M	M							L	H	H	
Beaver Ponds	L				L						L				H								H		L					M									
EGCP Depression Pond	H	L	L	M	H	L				L	M					M	M		M			H	H	L	H	M				M						L	H	M	
Ephemeral Pond	H	M	L	H	M	M				L	M						M		M			H	H		H	M				M						M	H	H	
Oxbow Lakes	M	L	M	H		L											M	M	M				H		H	M		H	H	H	M						L	L	M	
North-Central Gulf of Mexico Salt and Brackish Tidal Marsh	M	L	M					H			L		M			L		H	L				H	L	H			H			H						H			H

	1 Residential & Commercial Development			2 Agriculture & Aquaculture				3 Energy Production & Mining			4 Transportation & Service Corridors				5 Biological Resource Use				6 Human Intrusions & Disturbance			7 Natural Systems Modification			8 Invasive and other Problematic Species & Genes			9 Pollution						10 Geologic Events			11 Climate Change and Severe Weather			
	11	12	13	21	22	23	24	31	32	33	41	42	43	44	51	52	53	54	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	101	102	103	111	112	113	114
Sub-habitat Type	Housing/Urban Areas	Commercial/Industrial Areas, Factories, Commercial Areas	Tourism & Recreation Areas	Annual & Perennial Non-Timber Crops	Wood & Pulp Plantations	Livestock Farming & Ranching	Marine & Freshwater Aquaculture	Oil & Gas Drilling	Mining & Quarrying	Renewable Energy	Roads & Railroads	Utility & Service Lines	Shipping Lanes	Flight Paths	Hunting/Collection Terrestrial Animals	Gathering Terrestrial Plants	Logging & Harvesting Wood	Fishing/Harvesting Aquatic Resources	Recreational Activities	War, Civil Unrest, Military Exercises	Work & Other Activities	Fire & Fire Suppression	Dams & Water Management/ Use	Other Ecosystem Modifications	Invasive Non-Native/Alien Species	Problematic Native Species	Introduced Genetic Material	Household Sewage/Urban Waste Water	Industrial/Military Effluents	Agriculture & Forestry Effluents	Garbage & Solid Wastes	Air-borne Pollutants	Excess Energy	Volcanoes	Earthquakes/Tsunamis	Avalanches/Landslides	Habitat Shifting	Droughts	Temperature Extremes	Storms & Flooding
Mississippi Sound Fresh and Oligohaline Tidal Marsh	M	L	M					H			L							H	L				H	H	H			H			H						H			M
Florida Panhandle Beach Vegetation	H	H	L					H								L			H				H	H	H	M					H		L				H		M	H
EGCP Dune and Coastal Grassland			L					L											M			L	M	M	H						L						H			H
SCP Interdunal Wetland																			L			L		L	H						L						H			H
Mainland beaches	M	H	M					H											H				H	M	H	M		M			H						H		M	H
EGCP Maritime Forest	H	M	H					L			M					L			L			M			H			L			L						H			H
Shell middens and Estuarine Shrublands								L											H						H						L						H			M
Southern Salt Flat and Panne								H								L			H					H													H			H
EGCP Freshwater Tidal Wooded Swamp	M	M									L	L					M		L				H	L	H			L			L						H			H
Barrier Island passes								H	L				H					H			L		H														H			H

	1 Residential & Commercial Development			2 Agriculture & Aquaculture				3 Energy Production & Mining			4 Transportation & Service Corridors				5 Biological Resource Use				6 Human Intrusions & Disturbance			7 Natural Systems Modification		8 Invasive and other Problematic Species & Genes			9 Pollution						10 Geologic Events			11 Climate Change and Severe Weather			
	11	12	13	21	22	23	24	31	32	33	41	42	43	44	51	52	53	54	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	101	102	103	111	112	113	114
Sub-habitat Type	Housing/Urban Areas	Commercial/Industrial Areas, Factories, Commercial Areas	Tourism & Recreation Areas	Annual & Perennial Non-Timber Crops	Wood & Pulp Plantations	Livestock Farming & Ranching	Marine & Freshwater Aquaculture	Oil & Gas Drilling	Mining & Quarrying	Renewable Energy	Roads & Railroads	Utility & Service Lines	Shipping Lanes	Flight Paths	Hunting/Collection Terrestrial Animals	Gathering Terrestrial Plants	Logging & Harvesting Wood	Fishing/Harvesting Aquatic Resources	Recreational Activities	War, Civil Unrest, Military Exercises	Work & Other Activities	Fire & Fire Suppression	Dams & Water Management/ Use	Other Ecosystem Modifications	Invasive Non-Native/Alien Species	Problematic Native Species	Introduced Genetic Material	Household Sewage/Urban Waste Water	Industrial/Military Effluents	Agriculture & Forestry Effluents	Garbage & Solid Wastes	Air-borne Pollutants	Excess Energy	Volcanoes	Earthquakes/Tsunamis	Avalanches/Landslides	Habitat Shifting	Droughts	Temperature Extremes	Storms & Flooding
Estuarine bays, lakes and tidal streams	H	H	H					H			L							H	M				H	H	M			H	M		M						H			H
Mississippi Sound (Smooth Bottom)								H					H					H	L				H		M			H	H	L	M									
Mollusk reefs		H						H										H	L				H		M	L		H		L						H	L	L	H
North-Central Gulf of Mexico Salt and Brackish Tidal Marsh	M	L	M					H			L		M			L		H	L				H	L	H			H			H						H			H
Northern Gulf of Mexico Seagrass Bed	M	M						H										H	H				H		L			H	H	H							H		M	H
Hard bottoms and oceanic reefs		L						H										H	M						M						M									
Marine habitats (smooth bottoms)		L						H	M				M					H	L						H						M						H		M	H
Agricultural/Aquacultural Fields	M	M	L	H		L				H	M	M											M		H	H						L					M			M
Artificial Ponds				M		M																			L	M				M						M		H	
Artificial reefs								H										L					L		M														M	

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	11	12	13	21	22	23	24	31	32	33	41	42	43	44	51	52	53	54	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	101	102	103	111	112	113	114
Sub-habitat Type	Housing/Urban Areas	Commercial/Industrial Areas, Factories, Commercial Areas	Tourism & Recreation Areas	Annual & Perennial Non-Timber Crops	Wood & Pulp Plantations	Livestock Farming & Ranching	Marine & Freshwater Aquaculture	Oil & Gas Drilling	Mining & Quarrying	Renewable Energy	Roads & Railroads	Utility & Service Lines	Shipping Lanes	Flight Paths	Hunting/Collection Terrestrial Animals	Gathering Terrestrial Plants	Logging & Harvesting Wood	Fishing/Harvesting Aquatic Resources	Recreational Activities	War, Civil Unrest, Military Exercises	Work & Other Activities	Fire & Fire Suppression	Dams & Water Management/ Use	Other Ecosystem Modifications	Invasive Non-Native/Alien Species	Problematic Native Species	Introduced Genetic Material	Household Sewage/Urban Waste Water	Industrial/Military Effluents	Agriculture & Forestry Effluents	Garbage & Solid Wastes	Air-borne Pollutants	Excess Energy	Volcanoes	Earthquakes/Tsunamis	Avalanches/Landslides	Habitat Shifting	Droughts	Temperature Extremes	Storms & Flooding
Buildings, Bridges, and Overpasses, etc																			L				L		M						M									M
Hay and Pasture Lands	M	M	L	H	H	M				H	L	M							L			H			H	H													L		
Man-made beaches								H											H							M		L			L		M							H
Cultivated Forests	M	M						L		M	M	H					H		L			H			H	H				M								M		M
Shrublands	M	M		L	H					M	L	H										H			H	H				M								M		
Urban/Suburban Lands	H										H	H							L						H	M		L	L		M	L	M							
Utility Right-of-Ways											L				L	M			H						H	M		L			M							M		
Impoundments																	L	L	M				H		H			M		L								M		M
Big Black River Drainaged	M	L		H	M	M		L	L	L	L	L					H	M	L				H	M	M			M	L	H						L	M	M	H
Mississippi River	L	M	L	H					H				H				M	M					H	H	H			H	H	H						H	H	M	H

	1 Residential & Commercial Development			2 Agriculture & Aquaculture				3 Energy Production & Mining			4 Transportation & Service Corridors				5 Biological Resource Use				6 Human Intrusions & Disturbance			7 Natural Systems Modification		8 Invasive and other Problematic Species & Genes			9 Pollution						10 Geologic Events			11 Climate Change and Severe Weather			
	11	12	13	21	22	23	24	31	32	33	41	42	43	44	51	52	53	54	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	101	102	103	111	112	113	114
Sub-habitat Type	Housing/Urban Areas	Commercial/Industrial Areas, Factories, Commercial Areas	Tourism & Recreation Areas	Annual & Perennial Non-Timber Crops	Wood & Pulp Plantations	Livestock Farming & Ranching	Marine & Freshwater Aquaculture	Oil & Gas Drilling	Mining & Quarrying	Renewable Energy	Roads & Railroads	Utility & Service Lines	Shipping Lanes	Flight Paths	Hunting/Collection Terrestrial Animals	Gathering Terrestrial Plants	Logging & Harvesting Wood	Fishing/Harvesting Aquatic Resources	Recreational Activities	War, Civil Unrest, Military Exercises	Work & Other Activities	Fire & Fire Suppression	Dams & Water Management/ Use	Other Ecosystem Modifications	Invasive Non-Native/Alien Species	Problematic Native Species	Introduced Genetic Material	Household Sewage/Urban Waste Water	Industrial/Military Effluents	Agriculture & Forestry Effluents	Garbage & Solid Wastes	Air-borne Pollutants	Excess Energy	Volcanoes	Earthquakes/Tsunamis	Avalanches/Landslides	Habitat Shifting	Droughts	Temperature Extremes	Storms & Flooding
Mississippi River Alluvial Plain	L			H			L			L								M					H	H	H			H	H	H		H					H	H	M
Upper Coastal Plain, Yazoo River Drainage	M			H	M				L		M	L					M	M	L				H	H	H					H		M					H	H	H
Lower Mississippi River North Drainage (Hatchie and Wolf)				H		M			L								M		L				H	H	M				M	M								L	H
Northeast Hills, Tennessee River Drainage	M		M	H	L	M			M		L	L	M				H		L				H	L	H	H	H			M							H	H	L
Tombigbee River Drainage	M	H	M	H	M	M		L	H		M	L	H				H		L				H	H	H	H	H	M	L	L							H	H	H
Lower Coastal Plain, Pearl River Drainage	H	M	M	L	M	H		H	M		L	L					H	H	M				H	L	L			H	H	H							H	H	H	H
Upper Coastal Plain, Pearl River Drainage	H	H	M	M	H	H			L		M	L					L	L	H				H	M	M			H	M	M								H	H	H
Coastal Rivers Drainages	H	H	H	L	M				M		H	L					H	L	M				L	L	M	L		M	L	L			L				H	L	L	H
Pascagoula Drainage	H	H	M	L	M	M		M	M		M	L					H	M	M				M	L	M	L		M	M	M			L				H	H	M	H
Lake Ponchartrain Drainages				L		M		M	H								H		M				L	M	L			L	L	M							H	H	H	H
Lower Mississippi River South Drainage	L			M		H		H	H		L						H		H				H	H	L			L	L	M							H	H	H	H

Table A11.3 Conservation Actions for Sub-Habitat Types 1-9

		SUB-HABITAT TYPE	EGCP Interior Upland Longleaf Pine	SPC Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SCP Oak Dome and Hammock	EGCP Interior Shortleaf Pine-Oak Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	EGCP Southern Loblolly-Hardwood Flatwoods	SCP Limestone Forest	SCP Mesic Slope Forest	EGCP Northern Mesic Hardwood Slope Forest	Caves	Rock Outcrops	Southern Interior Sinkhole Wall	EGCP Dry Chalk Wall	Southeastern Coastal Plain Cliff	Mississippi River Low Floodplain Forest	Mississippi River High Floodplain Forest	Mississippi River Depression Floodplain Forest	Mississippi River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain	SCP Blackwater River Floodplain Forest	Sandbars	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall	EGCP Near-Coast Pine Flatwoods	EGCP Savanna and Wet Prairie	SCP Herbaceous Seep and Bog	EGCP Northern Seepage Swamp	SCP Blackland Prairie and Woodland	Inland Freshwater Marsh
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																		
A1.1 Site/area protection	Establishing or protecting public or private parks, reserves, and other areas	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A1.2 Resource and habitat protection	Establishing protection or easements of some specific aspect of the resource on public or private lands	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.1 Site/area management	Management of protected areas and other resource lands for conservation	Discourage/limit human access in highly critical areas and special habitats, when possible	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A2.1 Site/area management	Management of protected areas and other resource lands for conservation	Discourage incompatible recreational uses	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A2.2 Invasive/ problematic species control	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X												X	X	X		X	
A2.2 Invasive/ problematic species control	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators	X	X	X	X		X	X	X	X		X							X	X	X	X	X	X	X	X	X	X		X	X	X		X	

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A2.2 Invasive/ problematic species control	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Limit/discourage the introduction of propagation of exotic and invasive species Control/eradicate such species when present	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.3 Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage restoration and improve management of habitat by controlled burning at necessary frequencies and seasons	X	X	X	X	X	X	X	X	X	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X		X	X	X		X	X
A2.3 Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage restoration and improve management of altered/degraded habitat when possible	X	X	X	X	X	X	X	X	X	X	X	X	X			X											X	X	X	X	X	X	X	X	X
A2.3 Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Maintain/improve/restore hydrologic and geomorphic integrity	X	X	X	X	X		X	X		X	X	X	X	X								X				X	X	X	X	X	X	X	X	X
A2.3 Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage development of seasonal, semi-permanent, and permanent wetland infrastructure where appropriate																																		X
A2.3 Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X				X	X	X		X	X	X	X	X

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A2.3 Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Monitor/limit commercial/ residential/in dustrial point source erosion and sedimentation or pollution into streams/atmosphere	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.3 Habitat and natural process restoration	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Enhance viability of SGCN by minimizing fragmen- tation and providing habitat corridors between disjunct populations or subpopu- lations	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X		X	X	X		X	X
A3.1 Species Management	Managing specific plant and animal populations of concern	Plan and conduct additional research on SGCN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A3.1 Species Management	Managing specific plant and animal populations of concern	Monitor/address SGCN harvest/over harvest issues	X	X	X	X	X		X	X			X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X			X
A3.1 Species Management	Managing specific plant and animal populations of concern	Continue to restrict/ monitor scientific collection of SGCN	X	X	X	X							X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
A3.1 Species Management	Managing specific plant and animal populations of concern	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators	X	X	X	X		X	X	X	X		X							X	X	X	X	X	X	X	X	X	X		X	X	X		X	
A3.2 Species recovery	Manipulating, enhancing, or restoring specific plant and animal populations, vaccination programs	Develop/implement/conti nue recovery plans for individual SGCNs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X

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A3.2 Species recovery	Manipulating, enhancing, or restoring specific plant and animal populations, vaccination programs	Initiate propagation program or establish nest box program for selected SGCN	X				X																												
A3.3 Species reintroduc-cation	Reintroduing species to places where they formally occurred or benign introducations	Initiate propagation program or establish nest box program for selected SGCN	X				X	X			X																								
A3.4 ex situ conser-vation	Protecting biodiversity out of it native habitats (ie captive breeding programs)	Initiate propagation program or establish nest box program for selected SGCN	X				X																												
A4.1 Formal Education	Enhancing knowledge and skills of students in a formal degree program	Provide public education about the conservation of SGCN and/or their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A4.2 Training	Enhancing knowledge, skills and information exchange for practi-tioners, stakeholders, and other relevant individuals in struc-tured settings outside of degree program	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons	X	X	X	X	X	X	X	X	X	X	X	X			X											X	X	X	X	X	X		X	
A4.2 Training	Enhancing knowledge, skills and information exchange for practi-tioners, stakeholders, and other relevant individuals in struc-tured settings outside of degree program	Discourage incompatible forestry practices	X	X	X	X	X	X	X	X	X	X	X	X			X			X	X	X		X	X	X		X	X	X	X	X	X	X	X

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A4.2 Training	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Provide public education about the conservation of SGCN and/or their habitats	X	X	X	X	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A4.3 Awareness and communications	Raising environmental awareness and providing information through various media outlets	Discourage/limit human access in highly critical areas and special habitats, when possible	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A4.3 Awareness and communications	Raising environmental awareness and providing information through various media outlets	Discourage incompatible recreational uses	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A4.3 Awareness and communications	Raising environmental awareness and providing information through various media outlets	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators	X	X	X	X		X	X	X	X		X							X	X	X	X	X	X	X	X	X	X		X	X	X		X	
A4.3 Awareness and communications	Raising environmental awareness and providing information through various media outlets	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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A4.3 Awareness and communi-cations	Raising environmental awareness and providing information through various media outlets	Encourage appreciation of SGCN and their habitats by providing public access and compatiable recre-ational activities	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A4.3 Awareness and communi-cations	Raising environmental awareness and providing information through various media outlets	Encourage proper disposal and cleanup of waste and litter	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A4.3 Awareness and communi-cations	Raising environmental awareness and providing information through various media outlets	Provide public education about the conservation of SGCN and/or their habitats	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.1 Legislation	Making, implementing, changing, influencing, or providing input into formal government sector legislation or policies at all levels: international, national, state/provincial, local, tribal Species protection laws, hunting bans	Develop/improve urban/ suburban infrastructure land use development planning/zoning to address SGCN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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A5.1 Legislation	Making, implementing, changing, influencing, or providing input into formal government sector legislation or policies at all levels: international, national, state/provincial, local, tribal Species protection laws, hunting bans	Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2 Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Develop/implement/continue recovery plans for individual SGCNs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2 Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Encourage and improve agricultural/forestry/watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2 Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Develop/improve urban/suburban infrastructure land use development planning/zoning to address SGCN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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A5.2 Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alter flow, depth, and salt intrusion	X	X	X	X	X	X	X	X	X	X		X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2 Policies and regulations	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Limit bulkheading along coastal drainages																																		
A5.3 Private sector standards and codes	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Encourage and improve agricultural/forestry/water shed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.3 Private sector standards and codes	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Discourage incompatible forestry practices	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	

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A5.3 Private sector standards and codes	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Limit bulkheading along coastal drainages																																		
A5.4 Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Monitor/limit commercial/ residential/in dustrial point source erosion and sedimentation or pollution into streams/atmospheres	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.4 Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A5.4 Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Improve environmental review and permit process and oversight and enforcement of existing regulations in important habitats/populations	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.4 Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Limit/discourage surface and groundwater withdrawals that are not sustainable and signifi- cantly alter flow, depth, and salt intrusion	X	X	X	X	X	X	X	X	X	X		X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																	
A5.4 Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Discourage incompatible recreational uses	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.4 Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Improve enforcement of existing species protection regulations	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X		X	X
A5.4 Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Continue to restrict/ monitor scientific collection of SGCN	X	X	X	X									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
A5.4 Compliance and enforcement	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Encourage proper disposal and cleanup of waste and litter	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A6.1 Linked enter-prises and livelihood alternatives	Developing enterprises that directly depend on the maintenance of natural resources or provide substitute livelihoods as a means of changing behaviors and attitudes	Encourage appreciation of SGCN and their habitats by providing public access and compatible recre-ational activities	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	

		SUB-HABITAT TYPE	EGCP Interior Upland Longleaf Pine	SPC Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SCP Oak Dome and Hammock	EGCP Interior Shortleaf Pine-Oak Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	EGCP Southern Loblolly-Hardwood Flatwoods	SCP Limestone Forest	SCP Mesic Slope Forest	EGCP Northern Mesic Hardwood Slope Forest	Caves	Rock Outcrops	Southern Interior Sinkhole Wall	EGCP Dry Chalk Wall	Southeastern Coastal Plain Cliff	Mississippi River Low Floodplain Forest	Mississippi River High Floodplain Forest	Mississippi River Depression Floodplain Forest	Mississippi River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain	SCP Blackwater River Floodplain Forest	Sandbars	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall	EGCP Near-Coast Pine Flatwoods	EGCP Savanna and Wet Prairie	SCP Herbaceous Seep and Bog	EGCP Northern Seepage Swamp	SCP Blackland Prairie and Woodland	Inland Freshwater Marsh
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																		
A6.2 Substitution	Promoting alternative products and services that substitute for environmentally damaging ones	Discourage incompatible recreational uses	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A6.3 Market forces	Using market mechanisms to change behaviors and attitudes	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A6.4 Conser-vation payments	Using direct or indirect payments to change behaviors and attitudes	Encourage retention, preservation, and conser-vation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A6.4 Conser-vation payments	Using direct or indirect payments to change behaviors and attitudes	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A6.5 Non-monetary values	Using intangible values to change behaviors and attitudes	NA																																		
A7.1 Institutional and civil society devel-opment	Creating or providing nonfinancial support and capacity building for nonprofits, government agencies, communities, and for-profits	NA																																		

		SUB-HABITAT TYPE	EGCP Interior Upland Longleaf Pine	SPC Dry Upland Hardwood Forest	EGCP Northern Dry Upland Hardwood Forest	SCP Oak Dome and Hammock	EGCP Interior Shortleaf Pine-Oak Forest	EGCP Northern Loess Plain Oak-Hickory Upland	EGCP Northern Loess Bluff Forest	EGCP Southern Loess Bluff Forest	EGCP Southern Loblolly-Hardwood Flatwoods	SCP Limestone Forest	SCP Mesic Slope Forest	EGCP Northern Mesic Hardwood Slope Forest	Caves	Rock Outcrops	Southern Interior Sinkhole Wall	EGCP Dry Chalk Wall	Southeastern Coastal Plain Cliff	Mississippi River Low Floodplain Forest	Mississippi River High Floodplain Forest	Mississippi River Depression Floodplain Forest	Mississippi River Riparian Forest	EGCP Large River Floodplain Forest	EGCP Small Stream and River Floodplain	SCP Blackwater River Floodplain Forest	Sandbars	SCP Nonriverine Basin Swamp	SCP Nonriverine Cypress Dome	SCP Seepage Swamp and Baygall	EGCP Near-Coast Pine Flatwoods	EGCP Savanna and Wet Prairie	SCP Herbaceous Seep and Bog	EGCP Northern Seepage Swamp	SCP Blackland Prairie and Woodland	Inland Freshwater Marsh
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																		
A7.2 Alliance and partnership development	Forming and facilitating partnerships, alliances, and networks of organizations	NA																																		
A7.3 Conservation finance	Raising and providing funds for conservation work	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table A11.4 Conservation Actions for Sub-Habitat Types 10 – 13

CLASSIFICATION	DESCRIPTION	CONSERVATION ACTION	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
A1.1	Establishing protection or easements of some specific aspect of the resource on public or private lands	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A1.2	Establishing protection or easements of some specific aspect of the resource on public or private lands	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
A2.1	Management of protected areas and other resource lands for conservation	Discourage/limit human access in highly critical areas and special habitats, when possible		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A21	Management of protected areas and other resource lands for conservation	Discourage incompatible recreational uses		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X						X		X		X	X	X
A2.2	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons		X	X	X	X	X										X			X	X			X	X				X		X	X	
A2.2	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X						X	X	X			X	

		SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																
A2.2	Eradicating, controlling, and/ or preventing invasive and/ or other problematic plants, animals, and pathogens	Limit/discourage the intro- duction of propagation of exotic and invasive species Control/eradicat e such species when present	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.3	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage restoration and improve management of habitat by controlled burning at necessary frequencies and seasons		X	X	X	X	X										X		X	X					X	X	X	X	X	X	X	X	
A2.3	A23 Habitat and natural process restoration	Encourage restoration and improve management of altered/degrade d habitat when possible	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X			X	X
A2.3	A23 Habitat and natural process restoration	Maintain/improv e/restore hydrologic and geomorphic integrity	X	X	X	X	X	X	X			X			X		X	X	X	X	X	X				X		X					X	
A2.3	A23 Habitat and natural process restoration	Encourage development of seasonal, semi-permanent, and permanent wetland infra- structure where appropriate																																
A2.3	A23 Habitat and natural process restoration	Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats	X	X	X	X	X	X	X			X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A2.3	A23 Habitat and natural process restoration	Monitor/limit commercial/ resi dential/industrial point source erosion and sedimen- tation or pollution into streams/atmosp here	X	X	X	X	X	X	X			X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	

		SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																
A2.3	A23 Habitat and natural process restoration	Enhance viability of SGCN by minimizing fragmentation and providing habitat corridors between disjunct populations or subpopulations	X	X	X	X	X	X	X			X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	
A3.1	Managing specific plant and animal populations of concern	Plan and conduct additional research on SGCN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A3.1	Managing specific plant and animal populations of concern	Monitor/address SGCN harvest/over harvest issues		X	X	X	X	X									X	X	X	X	X	X	X	X		X	X	X	X				X	
A3.1	Managing specific plant and animal populations of concern	Continue to restrict/monitor scientific collection of SGCN		X		X	X	X									X	X	X	X	X	X	X	X		X	X							
A3.1	Managing specific plant and animal populations of concern	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X							X		X			
A3.2	Manipulating, enhancing, or restoring specific plant and animal populations, vaccination programs	Develop/implem ent/ continue recovery plans for individual SGCNs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A3.2	Manipulating, enhancing, or restoring specific plant and animal populations, vaccination programs	Initiate propagation program or establish nest box program for selected SGCN	X																															

		SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																
A3.3	Reintroduing species to places where they formally occurred or benign introducations	Initiate propagation program or establish nest box program for selected SGCN																																
A3.4	Protecting biodiversity out of it native habitats (ie captive breeding programs)	Initiate propagation program or establish nest box program for selected SGCN																																
A4.1	Enhancing knowledge and skills of students in a formal degree program	Provide public education about the conservation of SGCN and/or their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
A4.2	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons		X	X	X	X	X							X			X			X					X			X		X		
A4.2	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Discourage incompatible forestry practices		X	X	X																				X				X			
A4.2	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Provide public education about the conservation of SGCN and/or their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X

		SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																
A4.3	Raising environmental awareness and providing information through various media outlets	Discourage/limit human access in highly critical areas and special habitats, when possible		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
A4.3	Raising environmental awareness and providing information through various media outlets	Discourage incompatible recreational uses		X	X	X	X	X	X			X	X	X	X	X		X	X		X	X						X		X			X
A4.3	Raising environmental awareness and providing information through various media outlets	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X						X		X				
A4.3	Raising environmental awareness and providing information through various media outlets	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X		X	X			X	X			X		X			
A4.3	Raising environmental awareness and providing information through various media outlets	Encourage appreciation of SGCN and their habitats by providing public access and compatiable recreational activities	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X		X	X						X		X				
A4.3	Raising environmental awareness and providing information through various media outlets	Encourage proper disposal and cleanup of waste and litter	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A4.3	Raising environmental awareness and providing information through various media outlets	Provide public education about the conservation of SGCN and/or their habitats	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

CLASSIFICATION	DESCRIPTION	CONSERVATION ACTION	SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
A5.1	Making, implementing, changing, influencing, or providing input into formal government sector legislation or policies at all levels: international, national, state/provincial, local, tribal Species protection laws, hunting bans	Develop/improv e urban/ suburban infrastructure land use development planning/ zoning to address SGCN		X	X	X	X	X	X				X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	
A5.1	Making, implementing, changing, influencing, or providing input into formal government sector legislation or policies at all levels: international, national, state/provincial, local, tribal Species protection laws, hunting bans	Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites		X	X	X	X	X	X	X			X			X		X	X	X	X	X	X	X	X		X	X						
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Develop/implem ent/ continue recovery plans for individual SGCNs		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Encourage and improve agricultural/fore stry/ watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues		X	X	X	X	X	X							X		X	X	X	X	X	X			X	X			X		X	X	

CLASSIFICATION	DESCRIPTION	CONSERVATION ACTION	SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Develop/improv e urban/ suburban infrastructure land use development planning/ zoning to address SGCN		X	X	X	X	X	X				X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alter flow, depth, and salt intrusion		X	X	X	X	X	X	X			X			X		X	X	X	X	X	X	X	X	X	X	X	X					X	
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Limit bulkheading along coastal drainages						X	X										X	X		X	X												
A5.3	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Encourage and improve agricultural/fore stry/ watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues		X	X	X	X	X	X							X			X	X	X	X	X			X	X			X		X	X		
A5.3	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Discourage incompatible forestry practices			X	X	X																				X					X	X		

		SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																
A5.3	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Limit bulkheading along coastal drainages					X	X												X		X	X											
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Monitor/limit commercial/ resi dential/industria l point source erosion and sedimentation or pollution into streams/atmosp heres	X	X	X	X	X	X	X			X	X		X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites	X	X	X	X	X	X	X			X			X		X	X	X	X	X	X	X	X		X	X						
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Improve environmental review and permit process and oversight and enforcement of existing regulations in important habitats/populati ons	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alter flow, depth, and salt intrusion	X	X	X	X	X	X	X			X			X		X	X	X	X	X	X	X	X	X	X	X					X	
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Discourage incompatible recreational uses		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X						X		X		X	X

		SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Improve enforcement of existing species protection regulations	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Continue to restrict/monitor scientific collection of SGCN		X	X	X	X	X									X	X	X	X	X	X	X	X		X	X							
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Encourage proper disposal and cleanup of waste and litter	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A6.1	Developing enterprises that directly depend on the maintenance of natural resources or provide substitute livelihoods as a means of changing behaviors and attitudes	Encourage appreciation of SGCN and their habitats by providing public access and compatiable recreational activities	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X							X		X		X	
A6.2	Promoting alternative products and services that substitute for environmentally damaging ones	Discourage incompatible recreational uses		X	X	X																							X		X		X	X
A6.3	Using market mechanisms to change behaviors and attitudes	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X			X	X		X	X		X	X	X	X

		SUB-HABITAT TYPE	Beaver Ponds	EGCP Depression Pond	Ephemeral Pond	Oxbow Lakes	North-Central Gulf of Mexico Salt and Brackish Tidal	Mississippi Sound Fresh and Oligohaline Tidal Marsh	Florida Panhandle Beach Vegetation	EGCP Dune and Coastal Grassland	SCP Interdunal Wetland	Mainland Beaches	EGCP Maritime Forest	Shell Middens and Estuarine Shrublands	Salt Pannes	EGCP Freshwater Tidal Wooded Swamp	Barrier Island Passes	Estuarine Bays, lakes, and tidal streams	Mississippi Sound (Smooth Bottom)	Mollusk Reefs	North Central Gulf of Mexico Salt and Brackish Tidal	Northern Gulf of Mexico Seagrass Bed	Hard Bottoms and Oceanic Reefs	Maritime Habitats (smooth bottoms)	Agricultural/Aquacultural Fields	Impoundments	Artificial reefs	Buildings, Bridges, and Overpasses etc.	Hay and Pasture Lands	Man-Made Beaches	Cultivated Forests	Shrublands	Urban/Suburban Lands	Utility Right-of-ways
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**																																
A6.4	Using direct or indirect payments to change behaviors and attitudes	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
A6.4	Using direct or indirect payments to change behaviors and attitudes	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X		X	X			X	X		X	X	X		X	X	X
A6.5	Using intangible values to change behaviors and attitudes	NA	X																															
A7.1	Creating or providing nonfinancial support and capacity building for nonprofits, government agencies, communities, and for-profits	NA																																
A7.2	Forming and facilitating partnerships, alliances, and networks of organizations	NA	X																															
A7.3	Raising and providing funds for conservation work	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X		X	X			X	X		X	X			X	X	X

Table A11.5 Conservation Actions for Sub-Habitat Types 14 – 18

		SUB-HABITAT TYPE	Mississippi River	MS Alluvial Plai	Upper Coastal Plain, Yazoo	Big Black River	Northeast Hills, Tennessee River Drainage	Tombigbee Drainage	Lower MS North Drainage (Hatchie and Wolf)	Upper Coastal Plain, Pearl River	Lower Coastal Plain, Pearl River	Pascagoula Drainage	Coastal Rivers	Lake Ponchartrain	Lower MS South Drainage
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**													
A1.1	Establishing or protecting public or private parks, reserves, and other areas	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X
A1.2	Establishing protection or easements of some specific aspect of the resource on public or private lands	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.1	Management of protected areas and other resource lands for conservation	Discourage/limit human access in highly critical areas and special habitats, when possible	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.1	Management of protected areas and other resource lands for conservation	Discourage incompatible recreational uses	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.2	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons													
A2.2	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators	X		X	X	X	X	X			X	X	X	X
A2.2	Eradicating, controlling, and/or preventing invasive and/or other problematic plants, animals, and pathogens	Limit/discourage the introduction of propagation of exotic and invasive species Control/eradicate such species when present	X	X	X	X	X	X	X			X	X	X	X
A2.3	Enhancing degraded or restoring missing habitats and ecosystem functions, dealing with pollution	Encourage restoration and improve management of habitat by controlled burning at necessary frequencies and seasons													
A2.3	A23 Habitat and natural process restoration	Encourage restoration and improve management of altered/degraded habitat when possible	X	X	X	X	X	X	X	X	X	X	X	X	X

		SUB-HABITAT TYPE	Mississippi River	MS Alluvial Plai	Upper Coastal Plain, Yazoo	Big Black River	Northeast Hills, Tennessee River Drainage	Tombigbee Drainage	Lower MS North Drainage (Hatchie and Wolf)	Upper Coastal Plain, Pearl River	Lower Coastal Plain, Pearl River	Pascagoula Drainage	Coastal Rivers	Lake Ponchartrain	Lower MS South Drainage
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**													
A2.3	A23 Habitat and natural process restoration	Maintain/improve/resto re hydrologic and geomorphic integrity	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.3	A23 Habitat and natural process restoration	Encourage development of seasonal, semi-permanent, and permanent wetland infrastructure where appropriate													
A2.3	A23 Habitat and natural process restoration	Encourage buffers and improve land use practices adjacent to streams and other aquatic/wetland habitats	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.3	A23 Habitat and natural process restoration	Monitor/limit commercial/residential/ industrial point source erosion and sedimentation or pollution into streams/atmosphere	X	X	X	X	X	X	X	X	X	X	X	X	X
A2.3	A23 Habitat and natural process restoration	Enhance viability of SGCN by minimizing fragmentation and providing habitat corridors between disjunct populations or subpopulations	X	X	X	X	X	X	X	X	X	X	X	X	X
A3.1	Managing specific plant and animal populations of concern	Plan and conduct additional research on SGCN	X	X	X	X	X	X	X	X	X	X	X	X	X
A3.1	Managing specific plant and animal populations of concern	Monitor/address SGCN harvest/over harvest issues	X	X	X	X	X	X	X		X	X	X		X
A3.1	Managing specific plant and animal populations of concern	Continue to restrict/monitor scientific collection of SGCN	X	X		X					X	X			
A3.1	Managing specific plant and animal populations of concern	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators			X	X	X	X	X	X	X	X	X	X	X
A3.2	Manipulating, enhancing, or restoring specific plant and animal populations, vaccination programs	Develop/implement/co ntinue recovery plans for individual SGCNs	X	X	X	X	X	X	X	X	X	X	X	X	X

		SUB-HABITAT TYPE	Mississippi River	MS Alluvial Plai	Upper Coastal Plain, Yazoo	Big Black River	Northeast Hills, Tennessee River Drainage	Tombigbee Drainage	Lower MS North Drainage (Hatchie and Wolf)	Upper Coastal Plain, Pearl River	Lower Coastal Plain, Pearl River	Pascagoula Drainage	Coastal Rivers	Lake Ponchartrain	Lower MS South Drainage
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**													
A3.2	Manipulating, enhancing, or restoring specific plant and animal populations, vaccination programs	Initiate propagation program or establish nest box program for selected SGCN													
A3.3	Reintroduing species to places where they formally occurred or benign introducations	Initiate propagation program or establish nest box program for selected SGCN													
A3.4	Protecting biodiversity out of it native habitats (ie captive breeding programs)	Initiate propagation program or establish nest box program for selected SGCN													
A4.1	Enhancing knowledge and skills of students in a formal degree program	Provide public education about the conservation of SGCN and/or their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X
A4.2	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Encourage and improve management of habitat by controlled burning at necessary frequencies and seasons												X	X
A4.2	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Discourage incompatible forestry practices	X		X	X	X	X	X	X	X	X	X	X	X
A4.2	Enhancing knowledge, skills and information exchange for practitioners, stakeholders, and other relevant individuals in structured settings outside of degree program	Provide public education about the conservation of SGCN and/or their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X
A4.3	Raising environmental awareness and providing information through various media outlets	Discourage/limit human access in highly critical areas and special habitats, when possible	X		X	X	X	X	X	X	X	X	X	X	X
A4.3	Raising environmental awareness and providing information through various media outlets	Discourage incompatible recreational uses	X		X	X	X	X	X	X	X	X	X	X	X

		SUB-HABITAT TYPE	Mississippi River	MS Alluvial Plai	Upper Coastal Plain, Yazoo	Big Black River	Northeast Hills, Tennessee River Drainage	Tombigbee Drainage	Lower MS North Drainage (Hatchie and Wolf)	Upper Coastal Plain, Pearl River	Lower Coastal Plain, Pearl River	Pascagoula Drainage	Coastal Rivers	Lake Ponchartrain	Lower MS South Drainage
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**													
A4.3	Raising environmental awareness and providing information through various media outlets	Control/exclude predators of selected SGCN and discourage intentional or unintentional supplemental feeding of predators			X	X	X	X	X	X	X	X	X	X	X
A4.3	Raising environmental awareness and providing information through various media outlets	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X
A4.3	Raising environmental awareness and providing information through various media outlets	Encourage appreciation of SGCN and their habitats by providing public access and compatiable recreational activities			X	X	X	X	X	X	X	X	X	X	X
A4.3	Raising environmental awareness and providing information through various media outlets	Encourage proper disposal and cleanup of waste and litter	X	X	X	X	X	X	X	X	X	X	X	X	X
A4.3	Raising environmental awareness and providing information through various media outlets	Provide public education about the conservation of SGCN and/or their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.1	Making, implementing, changing, influencing, or providing input into formal government sector legislation or policies at all levels: international, national, state/provincial, local, tribal Species protection laws, hunting bans	Develop/improve urban/suburban infrastructure land use development planning/ zoning to address SGCN	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.1	Making, implementing, changing, influencing, or providing input into formal government sector legislation or policies at all levels: international, national, state/provincial, local, tribal Species protection laws, hunting bans	Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Develop/implement/co ntinue recovery plans for individual SGCNs	X	X	X	X	X	X	X	X	X	X	X	X	X

		SUB-HABITAT TYPE	Mississippi River	MS Alluvial Plai	Upper Coastal Plain, Yazoo	Big Black River	Northeast Hills, Tennessee River Drainage	Tombigbee Drainage	Lower MS North Drainage (Hatchie and Wolf)	Upper Coastal Plain, Pearl River	Lower Coastal Plain, Pearl River	Pascagoula Drainage	Coastal Rivers	Lake Ponchartrain	Lower MS South Drainage
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**													
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Encourage and improve agricultural/forestry/ wa tershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Develop/improve urban/suburban infra-structure land use development planning/ zoning to address SGCN	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alter flow, depth, and salt intrusion	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.2	Making, implementing, changing, influencing, or providing input into policies and regulations affecting the implementation of laws at all levels: international, national, state/provincial, local, tribal	Limit bulkheading along coastal drainages	X								X	X	X	X	X
A5.3	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Encourage and improve agricultural/forestry/ watershed land-use planning and BMPs to address nonpoint pollution, erosion, and water quality issues	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.3	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Discourage incompatible forestry practices	X		X	X	X	X	X	X	X	X	X	X	X
A5.3	Setting, implementing, changing, influencing, or providing input into voluntary standards and professional codes that govern private sector practice	Limit bulkheading along coastal drainages	X								X	X	X	X	X

		SUB-HABITAT TYPE	Mississippi River	MS Alluvial Plai	Upper Coastal Plain, Yazoo	Big Black River	Northeast Hills, Tennessee River Drainage	Tombigbee Drainage	Lower MS North Drainage (Hatchie and Wolf)	Upper Coastal Plain, Pearl River	Lower Coastal Plain, Pearl River	Pascagoula Drainage	Coastal Rivers	Lake Ponchartrain	Lower MS South Drainage
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**													
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Monitor/limit commercial/residential/ industrial point source erosion and sedimentation or pollution into streams/atmospheres	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Prohibit gravel mining in stream channels, discourage gravel mining in floodplains and improve oversight and planning for such mines on upland sites	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Improve environmental review and permit process and oversight and enforcement of existing regulations in important habitats/ populations	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Limit/discourage surface and groundwater withdrawals that are not sustainable and significantly alter flow, depth, and salt intrusion	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Discourage incompatible recreational uses	X		X	X	X	X	X	X	X	X	X	X	X
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Improve enforcement of existing species protection regulations	X	X	X	X	X	X	X	X	X	X	X	X	X
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Continue to restrict/monitor scientific collection of SGCN	X	X		X				X	X	X			
A5.4	Monitoring and enforcing compliance with laws, policies, regulations, and standards and codes at all levels	Encourage proper disposal and cleanup of waste and litter	X	X	X	X	X	X	X	X	X	X	X	X	X

		SUB-HABITAT TYPE	Mississippi River	MS Alluvial Plai	Upper Coastal Plain, Yazoo	Big Black River	Northeast Hills, Tennessee River Drainage	Tombigbee Drainage	Lower MS North Drainage (Hatchie and Wolf)	Upper Coastal Plain, Pearl River	Lower Coastal Plain, Pearl River	Pascagoula Drainage	Coastal Rivers	Lake Ponchartrain	Lower MS South Drainage
CLASSIFICATION	**DESCRIPTION**	**CONSERVATION ACTION**													
A6.1	Developing enterprises that directly depend on the maintenance of natural resources or provide substitute livelihoods as a means of changing behaviors and attitudes	Encourage appreciation of SGCN and their habitats by providing public access and compatiable recreational activities			X	X	X	X	X	X	X	X	X	X	X
A6.2	Promoting alternative products and services that substitute for environmentally damaging ones	Discourage incompatible recreational uses	X		X	X	X	X	X	X	X	X	X	X	X
A6.3	Using market mechanisms to change behaviors and attitudes	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X
A6.4	Using direct or indirect payments to change behaviors and attitudes	Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or MOAs	X	X	X	X	X	X	X	X	X	X	X	X	X
A6.4	Using direct or indirect payments to change behaviors and attitudes	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X
A6.5	Using intangible values to change behaviors and attitudes	NA													
A7.1	Creating or providing nonfinancial support and capacity building for nonprofits, government agencies, communities, and for-profits	NA													
A7.2	Forming and facilitating partnerships, alliances, and networks of organizations	NA													
A7.3	Raising and providing funds for conservation work	Promote and develop landowner incentive and assistance programs for conservation of SGCN and their habitats	X	X	X	X	X	X	X	X	X	X	X	X	X

APPENDIX 12

2025 Survey, Research, and Monitoring Needs Table A12.1

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Insects				
Acentrella alachua	A Mayfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Aeshna umbrosa	Shadow Darner			MEDIUM: Plan and conduct species status surveys
Agarodes libalis	Spring-loving Psiloneuran Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Agarodes stannardi	Stannard's Agarodes Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Allocapnia aurora	Aurora Snowfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Allocapnia polemistis	Black Warrior Snowfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Alloperla natchez	Natchez Stonefly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Amblyscirtes alternata	Least Florida Skipper			MEDIUM: Plan and conduct species status surveys
Amblyscirtes reversa	Reversed Roadside Skipper			MEDIUM: Plan and conduct species status surveys
Amphiagrion saucium	Eastern Red Damsel			MEDIUM: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Amphinemura alabama	Alabama Forestfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Aphodius troglodytes	Aphodius Tortoise Commensal Scarab Beetle	*MEDIUM: Survey work to better understand the current distribution of each	No targeted surveys conducted	HIGH: Continued survey and monitoring
		*MEDIUM: Research dispersal abilities of each, and model recolonization likelihood following local extirpation		MEDIUM: Specific research - investigate dispersal abilities
				MEDIUM: Specific research - model recolonization likelihood following local extirpation
Arigomphus lentulus	Stillwater Clubtail			MEDIUM: Plan and conduct species status surveys
Arigomphus villosipes	Unicorn Clubtail			MEDIUM: Plan and conduct species status surveys
Atrytone arogos arogos	Arogos Skipper			MEDIUM: Plan and conduct species status surveys
Atrytonopsis loammi	Loammi Skipper			MEDIUM: Plan and conduct species status surveys
Attaneuria ruralis	Giant Stone			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Automeris louisiana	Louisiana Eyed Silkmoth			MEDIUM: Plan and conduct species status surveys, focusing on saltmarshes around Bay St. Louis
Baetisca escambiensis	A Mayfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Bagisara brouana	A Noctuid Moth			MEDIUM: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Bombus fraternus	Southern Plains Bumble Bee		Rangewide surveys conducted (2023, 2024)	MEDIUM: Continued monitoring of known populations MEDIUM: Plan and conduct additional species status assessments for new populations
Bombus pensylvanicus	American Bumblebee		Rangewide surveys conducted (2023, 2024)	MEDIUM: Continued monitoring of known populations MEDIUM: Plan and conduct additional species status assessments for new populations
Bombus variabilis	Variable Cuckoo Bumble Bee		Species was not detected during rangewide surveys conducted (2023, 2024)	MEDIUM: Continued monitoring of known populations MEDIUM: Plan and conduct additional species status assessments for new populations
Catocala atocala	Brou's Underwing			MEDIUM: Plan and conduct species status surveys
Catocala delilah	Delilah Underwing			MEDIUM: Plan and conduct species status surveys
Catocala miranda	A Noctuid Moth			MEDIUM: Plan and conduct species status surveys
Caupolicana electa	A Plasterer Bee			MEDIUM: Continued monitoring of known populations MEDIUM: Plan and conduct species status surveys for new populations
Celithemis amanda	Amanda's Pennant			MEDIUM: Plan and conduct species status surveys
Ceraclea spongillovorax	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Ceratophaga vicinella	Gopher Tortoise Shell Moth			HIGH: Plan and conduct species status surveys
Chelyoxenus xerobatis	Gopher Tortoise Hister Beetle	*MEDIUM: Survey work to better understand the current distribution of each	No targeted surveys conducted	HIGH: Continued survey and monitoring.
		*MEDIUM: Research dispersal abilities of each, and model recolonization likelihood following local extirpation		MEDIUM: Specific research - investigate dispersal abilities
				MEDIUM: Specific research - model recolonization likelihood following local extirpation

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Cheumatopsyche petersi	Peters' Cheumatopsych e Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Chimarra falculata	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Cicindela marginipennis	Cobblestone Tiger Beetle		No targeted surveys conducted	HIGH: Plan and conduct species status surveys
Cicindela nigrior	Autumn Tiger Beetle			HIGH: Plan and conduct species status surveys
Cordulegaster bilineata	Brown Spiketail			MEDIUM: Plan and conduct species status surveys
Cordulegaster erronea	Tiger Spiketail			MEDIUM: Plan and conduct species status surveys
Enallagma concisum	Cherry Bluet			MEDIUM: Plan and conduct species status surveys
Enallagma davisi	Sandhill Bluet			MEDIUM: Plan and conduct species status surveys
Enallagma pallidum	Pale Bluet			MEDIUM: Plan and conduct species status surveys
Enallagma pollutum	Florida Bluet			MEDIUM: Plan and conduct species status surveys
Epitheca spinosa	Robust Baskettail			MEDIUM: Plan and conduct species status surveys
Erynnis martialis	Mottled Dusky Wing			MEDIUM: Plan and conduct species status surveys
Erythrodiplax umbrata	Band-winged Dragonlet			MEDIUM: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Eumorpha intermedia	Intermediate Sphinx			MEDIUM: Plan and conduct species status surveys
Euphyes arpa	Palmetto Skipper			MEDIUM: Plan and conduct species status surveys
Euphyes bayensis	Bay St. Louis Skipper			MEDIUM: Plan and conduct species status surveys, focusing on saltmarshes around Bay St. Louis
Euphyes dukesi dukesi	Dukes' Skipper			MEDIUM: Plan and conduct species status surveys
Euphyes pilatka	Palatka Skipper			MEDIUM: Plan and conduct species status surveys
Eutrichota gopheri	Gopher Tortoise Burrow Fly	*MEDIUM: Survey work to better understand the current distribution of each	No targeted surveys conducted	HIGH: Continued survey and monitoring
		*MEDIUM: Research dispersal abilities of each, and model recolonization likelihood following local extirpation		MEDIUM: Specific research - investigate dispersal abilities
				MEDIUM: Specific research - model recolonization likelihood following local extirpation
Gomphus australis	Clearlake Clubtail			MEDIUM: Plan and conduct species status surveys
Gomphus dilatatus	Blackwater Clubtail			MEDIUM: Plan and conduct species status surveys
Gomphus geminatus	Twin-striped Clubtail			MEDIUM: Plan and conduct species status surveys
Gomphus hodgesi	Hodges' Clubtail			MEDIUM: Plan and conduct species status surveys
Gryllotalpa major	Prairie Mole Cricket		No targeted surveys conducted	HIGH: Presumed extirpated, but candidate for possible rediscovery in areas of the Black Belt with high quality prairie remnants and appropriately managed pastureland.

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Gymnocthebius maureenae	Maureen's Gymnocthebius			MEDIUM: Plan and conduct species status surveys
	Minute Moss Beetle			
Haploperla chukcho	Chukcho Stonefly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Helopicus bogaloosa	Masked Springfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Hesperapis oraria	Gulf Coast Solitary Bee			HIGH: Plan and conduct species status surveys, focusing on MS barrier islands and other extreme coastal communities where Balduina uniflora occurs
Hesperia attalus	Dotted Skipper			MEDIUM: Plan and conduct species status surveys
Homoeoneuria cahabensis	Cahaba Sand-filtering Mayfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Hydroperla fugitans	Austin Springfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Hydroptila cretosa	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Hydroptila holzenthali	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Hydroptila homochitta	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Hydroptila molsonae	Molson's Microcaddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Hydroptila poirrieri	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Hydroptila tusculum	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Ischnura prognata	Furtive Forktail			MEDIUM: Plan and conduct species status surveys
Isogenoides varians	A Stonefly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Isonychia berneri	A Mayfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Lapara phaeobrachycerou s	Gulf Pine Sphinx			MEDIUM: Plan and conduct species status surveys
Lepidostoma morsei	Morse's Little Plain Brown Sedge			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Leuctra colemanorum	Yalobusha Needlefly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Leuctra hicksi	Cypress Needlefly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Machimus polyphemi	Gopher Tortoise Robber Fly	*MEDIUM: Survey work to better understand the current distribution of each	No targeted surveys conducted	HIGH: Continued survey and monitoring
		*MEDIUM: Research dispersal abilities of each, and model recolonization likelihood following local extirpation		MEDIUM: Specific research - investigate dispersal abilities
				MEDIUM: Specific research - model recolonization likelihood following local extirpation
Macromia alleghaniensis	Allegheny River Cruiser			MEDIUM: Plan and conduct species status surveys
Nannothemis bella	Elfin Skimmer			MEDIUM: Plan and conduct species status surveys
Nehalennia gracilis	Sphagnum Sprite			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Nemocapnia carolina	Southern Snowfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Neonympha helicta	Helicta Satyr			MEDIUM: Plan and conduct species status surveys
Neonympha mitchellii	Mitchell's Satyr	HIGH Plan and conduct species status surveys	Surveys conducted in Prentiss county to document flight periodicity of adults and host plants of larvae (2016)	MEDIUM: Monitor known populations
		HIGH Additional research appropriate to understand species and habitats	Adults collected for captive breeding experiments (2022)	MEDIUM: Identification novel locations
		HIGH Conduct genetic studies to determine relationships between Mitchell's Satyrs in Mississippi and Mitchell's Satyrs throughout the known range of the species.	Genetic studies performed and found little genetic difference between populations (2013)	MEDIUM: Specific research - determine habitat requirements to facilitate habitat management
Neoperla coxi	A Stonefly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Neotrichia alabamensis	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Neurocordulia yamaskanensis	Stygian Shadowdragon			MEDIUM: Plan and conduct species status surveys
Nicrophorus americanus	American Burying Beetle		No targeted surveys conducted	Considered extirpated.
Oecetis daytona	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Onthophagus polyphemi	Onthophagus Tortoise Commensal Scarab Beetle	*MEDIUM: Survey work to better understand the current distribution of each	No targeted surveys conducted	HIGH: Continued survey and monitoring
		*MEDIUM: Research dispersal abilities of each, and model recolonization likelihood following local extirpation		MEDIUM: Specific research - investigate dispersal abilities
				MEDIUM: Specific research - model recolonization likelihood following local extirpation
Ophiogomphus australis	Southern Snaketail			MEDIUM: Plan and conduct species status surveys
Orthotrichia dentata	Dentate Orthotrichian Microcaddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Papaipema maritima	Maritime Sunflower Borer			MEDIUM: Plan and conduct species status surveys
Papaipema sp. 5	Rare Cane Borer Moth			MEDIUM: Plan and conduct species status surveys
Paracymus seclusus	Seclusive Water Scavenger Beetle			MEDIUM: Plan and conduct species status surveys
Perlesta lagoi	A Stonefly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Philonthus testudo	Western Gopher Tortoise Rove Beetle	*MEDIUM: Survey work to better understand the current distribution of each	No targeted surveys conducted	HIGH: Continued survey and monitoring
		*MEDIUM: Research dispersal abilities of each, and model recolonization likelihood following local extirpation		
Pogonomyrmex badius	Florida Harvester Ant	MEDIUM Research on competitive/agonistic impact of red imported fire ants on harvester ants in MS	Species status surveys conducted and detected significant declines (2020, 2021, 2022)	HIGH: Continued surveys and monitoring
		MEDIUM Evaluate relationship of burn phenology to persistence of this species on forested property		
		MEDIUM Evaluate impact of herbicide on habitats (e.g. ROWs) occupied by this (and other) sandhill species		
		MEDIUM Research dispersal abilities of harvester ants in MS. Model recolonization probablilty following local extirpation		
Pseudiron centralis	White Sand-river Mayfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Pseudopomala brachyptera	Short-winged Toothpick Grasshopper	MEDIUM Research on patch size necessary to support a viable population of this low-vagility species	No targeted surveys conducted	MEDIUM: Continued monitoring of known populations and additional species status surveys
		MEDIUM Research on optimal management (including burn regimen) necessary to sustain this species		
		MEDIUM Research on habitat characteristics of high quality vs. low quality (but adequate) habitat		
		MEDIUM Research on metapopulation dynamics of this species		

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Raptoheptagenia cruenta	Wallace's Deepwater Mayfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Setodes dixiensis	A Caddisfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Shipsa rotunda	Intrepid Forestfly			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research on specimen localities and identify watersheds
Somatochlora georgiana	Coppery Emerald			MEDIUM: Plan and conduct species status surveys
Somatochlora provocans	Treetop Emerald			MEDIUM: Plan and conduct species status surveys
Speyeria diana	Diana			MEDIUM: Plan and conduct species status surveys
Spinadis simplex	Wallace's Deepwater Mayfly			MEDIUM: Plan and conduct species status surveys
Stylogomphus albistylus	Eastern Least Clubtail			MEDIUM: Plan and conduct species status surveys
Stylurus potulentus	Yellow-sided Clubtail			MEDIUM: Plan and conduct species status surveys
Stylurus townesi	Townes' Clubtail			MEDIUM: Plan and conduct species status surveys
Tachopteryx thoreyi	Gray Petaltail			LOW: Plan and conduct species status surveys
Tetraloniella albata	White-clothed Longhorn			HIGH: Plan and conduct species status surveys, focusing on high quality Black Belt prairie remnants

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Arachnids				
Amblyomma tuberculatum	Gopher Tortoise Tick	MEDIUM: Survey work to better understand the current distribution of each	No targeted surveys conducted	HIGH: Survey work to better understand the current distribution of each
		MEDIUM: Research dispersal abilities of each, and model recolonization likelihood following local extirpation		
Arctosa sanctaerosae	Santa Rosa Wolf Spider			HIGH: Plan and conduct species status surveys, focusing on MS barrier islands
Crayfish				
Cambarellus diminutus	Least Crayfish	MEDIUM: Plan and conduct species status surveys	No surveys conducted	MEDIUM: Plan and conduct species status survey
Cambarellus lesliei	Angular Dwarf Crayfish	MEDIUM Plan and conduct species status surveys	No surveys conducted	MEDIUM: Plan and conduct species status survey
Cambarus girardianus	Tanback Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	HIGH: Plan and conduct species status survey
		HIGH Genetics study to assess isolation of population	Recent genetic tissue has been preserved at MMNS	HIGH: Specific research - Population genetics and species isolation
Cambarus rusticiformis	Depression Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	HIGH: Plan and conduct species status survey
		HIGH Genetics study to assess isolation of population	Genetic study tentatively described the Mississippi population as an undescribed species (2024-ongoing)	HIGH: Specific research - Genetic investigation to determine if this is a new species
Cambarus striatus	Ambiguous Crayfish			HIGH: Specific research - Population genetics and species isolation
Creaserinus burrisi	Burris' Burrowing Crayfish	MEDIUM Plan and conduct species status surveys	No surveys conducted	HIGH: Plan and conduct species status survey
				MEDIUM: Monitor highway expansion projects and investigate translocations if needed

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
				MEDIUM: Habitat management - periodic prescribed burns to manage woody encroachment on bog habitat
Creaserinus byersi	Lavender Burrowing Crayfish	HIGH Determine if this species actually occurs in Mississippi	Species does not occur in Mississippi	
Creaserinus danielae	Speckled Burrowing Crayfish	HIGH Plan and conduct species status surveys	Rangewide status survey was completed (2017). Genetic survey in progress revealed species is not synomymous with C. oryktes (2022-2025)	MEDIUM: Continued monitoring of known populations
		HIGH Population genetics and taxonomy study to clarify range; a closely related, undescribed species may exist or this may be synonymous with Creaserinus oryktes.		
				MEDIUM: Identification of novel locations
Creaserinus gordoni	Camp Shelby Burrowing Crayfish	HIGH Plan and conduct species status surveys	Limited surveys and research conducted	HIGH: Continued monitoring of known populations
		HIGH Additional population monitoring		MEDIUM: Identification of novel locations
		HIGH Population genetics study to identify potential/ concerns for reintroductions/ translocations		MEDIUM: Monitor highway expansion projects and investigate translocations if needed
		HIGH Additional survey work: survey for roadside populations before highway projects are conducted within range.		
				MEDIUM: Specific research - Investigation of woody plant encroachment and habitat loss
Faxonius erichsonianus	Reticulate Crayfish			LOW: Continued monitoring of known populations
		MEDIUM Taxonomy study to clarify limits of range and distinguish from neighboring undescribed species.	Genetic study in progress (2025)	LOW: Identification of novel locations

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Faxonius etnieri	Ets Crayfish	HIGH Plan and conduct species status surveys	Commonly encountered in many stream fish surveys	LOW: Continued monitoring of known populations
				LOW: Identification of novel locations
				HIGH: Specific research - Taxonomic investigation. Populations of individuals vary in their morphology
Faxonius hartfieldi	Yazoo Crayfish			MEDIUM: Continued population monitoring
		HIGH Plan and conduct species status surveys	Status survey completed (2017-2018)	MEDIUM: Identification of novel locations
		HIGH Taxonomy study to clarify limits of range and possibly neighboring undescribed species	No surveys conducted	HIGH: Specific research - Taxonomic investigation. Populations of individuals vary in their morphology
Faxonius jonesi	Sucarnoochee River Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	MEDIUM: Plan and conduct species status survey
		MEDIUM Habitat management, including testing for aquatic contaminants	No surveys conducted	MEDIUM: Habitat management, including testing for aquatic contaminants
		HIGH Conduct taxonomy study to clarify limits of range and neighboring undescribed species	No surveys conducted	HIGH: Specific research - Taxonomic investigation to clarify limits of range and neighboring undescribed species
Faxonius mississippiensis	Mississippi Crayfish			HIGH: Specific research - Taxonomic investigation to clarify limits of range and neighboring undescribed species
Faxonius palmeri	Gray-Speckled Crayfish			MEDIUM: Specific reasech - Population genetics and species isolation
Faxonius placidus	Bigclaw Crayfish	HIGH Plan and conduct species status surveys	Few occurrences documented but no status survey conducted	MEDIUM: Plan and conduct species status survey
Faxonius validus	Powerful Crayfish	HIGH Plan and conduct species status surveys	Few occurrences documented but no status survey conducted	MEDIUM: Plan and conduct species status survey
Faxonius wrighti	Hardin Crayfish	HIGH Plan and conduct species status surveys	Few occurrences documented but no status survey conducted	HIGH: Plan and conduct species status survey
		MEDIUM Habitat management	No surveys conducted	MEDIUM: Habitat management

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Faxonius yanahlindus	Spinywrist Crayfish	HIGH Plan and conduct species status surveys	Few occurrences documented but no status survey conducted	HIGH: Plan and conduct species status survey
		HIGH Conduct taxonomy study to clarify identification as O. spinsosus vs. O. putnami.	Genetic study in progress (2025).	
		HIGH Genetics study to assess isolation of population.		
Hobbseus attenuatus	Pearl Rivulet Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2021-2023). Taxonomy clarification in progress (2025-2026)	MEDIUM: Status survey may be warranted if results of genetic study reveal a species with limited informtion. If not, future monitoring of known locations is suggested
Hobbseus cristatus	Crested Rivulet Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2021-2023). Taxonomy clarification in progress (2025-2026)	HIGH: Status survey may be warranted if results of genetic study reveal a species with limited informtion. If not, future monitoring of known locations is suggested
Hobbseus orconectoides	Oktibbeha Rivulet Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2021-2023). Taxonomy clarification in progress (2025-2026)	HIGH: Status survey may be warranted if results of genetic study reveal a species with limited informtion. If not, future monitoring of known locations is suggested
			Study in progress investigating use of different water body types and relationship of groundwater depth and surface water duration with presence/ absenc e (2025-ongoing)	HIGH: Specific research - Assess impacts of hybridization to species conservation
				HIGH: Specific research - Investigate impacts of urban development to habitat
Hobbseus petilus	Tombigbee Rivulet Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2021-2023). Taxonomy clarification in progress (2025-2026)	LOW: Status survey may be warranted if results of genetic study reveal a species with limited informtion. If not, future monitoring of known locations is suggested
Hobbseus prominens	Prominence Rivulet Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2021-2023). Taxonomy clarification in progress (2025-2026)	LOW: Status survey may be warranted if results of genetic study reveal a species with limited informtion. If not, future monitoring of known locations is suggested

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Hobbseus valleculus	Choctaw Rivulet Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2021-2023). Taxonomy clarification in progress (2025-2026)	MEDIUM: Status survey may be warranted if results of genetic study reveal a species with limited informtion. If not, future monitoring of known locations is suggested
Hobbseus yalobushensis	Yalobusha Rivulet Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2021-2023). Taxonomy clarification in progress (2025-2026)	MEDIUM: Status survey may be warranted if results of genetic study reveal a species with limited informtion. If not, future monitoring of known locations is suggested
Lacunicambarus dalyae	Jewel Mudbug			MEDIUM: Plan and conduct species status survey
Lacunicambarus freudensteini	Banded Mudbug			HIGH: Continued monitoring of known populations
				HIGH: Identification of novel locations
				HIGH: Monitor highway expansion projects and investigate translocations if needed
				HIGH: Work with MDOT to manage habitat along righ-of-ways
Lacunicambarus mobilensis	Lonesome Gravedigger			MEDIUM: Continued monitoring of known populations
				MEDIUM: Identification of novel locations
Lacunicambarus polychromatus	Paintedhand Crayfish			MEDIUM: Plan and conduct species status survey
Procambarus ablusus	Hatchie River Crayfish	MEDIUM Plan and conduct species status surveys	Commonly encountered in many stream fish surveys	LOW: Continued monitoring of known populations
				LOW: Identification of novel locations
Procambarus barbiger	Jackson Prairie Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2025)	MEDIUM: Continued monitoring of known populations
				MEDIUM: Identification of novel locations
				MEDIUM: Specific research - Investigation of woody plant encroachment and habitat loss
				MEDIUM: Specific research - life history

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Procambarus bivittatus	Ribbon Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	HIGH: Plan and conduct a species status survey
Procambarus elegans	Elegant Creek Crayfish	HIGH Conduct search of literature and museum specimens to determine whether there are any valid records of this species from Mississippi	Species does not occur in Mississippi	
		HIGH Plan and conduct species status surveys if there are valid records of this species from Mississippi		
Procambarus fitzpatricki	Spinytail Crayfish	HIGH Plan and conduct species status surveys	Status survey completed (2017)	MEDIUM: Continued monitoring of known populations
		HIGH Specific research: the species role as prey for the Mississippi Sandhill Crane	No surveys conducted	MEDIUM: Identification of novel locations
Procambarus hagenianus hagenianus	Southeastern Prairie Crayfish			HIGH: Plan and conduct species status survey
				HIGH: Specific research - Taxonomic investigation is needed. Populations of individuals vary in their morphology
Procambarus hagenianus vesticeps	Egyptian Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	HIGH: Plan and conduct species status survey
Procambarus lagniappe	Lagniappe Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	HIGH: Plan and conduct species status survey
Procambarus lecontei	Mobile Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	MEDIUM: Plan and conduct species status survey
Procambarus lylei	Shutispear Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	HIGH: Plan and conduct species status survey
Procambarus mancus	Lame Crayfish			MEDIUM: Plan and conduct species status survey
Procambarus penni	Pearl Blackwater Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	MEDIUM: Plan and conduct species status survey
				HIGH: Specific research - Taxonomic investigation is needed to clarify limits of range

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Procambarus planirostris	Flatnose Crayfish			MEDIUM: Plan and conduct species status survey
Procambarus shermani	Gulf Crayfish	HIGH Plan and conduct species status surveys	No surveys conducted	MEDIUM: Plan and conduct species status survey
Procambarus viaeviridis	Vernal Crayfish			HIGH: Plan and conduct species status survey
				HIGH: Specific research - Taxonomic investigation is needed. Populations of individuals vary in their morphology
Snails				
Elimia cylindracea	Cylinder Elimia			HIGH: Plan and conduct species status survey
Lithasia armigera	Armored Rocksnail			HIGH: Plan and conduct species status survey
Lithasia hubrichti	Big Black Rocksnail			HIGH: Continued monitoring of known populations
				HIGH: Specific research - Investigation into translocation if needed
				HIGH: Specific research - Assessment of threats
				MEDIUM: Specific research - Study of ecology and life history
				HIGH: Establishment of arc population
Lithasia lima	Warty Rocksnail			LOW: Continued monitoring of known populations
				LOW: Identification of novel locations
Lithasia verrucosa	Varicose Rocksnail			HIGH: Plan and conduct species status survey
Pleurocera vestita	Brook Hornsnail			MEDIUM: Plan and conduct species status survey
				HIGH: Specific research - Taxonomic investigation

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Fishes				
Acipenser desotoi	Gulf Sturgeon	HIGH Additional survey work: identify & protect spawning sites	Life history and distribution work completed (2016-present)	HIGH: Additional survey work - identify & protect spawning sites
		HIGH Additional research appropriate to understand species and habitats, especially making use of the existing acoustic telemetry array in the Pascagoula Estuary and Mississippi Sound		MEDIUM: Specific research - understand species and habitats, especially making use of the existing acoustic telemetry array in the Pascagoula Estuary and Mississippi Sound
		MEDIUM Plan and conduct species status surveys		
Acipenser fulvescens	Lake Sturgeon			LOW: Determine occurrence within Mississippi portions of Pickwick Reservoir.
Alburnops candidus	Silverside Shiner	HIGH Plan and conduct species status surveys	Detected in Buttahatchie River (2017, 2024)	HIGH: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Alburnops chalybaeus	Ironcolor Shiner	HIGH Plan and conduct species status surveys	Species status survey conducted and habitat determined within coastal drainages (2020, 2022, 2024)	LOW: Specific Research - determine population genetics between Pearl and Escawtawpa populations
		HIGH Determine habitat characteristics/species habitat needs (following re-discovery in the Escatawpa River)		MEDIUM: Specific research - investigate if there are population on the mainstem Pascagoula River
Alburnops edwardraneyi	Fluvial Shiner	HIGH Plan and conduct species status surveys	Not detected during surveys targeting other species within the Tombigbee Drainage (2016, 2017, 2018, 2019, 2024)	HIGH: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Alosa alabamae	Alabama Shad	HIGH Additional research appropriate to understand species and habitats	Species status survey in progress (2025)	
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species status surveys
		HIGH Determine habitat characteristics/ species habitat needs		HIGH: Specific research - Determine habitat characteristics/ species habitat needs

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Alosa chrysochloris	Skipjack Herring			MEDIUM: Specific research - Determine abundance and distribution within Pearl River to assess if species is in decline.
Ambloplites rupestris	Rock Bass	HIGH Plan and conduct species status surveys	Species not detected during two fish surveys of Bear reek (2016, 2023)	
		MEDIUM Determine habitat characteristics/ species habitat needs		LOW: Specific research - Determine habitat and distribution in Mississippi
Ammocrypta clara	Western Sand Darter	MEDIUM Additional research appropriate to understand species and habitats	Species not detected during fish surveys of the Big Black River (2017, 2019, 2024)	MEDIUM: Specific research - Research appropriate to understand species and habitats
		MEDIUM Plan and conduct species status surveys		MEDIUM: Plan and conduct species status surveys
Ammocrypta meridiana	Southern Sand Darter	HIGH Additional research appropriate to understand species and habitats	Species detected throughout Tombigbee tributaries (2015, 2016, 2017, 2018, 2019, 2024)	LOW: Specific research - Additional research appropriate to understand species and habitats
		MEDIUM Plan and conduct species status surveys		
Anguilla rostrata	American Eel			MEDIUM: Specific research - Determine abundance and distribution within Pearl River to assess if species is in decline.
				MEDIUM: Specific research - Determine if A. rostrata is the primary host for Elliptio arctata.
Atractosteus spatula	Alligator Gar	HIGH Additional research appropriate to understand species and habitats	No targeted survey work. Species detected sporadically in various surveys. Broodstock collected along Mississippi River	HIGH: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
		HIGH Determine habitat characteristics/ species habitat needs	oxbows for propogation	HIGH: Specific research - Determine habitat characteristics/ species habitat needs
		MEDIUM Additional survey work: movement studies		MEDIUM Additional survey work: movement studies
Catostomus commersonii	White Sucker		Species not detected during fish surveys of Bear Creek (2015, 2023).	LOW: Specific research - Determine if species moves into Mississippi streams near Pickwick Reservoir
Chrosomus erythrogaster	Southern Redbelly Dace		Species detected in several Yazoo tributaries (2017, 2021)	HIGH: Plan and conduct species status surveys within the Yazoo drainage.
Clinostomus funduloides	Rosyside Dace	HIGH Plan and conduct species status surveys	Species sporadic but stable throughout Tennessee River tributaries in Mississippi (2016, 2023)	LOW: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		LOW: Specific research - Determine habitat characteristics/ species habitat needs
Cottus carolinae	Banded Sculpin	HIGH Plan and conduct species status surveys	Species sporadic but stable throughout Tennessee River tributaries in Mississippi (2015, 2016, 2021, 2023)	LOW: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		LOW: Specific research - Determine habitat characteristics/ species habitat needs
Crystallaria asprella	Crystal Darter	HIGH Plan and conduct species status surveys	Non targeted surveys show species is seemingly stable in the Pearl and Tombigbee Rivers	LOW: Plan and conduct species status surveys
		HIGH Determine population structure for individuals present in the Tennessee-Tombigbee Waterway		LOW: Specific research - Determine population structure for individuals present in the Tennessee-Tombigbee Waterway
Cycleptus elongatus	Blue Sucker	HIGH Additional research appropriate to understand species and habitats	Species sporadically collected within the Big Black River	HIGH: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species status surveys
		MEDIUM Additional survey work: status survey in Yazoo & Big Black		MEDIUM: Additional survey work: status survey in Yazoo & Big Black

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Cycleptus meridionalis	Southern Blue Sucker	MEDIUM Plan and conduct species status surveys (contemporary targeted survey data are especially lacking for the Tombigbee River Drainage)	Species detected periodically in the Pearl River	MEDIUM: Plan and conduct species status surveys (contemporary targeted survey data are especially lacking for the Tombigbee River Drainage)
		MEDIUM Studies to determine the importance of old river bends as nursery habitat		MEDIUM: Specific research - Studies to determine the importance of old river bends as nursery habitat
Cyprinella callistia	Alabama Shiner	MEDIUM Determine habitat characteristics/ species habitat needs	Species detected periodically in the Tombigbee drainage	LOW: Specific research - Determine habitat characteristics/ species habitat needs
		MEDIUM Plan and conduct species status surveys		LOW: Plan and conduct species status surveys
Cyprinella galactura	Whitetail Shiner	HIGH Plan and conduct species status surveys	Species not detected during surveys of the Tennessee River (2016, 2023)	MEDIUM: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Cyprinella spiloptera	Spotfin Shiner		Species detected in Tennessee River tributaries (2015, 2023)	MEDIUM: Specific research - Determine genetics and distribution compared to C. spiloptera.
Cyprinella whipplei	Steelcolor Shiner	MEDIUM Determine habitat characteristics/ species habitat needs	Species detected in Tennessee River tributaries (2015, 2023)	MEDIUM: Specific research - Determine genetics and distribution compared to C. camura and C. spiloptera.
		MEDIUM Plan and conduct species status surveys		MEDIUM: Plan and conduct species status surveys.
Enneacanthus gloriosus	Bluespotted Sunfish	HIGH Plan and conduct species status surveys	Detected within the Pascagoula River drainage and Wolf River drainage during surveys for Ironcolor Shiner (2020, 2022, 2024)	MEDIUM: Plan and conduct species status surveys
Etheostoma asprigene	Mud Darter	HIGH Additional research appropriate to understand species and habitats	Species detected in Buffalo River and Homochitto River (2015, 2016, 2017)	HIGH: Specific research - Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Etheostoma blennioides	Greenside Darter	HIGH Plan and conduct species status surveys	Species stable within Bear Creek drainage (2016, 2023)	LOW: Plan and conduct species status surveys
		MEDIUM Monitor species population trends and determine quantity, condition and context of suitable habitat		LOW: Monitor species population trends
				LOW: Specific research - determine quantity, condition and context of suitable habitat
Etheostoma duryi	Black Darter	HIGH Plan and conduct species status surveys	Species regularly detected in Tennessee River tributaries. Tissue taken from several systems	MEDIUM: Plan and conduct species status surveys
		HIGH Additional research appropriate to understand species and habitats		MEDIUM: Additional research appropriate to understand species and habitats
Etheostoma faulkneri	Yoknapatawpha Darter		Coordinated yearly status surveys, monitoring efforts, broodstock collection, and re-introductions for the species	MEDIUM: Determine status and current threats within the Yocona River drainage.
Etheostoma flabellare	Fantail Darter	HIGH Additional research appropriate to understand species and habitats	Species detected in relatively high numbers in several headwater streams in Tishomingo County (2023).	
		MEDIUM Plan and conduct species status surveys		LOW: Plan and conduct species specific status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Etheostoma jessiae	Blueside Darter		Species detected in Bear Creek System (2016 and 2023)	LOW: Plan and conduct species specific status surveys
Etheostoma kennicotti	Stripetail Darter	HIGH Additional research appropriate to understand species and habitats	Species detected within several Tennessee River tributaries (2023).	LOW: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		LOW: Plan and conduct species specific status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Etheostoma lachneri	Tombigbee Darter	HIGH Additional research appropriate to understand species and habitats	Status survey conducted (2024).	LOW: Additional research appropriate to understand species and habitats
		MEDIUM Plan and conduct species status surveys		HIGH: Specific research - Additional genetic research to determine if this is a single species or a species complex within the Mobile drainage.
Etheostoma nigripinne	Blackfin Darter	HIGH Additional research appropriate to understand species and habitats	Species detected within several Tennessee River tributaries (2023).	MEDIUM: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		LOW: Plan and conduct species specific status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		
Etheostoma raneyi	Yazoo Darter	HIGH Determine taxonomic status Yocona River Population	E. falkneri split from E. raneyi (2020). Species periodically monitored	
		HIGH Continue monitoring population responses to habitat improvements in the Yazoo River Drainage		LOW: Continue monitoring population responses to habitat improvements in the Yazoo River Drainage
Etheostoma rupestre	Rock Darter	HIGH Additional research appropriate to understand species and habitats	Species regularly detected within the Tombigbee River drainage	LOW: Additional research appropriate to understand species and habitats
		MEDIUM Plan and conduct species status surveys		LOW: Plan and conduct species specific status surveys
Etheostoma simoterum	Snubnose Darter		Species detected in Bear Creek System (2015 and 2023)	LOW: Plan and conduct species specific status surveys
Etheostoma zonifer	Backwater Darter	HIGH Additional research appropriate to understand species and habitats	Species sporadically detected within the Tombigbee River drainage	HIGH: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Etheostoma zonistum	Bandfin Darter	HIGH Additional research appropriate to understand species and habitats	Species regularly detected within Tennessee River tributaries	LOW: Additional research appropriate to understand species and habitats
		MEDIUM Plan and conduct species status surveys		LOW: Plan and conduct species status surveys
Fundulus blairae	Western Starhead Topminnow			MEDIUM: Plan and conduct species status surveys
Fundulus dispar	Northern Starhead Topminnow			MEDIUM: Plan and conduct species status surveys
Fundulus euryzonus	Broadstripe Topminnow	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted	MEDIUM: Plan and conduct species status surveys
Fundulus jenkinsi	Saltmarsh Topminnow	MEDIUM Plan and conduct species status surveys	Full targeted survey conducted in 2021	MEDIUM: Monitor Species and determine inland extent of range
Heterandria formosa	Least Killifish	MEDIUM Plan and conduct species status surveys	Species found in several coastal tributaries	MEDIUM: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Hybopsis amnis	Pallid Shiner	HIGH Plan and conduct species status surveys	Species detected in several Mississippi River tributaries	MDEIUM: Plan and conduct species specific status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Hypentelium etowanum	Alabama Hog Sucker	MEDIUM Determine habitat characteristics/ species habitat needs	Species regularly detected within the Tombigbee River drainage	LOW: Specific research - Determine habitat characteristics/ species habitat needs
		MEDIUM Plan and conduct species status surveys		LOW: Plan and conduct species status surveys
Ichthyomyzon castaneus	Chestnut Lamprey	HIGH Additional research appropriate to understand species and habitats	Species sporadically detected within the Tennessee	HIGH: Specific research - Genetic research to determine identification and distribution
		MEDIUM Plan and conduct species status surveys	River drainage and the Big Black River	MEDIUM: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs (life history stages)		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs (life history stages)

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Ichthyomyzon unicuspis	Silver Lamprey			MEDIUM: Plan and conduct species status surveys
Ictiobus niger	Black Buffalo	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted.	MEDIUM: Plan and conduct species status surveys
Leptolucania ommata	Pygmy Killifish	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted.	MEDIUM: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs	No targeted surveys conducted.	MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Lethenteron appendix	American Brook Lamprey		No targeted surveys conducted.	MEDIUM: Plan and conduct species status surveys
Lythrurus fasciolaris	Scarlet Shiner		Species regularly detected in Tennessee River tributaries	LOW: Plan and conduct species status surveys
Macrobopsis gelida	Sturgeon chub	HIGH Additional research appropriate to understand species and habitats	Species never detected in Mississippi,	
		HIGH Plan and conduct species status surveys	removed from SWAP.	
Macrhybopsis meeki	Sicklefin Chub	HIGH Additional research appropriate to understand species and habitats	No targeted surveys conducted.	HIGH: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species status surveys
Miniellus boops	Bigeye Shiner	MEDIUM Plan and conduct species status surveys	Species detected in several Bear Creek tributaries (2016, 2023).	LOW: Plan and conduct species status surveys
Miniellus melanostomus	Blackmouth Shiner	HIGH Additional research appropriate to understand species and habitats		HIGH: Plan and conduct species status surveys
Miniellus sabinae	Sabine Shiner	MEDIUM Plan and conduct species status surveys	Species detected in Big Black river 2016 and 2024	MEDIUM: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Morone saxatilis	Striped Bass	HIGH Additional research appropriate to understand species and habitats	Tissue collected for genetic investigations. Removed from SWAP as all populations in the state are believed to be stocked population.	
Moxostoma anisurum	Silver Redhorse	HIGH Plan and conduct species status surveys	Individuals collected in Bear Creek (2023)	LOW: Plan and conduct species status surveys
Moxostoma breviceps	Smallmouth Redhorse		Individual collected in Bear Creek (2015). Not detected during survey in 2023	MEDIUM: Plan and conduct species status surveys
Moxostoma carinatum	River Redhorse	MEDIUM Plan and conduct species status surveys	Species sporadically collected across the state (2016, 2023).	MEDIUM: Plan and conduct targeted species status surveys
		MEDIUM Additional survey work: status survey of large river habitat		MEDIUM: Additional survey work: status survey of large river habitat
Moxostoma duquesnei	Black Redhorse	HIGH Plan and conduct species status surveys	Collected in Tennessee River drainage (2016, 2023)	MEDIUM: Plan and conduct targeted species status surveys
Moxostoma eryuthrurum	Golden Redhorse			
Moxostoma macrolepidotum	Shorthead Redhorse		Now recognized as Moxostoma breviceps	
Nothonotus rubrus	Bayou Darter	MEDIUM Monitor species population trends and determine quantity, condition and context of suitable habitat	Ongoing species and habitat monitored	MEDIUM: Monitor species population trends and
				MEDIUM: Specific research - Determine avenues to possible habitat protection and restoration.
Nothonotus rufilineatus	Redline Darter	HIGH Additional research appropriate to understand species and habitats	Species collected throughout Bear Creek drainage (2016, 2023)	LOW: Additional research appropriate to understand species and habitats
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Notropis micropteryx	Highland Shiner		Species collected throughout Bear Creek drainage (2016, 2023)	LOW: Additional research appropriate to understand species distribution and habitats
Noturus exilis	Slender Madtom	MEDIUM Additional research appropriate to understand species and habitats	Species not detected (2016, 2023) but has been detected in Bear Creek in Mississippi (2016).	MEDIUM: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species specific status surveys
		MEDIUM Additional survey work: extensive survey of historic localities		MEDIUM: Additional survey work: extensive survey of historic localities
Noturus flavus	Stonecat	HIGH Plan and conduct species status surveys	No targeted survey work.	HIGH: Plan and conduct species status surveys
		MEDIUM Additional survey work: extensive survey in Mississippi River deep water habitat		MEDIUM: Additional survey work: extensive survey in Mississippi River deep water habitat
Noturus gladiator	Piebald Madtom	HIGH Additional research appropriate to understand species and habitats	Species detected in Mississippi in the Wolf and Hatchie rivers (2016), Coldwater River (2018, 2023) and Big Black River (2024). eDNA conducted in Big Black River and Coldwater River. Habitat characteristics and needs noted during surveys. Population genetics determined	MEDIUM: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		LOW: Plan and conduct additional distribution surveys
		HIGH Determine habitat characteristics/ species habitat needs		HIGH: Specific research - Determine restoration projects/recovery needs
Noturus munitus	Frecklebelly Madtom	HIGH Additional research appropriate to understand species and habitats	Species thoroughly sampled statewide (2018, 2019)	LOW: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		LOW: Plan and conduct species status surveys in the Tombigbee drainage
Percina aurora	Pearl Darter	HIGH Additional research appropriate to understand species and habitats	Species thoroughly sampled statewide (2017, 2019, 2021) with eDNA surveys	MEDIUM: Additional monitoring needed along tributaries of the Pascagoula River
		HIGH Plan and conduct species status surveys	conducted. Species re-introduced into the Strong River (2023)	HIGH: Continued propagation and release of Pearl Darter into the Strong River with yearly monitoring.

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Percina evides	Gilt Darter	HIGH Plan and conduct species status surveys	Species regularly detected in the Bear Creek System	LOW: Plan and conduct species status surveys
		MEDIUM Additional research to understand species and habitats (study habitat associations)		LOW: Specific research - Additional research to understand species and habitats (study habitat associations)
		MEDIUM Monitor species population trends and determine quantity, condition and context of suitable habitat		MEDIUM: Monitor species population trends and determine quantity, condition and context of suitable habitat
Percina kathae	Mobile Logperch	MEDIUM Plan and conduct species status surveys	Species detected during Tombigbee drainage surveys (2016, 2018, 2019).	MEDIUM: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Genetic investigations between P. kathae and P. suttkusi.
				MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Percina lenticula	Freckled Darter	HIGH Additional research appropriate to understand species and habitats	Species surveyed in the Pascagoula River system (2021, 2022) with eDNA surveys conducted.	HIGH: Additional research appropriate to understand species and habitats in the Pearl River
		MEDIUM Plan and conduct species status surveys		MEDIUM: Plan and conduct species status surveys in the Pearl River
Percina phoxocephala	Slenderhead Darter	HIGH Additional research appropriate to understand species and habitats	Species detected in Bear Creek (2015, 2016, 2023)	HIGH: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		LOW: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Percina tanasi	Snail Darter	HIGH Plan and conduct species status surveys in Bear Creek	Percina tanasi has been synonymized with Perciana uranidea.	
		HIGH Determine habitat characteristics/ species habitat needs (quantity, condition and context of suitable habitat)		
		HIGH Additional genetic research (to determine source population)		

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
		HIGH Assess species population demographics		
		MEDIUM Additional survey work: trawl Bear Creek arm of Tennessee River		
Percina uranidea	Stargazing Darter	HIGH Plan and conduct species status surveys in Bear Creek	Species detected multiple times within Bear Creek (2016).	LOW: Plan and conduct species status surveys in Bear Creek
		HIGH Determine habitat characteristics/ species habitat needs (quantity, condition and context of suitable habitat)		LOW: Specific research - Determine habitat characteristics/ species habitat needs (quantity, condition and context of suitable habitat)
		HIGH Additional genetic research (to determine source population)		LOW: Specific research - Additional genetic research (to determine source population)
		HIGH Assess species population demographics		LOW: Specific research - Assess species population demographics
		MEDIUM Additional survey work: trawl Bear Creek arm of Tennessee River		MEDIUM: Additional survey work: Trawl Bear Creek arm of Tennessee River
Phenacobius mirabilis	Suckermouth Minnow	HIGH Plan and conduct species status surveys	Species not detected in Bear Creek (2016, 2023), nor in	MEDIUM: Plan and conduct species status surveys
		MEDIUM Determine habitat characteristics/ species habitat needs	Chambers Creek (2023).	MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Platygobio gracilis	Flathead Chub	MEDIUM Plan and conduct species status surveys	No targeted survey work. Not detected during regular Missis-sippi River surveys.	MEDIUM: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Polyodon spathula	Paddlefish	HIGH Plan and conduct species status surveys	Species regularly detected in Pearl River . Targeted surveys, distribution, and telemetry work ongoing by in the Pascagoula River drainage.	HIGH: Plan and conduct species status surveys in the Mississippi River drainage and Pearl River.
		HIGH Additional research appropriate to understand species and habitats		HIGH: Additional research appropriate to understand species and habitats
		MEDIUM Additional genetic research (if fish in Mobile and Mississippi strains are genetically extinct)		MEDIUM: Specific research - Additional genetic research (if fish in Mobile and Mississippi strains are genetically extinct)
		MEDIUM Additional survey work: creek surveys in large river systems to assess population; survey commercial fisherman		MEDIUM: Additional survey work: creel surveys in large river systems to assess population; survey commercial fisherman
		MEDIUM Studies to determine the importance of old river bends as nursery habitat		MEDIUM: Specific research - Studies to determine the importance of old river bends as nursery habitat
Pteronotropis welaka	Bluenose Shiner	HIGH Additional research appropriate to understand species and habitats	Surveys completed rangewide (2022) with genetics taken from each population.	MEDIUM: Additional research appropriate to understand species and habitats
		HIGH Plan and conduct species status surveys		HIGH: Specific research -Additional genetic research to determine if this is a single species or a species complex along gulf coastal drainages.
Rhinichthys obtusus	Blacknose Dace	HIGH Plan and conduct species status surveys	Species still detectable in Short Creek (annually). Not detected within any other Tennessee River tributaries (2023).	HIGH: Plan and conduct species status surveys along small tributaries of Pickwick Reservoir to find potential unknown populations.
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Determine population of Short Creek.
Scaphirhynchus albus	Pallid Sturgeon	HIGH Plan and conduct species status surveys	Detected sporadically during trotline surveys and trawling efforts. “Pure” S. albus may no longer exist in lower Mississippi as natural and stocked individuals have hybridized with S. platorynchus.	LOW: Plan and conduct species status surveys
		HIGH Continue investigations related to population structure and taxonomic relationship to Scaphirhynchus platorynchus		HIGH: Specific research -Continue investigations related to population genetics of Lower Mississippi River population.

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research -Determine habitat characteristics/ species habitat needs
Scaphirhynchus platorynchus	Shovelnose Sturgeon	HIGH Continue investigations related to population structure and taxonomic relationship to Scaphirhynchus albus	Species detected by trotline surveys (2016, 2017) along Mississippi River and Yazoo drainage.	HIGH: Specific research - Continue investigations related to population structure and taxonomic relationship to Scaphirhynchus albus
Scaphirhynchus suttkusi	Alabama Sturgeon	MEDIUM Plan and conduct species status surveys	Species no longer extant in Mississippi.	LOW: Plan and conduct species status surveys
Stizostedion canadense	Sauger	HIGH Additional research appropriate to understand species and habitats	Individuals sporadically collected along Mississippi River.	HIGH: Additional research appropriate to understand species and habitats along Mississippi River
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species status surveys along Mississippi River
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs along Mississippi River
Stizostedion sp. cf. vitreum	Southern Walleye	HIGH Plan and conduct species status surveys	Genetic Research and eDNA surveys ongoing. No targeted survey work completed for the species.	HIGH: Plan and conduct species status surveys
		HIGH Additional genetic research		HIGH: Specific research - Additional genetic research
		MEDIUM Determine habitat characteristics/ species habitat needs		MEDIUM: Specific research -Determine habitat characteristics/ species habitat needs

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Marine Fishes				
Aetobatus narinari	Whitespotted Eagle Ray			HIGH: Plan and conduct species status surveys
Archosargus rhomboidalis	Western Atlantic Seabream			MEDIUM: Plan and conduct species status surveys
Carcharhinus acronotus	Blacknose Shark			HIGH: Plan and conduct species status surveys
Carcharhinus plumbeus	Sandbar Shark			MEDIUM: Plan and conduct species status surveys
Carcharhinus porosus	Smalltail Shark		Individual caught in Chandeleur Islands (2023)	HIGH: Surveys needed to assess status and habitats in Mississippi
				HIGH: Specific research - eDNA surveys to identify areas for further survey efforts
Carcharias taurus	Sand Tiger Shark			LOW: Specific research - Determine habitat characteristics/ species habitat needs
Epinephelus itajara	Atlantic Goliath Grouper			LOW: Plan and conduct species status surveys
Hippocampus erectus	Lined Seahorse			LOW: Plan and conduct species status surveys
Isurus oxyrinchus	Shortfin Mako Shark			LOW: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Manta birostris	Giant Manta Ray			LOW: Plan and conduct species status surveys
				HIGH: Additional research appropriate to understand species and habitats
Megalops atlanticus	Tarpon			MEDIUM: Specific research - Determine species distribution and identify habitat and use of MS coastal waters
Mobula hypostoma	Atlantic Pygmy Devil Ray			LOW: Plan and conduct species status surveys
Mobula tarapacana	Sicklefin Devil Ray			HIGH: Additional research appropriate to understand species and habitats
				LOW: Plan and conduct species status surveys
Narcine bancroftii	Caribbean Electric Ray			MEDIUM: Additional research appropriate to understand species and habitats
Negaprion brevirostris	Lemon Shark			MEDIUM: Additional research appropriate to understand species and habitats
				MEDIUM: Plan and conduct species status surveys
Pristis pectinata	Smalltooth Sawfish		Species detected by eDNA surveys around Deer Island (2018). Sawfish encounters occurred in Mississippi and reported to FWC in 2019. Record from Chandeleur Island December (2024)	HIGH: Additional survey work to identify areas and habitats of occurrence, determine seasonal use of Mississippi coastal waters
				HIGH: Specific research - eDNA surveys to identify priority areas/ seasons for further survey efforts
Pristis pristis	Largetooth Sawfish		Species may be locally extinct in U.S. waters. eDNA assay developed for the species to support eDNA surveys.	LOW: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Rhinoptera brasiliensis	Brazilian Cownose Ray		Life history work. Population genetics work by the University of Southern Mississippi found signficiant, albeit low, population structure between the northern Gulf of Mexico and the northwest Atlantic (2022). Population in Mississippi appears to be genetically distinct from populations in South America. Current research on population genomics of the species to further refine population structure in US waters, including samples from Mississippi is ongoing	MEDIUM: Specific research - Determine habitat characteristics/ species habitat needs
Mussels				
Actinonaias ligamentina	Mucket	MEDIUM Additional survey work: surveys in large Delta rivers (e.g.Coldwater)	Surveys in the Big Sunflower River failed to detect the species (2023)	MEDIUM: Additional survey work: surveys in large Delta rivers (e.g.Coldwater)
		MEDIUM Plan and conduct species status surveys		
Arcidens confragosus	Rock Pocketbook		Individuals detected in Bear Creek (2020), Big Black River (2021), Pearl River (2022), and Big Sunflower River (2023)	LOW: Specific research - Determine genetics between drainages
Cyclonaias tuberculata	Purple Wartyback	MEDIUM Plan and conduct species status surveys	Surveys conducted in Bear Creek (2020) and Pickwick Reservoir (2024) successfully detected live individuals	LOW: Continued monitoring populations in Bear Creek and Pickwick Reservoir.
				LOW: Identification of novel populations
Cyprogenia aberti	Western Fanshell	LOW Plan and conduct species status surveys to determine if this species still occurs in Mississippi	Relict Shells detected in Big Sunflower River (2023)	MEDIUM: Additional surveys in large Delta rivers (e.g.Coldwater)
Ellipsaria lineolata	Butterfly	LOW Monitor species population trends and determine quantity, condition and context of suitable habitat	Individuals detected in Bear Creek (2020), Big Black River (2021), and Big Sunflower River (2023)	LOW: Monitor species population trends and determine quantity, condition and context of suitable habitat

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Elliptio arca	Alabama Spike	HIGH Additional genetic research	Tissue collected from Buttahatchie population (2023)	HIGH: Specific research - Additional genetic research
		MEDIUM Plan and conduct species status surveys		MEDIUM: Plan and conduct species status surveys
Elliptio arctata	Delicate Spike		Tissue collected from Pascagoula River drainage populations (2024)	HIGH: Specific research - additional genetic research
			Fresh Dead individuals detected within the Strong River (2022) and Live individuals detected in the Leaf River and Chickasawhay River (2024)	MEDIUM: Plan and conduct targeted monitoring and status surveys, especially within the Pearl River drainage.
Epioblasma brevidens	Cumberlandian Combshell	MEDIUM Monitor species population trends and determine quantity, condition and context of suitable habitat	Surveys conducted in Bear Creek and Cedar Creek (2020) detected live individuals	HIGH: Monitor species population trends and determine quantity, condition and context of suitable habitat
Epioblasma penita	Southern Combshell	HIGH Additional genetic research	Propagation program established between ADCNR and MDWFP/USFWS with broodstock collected in Buttahatchie River and released into Bull Mountain Creek (2015). Continued collection for propagation ongoing	HIGH: Specific research - Additional genetic research
		HIGH Monitor extant population.		HIGH: Monitor extant population.
		HIGH Plan for release of hatchery reared juveniles into East Fork Tombigbee River and tributaries.		HIGH: Specific research - Determine possibility of release into other hitsric Tombigbee systems.
Epioblasma triquetra	Snuffbox	HIGH Conduct status survey to determine whether this species still occurs in Mississippi	No individuals detected in Bear Creek (2020)	HIGH: Specific research - Determine avenues for propagation and species release into Bear Creek.
Eurynia dilatata	Spike		No individuals detected in the Big Sunflower River (2021)	MEDIUM: Specific research -Determine strategies for propagation and species release into the Big Sunflower River.
Hamiota perovalis	Orangenacre Mucket	MEDIUM Plan and conduct species status surveys	Individuals detected in Bull Mountain (2021 and 2024) No individuals detected in Luxapallila Creek (2023)	MEDIUM: Plan and conduct species status surveys within the Tombigbee River drainage.
Lampsilis fasciola	Wavy-rayed Lampmussel		Surveys conducted in Bear Creek and Cedar Creek (2020 and 2023) detected live individuals	MEDIUM: Determine site occurrence within Bear and Cedar Creek

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Lampsilis hydiana	Louisiana Fatmucket	MEDIUM Plan and conduct species status surveys	No individuals collected in the Big Sunflower River (2023). Genetic work determined populations extant in Bayou Pierre and Amite drainages	MEDIUM: Specific research - Additional genetic research, especially within the Yazoo River drainage.
Lampsilis silquoidea	Fatmucket	MEDIUM Additional survey work in smaller streams	Species detected in the Big Black River (2021)	
Lampsilis straminea straminea	Rough Fatmucket	MEDIUM Additional genetic research to determine relationship between this taxon and L.s. claibornensis	Species sporadically collected in the Tombigbee River watershed	LOW: Specific research - Additional genetic research to determine relationship between this taxon and L.s. claibornensis
Lasmigona alabamensis	Alabama Heelsplitter	MEDIUM Conduct species status surveys	No individuals detected in Luxapallila Creek (2023) or Tibee Creek (2023)	MEDIUM: Plan and conduct species status surveys
Lasmigona complanata	White Heelslpitter	MEDIUM Conduct species status surveys	Individuals detected in Bear Creek (2020), Big Black River (2021), Pearl River (2022), and Big Sunflower River (2023)	LOW: Specific research - Determine genetics between native drainages in Mississippi River and Gulf Coast
Lasmigona costata	Fluteshell		Live individuals detected in Bear Creek (2020)	MEDIUM: Specific research - Determine site occurrence within Bear and Cedar Creek
Ligumia recta	Black Sandshell	HIGH Conduct species status survey to determine whether this species still exists in streams other than the East Fork Tombigbee River.	Species detected live in Bear Creek (2020) but no individuals detected within the Pearl River drainage (2022)	MEDIUM: Specific research - determine likelihood of successful Southern Walleye release into the Lower or Upper Pearl River to attempt to re-establish L. recta in the system,.
Medionidus acutissimus	Alabama Moccasinshell	MEDIUM Plan and conduct species status surveys	Species detected within Buttahatchie River (2022, 2023, and 2024)	MEDIUM: Plan and conduct species status surveys within tributaries of the Tombigbee River.
Obovaria arkansasensis	Southern Hickorynut	HIGH Additional genetic research (conduct phyloge-netic analysis of the Obovania subrotunda/ unicolor/jackso-niana complex)	Rangewide genetic study of Obovaria (2021, 2023)	HIGH: Monitor extant population and determine distribution within Mississippi.
		MEDIUM Plan and conduct species status surveys & monitoring	Species detected in Big Black River (2021 and 2024) and Pontchartrain drainage (2023 and 2024). Species not detected in the Pearl River (2022)	

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Obovaria subrotunda	Round Hickorynut		Rangewide genetic study of Obovaria (2021, 2023)	MEDIUM: Specific research - Determine strategies for propagation and species release into the tributaries of the Mississippi River.
			Species detected in the Big Black River in (2021, 2022, 2024)	MEDIUM: Plan and conduct species status surveys within the Yazoo River drainage.
Obovaria unicolor	Alabama Hickorynut	HIGH Additional genetic research (conduct phylogenetic analysis of the Obovania subrotunda/ unicolor/jacksoniana complex)	Species detected in Buttahatchie River. Genetics determined species is endemic to the Mobile drainage in Mississippi. Pontchartrain, Pearl, and Pascagoula populations now considered Obovaria cf. unicolor.	
		MEDIUM Plan and conduct species status surveys		MEDIUM: Plan and conduct species status surveys.
Obovaria cf. unicolor	Undescribed Hickorynut		Genetic studies revealed populations in the Pearl, Pontchartrain, and Pascagoula drainages are genetically separate from O. unicolor. These populations have been heavily surveyed (2022, 2023, and 2024)	MEDIUM: Specific research - Determine avenues for propagation and species release into the Pearl River below Ross Barnett Reservoir.
				MEDIUM: Conduct species status surveys within the Yazoo River drainage.
Plethobasus cyphyus	Sheepnose	HIGH Additional survey work: surveys in large Delta rivers (e.g.Coldwater)	Species detected within the Big Sunflower (2023, 2024) with tissue taken	HIGH: Additional survey work in large Delta rivers (e.g.Coldwater)
Pleurobema beadleianum	Mississippi Pigtoe	HIGH Additional genetic research (clarify identification of this species through genetic work then reassess status)	Species detected in the Pontchartrain drainage (2023, 2024) the Pearl River drainage (2022, 2023) and the Pascagoula River drainage (2024) with tissue taken from all three populations.	HIGH: Specific research - Additional genetic research (clarify identification of this species through genetic work then reassess status)
		MEDIUM Plan and conduct species status surveys		
Pleurobema curtum	Black Clubshell	LOW Plan and conduct species status surveys to determine whether this species still occurs in Mississippi		LOW: Plan and conduct species status surveys to determine whether this species still occurs in Mississippi
Pleurobema decisum	Southern Clubshell	MEDIUM Plan and conduct species status surveys	Species detected in Bull Mountain Creek (2022) and Buttahatchee River (2022, 2023, 2024)	LOW: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Pleurobema marshalli	Flat Clubshell	LOW Plan and conduct species status surveys to determine whether this species still occurs in Mississippi	Declared Extinct by USFWS.	
Pleurobema perovatum	Ovate Clubshell	HIGH Plan and conduct species status surveys	Species detected within Buttahatchie River (2022, 2023, 2024)	HIGH: Plan and conduct species status surveys
Pleurobema rubrum	Pyramid Pigtoe	HIGH Additional genetic research (conduct phylogenetic research on this species to determine relatedness of Delta populations to others)	Range wide genetics determined P. rubrum in Mississippi is P. sintoxia	
		HIGH Additional taxonomic research to determine if the highly similar P. cordatum is also present.		
		HIGH Additional survey work: surveys in large Delta rivers (e.g.Coldwater)		
		MEDIUM Plan and conduct species status surveys		
Pleurobema sintoxia	Round Pigtoe	HIGH Additional genetic research (conduct phylogenetic research on this species to determine relatedness of Delta populations to others)	Range wide genetics determined P. rubrum in Mississippi is P. sintoxia. Species detected in the Big Sunflower River (2023) but not within the Big Black River (2021)	MEDIUM: Additional survey work: surveys in large Delta rivers (e.g.Coldwater) and in Pickwick Reservoir.
		HIGH Additional taxonomic research to determine if the highly similar P. cordatum is also present.		
		HIGH Additional survey work: surveys in large Delta rivers (e.g.Coldwater)		
		MEDIUM Plan and conduct species status surveys		
				MEDIUM: Specific research - Determine reason for declines in the Big Black River and Sunflower River
Pleurobema riddellii	Louisiana Pigtoe		Species found within the Pearl River below Ross Barnett Reservoir, near Columbia, and along the East Pearl River (2022, 2023) in low numbers	HIGH: Plan and conduct species status surveys in the Pearl River and Bogue Chitto River.

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Pleurobema taitianum	Heavy Pigtoe	Plan and conduct species status surveys to determine whether this species still occurs in Mississippi.	No surveys conducted	LOW: Plan and conduct species status surveys to determine whether this species still occurs in Mississippi.
Pleuronaia barnesiana	Tennessee Pigtoe	MEDIUM Plan and conduct species status surveys	No individuals detected in Bear Creek (2020).	MEDIUM Conduct further species status surveys in Bear Creek to determine presence.
Pleuronaia dolabelloides	Slabside Pearlymussel	MEDIUM Plan and conduct species status surveys	Surveys conducted in Bear Creek and Cedar Creek (2020) detected live individuals.	MEDIUM: Monitor species population trends and determine quantity, condition and context of suitable habitat
				MEDIUM: Specific research - determine quantity, condition and context of suitable habitat
Potamilus alatus	Pink Heelsplitter	LOW Plan and conduct species status surveys, particularly in the Mississippi River.	Surveys conducted in Bear Creek and Cedar Creek (2020) and Pickwick Reservoir (2024) detected live individuals. Species now known invader into Mobile Drainage.	LOW:Monitor species population trends
				LOW: Specific research - determine quantity, condition and context of suitable habitat
				LOW: Monitor advance into Mobile drainage
Potamilus capax	Fat Pocketbook	MEDIUM Plan and conduct species status surveys	Species not detected in St. Catherine's Creek (2023).	MEDIUM: Plan and conduct surveys to detect new populations along Mississippi River.
Potamilus inflatus	Inflated Heelsplitter	MEDIUM Plan and conduct species status surveys	Species not detected in the Amite River (2024).	MEDIUM: Specific research - determine avenues for propagation and species release into the Pearl River below Ross Barnett Reservoir using Amite River stock.
		MEDIUM Conduct additional survey work in lower Pearl River	Species not detected in the Pearl River (2022). Recent eDNA work indicates possible detection in lower West Pearl River (2022).	

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Pseudodontoides subvexus	Southern Creekmussel	HIGH Genetic research to determine relationship between this species, Strophitus subvexus, Strophitus undulatus, and the Strophitus in the upper Pascagoula watershed.	Genetics investigated for Mississippi populations of Strophitus and Pseudodontoides in Gulf and Mississippi drainages.	MEDIUM: Determine current status and distribution in Mobile drainage headwater streams.
		MEDIUM Plan and conduct species status surveys	Species detected in Bull Mountain Creek (2021).	MEDIUM: Plan and conduct species status surveys.
Ptychobranchus fasciolaris	Kidneyshell		Species detected in Bear Creek in (2020, 2024)	MEDIUM: Monitor species population trends
				MEDIUM: Specific research - determine quantity, condition and context of suitable habitat
Pustulosa nodulata	Wartyback	MEDIUM Plan and conduct species status surveys	Species found in abundance within Big Black River (2021) and	
			Sunflower River (2023). Removed from SWAP.	
Quadrula nobilis	Gulf Mapleleaf		Species detected in the Pearl (2022), Pontchartrain (2023 and 2024) and Pascagoula (2024) drainages. Tissue taken from all three populations.	LOW: Specific research - Determine species genetics of Quadrula species between Gulf, Pontchartrain, and Mississippi drainages.
Quadrula rumphiana	Ridged Mapleleaf	MEDIUM Plan and conduct species status surveys	Species detected in Noxubee River (2022) and Tibee Creek (2023). Removed from SWAP	LOW: Plan and conduct species status surveys
Strophitus connasaugaensis	Alabama Creekmussel	HIGH Genetic research to determine relationship between this species, Strophitus subvexus, Strophitus undulatus, and the Strophitus in the upper Pascagoula watershed.	Does not occur in Mississippi	
		MEDIUM Plan and conduct species status surveys		
Strophitus pascagoulaensis	Pascagoula Creekshell		Genetics investigated in Pearl and Pascagoula drainages. Species split from S. radiatus (2018). Populations detected within Pearl drainage (2022 and 2023) and Pascagoula drainage (2022 and 2023)	LOW: Identification of novel populations

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Strophitus radiatus	Rayed Creekshell	HIGH Additional survey work in headwater streams	Species detected in headwaters of Tombigbee drainage (2019, 2020, 2022, 2023).	MEDIUM: Additional survey work in headwater streams
		MEDIUM Plan and conduct species status surveys	Species detected in Big Black River (2021 and 2024).	MEDIUM: Additional survey work in Mississippi River tributaries
		MEDIUM Study life history of species		MEDIUM: Specific research - Study life history of species
Strophitus undulatus	Creeper	HIGH Genetic research to determine relationship between this species, Strophitus subvexus, Strophitus undulatus, and the Strophitus in the upper Pascagoula watershed.	Species detected in Bear Creek (2020), Big Black River (2021) and Sunflower River (2023) with tissue taken from all three populations.	MEDIUM: Plan and conduct species status surveys in Mississippi River tributaries.
		MEDIUM Plan and conduct species status surveys		
Theliderma cylindrica cylindrica	Rabbitsfoot	HIGH Plan and conduct species status surveys	Individuals detected in Bear Creek (2020), Big Black River (2021), and Big Sunflower River (2023). Tissue taken from all three populations.	MEDIUM: Specific research - Investigate habitat preference in Big Black River and Sunflower River. Determine population status within both Big Black River and Sunflower River.
				MEDIUM: Identification of novel populations
Theliderma metanevra	Monkeyface	LOW Plan and conduct species status surveys to determine whether this species still occurs in Mississippi	No individuals collected in Tombigbee drainage post Ten-Tom construction. No individuals detected in Yazoo drainage	LOW: Plan and conduct species status surveys to determine whether this species still occurs in Mississippi.
Theliderma stapes	Stirrupshell	LOW Plan and conduct status surveys to determine whether this species still occurs in Mississippi	Declared Extinct by USFWS.	
Toxolasma lividum	Purple Lilliput		Species detected in Chambers Creek (2023).	MEDIUM: Plan and conduct species status survey
				MEDIUM: Specific research - Determine status and investigate habitat preference in headwaters of Tennessee River drainages.

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Uniomerus declivis	Tapered Pondhorn	HIGH Conduct phylogenetic analysis of genus Uniomerus)	Tissue from Uniomerus sp. taken across the state of Mississippi and given to USGS.	HIGH: Specific research - Determine statewide occurrence via genetic investigations
		MEDIUM Plan and conduct species status surveys	Species detected in Big Sunflower River (2023).	MEDIUM: Plan and conduct species specific status survey in small, headwater systems.
Utterbackiana hartfieldorum	Cypress Floater		Species detected in Pearl River drainage (2021, 2022 and 2023) and Pascagoula River drainage 2024).	LOW: Plan and conduct species status surveys along oxbows of the Pearl and Pascagoula drainages along with other Coastal Rivers.
Villosa vanuxemensis	Mountain Creekshell		Species detected in Bear Creek (2020).	LOW Plan and conduct species status survey
				LOW: Specific research - investigate habitat preference in headwaters of Mississippi.
Amphibians				
Ambystoma texanum	Smallmouth Salamander			MEDIUM: Plan and conduct species status surveys
Ambystoma tigrinum	Tiger Salamander	MEDIUM Additional survey work	A small breeding population was discovered in Northern Mississippi changing the rank from SX to S1.	MEDIUM: Additional survey work during breeding period in habitats in the surrounding area
		MEDIUM Breeding status surveys: need widespread survey for this species during likely breeding period in habitats that support the salamander in neighboring states		
Amphiuma pholeter	One-toed Amphiuma	HIGH Plan and conduct species status surveys	No targeted surveys conducted	HIGH: Plan and conduct species status surveys HIGH: specific research on habitat
Aneides aeneus	Green Salamander	HIGH Plan and conduct species status surveys	Species detected during surveys in Northeastern MS (2021, 2022, 2023)	MEDIUM: continued monitoring of known populations
				MEDIUM: specific research on use of trees for foraging and repro-duction

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
				MEDIUM: Specific research on how rock succession of mosses impacts habitat use
Cryptobranchus alleganiensis	Hellbender	HIGH Plan and conduct species status surveys	Not detected during status surveys (2021, 2022, 2023)	HIGH: Plan and conduct species status surveys in new locality
			Larval individual discovered in a novel location (2022)	
			eDNA surveys in this stream yielded 13 positive hits (2023)	
Desmognathus pascagoula	Pascagoula Dusky Salamander			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research - habitat requirements
Desmognathus valentinei	Valentine's Southern Dusky Salamander			MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research - habitat requirements
Eurycea longicauda longicauda	Longtail Salamander		Species detected during surveys in Northeastern MS (2021, 2022, 2023)	MEDIUM: Plan and conduct species status surveys
				MEDIUM: Specific research - habitat requirements and dependence on rock outcrops
Eurycea lucifuga	Cave Salamander	HIGH Conduct population estimates	Species detected during surveys in northeastern MS (2021, 2022, 2023)	MEDIUM: Continued monitoring of known populations
		HIGH Plan and conduct species status surveys		MEDIUM: Identification of novel locations
Eurycea sphagnicola	Bog Dwarf Salamander			HIGH: Plan and conduct species status surveys
Gyrinophilus porphyriticus	Spring Salamander	HIGH Plan and conduct species status surveys	Species detected during surveys in northeastern MS (2021, 2022, 2023)	MEDIUM: Continued monitoring of known populations
				MEDIUM: Identification of novel locations
Hemidactylium scutatum	Four-toed Salamander	HIGH Plan and conduct species status surveys	No targeted surveys conducted but 2 populations incidentally discovered during Webster's Salamander surveys	MEDIUM: Plan and conduct species status surveys MEDIUM: Specific research - Impacts of dormant season burning
Lithobates areolatus	Crawfish Frog	HIGH Plan and conduct species status surveys (areas species previously reported)	Species detected during surveys in central Mississippi and Black Belt Prairie (2023, 2024, 2025)	MEDIUM: Continued monitoring of known populations MEDIUM: Additional surveys in areas of historic occupancy south of I-20

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Lithobates heckscheri	River Frog	HIGH Additional survey work needed	No targeted surveys	HIGH: Plan and conduct species status surveys
Lithobates sevosus	Dusky Gopher Frog	HIGH Specific research on terrestrial habitat requirements and on perkinson like disease	Head starting efforts have continued and 15-20 ponds have been identified as supporting breeding frogs, though none are thought to be sustainable.	HIGH: Specific research - Determine factors that influence pond success
		HIGH Specific research: supplemental rearing of tadpoles in artificial ponds and release of metamorphs		HIGH: Specific research - Understanding movement and dispersal
		MEDIUM Monitor species population		HIGH: Specific research - Understanding perkinsea parasite and its affects on ponds
				HIGH: Specific research - Determine factors influencing population viability
				MEDIUM:Sspecific research - Determine factors influencing juvenile and adult survival
Necturus maculosus	Common Mudpuppy		No targeted surveys conducted bu 1 individual incidentally discovered during general surveys conducted at Hillside NWR	MEDIUM: Plan and conduct species status surveys
Plethodon ventralis	Southern Zigzag Salamander	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted but 8 populations incidentally discovered during Green Salamander Surveys (2017, 2018, 2019)	MEDIUM: Plan and conduct species status surveys
				MEDIUM: Specific research - Determine impacts of dormant season burning
				MEDIUM: Specific research - Determine impacts on conversion of hardwood/mixed pine-hardwood stands

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Plethodon websteri clade A	Webster's Salamander Clade A	HIGH Plan and conduct species status surveys (map statewide populations)	Yearly monitoring. Inter-ceptor/condui t array system implemented to decrease road mortality of individuals migrating to breeding areas (2023, 2024)	MEDIUM: Additional surveys needed in hardwood habitats with rock outcrops
		MEDIUM Additional survey work particularly on appro-priate soil a cover types east of the Pearl River in central Mississippi		MEDIUM: Specific research - Determine impacts of dormant season burning
Plethodon websteri clade B	Webster's Salamander Clade B	HIGH Plan and conduct species status surveys (map statewide populations)	Range-wide status surveys conducted (2023, 2024)	MEDIUM: Plan and conduct additional species status surveys
		MEDIUM Additional survey work particularly on appro-priate soil a cover types east of the Pearl River in central Mississippi		MEDIUM: Specific research - Determine impacts of dormant season burning
				MEDIUM: Specific research - Determine impacts on conversion of hardwood/mixed pine-hardwood stands
Pseudacris collinsorum	Collinses' Mountain Chorus Frog	HIGH Plan and conduct species status surveys	Species detected during auditory surveys (2023, 2024, 2025)	MEDIUM: Specific research - inves-tigate call phenology and detection rates
Pseudacris ornata	Ornate Chorus Frog	HIGH Additional survey work needed especially at ephemeral pond sites	Surveys have been conducted but only 2 populations are confirmed	HIGH: Plan and conduct additional species status surveys
		HIGH Additional research appropriate to understand species and habitats		HIGH: Specific research - Determine non-breeding season habitat
		MEDIUM Specific research on terrestrial habitat require-ments		MEDIUM: Specific research - Determine impact of disease
Pseudotriton montanus	Mud Salamander		No targeted surveys conducted but incidental observations at Ward Bayou WMR documented	HIGH: Plan and conduct species status surveys
				HIGH: Specific research - Determine impact of habitat conversion from hardwood to pine plantations

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Pseudotriton ruber	Red Salamander	HIGH Plan and conduct species status surveys (map statewide populations)	No targeted surveys conducted but 11 incidental observations documented at Ward Bayou WMR, Ragland Hills, and Lake Thoreau Environmental Center (2019-2024)	HIGH: Plan and conduct species status surveys
			Incidental observations documented in Tishomingo County	HIGH: Specific research - Determine impact of habitat conversion from hardwood to pine plantations
Reptiles				
Coluber flagellum flagellum	Eastern Coachwhip			LOW: Plan and conduct species status surveys
Crotalus adamanteus	Eastern Diamondback Rattle-snake	HIGH Conduct population estimates	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
		MEDIUM Plan and conduct species status surveys		HIGH: Specific research - conduct population estimates
Deirochelys reticularia miaria	Western Chicken Turtle	HIGH Plan and conduct species status surveys	eDNA surveys conducted (2022-2023) at or adjacent to historic localities. No positives detected	MEDIUM: Plan and conduct species status surveys using basking camera arrays on public and private properties
			Surveys ongoing (2025)	
Deirochelys reticularia reticularia	Eastern Chicken Turtle		Opportunistic surveys in Pearl (2018-2020) documented 10 individuals. Incidental obser-vations at 15 sites throughout MS since 2015	MEDIUM: Plan and conduct species status surveys.
Farancia erytrogramma	Rainbow Snake	HIGH Plan and conduct species status surveys	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
		MEDIUM Develop better survey techniques to assay popula-tions		MEDIUM: Specific research - Develop better survey techniques to assess populations
Gopherus polyphemus	Gopher Tortoise		Head starting at Camp Shelby ongoing. Headstarting efforts expanded to Desoto	HIGH: Specific research - Conduct estimates of viable populations

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
			National Forest (2022-present)	
				HIGH: Specific research - Investigate adult movement patterns and distances
				MEDIUM: Specific research - Determine factors influencing nest success/failure
				MEDIUM: Specific research - Investigate genetics and gene flow
Graptemys flavimaculata	Yellow-blotched Map Turtle	HIGH Plan and conduct species status surveys	Status survey in the Pascagoula River system completed (2016)	MEDIUM: Monitor known populations and establish long-term monitoring sites
		HIGH Specific research on causes of low reproductive output.		HIGH: Establish marked population in the lower Escatawpa genetic unit
Graptemys geographica	Common Map Turtle		Small population discovered and surveyed in Northern Mississippi in (2017, 2018)	LOW: Monitor known populations
				LOW: Additional survey work to determine full distribution
Graptemys gibbonsi	Pascagoula Map Turtle	HIGH Plan and conduct species status surveys	No targeted surveys conducted.	HIGH: Plan and conduct species status surveys
			Population genetic study conducted (2020)	
Graptemys nigrinoda	Black-knobbed Map Turtle	HIGH Determine habitat characteristics/ species habitat needs	Rangewide status surveys conducted (2019, 2022, 2023)	MEDIUM: Monitor known populations
		HIGH Conduct population estimates, particularly in Tenn-Tom Waterway.		
		MEDIUM Survey work to determine extent of movement of species upstream in Tenn-Tom Waterway.		

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Graptemys oculifera	Ringed Map Turtle	MEDIUM Continue monitoring five marked populations in the Pearl River	Rangewide status surveys conducted (2022, 2023)	MEDIUM: Monitor known populations at long-term monitoring sites
			Lower Pearl River surveys conducted (2020, 2021)	MEDIUM: Specific research - Collect baseline data on movement patterns, home ranges, and microhabitat use within proposed One Lake project area
			Specific research assessing diet (2023)	
			Habitat assessment surveys conducted (2023, 2024)	
Graptemys pearlensis	Pearl River Map Turtle	HIGH Plan and conduct species status surveys	Rangewide status surveys conducted (2022, 2023)	HGH: Monitor established mark-resight/recapture populations
			Lower Pearl River surveys conducted (2020, 2021)	HIGH: Specific research - document nesting habitat and reproductive output
			Population genetic study conducted (2020)	
			Habitat assessment surveys conducted (2023, 2024)	
			Targeted mark-recapture surveys conducted on Strong River (2023, 2024)	
Graptemys pulchra	Alabama Map Turtle	HIGH Conduct population estimates	Rangewide status surveys conducted (2019, 2022, 2023)	HIGH: Monitor known populations
		HIGH Additional survey work, particularly in Noxubee and Buttahatchee Rivers, in smaller streams of the Tombigbee River watershed, and in the Tenn-Tom Waterway.		MEDIUM: Specific research - determine extent of interdrainage exchange between Tombigbee and Tennessee River systems
		MEDIUM Determine habitat characteristics/ species habitat needs		
Lampropeltis calligaster calligaster	Prairie Kingsnake			MEDIUM: Plan and conduct species status surveys
Lampropeltis calligaster rhombomaculata	Mole Kingsnake	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted	MEDIUM: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Lampropeltis triangulum	Red Milk Snake	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted	MEDIUM: Plan and conduct species status surveys
			Incidental observations documented at Panther Swamp NWR (2022, 2023, 2024)	
Liodytes rigida deltae	Delta Crayfish Snake	HIGH Additional survey work to determine relative distribution of R.R. detae vs R.R. sinicola	No targeted surveys conducted	MEDIUM: Plan and conduct species status surveys
				MEDIUM:
Liodytes rigida sinicola	Gulf Crayfish Snake	HIGH Additional research appropriate to understand species and habitats	No targeted surveys conducted	MEDIUM: Plan and conduct species status surveys
Macrochelys temminckii	Alligator Snapping Turtle	HIGH Plan and conduct species status surveys: abundance, distribution and survival	State-wide surveys conducted (2017, 2018, 2019, 2020)	MEDIUM: Monitor known populations
		HIGH Conduct population estimates	Radio-telemetry survey conducted at	
			Population genetic study (2021)	HIGH: Specific research - Determine impacts of hook ingestion
Malaclemys terrapin pileata	Mississippi Diamondback Terrapin	HIGH Conduct population estimates	Status surveys and nest monitoring (2018)	HIGH: Specific research - Conduct population estimates
				HIGH: Continued monitoring of known populations
				HIGH: Specific research - determine impact of crab traps on terrapin bycatch mortality and population viability
Micrurus fulvius	Eastern Coral Snake	HIGH Additional survey work: more drift fence surveys needed in good habitat to better evaluate likely abundance	No targeted surveys conducted	HIGH: Additional survey work - More drift fence surveys needed in good habitat to better evaluate likely abundance
Nerodia clarkii clarkii	Gulf Salt Marsh Snake	HIGH Plan and conduct species status surveys	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
Ophisaurus attenuatus	Slender Glass Lizard	MEDIUM Additional survey work: need more effective survey method	No targeted surveys conducted	MEDIUM: Additional survey work: need more effective survey method

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Ophisaurus mimicus	Mimic Glass Lizard			HIGH: Plan and conduct species status surveys in pitcher plant bogs
Pituophis melanoleucus lodingi	Black Pine Snake	MEDIUM Plan and conduct species status surveys	Camera trap survey started (2024, ongoing)	MEDIUM: Plan and conduct species status surveys
		MEDIUM Specific research: research needed to determine effects of site preparation and timber harvesting		
Pituophis melanoleucus melanoleucus	Northern Pine Snake	HIGH Plan and conduct species status surveys	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
Plestiodon anthracinus	Coal Skink	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
Pseudemys alabamensis	Alabama Red-bellied Turtle	HIGH Additional research appropriate to understand species and habitats	Status surveys conducted at Old Fort Bayou and historic golf course ponds (2024). Surveys planned on Pascagoula River System and Tchoutacabouffa River System (2025)	HIGH: Continued monitoring of known populations
		HIGH Conduct population estimates	Genetic study revealed genetic differentiation between Alabama and Mississippi, inbreeding, and hybridization (2019)	HIGH: Specific research - Conduct population estimates
		HIGH Plan and conduct species status surveys	Genetic study documenting hybridization across range ongoing (2025)	HIGH: Plan and conduct species status surveys upstream of known collection sites
		HIGH Additional survey work upstream of known collection sites		MEDIUM: Submerged aquatic vegetation mapping within species range
		HIGH Forensics (evaluate causes of death)		MEDIUM: Determine feasibility and effectiveness of captive propogation, head starting, and releasing
Regina septemvittata	Queen Snake	HIGH Additional survey work in small streams for this species	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
				HIGH: Additional survey work in small streams for this species

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Rhadinaea flavilata	Pine Woods Snake	MEDIUM Additional research appropriate to understand species and habitats	No targeted surveys conducted	LOW: Plan and conduct species status surveys
		MEDIUM Plan and conduct species status surveys		
Marine Turtles				
Caretta caretta	Loggerhead Sea Turtle	HIGH Plan and conduct species status surveys	Some nesting surveys conducted on Cat and Ship Islands indicating moderate nesting use on each island	HIGH: Conduct species status surveys
		HIGH Forensics (evaluate causes of death)		HIGH: Collaborate with agencies/ partners to share data on ongoing trends in the state
Chelonia mydas	Green Sea Turtle			HIGH: Conduct species status surveys
				HIGH: Collaborate with agencies/ partners to share data on ongoing trends in the state
Dermochelys coriacea	Atlantic Leatherback Sea Turtle	HIGH Forensics (evaluate causes of death)	No targeted surveys conducted	HIGH: Conduct species status surveys
		HIGH Additional survey work: identify nesting sites		HIGH: Collaborate with agencies/ partners to share data on ongoing trends in the state
Eretmochelys imbricata	Hawksbill Sea Turtle			HIGH: Conduct species status surveys
				HIGH: Collaborate with agencies/ partners to share data on ongoing trends in the state
Lepidochelys kempii	Kemp's Ridley Sea Turtle	HIGH Forensics (evaluate causes of death	Some nesting surveys conducted on Cat and Ship Islands indicating moderate nesting use on each island	HIGH: Conduct species status surveys
		HIGH Plan and conduct species status surveys	Aerial surveys to be conducted on Petit Bois and Horn Island in 2025	HIGH: Collaborate with agencies/ partners to share data on ongoing trends in the state
		HIGH Determine in shore habitat requirements and frequency of occurrence in those habitats		

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Birds				
Accipiter striatus	Sharp-shinned Hawk (breeding population)			MEDIUM: Plan and conduct species status surveys
Ammodramus savannarum	Grasshopper Sparrow	HIGH Specific research: relationship of field border management to birds during breeding season	Nonbreeding surveys in pine savannah (2021, 2022, 2023)	MEDIUM: Plan and conduct species status surveys
		MEDIUM Plan and conduct species status surveys		
Ammospiza leconteii	LeConte's Sparrow	MEDIUM Plan and conduct species status surveys	Nonbreeding surveys in pine savannah (2021, 2022, 2023)	MEDIUM: Continue species status surveys and expand to other habitats
Ammospiza maritima	Seaside Sparrow	HIGH Plan and conduct species status surveys	Nonbreeding surveys in coastal marshes (2018, 2019, 2020)	HIGH: Continue species status surveys
Ammospiza nelsoni	Nelson's Sparrow	MEDIUM Plan and conduct species status surveys	Nonbreeding surveys in coastal marshes (2018, 2019, 2020)	HIGH: Continue species status surveys
Anas acuta	Northern Pintail			LOW: Plan and conduct species status surveys
Anas fulvigula	Mottled Duck	HIGH Plan and conduct species status surveys	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
		HIGH Specific research on habitat use, reproduction, movement in Mississippi		
Antigone canadensis pulla	Mississippi Sandhill Crane	HIGH Additional research appropriate to understand species and habitats (continue on-going research)	Annual nest monitoring. Behavioral studies to determine methods to increase nesting success and survival	HIGH: Continue populaion and nest monitoring
		HIGH Study reintroduction techniques that improve reproductive success		LOW: Plan and conduct species status surveys
Antrostomus carolinensis	Chuck-will's-wid ow			LOW: Plan and conduct species status surveys
Antrostomus vociferus	Eastern Whip-poor-will			HIGH: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Aquila chrysaetos	Golden Eagle			MEDIUM: Plan and conduct species status surveys
Asio flammeus	Short-eared Owl	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted	LOW: Plan and conduct species status surveys
		MEDIUM Determine quantity, condition and context of suitable habitat		
Aythya affinis	Lesser Scaup			LOW: Plan and conduct species status surveys
Botaurus lentiginosus	American Bittern			MEDIUM: Plan and conduct species status surveys
Calidris canutus	Red Knot		Surveys conducted on MS barrier islands and mainland beaches	HIGH: Plan and conduct species status surveys
				HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration
Calidris melanotos	Pectoral Sandpiper			LOW: Plan and conduct species status surveys
				HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration
Calidris pusilla	Semipalmated Sandpiper			LOW: Plan and conduct species status surveys
				HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration
Calidris subruficollis	Buff-breasted Sandpiper			MEDIUM: Plan and conduct species status surveys
				HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration
Campephilus principalis	Ivory-billed Woodpecker	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted	LOW: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Centronyx henslowii	Henslow's Sparrow	HIGH Plan and conduct species status surveys	Nonbreeding surveys in pine savannah (2021, 2022, 2023)	HIGH: Continue species status surveys
Chaetura pelagica	Chimney Swift			MEDIUM: Plan and conduct species status surveys (migration roost surveys)
Charadrius melodus	Piping Plover	HIGH Determine quantity, condition and context of suitable habitat	Regular multi-year coast-wide surveys	HIGH: Continue species status surveys
		HIGH Plan and conduct species status surveys	Surveys conducted on MS barrier islands	HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration
Charadrius nivosus	Snowy Plover	HIGH Plan and conduct species status surveys	Regular multi-year coast-wide surveys	HIGH: Continue species status surveys
				HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration
Charadrius wilsonia	Wilson's Plover	HIGH Plan and conduct species status surveys	Regular multi-year coast-wide surveys	HIGH: Continue species status surveys
		HIGH Studies of reproduction and survival	Studies on effects of research activities and predators on nest success (2018, 2019, 2020, 2021, 2022)	
Chlidonias niger	Black Tern			LOW: Plan and conduct species status surveys
Chordeiles minor	Common Nighthawk			LOW: Plan and conduct species status surveys
Cistothorus palustris marianae	Marian's Marsh Wren			MEDIUM: Plan and conduct species status surveys
Coccyzus americanus	Yellow-billed Cuckoo			LOW: Plan and conduct species status surveys
Colinus virginianus	Northern Bobwhite	HIGH Plan and conduct species status surveys	Quail call-count surveys conducted on selected WMAs (2020, 2021, 2022, 2023, 2024)	MEDIUM: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
			Annual state-wide breeding bird survey	
Columbina passerina	Common Ground Dove	HIGH Plan and conduct species status surveys	Annual state-wide breeding bird survey	LOW: Plan and conduct species status surveys
Coturnicops noveboracensis	Yellow Rail			MEDIUM: Plan and conduct species status surveys
Dryobates borealis	Red-cockaded Woodpecker			HIGH: Plan and conduct species status surveys
Egretta caerulea	Little Blue Heron	HIGH Plan and conduct species status surveys	No targeted surveys conducted	MEDIUM: Plan and conduct species status surveys
		MEDIUM Determine quantity, condition and context of suitable habitat (colonial waterbird nesting sites)		
Egretta rufescens	Reddish Egret	HIGH Plan and conduct species status surveys	Regular multi-year coast-wide surveys	MEDIUM: Continue species status surveys
Egretta tricolor	Tricolored Heron			LOW: Plan and conduct species status surveys
Elanoides forficatus	Swallow-tailed Kite	HIGH Plan and conduct species status surveys	6 years of surveys for activity centers (nests, premigration roosts) focused on expanded range in central Mississippi (2015, 2016, 2017, 2019, 2020, 2021)	HIGH: Continue species status surveys
			Annual solicitation of observations statewide	
Eudocimus albus	White Ibis	MEDIUM Plan and conduct species status surveys	Removed from list due to not meeting SEAFWA criteria	
Euphagus carolinus	Rusty Blackbird			MEDIUM: Plan and conduct species status surveys
Falco peregrinus	Peregrine Falcon	MEDIUM Plan and conduct species status surveys	Species removed from federal list and changed to S4N	

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Falco sparverius paulus	Southeastern American Kestrel	HIGH Plan and conduct species status surveys	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
Gelochelidon nilotica	Gull-billed Tern	HIGH Plan and conduct species status surveys	Regular multi-year coast-wide surveys	HIGH: Continue species status surveys
Geothlypis formosa	Kentucky Warbler			LOW: Plan and conduct species status surveys
Haematopus palliatus	American Oystercatcher	MEDIUM Plan and conduct species status surveys	Regular multi-year coast-wide surveys	HIGH: Continue species status surveys
Haliaeetus leucocephalus	Bald Eagle	MEDIUM Breeding status surveys	Annual solicitation of nest locations statewide	
		LOW Plan and conduct species status surveys during midwinter		
Helmitheros vermivorum	Worm-eating Warbler	MEDIUM Plan and conduct species status surveys	Annual state-wide breeding bird survey	MEDIUM: Plan and conduct species status surveys
Hylocichla mustelina	Wood Thrush			LOW: Plan and conduct species status surveys
Ixobrychus exilis	Least Bittern			MEDIUM: Plan and conduct species status surveys
Lanius ludovicianus ludovicianus	Loggerhead Shrike			MEDIUM: Plan and conduct species status surveys
Lanius ludovicianus migrans	Migrant Loggerhead Shrike			LOW: Plan and conduct species status surveys
Laterallus jamaicensis	Black Rail	HIGH Plan and conduct species status surveys	Coastal breeding and wintering surveys (2021, 2022)	HIGH: Continue species status surveys
Limnodromus griseus	Short-billed Dowitcher			LOW: Plan and conduct species status surveys
				HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Limnothlypis swainsonii	Swainson's Warbler	HIGH Plan and conduct species status surveys	Annual state-wide breeding bird survey	MEDIUM: Plan and conduct species status surveys
Limosa fedoa	Marbled Godwit			MEDIUM: Plan and conduct species status surveys
Melanerpes erythrocephalus	Red-headed Woodpecker	LOW Plan and conduct species status surveys	Annual state-wide breeding bird survey	LOW: Plan and conduct species status surveys
Mycteria americana	Wood Stork	MEDIUM Plan and conduct species status surveys	No targeted surveys conducted	MEDIUM: Plan and conduct species status surveys
Nyctanassa violacea	Yellow-crowned Night-Heron			LOW: Plan and conduct species status surveys
Nycticorax nycticorax	Black-crowned Night-Heron			LOW: Plan and conduct species status surveys
Pandion haliaetus	Osprey	MEDIUM Breeding status surveys to asses numbers and distribution of breeding ospreys	Removed from list due to not meeting SEAFWA criteria and changed to S3	
Parkesia motacilla	Louisiana Waterthrush			MEDIUM: Plan and conduct species status surveys
Passerina ciris	Painted Bunting	MEDIUM Determine quantity, condition and context of suitable habitat	Annual state-wide breeding bird survey	MEDIUM: Plan and conduct species status surveys
		MEDIUM Plan and conduct species status surveys		
Pelecanus occidentalis	Brown Pelican	MEDIUM Determine where Mississippi birds come from and breed	Regular multi-year coast-wide surveys	
		MEDIUM Plan and conduct species status surveys		
Peucaea aestivalis	Bachman's Sparrow	HIGH Plan and conduct species status surveys	Nonbreeding surveys in pine savannah (2021, 2022, 2023)	MEDIUM: Continue species status surveys
Piranga olivacea	Scarlet Tanager (breeding population)	LOW Plan and conduct species status surveys	Annual state-wide breeding bird survey	LOW: Plan and conduct species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Platalea ajaja	Roseate Spoonbill			MEDIUM: Plan and conduct species status surveys
Pluvialis dominica	American Golden-Plover			LOW: Plan and conduct species status surveys
				HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration
Porphyrio martinicus	Purple Gallinule			LOW: Plan and conduct species status surveys
Protonotaria citrea	Prothonotary Warbler			LOW: Plan and conduct species status surveys
Quiscalus quiscula	Common Grackle			LOW: Plan and conduct species status surveys
Rallus elegans	King Rail	HIGH Plan and conduct species status surveys	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
Riparia riparia	Bank Swallow (breeding population)			MEDIUM: Plan and conduct species status surveys
Rynchops niger	Black Skimmer	HIGH Plan and conduct species status surveys	Regular multi-year coast-wide surveys	HIGH: Continue species status surveys
		HIGH Baseline research on reproduction, survival and movement in Mississippi		
Scolopax minor	American Woodcock			LOW: Plan and conduct species status surveys
Seiurus aurocapilla	Ovenbird (breeding population)			MEDIUM: Plan and conduct species status surveys
Setophaga cerulea	Cerulean Warbler	MEDIUM Plan and conduct species status surveys	Annual state-wide breeding bird survey	MEDIUM: Plan and conduct species status surveys
		HIGH Determine quantity, condition and context of suitable habitat		

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Setophaga discolor	Prairie Warbler	MEDIUM Plan and conduct species status surveys	Annual state-wide breeding bird survey	LOW: Plan and conduct species status surveys
Sitta pusilla	Brown-headed Nuthatch	MEDIUM Plan and conduct species status surveys	Annual state-wide breeding bird survey	LOW: Plan and conduct species status surveys
Spizella pusilla	Field Sparrow			LOW: Plan and conduct species status surveys
Sterna hirundo	Common Tern (breeding population)			HIGH: Plan and conduct species status surveys
Sternula antillarum antillarum	Coastal Least Tern	HIGH Determine quantity, condition and context of suitable habitat	Regular multi-year monitoring with individual birds being radio-tagged	HIGH: Continue species status surveys
		HIGH Additional survey work: demography study of mainland and island colonies		
		HIGH Breeding status surveys: information on reproduction, movements and survival in Mississippi		
		HIGH Plan and conduct species status surveys	Regular multi-year coast-wide surveys	
Sternula antillarum athalassos	Interior Least Tern	HIGH Determine quantity, condition and context of suitable habitat	No targeted surveys conducted	MEDIUM: Plan and conduct species status surveys
		HIGH Specific research: effects of flow management on connectivity of sandbars to mainland		
		HIGH Plan and conduct species status surveys		
		HIGH Specific research on reproduction, movement and survival in Mississippi		
Sturnella magna	Eastern Meadowlark			MEDIUM: Plan and conduct species status surveys
Thalasseus maximus	Royal Tern	HIGH Plan and conduct species status surveys	Regular multi-year coast-wide surveys	MEDIUM: Continue species status surveys

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Thalasseus sandvicensis	Sandwich Tern			HIGH: Plan and conduct species status surveys
Thryomanes bewickii	Bewick's Wren	MEDIUM Determine quantity, condition and context of suitable habitat (monitor nests and identify food brought to young, nest success, cowbird susceptibility)	No targeted surveys conducted	HIGH: Plan and conduct species status surveys
		HIGH Plan and conduct species status surveys		
Tringa flavipes	Lesser Yellowlegs			LOW: Plan and conduct species status surveys
				HIGH: Specific research - radio and GPS tracking studies to estimate local movements, habitat use, and stopover duration
Tringa semipalmata	Willet			LOW: Plan and conduct species status surveys
Vermivora chrysoptera	Golden-winged Warbler			HIGH: Plan and conduct species status surveys
Vireo gilvus	Warbling Vireo			MEDIUM: Plan and conduct species status surveys
Mammals				
Lasiurus cinereus	Hoary Bat			HIGH: Statewide acoustic surveys to detect this high flying species
				HIGH: Plan and conduct species status surveys
Bison bison	American Bison			

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Canis rufus	Red Wolf			
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	HIGH Additional research appropriate to understand species and habitats	Surveys have been conducted to monitor use in anthro-pogenic structures (2015-ongoing)	MEDIUM: Continue monitoring of known roost sites
		HIGH Plan and conduct species status surveys especially in northern and coastal regions of state		HIGH: Plan and conduct species status surveys in areas unknown in bottomland hardwood forests
		HIGH Specific research: additional research on forest management compatibility		HIGH: Specific research -Additional research on forest management compatibility
Lasiurus intermedius	Northern Yellow Bat	HIGH Additional research appropriate to understand species and habitats	Species has been redis-covered in the state for the first time in 81 years. (2018)	HIGH: Continue monitoring coastal populations
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct species state surveys along Mississippi River
		HIGH Specific research (e.g. effects of pesticides on populations of prey)		
Lasionycteris noctivagans	Silver-haired Bat	HIGH Additional research appropriate to understand species and habitats	Species has been redis-covered in the state for the first time in 34 years (2020)	HIGH: Plan and conduct acoustic surveys year round to determine presences in state
		HIGH Plan and conduct species status surveys including fall and winter surveys		MEDIUM: Plan and conduct winter status surveys
		MEDIUM Specific research (e.g.., extent of migration through MS and habitats used)		
		MEDIUM Breeding status surveys		

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Myotis austroriparius	Southeastern Myotis	HIGH Additional research appropriate to understand species and habitats	Extensive surveys have been conducted to determine species status in the state year round. Numerous maternity and hibernacula have been discovered.	MEDIUM: Continue monitoring of known roost sites
		HIGH Plan and conduct species status surveys		MEDIUM: Specific research - Conduct research on forest management compatibility
Myotis grisescens	Gray Bat	HIGH Additional research appropriate to understand species and habitats	Extensive surveys have been conducted to determine species status and trends. New roost was discovered.	HIGH: Continue monitor of known population
		HIGH Plan and conduct species status surveys		HIGH: Collorbate with neighboring states to monitor migration to and from nearby roosts
Myotis lucifugus	Little Brown Bat	HIGH Additional research appropriate to understand species and habitats	Based upon voucher specimens, all records of this species was determined to be misidentifications. No confirmed record of this species in the state exists.	
		HIGH Plan and conduct species status surveys		
Myotis septentrionalis	Northern Long-eared Bat	HIGH Additional research appropriate to understand species and habitats	Extensive surveys have been conducted and located over 40 new roost locations.	HIGH: Collorbate with neighboring states to monitor migration to and from nearby roosts
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct acoustic surveys statewide
				HIGH: Continue monitoring known populations
Myotis sodalis	Indiana Bat	HIGH Additional research appropriate to understand species and habitats	Extensive species status surveys have been conducted (2015-ongoing)	HIGH: Continue monitoring known populations
		MEDIUM Plan and conduct species status surveys		HIGH: Plan and conduct acoustic surveys in northern region of state
Neogale frenata	Long-tailed Weasel	HIGH Plan and conduct species status surveys	Long-term passive sampling has been conducted for this species	MEDIUM: Continue to conduct species status surveys
Perimyotis subflavus	Tricolored Bat			HIGH: Specific research - Conduct research on forest management compatibility
				HIGH: Continue monitoring impacts of white-nose syndrome

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Peromyscus polionotus	Oldfield Mouse	HIGH Additional research appropriate to understand species and habitats	Species status surveys throughout range completed (2024)	HIGH: Plan and conduct species status surveys in extirpated range
		HIGH Plan and conduct species status surveys		HIGH: Plan and conduct surveys to determine threats causing population loss
Puma concolor coryi	Florida Panther			
Sorex longirostris	Southeastern Shrew			MEDIUM: Plan and conduct species status surveys
				MEDIUM: Specific research - Determine habitat requirements
Spilogale putorius	Eastern Spotted Skunk	HIGH Status surveys	Long-term passive sampling has been conducted for this species	HIGH: Specific research - Conduct research on forest management compatibility
				HIGH: Continue monitoring known populations
Ursus americanus	Black Bear	HIGH Additional research appropriate to understand species and habitats	Long-term telemetry projects have been conducted to monitor individual movements, habitat use, and location of den sites by breeding females.	HIGH: Continue to monitor breeding populations
		HIGH Plan and conduct species status surveys		
Ursus americanus luteolus	Louisiana Black Bear	HIGH Additional research appropriate to understand species and habitats	Long-term telemetry projects have been conducted to monitor individual movements, habitat use, and location of den sites by breeding females.	HIGH: Continue to monitor breeding populations
		HIGH Plan and conduct species status surveys		

Species	Common Name	2015 Research need	2025 Update	2025-2035 recommendations
Zapus hudsonius	Meadow Jumping Mouse	HIGH Additional research appropriate to understand species and habitats	A species status survey completed (2022)	HIGH: Plan and conduct more species status surveys
		HIGH Plan and conduct species status surveys		
Marine Mammals				
Balaenoptera ricei	Rice's Whale			HIGH: Plan and conduct species status surveys
Eubalaena glacialis	North American Right Whale			HIGH: Plan and conduct species status surveys
Feresa attenuata	Pygmy Killer Whale			HIGH: Plan and conduct species status surveys
Globicephala macrorhynchus	Short-finned Pilot Whale			HIGH: Plan and conduct species status surveys
Physeter macrocephalus	Sperm Whale			HIGH: Plan and conduct species status surveys
Trichechus manatus	West Indian Manatee		Regular monitoring efforts	HIGH: Plan and conduct species status surveys
				HIGH: Plan and conduct species status surveys