

Federally Endangered, Threatened, and Candidate Species in Mississippi

MAMMALS

Gray Bat

The endangered gray bat (*Myotis grisescens*) is a historical resident of Tishomingo County. They are the only listed bat species in Mississippi that roosts year round in caves. Activities that impact caves or suitable mines could adversely affect this species. Protection measures for the gray bat include preventing human entry into caves with hibernating or maternity gray bat colonies by installing bat friendly gates and establishing a buffer of undisturbed vegetation around bat caves.

County: Tishomingo

Indiana Bat

The endangered Indiana bat (*Myotis sodalis*) is a migratory bat that hibernates in caves and abandoned mines in the winter, then migrates to wooded areas (roost sites) in the spring to bear and raise their young over the summer. Reproductive females occupy roost sites under the exfoliating bark of large, often dead, trees. Roost trees are typically within canopy gaps in the forest where the primary roost tree receives direct sunlight for more than half the day. Habitats include riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. A significant threat to the survival and recovery of Indiana bats in Mississippi is the destruction of maternity and foraging habitats; therefore, we recommend that all tree removal activities in areas supporting Indiana bat habitat take place in the non-maternity season (September 1st – May 14th).

Counties: Alcorn, Benton, Marshall, Prentiss, Tippah, and Tishomingo

Northern Long-eared Bat

The northern long-eared bat (*Myotis septentrionalis*) (NLEB) was listed as threatened on May 4th, 2015. The NLEB is a migratory bat that hibernates in caves, mines, and occasionally culverts and migrates to wooded areas to raise young over the summer. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live trees and snags (dead trees). NLEB seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices.

A final 4(d) rule was published in 2016 exempting incidental take of otherwise legal actions related to tree clearing, except when tree removal occurs within a hibernacula site or when tree removal activities: 1) occur within a quarter-mile of a known hibernacula; or 2) cut or destroy known occupied maternity roost trees, or any other trees within 150 feet of that maternity roost tree during the pup-rearing season (June 1–July 31). Currently, there are no known maternity roost trees in the state of Mississippi and one known hibernaculum located in Tishomingo County near Pickwick Lake.

If tree clearing is not proposed then the Service has determined the proposed project will have “no effect” on NLEB. If tree clearing is proposed, then this project “may affect” the NLEB. If this project is federally funded or requires a federal permit, then we encourage the lead federal agency or its designated non-federal representative to rely upon the findings of the 2016 programmatic biological opinion for the final 4(d) rule to fulfill their project-specific section 7 responsibilities. A federal agency or its designated non-federal representative may use the NLEB 4(d) Rule Streamlined Consultation Form (<https://www.fws.gov/midwest/endangered/mammals/nleb/pdf/StreamlinedConsultationForm29Feb2016.docx>) to notify the Service that it proposes an action that may rely on the 4(d) rule biological opinion. If this is a non-federal activity, then incidental take from tree removal is not prohibited and no permits or further coordination is required with the Service.

Counties: Alcorn, Attala, Benton, Bolivar, Calhoun, Carroll, Chickasaw, Choctaw, Clay, Coahoma, Desoto, Grenada, Hinds, Holmes, Humphreys, Issaquena, Itawamba, Kemper, Lafayette, Lauderdale, Leake, Lee, Leflore, Lowndes, Madison, Marshall, Monroe, Montgomery, Neshoba, Newton, Noxubee, Oktibbeha, Panola, Pontotoc, Prentiss, Quitman, Rankin, Scott, Sharkey, Sunflower, Tallahatchie, Tate, Tippah, Tishomingo, Tunica, Union, Warren, Washington, Webster, Winston, Yalobusha, and Yazoo.

West Indian Manatee

The threatened West Indian manatee (*Trichechus manatus*) is an aquatic mammal that occurs in rivers, estuaries, and coastal areas of the Gulf of Mexico. Manatees have large, seal-shaped bodies with paired flippers and a round, paddle-shaped tail. Most manatee sightings in Mississippi occur in tidal rivers such as the Pascagoula and Jordan Rivers. Manatees have also been spotted in Biloxi Bay, Bay St. Louis, and near shore in the Gulf of Mexico. Most of the sightings in Mississippi occur during the months of June through November; however, winter sightings do occur.

Counties: Hancock, Harrison, and Jackson

BIRDS

Bald Eagle

Although the bald eagle (*Haliaeetus leucocephalus*) was officially removed from the List of Endangered and Threatened Species as of August 8, 2007, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (BGEPA). Bald eagles nest in Mississippi from December through mid-May in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water. Nest sites typically include at least one perch with a clear view of the water or area where the eagles usually forage. Bald eagles are vulnerable to disturbance during courtship, nest building, egg laying, incubation, and brooding. The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations regarding how to minimize potential project impacts to bald eagles, particularly where such impacts may constitute “disturbance,” which is prohibited by the BGEPA. A copy of the NBEM Guidelines is available at <https://catalog.data.gov/dataset/national-bald-eagle-management-guidelines>.

Counties: All

Eastern Black Rail

The eastern black rail (*Laterallus jamaicensis jamaicensis*) was proposed for listing as a threatened species under the ESA on October 9, 2018. The eastern black rail is a small, secretive marsh dependent bird. One of four subspecies of black rails, it occurs in 36 states and multiple territories along the U.S. Atlantic and Gulf coasts, in the U.S. interior east of the Rocky Mountains, and in Mexico, Central America, and the Caribbean. Although historically uncommon in Mississippi, the species may be found in coastal marshes during the winter months (i.e., non-nesting season). While it can be found in salt, brackish, and freshwater marshes, it has a very specific niche habitat, requiring dense herbaceous vegetation (i.e. rushes, grasses, sedges) to provide shelter and cover.

Counties: Hancock, Harrison, Jackson

Interior Least Tern

The endangered interior least tern (*Sterna antillarum*) is a migratory shorebird that breeds, nests, and rears its young on sparsely or non-vegetated portions of sand or gravel bars located mid-stream or along the shoreline in the Mississippi, Missouri, Arkansas, Ohio, Red and Rio Grande river systems and the rivers of central Texas. On the lower Mississippi River, the interior least tern is a common summer resident between Cairo, Illinois, and Baton Rouge, Louisiana. The breeding season for terns is approximately May through July. Avoidance of non-vegetated islands or point bars during the breeding season would prevent adverse impacts to this species.

Counties: Adams, Bolivar, Claiborne, Coahoma, DeSoto, Issaquena, Jefferson, Tunica, Warren, Washington, and Wilkinson

Mississippi Sandhill Crane

The endangered Mississippi sandhill crane (*Grus canadensis pulla*) is found only in Jackson County. Critical habitat has been designated for the species on and adjacent to the Mississippi Sandhill Crane National Wildlife Refuge. Primary habitat for the cranes is wet pine savanna grasslands with scattered longleaf pine, slash pine, and pond cypress. Crane nests are typically laid in an open area of grasses and sedges with perennial shallow water, but they may also nest in swamp or marsh edges. During fall, winter, and early spring, the cranes will feed in small corn and chufa fields and in pastures. Increasing commercial, industrial and residential development in the area surrounding the refuge is limiting the availability of off-refuge habitat for the crane and limiting the ability of the refuge to manage crane habitat through the use of prescribed burning. Because the cranes fly between nesting, foraging, and roosting areas that may be off-refuge or between refuge units, the increase in off-refuge motorized vehicular traffic increases the likelihood that a crane will be hit and killed.

County: Jackson

Piping Plover

The threatened piping plover (*Charadrius melodus*) is a small shorebird approximately seven inches long with sand-colored plumage on their backs and crown and white underparts. The piping plover breeds from central Canada south to Nebraska and Iowa, east along the Great Lakes and Newfoundland, and south along the Atlantic Coast to Virginia. Plovers depart for the wintering grounds from mid-July through late October. Breeding and wintering plovers feed on exposed wet sand in wash zones; intertidal ocean beach; wrack lines; washover passes; mud-, sand-, and algal flats; and shorelines of streams, ephemeral ponds, lagoons, and salt marshes by probing for invertebrates at or just below the surface. They use beaches adjacent to foraging areas for roosting and preening. Small sand dunes, debris, and sparse vegetation within adjacent beaches provide shelter from wind and extreme temperatures. The piping plover does not nest in Mississippi but winters along the coastal beaches and barrier islands. Critical habitat has been designated along many sand beach areas along the Mississippi Gulf Coast. Major threats to this species along the Gulf of Mexico include the loss and degradation of beach habitat due to erosion and shoreline stabilization development, disturbance by humans and pets, and predation.

Counties: Hancock, Harrison, and Jackson

Red-cockaded Woodpecker

The endangered red-cockaded woodpecker (*Picoides borealis*) excavates nesting cavities in mature pine trees (60+ years old). A mated pair of birds and all helper birds forms a group. A collection of cavity trees where the group nests and roosts is called a cluster. All cavity trees, active and inactive, are important to the group and should therefore be avoided. In addition, older (30+ years) pine stands within a half-mile of a colony should be considered suitable or potentially suitable foraging habitats and should not be adversely impacted without additional foraging habitat analysis.

Counties: Adams, Amite, Choctaw, Copiah, Forrest, Franklin, George, Greene, Harrison, Jackson, Jasper, Jefferson, Jones, Lincoln, Newton, Noxubee, Oktibbeha, Pearl River, Perry, Scott, Smith, Stone, Wayne, Wilkinson, and Winston

Red Knot

The red knot (*Calidris canutus rufa*), a threatened species, is a medium-sized shorebird about 9 to 11 inches in length with a proportionately small head, small eyes, short neck, and short legs. The red knot can be found in Mississippi during the winter months (generally October through March). In the southeastern United States, red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks. Observations along the Texas coast indicate that red knots forage on beaches, oyster reefs, and exposed bay bottoms and roost on high sand flats, reefs, and other sites protected from high tides. In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Coquina clams (*Donax variabilis*), a frequent and often important food resource for red knots, are common along many gulf beaches. Major threats to this species along the Gulf of Mexico include the loss and degradation of habitat due to erosion and shoreline stabilization development, disturbance by humans and pets, and predation.

Counties: Hancock, Harrison, and Jackson

Wood Stork

Wood storks (*Mycteria americana*) are large, long-legged wading birds, about 50 inches tall, with a wingspan of 60-65 inches. The plumage is white except for black primaries and secondaries and a short black tail. The head and neck are largely unfeathered and dark gray in color. Two distinct populations of wood storks occur in the United States. One population breeds in Florida, Georgia, and South Carolina, and is federally protected (threatened). The other population breeds from Mexico to northern Argentina and is not federally protected. Wood storks from each of these populations occur seasonally in Mississippi during the non-breeding season (May-October) and are not distinguishable from one another. The major threat to this species is a reduction in food base (primarily small fish) due to habitat loss, modification, and fragmentation. Typical foraging sites include freshwater marshes, swales, ponds, hardwood and cypress swamps, narrow tidal creeks or shallow tidal pools, and artificial wetlands (such as stock ponds; shallow, seasonally flooded roadside or agricultural ditches; and impoundments).

Counties: All

FISH

Bayou Darter

The threatened bayou darter (*Etheostoma rubrum*) is found only in the Bayou Pierre River and its tributaries: White Oak Creek, Foster Creek, and Turkey Creek. The darter prefers stable gravel riffles or sandstone exposures with large sized gravel or rock. Habitat loss or degradation has been a major contributor to the reduction in bayou darter numbers. Historical in-stream-bed gravel mining has caused various head-cuts throughout the last 50 years. Along with severe erosion rates from adjacent farm fields and bankside collapse, the river is becoming more shallow and wider. Tributaries are less impacted but also have various threats such as gravel mining, stream fords, ATV traffic and non-point and point source pollution.

Counties: Claiborne, Copiah, Hinds, and Lincoln

Gulf Sturgeon

The threatened Atlantic sturgeon, Gulf subspecies (*Acipenser oxyrinchus (=oxyrhynchus) desotoi*) is found in the coastal rivers of the northeastern Gulf of Mexico generally from Lake Pontchartrain in Louisiana to the Suwanee River in Florida. Critical habitat has been designated for the species in Mississippi to include portions of the Bogue Chitto, Bouie, Chickasawhay, Leaf, Pascagoula and Pearl Rivers and the Gulf of Mexico. Gulf sturgeons are primitive, anadromous fish that annually migrate from the Gulf of Mexico into freshwater streams to spawn. Subadults and adults spend eight to nine months each year in rivers. Adult and subadult holding areas have been identified in the Pascagoula River. The decline of the Gulf sturgeon is primarily due to limited access to riverine migration routes and historic spawning areas, habitat modification, and water quality degradation.

Counties: Clarke, Copiah, Forrest, George, Greene, Hancock, Harrison, Hinds, Jackson, Jones, Lawrence, Marion, Pearl River, Perry, Pike, Rankin, Simpson, Walthall, and Wayne

Pallid Sturgeon

The endangered pallid sturgeon (*Scaphirhynchus albus*) is found throughout the lower Mississippi River. These fish require large, turbid, free-flowing riverine habitats, and feed on aquatic invertebrates and small fish. They are usually found near the bottom of rivers on sand flats or gravel bars. Little information is known on spawning or migration habits of these fish, although spawning likely occurs in the spring and summer months. Pallid sturgeon may be entrained into water intake structures or by dredging.

Counties: Adams, Bolivar, Claiborne, Coahoma, DeSoto, Issaquena, Jefferson, Tunica, Warren, Washington, and Wilkinson

Pearl Darter

The threatened pearl darter (*Percina aurora*) was historically found in the Pearl and Pascagoula River systems. However, it is currently found only in the Pascagoula River system. The darter prefers stable gravel riffles or sandstone exposures with large sized gravel or rock. The pearl darter is vulnerable to non-point source pollution, urbanization, and changes in river geomorphology due to its localized distribution within one river drainage and its apparent low population sizes.

Counties: Clarke, Covington, Forrest, George, Greene, Jackson, Jones, Lauderdale, Newton, Perry, Stone, and Wayne

Snail Darter

The threatened snail darter (*Percina tanasi*) was recently (2015) discovered within Bear Creek in Tishomingo County. The previous distribution included the upper Tennessee River drainage of eastern Tennessee, northern Georgia, and Alabama. Snail darters inhabit gravel or sandy shoals in large creeks and rivers with low degrees of turbidity or siltation. Threats to this species include non-sustainable agricultural practices, environmental contamination and pollution, pesticides, channel modification, habitat inundation (reservoirs), and siltation.

County: Tishomingo

REPTILES

Alabama Red-bellied Turtle

The endangered Alabama red-bellied turtle (*Pseudemys alabamensis*) is found in the lower Pascagoula River and its tributaries and bayous: Bayou Chemise, Bluff Lake, Dead River, Escatawpa River, Farragut Lake, John's Bayou, King's Bayou, Little Bear Bayou, Mary Walker Bayou, Page Bayou, and Sioux Bayou. It is also found in the Back Bay of Biloxi, Bayou Cassotte, Bayou Cumbest, Biloxi River, Old Fort Bayou, and the Tchoutacabouffa River. Destruction of nesting areas along riverbanks; degradation of submerged aquatic vegetation feeding areas; and reduced water quality have impacted this species.

Counties: Harrison and Jackson

Black Pinesnake

The threatened black pinesnake (*Pituophis melanoleucus lodingi*) prefers uplands with well-drained, sandy soils in pine-dominated forests, particularly longleaf pine. Using prescribed fire and other beneficial practices to maintain an open-canopied forest with abundant herbaceous groundcover is essential to maintain prey base and basking opportunities; additionally, leaving stumps intact during forestry activities is important so they may naturally burn or rot out and provide the root system refugia that pinesnakes utilize. Critical habitat is proposed for Forrest, George, Greene, Harrison, Jones, Marion, Perry, Stone, and Wayne Counties.

Counties: Covington, Forrest, George, Greene, Hancock, Harrison, Jackson, Jefferson Davis, Jones, Lamar, Lawrence, Marion, Pearl River, Perry, Stone, and Wayne

Green, Hawksbill, Kemp's Ridley, Leatherback, and Loggerhead Sea Turtles

There are five species of federally protected sea turtles that inhabit the Gulf of Mexico waters along the Mississippi coast: the leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), green (*Chelonia mydas*), hawksbill (*Chelonia mydas*) and Kemp's ridley (*Lepidochelys kempii*). Although these are predominantly marine animals, they can come ashore to nest on barrier island and mainland beaches. Currently, only the loggerhead is known to nest in Mississippi. Mortality due to fishing nets and trawls, ingestion of inedible objects, and nest predation has reduced these species numbers. Critical habitat for the loggerhead includes Horn and Petit Bois Islands in Jackson County.

Counties: Hancock, Harrison, and Jackson

Gopher Tortoise

The threatened gopher tortoise (*Gopherus polyphemus*) occupies a wide range of upland habitat types; most frequently the longleaf pine ecosystem. The general physical and biotic features thought to characterize suitable tortoise habitat are: presence of well-drained, sandy soils, which allow easy burrowing; an abundance of diverse herbaceous ground cover; and an open canopy and sparse shrub cover, which allows sunlight to reach the ground floor. The gopher tortoise digs burrows for shelter, and groups of tortoises dig burrows in the same location, forming a colony. Some of the major threats to the species are habitat degradation (often attributed to fire suppression) and habitat fragmentation (often attributed to urbanization and agricultural/silvicultural conversion), which can result in forage reduction, direct human impacts, and reproductive isolation.

Counties: Clarke, Covington, Forrest, George, Greene, Hancock, Harrison, Jackson, Jasper, Jefferson Davis, Jones, Lamar, Marion, Pearl River, Perry, Smith, Stone, Walthall, and Wayne

Ringed Map Turtle

The threatened ringed map turtle (*Graptemys oculifera*) is found in the Pearl River. It prefers river stretches with moderate currents, abundant basking sites, and sand bars for nesting. Stream modification in the Pearl River for flood control and urban development has significantly contributed to the decline of the species. Threats to this species include removing forested habitat along the river banks (source of the deadwood used for basking) and/or removing instream

deadwood used for basking and foraging (commonly referred to as desnagging). Water quality degradation has also posed a serious problem for the turtle.

Counties: Copiah, Hancock, Hinds, Lawrence, Leake, Madison, Marion, Neshoba, Pearl River, Pike, Rankin, Scott, Simpson, and Walthall

Yellow-blotched Map Turtle

The threatened yellow-blotched map turtle (*Graptemys flavimaculata*) is found in the Chickasawhay, Leaf, and Pascagoula Rivers and their larger tributaries. The yellow-blotched map turtle prefers river stretches with moderate currents, abundant basking sites, and sand bars. Threats to this species include removing forested habitat along the river banks (source of the deadwood used for basking) and/or removing instream deadwood used for basking and foraging (commonly referred to as desnagging). Water quality degradation has also posed a serious problem for the turtle.

Counties: Clarke, Covington, Forrest, George, Greene, Jackson, Jefferson Davis, Jones, Lauderdale, Perry, Smith, and Wayne

AMPHIBIANS

Dusky Gopher Frog

The endangered dusky gopher frog (*Rana sevosa*), formerly called the Mississippi gopher frog, historically was widely distributed in the southern counties of Mississippi. Dusky gopher frog habitat includes both upland sandy sites historically forested with longleaf pine and isolated temporary wetland breeding sites embedded within the forested landscape. Adult and subadult dusky gopher frogs spend the majority of their lives underground, primarily in stump holes and small mammal burrows, but they will also use gopher tortoise burrows. Breeding sites are small, relatively shallow, isolated, depressional ponds (not connected to any other water body) that dry completely on a cyclic basis. Emergent herbaceous vegetation is important for egg attachment. The dominant source of water to the ponds is rainfall within their small, localized watersheds. Approximately 4,933 acres are designated as critical habitat in Forrest, Harrison, Jackson, and Perry Counties, Mississippi.

Counties: Forrest, George, Greene, Hancock, Harrison, Jackson, Jones, Lamar, Pearl River, Perry, Stone, and Wayne

MUSSELS

Alabama Moccasinshell, Black Clubshell, Heavy Pigtoe, Orange-nacre Mucket, Ovate Clubshell, Southern Clubshell, and Southern Combshell

Seven federally listed mussel species are found within top bank of the Tombigbee, Luxapallila, and Buttahatchie Rivers; and Bull Mountain Creek. Two of these species (southern clubshell and southern combshell) may be found in the Noxubee River. The endangered heavy pigtoe mussel (*Pleurobema taitianum*), the endangered southern combshell mussel (*Epioblasma penita*), the endangered southern clubshell mussel (*Pleurobema decisum*), the endangered ovate clubshell

mussel (*Pleurobema perovatum*), the endangered black clubshell mussel (*Pleurobema curtum*), the threatened Alabama moccasinshell (*Medionidus acutissimus*), and the threatened orange-nacre mucket (*Lampsilis perovalis*) all require clean, swiftly moving stable streams with pools and riffles. Work activities that affect channel geometry (depth, width) or that increase sedimentation and water turbidity could have adverse impacts on these species. Also, be advised that in-stream activities can affect channel geometry both up- and downstream. Critical habitat has been designated for the Alabama moccasinshell, orange-nacre mucket, ovate clubshell, and southern clubshell in Itawamba, Lowndes and Monroe Counties.

Counties: Clay, Itawamba, Kemper, Lauderdale, Lowndes, Monroe, and Noxubee [Note: Not every county listed has all seven species; see County List for greater detail]

Cumberlandian Combshell, Oyster Mussel, Slabside Pearlymussel and Snuffbox

The endangered Cumberlandian combshell mussel (*Epioblasma brevidens*), oyster mussel (*Epioblasma capsaeformis*), slabside pearly mussel (*Lexingtonia dolabelloides*), and snuffbox mussel (*Epioblasma triquetra*) are found in the Bear Creek watershed. Work activities that alter flow, channel geometry or increase sedimentation and water turbidity could have adverse impacts on these species. All of Bear Creek in Tishomingo County is designated as critical habitat for the cumberlandian combshell, oyster mussel, and slabside pearlymussel.

County: Tishomingo

Fat Pocketbook

The endangered fat pocketbook mussel (*Potamilus capax*) is found in the Mississippi River and associated tributaries. It is a broad, rounded, and slightly angular mussel with a smooth, yellowish exterior color that is frequently clouded with brown. Fat pocketbooks occur primarily in sand and mud substrates, although the species has been found in fine gravel and hard clay occasionally. Water depth ranges from a few inches to several feet. The fish host for this species is freshwater drum. Fat pocketbook mussels may be affected by dredging or channel clearing activities, excessive sedimentation, channel erosion, and pollutants.

Counties: Adams, Bolivar, Claiborne, Coahoma, DeSoto, Issaquena, Jefferson, Tunica, Warren, Washington, and Wilkinson

Inflated Heelsplitter

The threatened inflated heelsplitter mussel (*Potamilus inflatus*) is found in the lower Pearl River and Tombigbee watersheds. It inhabits areas with moderate to swift currents, and prefers riffle or shoal areas with stable bottoms composed of sandy gravel or firm mud gravel and cobble. Work activities that increase sedimentation and water turbidity, or alter channel geometry or flow could have adverse impacts on this species.

Counties: Clay, Hancock, Itawamba, Lowndes, Monroe, Noxubee, and Pearl River

Rabbitsfoot

The rabbitsfoot mussel (*Quadrula cylindrica cylindrica*), a threatened species, is a historical resident of the Bear Creek, Big Sunflower River and Big Black River watersheds. Population

declines can be attributed to channel erosion, water-quality degradation, loss of stable substrates, sedimentation, channelization, gravel mining, dredging, impoundments, and competition of exotic mussel species. Critical habitat has been designated for the Big Black River in Hinds and Warren Counties (from Porter Creek to Highway 27), the Big Sunflower River in Sunflower County (from Highway 442 to the Quiver River), and Bear Creek in Tishomingo County (from state line to state line).

Counties: Bolivar, Claiborne, Hinds, Humphreys, Madison, Sharkey, Sunflower, Tishomingo, Warren, Washington, and Yazoo

Sheepnose

The endangered sheepnose mussel (*Plethobasus cyphus*) is a larger stream species occurring primarily in shallow shoal habitats with moderate to swift currents over coarse sand and gravel. A population of sheepnose survives in the Big Sunflower River, which may be limited to a 12 to 15-mile reach upstream of Indianola in Sunflower County. Although no juvenile mussels have been found in recent sampling efforts, variably sized individuals indicate some, possibly very low, level of recruitment in the population (Jones 2008, pers. comm.). The species is believed to be extirpated from the Hatchie and Big Black Rivers.

Counties: Bolivar, Humphreys, Sharkey, Sunflower, and Washington

INSECTS

Mitchell's Satyr Butterfly

The endangered Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*) is a medium sized butterfly with an overall rich brown color. A distinctive series of orange-ringed black circular eyespots with silvery centers are located on the lower surfaces of both pairs of wings. It occurs in wetlands where low nutrient systems receive carbonate-rich ground water from seeps and springs. In Mississippi, Mitchell's satyr has been found in small upland wetlands created by beaver dams and in wetlands formed by road culverts. The greatest threat to the Mitchell's satyr is habitat destruction caused by beaver control, draining and filling of wetlands, invasion from exotic weeds, and contamination of wetlands by pesticides, fertilizer, and nutrient runoff from adjacent agriculture.

Counties: Alcorn, Itawamba, Monroe, Prentiss, and Tishomingo

PLANTS

Louisiana Quillwort

The endangered Louisiana quillwort (*Isoetes louisianensis*) is a small, nonflowering grass-like semi-aquatic to aquatic plant. Mature plants are six to ten inches long, mostly evergreen, with spore-bearing structures below ground. Surveys need to be conducted during the appropriate field season when the plants are visible, typically November into May. Timing varies depending upon rainfall, as plants completely die back and are not visible when the intermittent streams, which are habitat for this species, have dried-up. As such, it is recommended that known sites be

visited prior to initiating surveys to determine if plants will likely be visible. Threats include activities that increase stream sedimentation, reduce stream flow, and reduce the overstory canopy cover.

Counties: Forrest, George, Greene, Hancock, Harrison, Jackson, Jones, Lamar, Pearl River, Perry, Stone, and Wayne

Pondberry

The endangered pondberry (*Lindera melissifolia*) is a member of the laurel family (Lauraceae) and is a deciduous aromatic shrub that averages two to six feet tall. It occurs in seasonally flooded wetlands, sandy sinks, pond margins, and swampy depressions. It is best to conduct surveys for this species during the flowering season, when the species is highly visible (February to March); however surveys are still possible later in the season following leaf-out and into the fruiting season (late summer-fall). Fruits turn bright red as they mature in the late fall before being dropped in the early winter (December). Since pondberry is a deciduous shrub, it is recommended that a nearby known site be visited prior to initiating any surveys, to confirm adequate visibility of the species for a determination of its presence or absence at a project site. Threats included habitat destruction, population fragmentation, altered hydrologic regimes, competition from encroaching vegetation, and disturbance by wild hogs and domestic cattle.

Counties: Bolivar, Carroll, Coahoma, DeSoto, Grenada, Holmes, Humphreys, Issaquena, Leflore, Panola, Quitman, Sharkey, Sunflower, Tallahatchie, Tunica, Warren, Washington, and Yazoo

Price's Potato Bean

The threatened Price's potato bean (*Apios priceana*) is a perennial, herbaceous, twining vine in the pea family (Fabaceae [=Leguminosae]). It is found on slopes or bluffs with open woods that often grade into creek and river bottoms. The species may also be found along forested margins of power-line and road rights-of-ways. These areas are typically underlain by alkaline soils and calcareous parent rock. Surveys should be conducted when the species is in flower or fruit, typically mid-June into October. Price's potato bean is readily confused with its more common relative groundnut (*Apios americana*) and surveys should be conducted by individuals familiar with both species. Threats include excessive shading from forest canopy closure, incompatible right-of-way maintenance (e.g., indiscriminate herbicide spraying), and competition from non-native, invasive plants.

Counties: Alcorn, Calhoun, Chickasaw, Clay, Kemper, Lee, Lowndes, Monroe, Noxubee, Oktibbeha, Pontotoc, Prentiss, Tippah, Union, Webster, and Winston

White Fringeless Orchid

The threatened white fringeless orchid (*Platanthera integrilabia*) is a perennial herbaceous plant with a light green stem (growing to over 2 feet tall) arising from a tuber. Leaves decrease in size from the base to the top of the stem, have alternate arrangement, are narrowly elliptic to lanceolate in shape, and have entire margins. Flowers are white and borne in a loose cluster at the end of the stem. The flower's lower petal (the lip) does not have a conspicuous fringe along the margin, but may be slightly toothed. A prominent green to white spur (growing to nearly 2.5

inches) protrudes from the underside of each flower. Flowering occurs from July to September and fruiting capsules mature in October. The species can be found in forested wetlands, wet, boggy areas at the heads of streams and on seepage slopes that are partially shaded. Plants are often associated with *Sphagnum* (peat) moss and other orchids. Surveys should be conducted when plants are in bloom, as the species is difficult to distinguish from more common *Platanthera* species without flowers. Threats include habitat destruction and modification from development, incompatible forestry practices, alteration of hydrologic regimes, incompatible right-of-way maintenance, invasive species competition, and disturbance by feral hogs. Other threats include herbivory by deer and feral hogs as well as over-collection.

Counties: Alcorn, Itawamba, Lowndes, Monroe, Prentiss, and Tishomingo

Whorled Sunflower

The endangered whorled sunflower (*Helianthus verticillatus*), a member of the aster family (Asteraceae [=Compositae]), is a tall (growing to over 15 feet tall), rhizomatous, perennial herbaceous plant. The firm, linear to lanceolate leaves have a prominent mid-vein, lack prominent lateral veins, are short-petioled to nearly sessile, and can grow to over 7 inches long. Leaf arrangement is opposite on the lower stem, whorled (verticillate) in groups of 3 or 4 (to 6) along the mid-stem, and alternate or opposite near the top. The stem is smooth, waxy (glaucous), and has a bluish tint during the growing season. Flowering occurs from mid- to late August into October. Flowers are arranged in branched inflorescences (cymes) of 3 to 7 heads. Heads consist of deep yellow ray flowers and lighter yellow disk flowers. The species can be confused with its more common close relatives, *H. angustifolius* (narrowleaf sunflower), *H. giganteus* (giant sunflower), and *H. grosseserratus* (sawtooth sunflower). Plants are found on moist soils in open, grassy areas (such as wet prairies, road and utility rights-of-way, and along margins of agricultural fields) with little to no overstory canopy and are often associated with floodplains of small streams. Threats include indiscriminate herbicide application, incompatible mowing regimes, habitat destruction, and encroachment of woody vegetation.

County: Alcorn, Benton, Marshall, Tishomingo

END