

## Habitat Descriptions

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## I. Habitat Description of Threatened Endangered and Candidate Species of Louisiana

### MAMMALS

#### Louisiana Black Bear

Louisiana black bears (*Ursus americanus luteolus*) are primarily associated with forested wetlands, however, they utilize a variety of other habitat types, including scrub-shrub, marsh, spoil banks, and upland forests. They normally den from December through April and preferred den sites include large, hollow trees (36 inches or more in diameter at breast height) with sufficiently sized openings that allow access to interior cavities. Due to recovery, the Louisiana black bear was officially removed from the List of Endangered and Threatened Species on March 11, 2016 (effective April 11, 2016); critical habitat designation for this subspecies has also been withdrawn. Because the Louisiana black bear is no longer protected under the Endangered Species Act (ESA), consultation with the Service is not required for this subspecies. The Louisiana black bear remains protected, however, under Louisiana state law, and the Louisiana Department of Wildlife and Fisheries (LDWF) will continue to actively manage this subspecies. The Service and LDWF have developed a plan to extensively monitor the status of the Louisiana black bear for 7 years following its delisting (until year 2022). That monitoring will be undertaken to detect any potential population decreases or threat increases that may warrant the implementation of measures to ensure that the Louisiana black bear remains secure from risk of extinction.

Although ESA consultation is no longer required regarding project impacts on this subspecies, in the interest of conserving the Louisiana black bear, projects proposed in areas of the state that are inhabited by bears should be designed to avoid adversely affecting this subspecies or its habitat. Conservation measures for the Louisiana black bear include reducing the footprint of proposed actions to the maximum extent feasible, avoiding impacts to trees that are 36 inches or more in diameter at breast height, implementing programs to prevent the habituation of bears to human-associated food sources (e.g., use of “bear-proof” waste disposal containers or daily removal of food and garbage), and avoiding vegetative clearing during the black bear denning season (i.e., December 1 through April 30). For additional information regarding the Louisiana black bear and conservation measures that may be required by the LDWF, please contact Maria Davidson (Large Carnivore Program Manager) at (337) 948-0255.

#### West Indian Manatee

The endangered West Indian manatee (*Trichechus manatus*) is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of southeastern Louisiana. Manatees may also infrequently be observed in the Mississippi River and coastal areas of southwestern Louisiana. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

During in-water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal

penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

- All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). We recommend the following to minimize potential impacts to manatees in areas of their potential presence:
- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).
- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at “no wake/idle” speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.
- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.
- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8½ " X 11" reading language similar to the following: “CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSTRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT”. A second temporary sign measuring 8½ " X 11” should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: “CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION”.
- Collisions with, injury to, or sightings of manatees should be immediately reported to the Service’s Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

### Northern Long-Eared Bat

The northern long-eared bat (*Myotis septentrionalis*), federally listed as a threatened species, is a medium sized bat about 3 to 3.7 inches in length but with a wingspan of 9 to 10 inches and is distinguished by its long ears. Its fur color can range from medium to dark brown on the back and tawny to pale-brown on the underside. The northern long-eared bat can be found in much of the eastern and north central United States and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. In Louisiana, there have been confirmed reports of sightings in Winn and Grant parishes; although they can possibly be found in other parishes in the state. Some individuals were

documented during mist net and bridge surveys on the Winn District of the Kisatchie National Forest and were also observed under bridges on the Winn District in Grant Parish.

Northern long-eared bats can be found in mixed pine/hardwood forest with intermittent streams. Northern long-eared bats roost alone or in small colonies underneath bark or in cavities or crevices of both live trees and snags (dead trees). During the winter, northern long-eared bats can be found hibernating in caves and abandoned mines, although none have been documented using caves in Louisiana. Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges to feed on moths, flies, leafhoppers, caddis flies and beetles, which they catch using echolocation. This bat can also feed by gleaning motionless insects from vegetation and water surfaces.

The most prominent threat to this species is white-nose syndrome, a disease known to cause high mortality in bats that hibernate in caves. Other sources of mortality for northern long-eared bats are wind energy development, habitat destruction or disturbance, climate change and contaminants.

## **BIRDS**

### **Whooping Crane**

Beginning in 2010, the Louisiana Department of Wildlife and Fisheries, in cooperation with the U.S. Fish and Wildlife Service and the U.S. Geological Survey, began efforts to establish a nonmigratory flock of whooping cranes (*Grus americana*) into historic southwestern Louisiana habitat on the state-owned White Lake Wetlands Conservation Area in Vermilion Parish, Louisiana. This reintroduced population was designated as a nonessential experimental population (NEP) under section 10(j) of the Endangered Species Act of 1973 (ESA), as amended. A NEP population is a reintroduced population believed not to be essential for the survival of the species, but important for its full recovery and eventual removal from the endangered and threatened list. These populations are treated as "threatened" species except that the ESA's section 7 consultation regulations (requiring consultation with the U.S. Fish and Wildlife Service to reduce adverse impacts from Federal actions) do not apply (except where the species occurs within National Parks or National Wildlife Refuges) and critical habitat cannot be designated. The only natural wild population of the endangered whooping crane remains vulnerable to extirpation through a natural catastrophe or contaminant spill, due primarily to its limited wintering distribution along the Texas gulf coast.

### **Interior Least Tern**

The interior least tern (*Sterna antillarum*) is an endangered 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 listed interior least tern population is concentrated within approximately 500 river miles between its confluence with the Ohio River at Cairo, Illinois, and Vicksburg, Mississippi. In Louisiana, the interior least tern historically occurred along the Mississippi River north of Baton Rouge, but few birds have been observed in surveys conducted over the last few years. Interior least tern nesting colonies are known to occur along the Red River in northwestern and Central Louisiana. Major threats to this species include habitat loss, human disturbance at nesting colonies, and altered water flow patterns.

The absence of nesting interior least terns should be confirmed before initiating any work in or adjacent to the Red or Mississippi Rivers during the breeding season (May 15 to August 31, depending upon river stages). In order to minimize impacts to nesting terns, the Service recommends that no activity should be conducted within 650 feet of a nesting colony (Martin and Lester 1990) and no disturbance to suitable

nesting habitat (including changes in river morphology) should result from implementation of the proposed project. If nesting least terns are observed in proximity to the project area during the breeding season, all work should cease and the Service should be contacted immediately for further consultation.

### Piping Plover

The piping plover (*Charadrius melodus*), federally listed as a threatened species, is a small (7 inches long), pale, sand-colored shorebird that winters in coastal Louisiana and may be present for 8 to 10 months annually. Piping plovers arrive from their northern breeding grounds as early as late July and remain until late March or April. They feed on polychaete marine worms, various crustaceans, insects and their larvae, and bivalve mollusks that they peck from the top of or just beneath the sand. Piping plovers forage on intertidal beaches, mudflats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation. They roost in unvegetated or sparsely vegetated areas, which may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. They also forage and roost in wrack (i.e., seaweed or other marine vegetation) deposited on beaches. In most areas, wintering piping plovers are dependent on a mosaic of sites distributed throughout the landscape, because the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers move among sites as environmental conditions change, and studies have indicated that they generally remain within a 2-mile area. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation.

On July 10, 2001, the Service designated critical habitat for wintering piping plovers (Federal Register Volume 66, No. 132); a map of the seven critical habitat units in Louisiana can be found at <http://criticalhabitat.fws.gov/crithab>. Their designated critical habitat identifies specific areas that are essential to the conservation of the species. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support those habitat components. Constituent elements are found in geologically dynamic coastal areas that contain intertidal beaches and flats (between annual low tide and annual high tide), and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers

### Red-Cockaded Woodpecker

The endangered red-cockaded woodpecker (RCW, *Picoides borealis*) roosts and forages year-round and nests seasonally (i.e., April through July) in open, park-like stands of mature pine trees containing little hardwood component, a sparse midstory, and a well-developed herbaceous understory. RCWs can tolerate small numbers of overstory and midstory hardwoods at low densities found naturally in many southern pine forests, but they are not tolerant of dense midstories resulting from fire suppression or from overstocking of pine. Trees selected for cavity excavation are generally at least 60 years old, although the average stand age can be younger. The collection of one or more cavity trees plus a surrounding 200 foot wide buffer of continuous forest is known as a RCW cluster. RCW foraging habitat is located within one-half mile of the cluster and is comprised of pine and pine-hardwood stands (i.e., 50 percent or more of the dominant trees are pines) that are at least 30 years of age and have a moderately low average basal area (i.e., 40 – 80 square feet per acre is preferred).

If the proposed project area does not contain suitable nesting and/or foraging habitat as defined above, further consultation with the Service will not be necessary. However, if potential RCW nesting or foraging habitat is located within the project area, all suitable nesting habitat within the project area and within a one-half mile radius from such habitat should be carefully surveyed by a qualified biologist for

the presence of RCW cavity trees in accordance with the survey protocol found in *Appendix 4* of the *RCW Recovery Plan* (2003), which can be found online at [http://www.fws.gov/rcwrecovery/recovery\\_plan.html](http://www.fws.gov/rcwrecovery/recovery_plan.html). We request that you provide this office with a copy of the survey report, which should include the following details:

1. survey methodology including dates, qualifications of survey personnel, size of survey area, and transect density;
2. pine stand characteristics including number of acres of suitable nesting and/or foraging habitat, tree species, basal area and number of pine stems 10 inches or greater per acre, percent cover of pine trees greater than 60 years of age, species of dominant vegetation within each canopy layer, understory conditions and species composition (several representative photographs should be included);
3. number of active and inactive RCW cavity trees observed and the condition of the cavities (e.g., resin flow, shape of cavity, start-holes);
4. presence or absence of RCWs; and
5. topographic quadrangle maps which illustrate areas of adequate RCW nesting and/or foraging habitat, cluster sites, and cavity tree locations relative to proposed construction activities.

### Red Knot

The red knot (*Calidris canutus rufa*), federally listed as a threatened species, is a medium-sized shorebird about 9 to 11 inches (23 to 28 centimeters) in length with a proportionately small head, small eyes, short neck, and short legs. The black bill tapers steadily from a relatively thick base to a relatively fine tip; bill length is not much longer than head length. Legs are typically dark gray to black, but sometimes greenish in juveniles or older birds in non-breeding plumage. Non-breeding plumage is dusky gray above and whitish below. The red knot breeds in the central Canadian arctic but is found in Louisiana during spring and fall migrations and the winter months (generally September through May).

During migration and on their wintering grounds, 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 they 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, shoreline stabilization, and development; disturbance by humans and pets; and predation.

## AMPHIBIANS

### Dusky Gopher Frog

Historically, the dusky gopher frog (=Mississippi gopher frog) (*Rana sevosa*) was found in Louisiana, Mississippi, and Alabama, west of the Mobile River drainage. It has not been seen in Louisiana since 1965 and is presently known to survive at only one site in Mississippi. The dusky gopher frog is a darkly-colored, moderately-sized frog with warts covering its back and dusky spots on its belly. The Dusky (Mississippi) gopher frog was listed as endangered under the Endangered Species Act on December 4, 2001, as a distinct population segment (DPS) of the gopher frog.

The dusky gopher frog's habitat includes both upland, sandy areas covered with longleaf pine; and isolated, temporary, wetland breeding sites within the forested landscape. Adult frogs spend most of their lives underground in forests with an open canopy and abundant ground cover. They use active and abandoned gopher tortoise burrows, abandoned mammal burrows and holes in and under stumps as their underground retreats. Breeding sites are isolated ponds that dry out completely at certain times of the year. Substantial winter rains are needed to ensure that ponds are filled sufficiently to allow development of juvenile frogs.

On June 12, 2012, the Service announced the final rule in the Federal register (Volume 77, No. 113) designating Dusky gopher frog critical habitat on 1,544 acres in St. Tammany Parish, Louisiana (Unit 1) and 1,996 acres in four Mississippi counties (Units 2-12). The primary constituent elements (PCE) essential for the conservation of the Dusky gopher frog are:

PCE 1—Ephemeral wetland habitat. Breeding ponds, geographically isolated from other waterbodies and embedded in forests historically dominated by longleaf pine communities, that are small (generally <0.4 to 4.0 ha (<1 to 10 ac)), ephemeral, and acidic. Specific conditions necessary in breeding ponds to allow for successful reproduction of dusky gopher frogs are:

- (a) An open canopy with emergent herbaceous vegetation for egg attachment;
- (b) An absence of large, predatory fish that prey on frog larvae;
- (c) Water quality such that frogs, their eggs, or larvae are not exposed to pesticides or chemicals and sediment associated with road runoff; and
- (d) Surface water that lasts for a minimum of 195 days during the breeding season to allow a sufficient period for larvae to hatch, mature, and metamorphose.

PCE 2 —Upland forested nonbreeding habitat. Forests historically dominated by longleaf pine, adjacent to and accessible to and from breeding ponds, that are maintained by fires frequent enough to support an open canopy and abundant herbaceous ground cover and gopher tortoise burrows, small mammal burrows, stump holes, or other underground habitat that the dusky gopher frog depends upon for food, shelter, and protection from the elements and predation.

PCE 3 —Upland connectivity habitat. Accessible upland habitat between breeding and nonbreeding habitats to allow for dusky gopher frog movements between and among such sites. This habitat is characterized by an open canopy, abundant native herbaceous species, and a subsurface structure that provides shelter for dusky gopher frogs during seasonal movements, such as that created by deep litter cover, clumps of grass, or burrows.

Although the Louisiana Unit (Unit 1) is currently unoccupied, the last observation of this frog occurred in 1965 in one of the ponds within this unit. The uplands associated with this unit currently do not contain the essential physical or biological features of critical habitat (PCE 2 and PCE 3), however, the Service believes them to be restorable with reasonable effort. Thus, the Service determined Unit 1 to be essential for the conservation and recovery of the Dusky gopher frog because it provides important breeding sites for recovery.

## **REPTILES**

### Gopher Tortoise

In Louisiana, the threatened, gopher tortoise (*Gopherus polyphemus*) occurs in Washington, Tangipahoa, and St Tammany Parishes. The gopher tortoise is the only native tortoise found in the southeastern United States. This species is associated with areas that have well-drained, sandy soils appropriate for

burrow establishment, ample sunlight for nesting, and understory vegetation suitable for foraging (i.e., grasses and forbs). The burrow opening is semicircular or “half-moon” in shape and a low mound of bare soil will be immediately in front of the mouth of an active burrow. Suitable soil types for gopher tortoises include Latonia and Bassfield (highly suitable), Cahaba, Ruston, and Smithdale (less suitable), and Abita, Malbis, Angie, and Prentiss (marginal).

Gopher tortoises prefer “open” longleaf pine-scrub oak communities that are thinned and burned every few years. Habitat degradation (lack of thinning or burning on pine plantations), predation, and conversion to agriculture or urbanization have contributed to the decline of this species. That habitat decline has concentrated many remaining gopher tortoise populations along pipeline and power line rights-of-way (ROW) within their range. Tortoise burrows also can be found along road ROW’s, and other marginal habitats; including fence rows, orchard edges, golf course roughs and edges, old fields, and pasturelands. Tortoises are often pushed into these areas due to adjacent habitat becoming unsuitable.

If suitable gopher tortoise habitat does exist within a proposed action area, those areas should be surveyed by a qualified biologist for the presence of gopher tortoises and/or their burrows. Survey areas should be divided into consecutive “sight-distance” strip transects, each of which should be traversed by walking. Transect widths may range from 10 to 50 feet, and will be determined by ground visibility within the site.

We recommend that you provide this office with a copy of the survey report, which should include the following information:

1. Survey methodology including dates, qualifications of survey personnel, size of survey area, and transect density;
2. general soil type, understory conditions, percent canopy cover, and species composition (several representative photographs should be included);
3. GPS coordinates and photographs of burrow(s) to clarify whether the hole is for tortoises or some other animal (i.e. fox, armadillo);
4. determination of burrow status as active, inactive, or old (see burrow descriptions below);
5. presence or absence of gopher tortoises outside the burrow (only permitted individuals may videoscope burrows);
6. determination of whether the burrow is part of tortoise colony. (For each burrow found, a 600 foot radius around that burrow should be surveyed for additional burrows. This process should be continued for each new burrow until no new burrows are found, and will determine the extent of the colony); and,
7. topographic maps which illustrate areas of adequate gopher tortoise habitat, individual and/or colony locations, and burrow sites relative to proposed construction activities.

All persons surveying for gopher tortoise presence/absence should be familiar with the appearance of this species and its associated burrow. All tortoise burrows encountered should be categorized according to the following scheme:

1. Active – most likely occupied by a tortoise; as evidenced by presence of tortoise, freshly dug sand, tortoise tracks, or tortoise scat.

2. Inactive – most likely not currently occupied by a tortoise; as evidenced by absence of above signs, debris in burrow entrance. Future use of Inactive burrows by tortoises occasionally occurs.
3. Old – most likely not occupied by a tortoise for many years; as evidenced by deteriorated nature of burrow entrance, (i.e. collapsed, growth of vegetation, sand washed in, etc.) Old burrows are in such a condition that they are not considered to be good candidates for future use by tortoises.

### Ringed Map Turtle

The threatened ringed map (=sawback) turtle (*Graptemys oculifera*) is endemic to the Pearl River system. In Louisiana, it occurs in the Bogue Chitto River and in the Pearl River north of Louisiana Highway 190 in St. Tammany and Washington Parishes. This turtle prefers riverine habitats with moderate currents, channels wide enough to permit sunlight penetration for several hours each day, numerous logs for basking, and large, sandy banks that are used for nesting. The ringed map turtle is a small turtle (4 to 7 inches in plastron length) with a yellow ring bordered inside and outside with dark olive-brown on each shield of the carapace and a yellow plastron. The head has a large yellow spot behind the eye, two yellow stripes from the orbit backwards, and a characteristic yellow stripe covering the whole lower jaw. The decline of the ringed map turtle has been attributed to habitat modification (i.e., loss of exposed sandbars, basking areas) and water quality deterioration, reservoir construction, channelization, desnagging for navigation, siltation, and the subsequent loss of invertebrate food sources.

### Sea Turtles

There are five species of federally listed threatened or endangered sea turtles that forage in the near shore waters, bays, and estuaries of Louisiana. The National Marine Fisheries Service (NMFS) is responsible for aquatic marine threatened or endangered species that occur in the marine environment. Please contact Eric Hawk (727/824-5312) at the NMFS Regional Office in St. Petersburg, Florida, for information concerning those species in the marine environment.

When sea turtles leave the marine environment and come onshore to nest, the Service is responsible for those species. Two species, the threatened loggerhead sea turtle (*Caretta caretta*) and the endangered Kemp's ridley (*Lepidochelys kempii*) could potentially nest in Louisiana during the summer months (i.e., May through November). Historical records indicate that loggerheads nested on the Chandeleur Islands and recent data indicate rare nesting attempts along Fourchon Beach in Lafourche Parish. The Kemp's ridley is known to nest in coastal Texas and Alabama; thus, nesting attempts could possibly occur in Louisiana as that species achieves recovery. The primary threats to nesting beaches include coastal development and construction, placement of erosion control structures and other barriers to nesting, beachfront lighting, vehicular and pedestrian traffic, sand extraction, beach erosion, beach nourishment, beach pollution, removal of native vegetation, and planting of non-native vegetation (USFWS 2007). We recommend that you contact this office if your activities would occur on coastal beaches during the summer months (i.e., May through November). More detailed information on these two species can be found below.

### Loggerhead Sea Turtle

Federally listed as a threatened species, loggerhead sea turtles (*Caretta caretta*) nest within the coastal United States from Virginia to Louisiana, with major nesting concentrations occurring on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida. Historically in Louisiana, loggerheads have been known to nest on the Chandeleur Islands and recent data indicate rare nesting attempts along Fourchon Beach in Lafourche Parish. Nesting and hatching dates for the loggerhead in the northern Gulf of Mexico are from May 1 through November 30. Threats to this

species include destruction of nesting habitat and drowning in fishing nets. The National Marine Fisheries Service is responsible for marine threatened or endangered species. Please contact Eric Hawk (727/824-5312) in St. Petersburg, Florida, for information concerning this species in the marine environment. When loggerhead sea turtles leave the aquatic environment and come onshore to nest, the Service is responsible for the species. Accordingly, we recommend that you contact this office if your activities would occur on coastal beaches during the loggerhead nesting season.

### Kemp's Ridley Sea Turtle

The endangered Kemp's ridley (*Lepidochelys kempii*) sea turtle has a restricted distribution. Nesting is essentially limited to the beaches of the western Gulf of Mexico, primarily in Mexico. Kemp's ridleys are coastal inhabitants throughout the Gulf of Mexico and the northwestern Atlantic Ocean, as far north as the Grand Banks and Nova Scotia, Canada. Juveniles and sub-adults occupy shallow, coastal regions and are commonly associated with crab-laden, sandy or muddy water bottoms. They are generally found in near shore areas of the Louisiana coast from May through October. Adults may be abundant near the mouth of the Mississippi River in the spring and summer. Adults and juveniles move offshore to deeper, warmer water during the winter. Between the East Gulf Coast of Texas and the Mississippi River Delta, Kemp's ridleys use near shore waters, ocean sides of jetties, small boat passageways through jetties, and dredged and nondredged channels. They have been observed within both Sabine and Calcasieu Lakes. Major threats to this species include over-exploitation on their nesting beaches, drowning in fishing nets, and pollution. The National Marine Fisheries Service is responsible for marine threatened or endangered species. Please contact Eric Hawk (727/824-5312) in St. Petersburg, Florida, for information concerning this species. When Kemp's ridley sea turtles leave the marine environment and come onshore to nest, the Service is responsible for the species. Accordingly, we recommend that you contact this office if your activities would occur on coastal beaches during the summer months (i.e., May through November).

## FISH

### Atlantic Sturgeon

The Atlantic sturgeon (*Acipenser oxyrinchus desotoi*), federally listed as a threatened species, is an anadromous fish that occurs in many rivers, streams, and estuarine and marine waters along the northern Gulf coast between the Mississippi River and the Suwannee River, Florida. In Louisiana, Atlantic sturgeon have been reported at Rigolets Pass, rivers and lakes of the Lake Pontchartrain Basin, the Pearl River System, and adjacent estuarine and marine areas. Spawning occurs in coastal rivers between late winter and early spring (i.e., March to May). Adults and sub-adults may be found in those rivers and streams until November, and in estuarine or marine waters during the remainder of the year. Atlantic sturgeon less than two years old appear to remain in riverine habitats and estuarine areas throughout the year, rather than migrate to marine waters. Habitat alterations such as those caused by water control structures and navigation projects that limit and prevent spawning, poor water quality, and over-fishing have negatively affected this species.

On March 19, 2003, the Service and the National Marine Fisheries Service (NMFS) published a final rule in the Federal Register (Volume 68, No. 53) designating critical habitat for the Atlantic sturgeon in Louisiana, Mississippi, Alabama, and Florida. In Louisiana, the designation includes portions of the Pearl and Bogue Chitto Rivers and Lake Pontchartrain east of the Lake Pontchartrain Causeway, as well as

Little Lake, The Rigolets, Lake St. Catherine, and Lake Borgne in their entirety. The primary constituent elements essential for the conservation of Gulf sturgeon, which should be considered when determining potential project impacts, are those habitat components that support feeding, resting, sheltering, reproduction, migration, and physical features necessary for maintaining the natural processes that support those habitat components. The primary constituent elements for Atlantic sturgeon critical habitat include:

- abundant prey items within riverine habitats for larval and juvenile life stages, and within estuarine and marine habitats for juvenile, sub-adult, and adult life stages;
- riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay;
- riverine aggregation areas, also referred to as resting, holding and staging areas, used by adult, sub-adult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths, believed necessary for minimizing energy expenditures during freshwater residency and possibly for osmoregulatory functions;
- a flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging; and necessary for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larvae staging;
- water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages;
- sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and,
- safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., a river unobstructed by a permanent structure, or a dammed river that still allows for passage).

### Pallid Sturgeon

The pallid sturgeon (*Scaphirhynchus albus*) is an endangered, bottom-oriented, fish that inhabits large river systems from Montana to Louisiana. Within this range, pallid sturgeon tend to select main channel habitats in the Mississippi River and main channel areas with islands or sand bars in the upper Missouri River. In Louisiana it occurs in the Atchafalaya and Mississippi Rivers, and below Lock and Dam Number 3 on the Red River (with known concentrations in the vicinity of the Old River Control Structure Complex). The pallid sturgeon is adapted to large, free-flowing, turbid rivers with a diverse assemblage of physical characteristics that are in a constant state of change. Many life history details and subsequent habitat requirements of this fish are not known. However, the pallid sturgeon is believed to utilize Louisiana riverine habitat during reproductive stages of its life cycle. Habitat loss through river channelization and dams has adversely affected this species throughout its range.

Entrainment issues associated with dredging operations in the Mississippi and Atchafalaya Rivers and through diversion structures off the Mississippi River are two potential effects that should be addressed in future planning studies and/or in analyzing current project effects. We recommend the following to

minimize potential impacts to pallid sturgeon associated with dredging to ensure protection of the pallid sturgeon: (1) the cutterhead should remain completely buried in the bottom material during dredging operations. If pumping water through the cutterhead is necessary to dislodge material or to clean the pumps or cutterhead, etc., the pumping rate should be reduced to the lowest rate possible until the cutterhead is at mid-depth, where the pumping rate can then be increase; (2) during dredging, the pumping rates should be reduced to the slowest speed feasible while the cutterhead is descending to the channel bottom.

## MOLLUSKS

### Fat Pocketbook Pearly Mussel

Federally listed as an endangered species, the fat pocketbook pearly mussel (*Potamilus capax*) inhabits the Mississippi River in Concordia, East Carroll, Madison, and Tensas Parishes, Louisiana. The fat pocketbook mussel has a smooth, rayless, shiny yellow to brown shell measuring up to 5 inches long. Although little is known about the ecology of this species, the fat pocketbook is a large river species and suitable habitat is most likely a mixture of stable sand, silt, and clay substrates with flowing water (e.g., old dike fields, secondary channels). The life history of this species is believed to be similar to that of other members of the Unionidae family, and the host fish is likely to be one or more species of large river fish. The greatest threats to this species include habitat alteration caused by activities related to navigation (e.g., channel maintenance dredging) and flood control, and reduction in water quality due to siltation.

### Alabama Heelsplitter

Federally listed as a threatened species, the Alabama heelsplitter mussel (*Potamilus inflatus*) was historically found in Louisiana in the Amite, Tangipahoa, and Pearl Rivers. Many life history aspects of the species are poorly understood but are likely similar to that of other members of the Unionidae family. Although the primary host fish for the species is not certain, investigation by K. Roe et al. (1997) indicates that the freshwater drum (*Aplodinotus grunniens*) is a suitable glochidial host for the species.

Based on the most recent survey data, the currently known range for the Alabama heelsplitter in Louisiana occurs only in the lower third of the Amite River along the East Baton Rouge/Livingston Parish line from Spiller's Creek, which is in the vicinity of Denham Springs downstream to the vicinity of Port Vincent. In addition, the species may be found in the Pearl River, as evidenced by two dead specimens reported from the West Pearl River drainage in 1996. Because it has not been used widely for past or present gravel mining operations, the lower third of the Amite River (between Louisiana Highway 37 and Louisiana Highway 42) is more typical of a coastal plain river; being characterized by a silt substratum, less channelization, and slower water flow, all of which are characteristic of heelsplitter habitat. This freshwater mussel is typically found in soft, stable substrates such as sand, mud, silt, and sandy gravel, in slow to moderate currents. Heelsplitter mussels are usually found in depositional pools below sand point bars and in shallow pools between sandbars and river banks.

Major threats to this species in Louisiana are the loss of habitat resulting from sand and gravel dredging and channel modifications for flood control, as shown by the apparent local extirpation of the species in the extensively modified upper portions of the Amite River.

### Louisiana Pearlshell Mussel

The threatened Louisiana pearlshell mussel (LPM; *Margaritifera hembeli*), is a freshwater species found only in Louisiana in Rapides and Grant Parishes. The shell of the Louisiana pearlshell mussel is oblong

with moderately full beaks, no obvious sculpture, and its surface has uneven growth lines. The epidermis is brown to blackish and the nacre is white to purple with numerous pits. Adults are about 3.9 inches long, 2.0 inches high, and 1.2 inches wide. The LPM requires clear, moderately swift-flowing, perennial streams having stable mineral substrate (such as gravel bottom or sandy bottom with rocky outcroppings). This mussel is known to occur in the tributaries of Bayou Boeuf and Bayou Rapides in Rapides Parish, specifically Bayou Clear, Brown Creek, Burney Branch, Castor Creek, Clear Creek, Haikey's Creek, Little Bayou Clear, Little Brushy Creek, Little Loving Creek, Long Branch, Loving Creek, Mack Branch, Patterson Branch, Valentine Creek, and Williamson Branch. The species is known to occur in the tributaries of Bayou Rigolette in Grant Parish, specifically Beaver Creek, Black Creek, Chandler Creek, Clear Branch, Coleman Branch, Cress Creek, Cypress Creek, Glady Hollow, Gray Creek, Hudson Creek, James Branch, Jordan Creek, Moccasin Branch, and Swafford Creek.

At present, the life history of this mussel is poorly understood. Research conducted by the Service's Natchitoches National Fish Hatchery is ongoing to determine reproductive aspects of the species and to identify the host fish species. Preliminary results indicate that reproductive timing (i.e., spawning and glochidial release) likely occurs once annually in the February through April timeframe, but the host fish currently remains unknown.

Major threats to the LPM include loss of habitat, degradation of water quality, and impacts to stream morphology as a result of impoundments (both man-made and beaver dams), non-implementation of streamside best management practices during timber harvest operations, and lack of sufficient erosion control measures and maintenance during construction activities (e.g., well pad construction, road construction, road improvement or widening, bridge replacement or installation, culvert replacement or installation, gravel mining, etc.). In addition, unregulated in-stream activities and equipment use could result in direct impacts to LPM individuals from stranding, trampling, or crushing. Additional information on threats and current status of this species can be found online at: <http://www.fws.gov/southeast/5yearReviews/5yearreviews/louisianapearlshellmussel.pdf>.

### Pink Mucket Pearly Mussel

Federally listed as an endangered species, the pink mucket pearly mussel (*Lampsilis abrupta*) occurs in Bayou Bartholomew in Morehouse Parish, Louisiana. The pink mucket pearly mussel is characterized by an elliptical shell approximately 4 inches long, 3 inches high, and 2 inches wide. The surface of the shell is smooth, except for wide, relatively dark, concentric growth rests, and shell color is yellow to yellowish or greenish brown, with wide, greenish rays present in younger individuals. The pink mucket pearly mussel is found in a variety of habitats ranging from silt to boulders, rubble, gravel, and sand substrates, and standing to fast-flowing water at depths ranging from 1.5 to 26 feet. The host fish essential to development of the glochidia of this species is believed to be a species of bass in the genus *Micropterus*. Major threats to the pink mucket pearly mussel are habitat loss and/or alteration due to impoundments and excessive siltation resulting in reduced water quality.

### Rabbitsfoot Mussel

The threatened rabbitsfoot mussel (*Quadrula cylindrical cylindrical*) occurs in Bayou Bartholomew in Morehouse Parish, Louisiana. The rabbitsfoot mussel is characterized by an elongate, rectangular, and moderately inflated shell that reaches approximately 6 inches in length. The surface of its shell is generally smooth and yellowish, greenish, or olive in color becoming darker and yellowish-brown with age. The rabbitsfoot mussel is primarily an inhabitant of small to medium-sized streams and some large

rivers, occurring in shallow areas along the bank and adjacent runs and shoals where the water velocity is reduced. This mussel may also occupy deep water runs up to 12 feet in depth; its preferred substrate is sand or gravel, and it seldom burrows but lies on its side. The host fish species essential to development of the glochidia of the mussel is believed to be several species of shiners (genus *Cyprinella*, *Luxilus*, and *Notropis*) for populations west of the Mississippi River. Major threats to the rabbitsfoot mussel are habitat loss and/or alteration due to impoundments, sedimentation (e.g., resulting from poor timber harvest best management practices, construction activities, cattle grazing, etc.), agricultural pollutants, and lead and zinc mining.

## PLANTS

### American Chaffseed

Federally listed as an endangered plant species, the American chaffseed (*Schwalbea americana*) grows on “pimple mounds” in the longleaf pine flatwoods of Allen and Beauregard Parishes in southwestern Louisiana. The American chaffseed is a tall perennial herb in the snapdragon family, and can be identified by its two-inch-long, purplish-yellow, tubular flowers. The plant, a partial parasite on the roots of other plants, grows to a height of 12 to 24 inches at the time of flowering in the spring. Its leaves are alternate, lance-shaped to elliptic, and its flowers are borne singularly on short stalks. The fruit is a long, narrow capsule enclosed in a sac-like structure. Flowering occurs from April to June in the south and from June to mid-July in the north. Fruits mature from early summer in the south to October in the north.

A major threat to this species is the decline in prescribed burning throughout the Atlantic and Gulf coasts.

### Earth Fruit

The federally threatened earth fruit (*Geocarpon minimum*) is a tiny annual plant that completes its life cycle within 4 to 6 weeks and is rarely visible except during the flowering stage in March and April. The flowers, which are inconspicuous in the leaf axils, have a greenish-red calyx and no petals. The fruit (a capsule) splits open into three parts at maturity, releasing numerous 0.02-inch-long seeds. Young plants are dull gray, turn reddish-purple at maturity, and then diminish at the end of the life cycle. Under optimal conditions, the seeds remain in the nearby earth until the following spring when they complete another life cycle.

The current known distribution of earth fruit is limited to the sandstone glades of Missouri and the saline prairies of Arkansas and Louisiana. In Louisiana, saline prairies are generally located as openings within or adjacent to forested habitat. These prairies are commonly characterized by a low, extensive coverage of sedges, grasses, and forbs, with few to no trees or shrubs. This topographic characteristic is a function of the soil chemistry, which precludes trees from growing in the area and allows for specialized vegetation to establish. Because the earth fruit is not tolerant of competition from other herbaceous species, the plant often occurs on “slick spots,” which are small areas within a saline prairie that are either bare or have noticeably less vegetation than the surrounding area. In Louisiana, earth fruit is currently known to occur in saline prairies of Caddo, DeSoto, and Winn Parishes. The earth fruit is associated with the Bonn soil series in DeSoto and Caddo Parishes and with the Brimstone soil series in Winn Parish. However, in certain landscape positions, the soil survey may have mapped these soils under the Guyton soil series. More information about the earth fruit can be found in the recovery plan at [http://ecos.fws.gov/docs/recovery\\_plan/930726.pdf](http://ecos.fws.gov/docs/recovery_plan/930726.pdf) or in the species’ 5-year review at [http://ecos.fws.gov/docs/five\\_year\\_review/doc2487.pdf](http://ecos.fws.gov/docs/five_year_review/doc2487.pdf).

Major threats to this species include conversion of saline prairies to pastureland or other land uses, cattle grazing, habitat destruction through construction activities, and rutting via the use of heavy equipment and off-road vehicles.

If the proposed project area would cross saline prairie habitat, the Service recommends one of the following to minimize project related impacts to earth fruit:

- (1) Earth fruit surveys should be conducted by qualified personnel during the flowering season (March and April). Even at the flowering stage, this species can be difficult to detect in the field; thus, thorough survey efforts are needed within appropriate habitat to determine species presence/absence. If found, earth fruit locations should be marked or flagged and avoided during construction.
- (2) In lieu of conducting surveys, we recommend avoiding project-related impacts to saline prairies.

### Louisiana Quillwort

Federally listed as an endangered plant species, the Louisiana quillwort (*Isoetes louisianensis*) is a small, semi-aquatic, facultative evergreen plant with spirally arranged leaves (sporophylls) arising from a globose, two-lobed corm. The hollow leaves are transversely septate, and measure approximately 0.12 inches wide and up to 16 inches long. This species grows on sand and gravel bars on the accreting sides of streams and moist overflow channels within riparian forest and bay head swamp communities in Washington and St. Tammany Parishes, Louisiana.

The Louisiana quillwort is believed to be dependent on a special hydrologic regime resulting from the presence of small springs scattered at the base of banks or bluffs. Major threats to this species are habitat loss through hydrologic modifications of stream habitat, and land use practices that significantly alter stream water quality and hydrology.

## **CANDIDATE SPECIES INFORMATION:**

### Louisiana Pine Snake

The Louisiana pine snake (*Pituophis ruthveni*), is a candidate species for federal listing as a threatened or endangered species. Candidate species are those taxa for which the Service has on file sufficient information regarding biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Historically, the Louisiana pine snake occurred in portions of west-central Louisiana and east-central Texas. According to our records, the Louisiana pine snake is currently known to occur in Bienville, Sabine, Natchitoches, and Vernon Parishes, Louisiana, and in Angelina, Jasper, Newton, and Sabine Counties, Texas.

Louisiana pine snakes prefer pine forests with sandy, well-drained soils, substantial herbaceous ground cover, and little midstory (e.g., longleaf pine savannah). The Louisiana pine snake is highly associated with Baird's pocket gopher (*Geomys breviceps*), a major food source, which is dependent on the same habitat type. Louisiana pine snakes are most frequently found near or within pocket gopher burrow systems and move from one burrow system to another. Threats to this species include the sharp decline in quality and quantity of open pine forest habitat due to logging, suppression of fire, and short-rotation silviculture, as well as vehicle-related mortality on roads and off-road trails. A more recently identified threat for many snake species is entanglement in filamentous mesh (particularly synthetic, non-biodegradable types) used in erosion control blankets (ECBs) installed on pipeline and road construction rights-of-ways has been documented (Kapfer and Paloski 2011). The extent of mortality caused by this threat to the Louisiana pine snake population is unknown.

There is currently no requirement under the Endangered Species Act for consultation regarding project impacts on candidate species. In the interest of conserving the Louisiana pine snake, we encourage you to avoid project activities that would adversely affect this species or its habitat.