

McClain	interior least tern <sup>(6, 7)</sup> whooping crane <sup>(9)</sup> Arkansas River shiner piping plover <sup>(10)</sup>	Endangered Endangered Threatened, Critical habitat designated Threatened
McCurtain	American burying beetle <sup>(1, B)</sup> interior least tern <sup>(6, 7)</sup> Ouachita rock pocketbook mussel red-cockaded woodpecker scaleshell mussel winged mapleleaf mussel American alligator leopard darter piping plover <sup>(10)</sup> rabbitsfoot mussel	Endangered Endangered Endangered Endangered Endangered Threatened, Similarity of appearance Threatened, Critical habitat designated Threatened Candidate
McIntosh	American burying beetle <sup>(1, B)</sup> interior least tern <sup>(6, 7)</sup> whooping crane <sup>(9)</sup> Arkansas River shiner piping plover <sup>(10)</sup>	Endangered Endangered Endangered Threatened, Critical habitat designated Threatened
Murray	interior least tern <sup>(6, 7)</sup> whooping crane <sup>(9)</sup> piping plover <sup>(10)</sup>	Endangered Endangered Threatened
Muskogee	American burying beetle <sup>(1, B)</sup> gray bat <sup>(3)</sup> interior least tern <sup>(6, 7)</sup> whooping crane <sup>(8h)</sup> piping plover <sup>(10)</sup>	Endangered Endangered Endangered Endangered Threatened
Noble	interior least tern <sup>(6, 7)</sup> whooping crane <sup>(8)</sup> piping plover <sup>(10)</sup>	Endangered Endangered Threatened
Nowata	American burying beetle <sup>(1, B)</sup> interior least tern <sup>(7)</sup> piping plover <sup>(10)</sup> Neosho mucket mussel	Endangered Endangered Threatened Candidate
Okfuskee	American burying beetle <sup>(1, A)</sup> interior least tern <sup>(7)</sup> whooping crane <sup>(9)</sup> piping plover <sup>(10)</sup>	Endangered Endangered Endangered Threatened
Oklahoma	interior least tern <sup>(6, 7)</sup> whooping crane <sup>(8c, 9)</sup> piping plover <sup>(10)</sup>	Endangered Endangered Threatened
Okmulgee	American burying beetle <sup>(1, A)</sup> interior least tern <sup>(7)</sup> whooping crane <sup>(9)</sup> piping plover <sup>(10)</sup>	Endangered Endangered Endangered Threatened
Osage	American burying beetle <sup>(1, B)</sup>	Endangered

## American Burying Beetle (*Nicrophorus americanus*)

**Note - Posted May 17, 2011:** The 2011 ABB Survey Guidance is now available. Any ongoing projects that may affect the ABB and have already incorporated the current (2005) ABB guidance into their project planning do not need to incorporate the 2011 updated guidance. The Service does not expect ongoing projects to re-address the ABB. However, any new projects that may affect the ABB and have not implemented or incorporated the current (2005) ABB guidance into their planning will need to follow the 2011 updated guidance.



The trap and relocation and bait away guidance has not been changed. However, the trap and relocate guidance refers to the survey guidance. The 2011 survey guidance should be utilized. The same caveat applies to the trap and relocation guidance as to the survey protocol in regards to existing and new projects as described above.

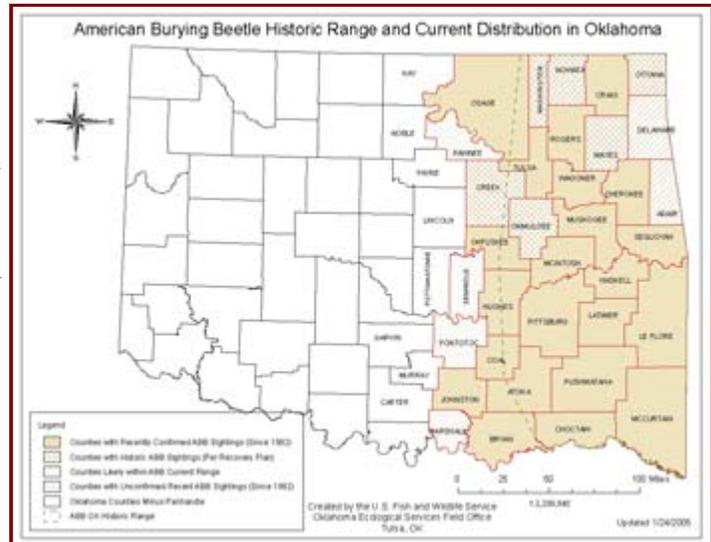
**Status:** Endangered (54 FR 29652; July 13, 1989). Critical habitat has not been designated. The Final Recovery Plan was signed on September 27, 1991 ([Link to Final Recovery Plan](#), 7 MB)

**Description:** The American burying beetle is the largest species of its genus in North America, measuring 0.98-1.4 inches in length. It was formerly known as the giant carrion beetle. The body of the American burying beetle is shiny black and has hardened protective wing covers (elytra) that meet in a straight line down the back. The elytra are smooth, shiny black, and each elytron has two scalloped shaped orange-red markings. The pronotum, or shield over the mid-section between the head and wings, is circular in shape with flattened margins and a raised central portion. The most diagnostic feature of the American burying beetle is the large orange-red marking on the raised portion of the pronotum, a feature shared with no other members of the genus in North America. The American burying beetle also has orange-red frons (a mustache-like feature) and a single orange-red marking on the top of the head (triangular in females and rectangular in males). Antennae are large, with notable orange clubs at the tips.

**Life History:** The American burying beetle is nocturnal (active at night), lives for only one year, and typically reproduces only once. During the winter months when temperatures are below 60°F (15°C) American burying beetles bury themselves in the soil to overwinter. When temperatures are above 60°F (15°C) they emerge from the soil and begin the mating and reproduction process. American burying beetles are scavengers, dependent on carrion for food and reproduction. They play an important role in breaking down decaying matter and recycling it back into the ecosystem. Reproduction involves burying a small vertebrate carcass (1-9 ounces; 35-250 grams), laying eggs on the carcass, and then larvae feeding on the carcass until mature. The American burying beetle is unusual in that both parents provide care to their young. American burying beetles must compete with other invertebrate species, as well as vertebrate species, for carrion. Even though American burying beetles are considered feeding habitat generalists, they have still disappeared from over 90% of their historic range. Habitat loss, alteration, and degradation have been attributed to the decline of the American burying beetle.

**Habitat:** Habitat requirements for American burying beetles, particularly reproductive habitat requirements, are not fully understood at this time. The American burying beetle has been found in various types of habitat including oak-pine woodlands, open fields, oak-hickory forest, open grasslands, and edge habitat. Research indicates that American burying beetles are feeding habitat generalists. Data is lacking pertaining to American burying beetle reproductive habitat requirements, but species experts assume that they are more restrictive in selecting their reproductive habitat than feeding habitat.

**Distribution:** The [historical distribution](#) of the American burying beetle included the eastern half of North America from southern Ontario, Canada and the northern peninsula of Michigan to the southern Atlantic coastal plain. This range included the eastern half of Oklahoma. At the time of listing there were only 3 known areas of occurrence. Two of these were in Oklahoma and one was in Rhode Island. The current distribution encompasses 8 states, including Rhode Island, Massachusetts, South Dakota, Nebraska, Kansas, Arkansas, Texas, and Oklahoma.



In Oklahoma the beetle is currently known to occur in over 20 counties (see map at right; click image for larger map). There are also 2 counties that have unconfirmed sightings in Oklahoma. An unconfirmed sighting is defined as a likely sighting although not confirmed by an entomologist or a Service biologist. In addition, there are 9 counties that are considered likely to support American burying beetles due to their proximity to counties with current American burying beetle occurrences and the presence of suitable habitat. However, no current surveys have been conducted in these counties. The State of Ohio has reintroduced American burying beetles over a 3 year period. To date the status of this reintroduced population is poor. Additional research is needed to properly understand the requirements of the American burying beetle and achieve successful reintroduction efforts.

**Causes of Decline:** The cause for the decline of this species is not clearly understood. Declines could be a result of habitat fragmentation, habitat loss, carcass limitation, pesticides, disease, light pollution, or a combination of these factors. Species experts believe the primary cause of decline habitat loss and fragmentation.

**Recovery Needs:** The highest priority recovery tasks as identified by the Recovery Plan include: 1) protecting and monitoring extant population; 2) maintaining captive populations; 3) continuing the Penikese Island reintroduction attempt; 4) conducting ecological studies; and 5) conducting field surveys for additional populations.

**Other information:** Ongoing projects in Oklahoma include a study of the habitat, soil, and weather preferences of the American burying beetle. In addition, surveys are being conducted to locate additional populations and monitor known populations. The populations on Block Island, RI; Camp Gruber, OK; and Fort Chaffee, AR, are being monitored annually. Genetic comparison research between the Oklahoma populations with the Block Island population has been conducted and has revealed no significant genetic differences between populations.



## Additional Documents and Information:

### Section 7 Consultations

- Project Evaluation Form for the American Burying Beetle (*being updated*): This form is to be completed and submitted with projects that are within the American burying beetle Range (as depicted in the map above) and that are required to comply with Section 7 of the Endangered Species Act.
- Biological Opinions
  - **NULL AND VOID** - Programmatic Biological Opinion on the American Burying Beetle for the Environmental Protection Agency. Due to the Energy Policy Act of 2005, this Programmatic Biological Opinion is null and void. The Energy Policy Act modified the Clean Water Act's National Pollutant Discharge Elimination System (NPDES) regulations. These modifications exempted certain oil and gas field activities from storm water discharge permit requirements. For a complete description of the modified regulations, refer to the Federal Register, Vol. 71, No. 112 / Monday, June 12, 2006, pages 33628-33460. This document is available [HERE](#)

### Surveying

- U.S. Fish and Wildlife Service (2011) American Burying Beetle *Nicrophorus americanus* Rangewide Survey Guidance ([PDF, 196KB](#)); this is the Service's recommended survey protocol
  - Appendices and Figures
    - [Appendix 1](#). American burying beetle Survey Data Form 4-4-11
    - [Appendix 2](#). American burying beetle Survey Summary Report (Electronic Copy) 4-4-11
    - [Appendix 3](#). Carrion Types Tested and Found Effective at Attracting American burying beetles 4-4-11
    - [Appendix 4](#). Description of Nicrophorus Species in Oklahoma 4-4-11
    - [Appendix 5](#). Identification Key to Nicrophorus Species in Oklahoma 4-4-11
    - [Appendix 6](#). American burying beetle accidental death form 4-4-11
    - [Appendix 7](#). American burying beetle Survey Summary Report (Hard Copy) 4-4-11
    - [Appendix 8](#). American burying beetle Summary Report column header descriptions 4-4-11
    - [Figure 1](#). American burying beetle Survey Transect Diagram 4-4-11
    - [Figure 2](#). American burying beetle Baited Cup Pitfall Trap with Cover 4-4-11
    - [Figure 3](#). American burying beetle Baited Bucket Pitfall Survey Trap with wood cover 4-4-11
    - [Figure 4](#). Baited Bucket Pitfall Trap Baited Bucket Pitfall Survey Trap with Wire Mesh 4-4-11
    - [Figure 5](#). Identification of American burying beetle Gender 4-4-11

### Section 10 Permittees, and Accidental Death Reporting

- American Burying Beetle Service Permittees ([PDF](#)): This is a comprehensive list of Section 10 Permitted Biologists, located in Oklahoma and surrounding states, approved by the Service to conduct American burying beetle surveys.
- American Burying Beetle Service Permit Requirements ([PDF](#)): This is a description of the required qualifications for obtaining a Section 10 Recovery Permit. General permit information is

available [HERE](#). The permit application form for a Section 10 Recovery Permit is available [HERE](#).

- American Burying Beetle Accidental Death Form ([PDF](#)): This form is to be filled out by a Section 10 Permitted Biologist when an American burying beetle is accidentally killed.
- American Burying Beetle Accidental Death Summary Report ([MS Excel Spreadsheet](#)): This form is to be completed annually by a Section 10 Permitted Biologist for all American burying beetles accidentally killed. This report must be submitted by October 31 of each year.

### **Baiting Away**

- American Burying Beetle Baiting Away Protocol ([PDF, 64 KB](#))
  - Reporting Form for American Burying Beetle Baiting Away Protocol ([MS Excel Document](#))

### **Trapping and Relocating**

- American Burying Beetle Trapping and Relocating Protocol ([PDF, 65KB](#))
  - Reporting Form for American Burying Beetle Trapping and Relocating Protocol ([MS Excel Document](#))

### **Databases**

- Surveys
  - Database of presence/absence surveys conducted in Oklahoma for the American burying beetle ([PDF](#)). Every attempt is made by the Service to update this on a regular basis. *Last updated on 8-6-2010.*
  - Heading and Field Codes for survey database ([Excel Spreadsheet, 43 KB](#))

### **Maps**

- Historical and Current Range of the American Burying Beetle in the United States ([JPG Image, 300 KB](#))
- Current Range of the American Burying Beetle in the Eastern United States ([JPG Image, 122 KB](#))
- Current Range of the American Burying Beetle in the Central United States ([JPG Image, 398 KB](#))
- Current Range of the American Burying Beetle in Oklahoma ([JPG Image, 396 KB](#))

**BACK**

## Interior Least Tern (*Sterna antillarum*)

**Status:** Endangered (50 FR 21784; May 28, 1985).  
Critical habitat has not been designated.

**Description:** The interior least tern is the smallest member of the tern family with a wingspan of 20 inches (50 cm). They have a grayish back and wings, and snowy white undersides. Least terns can be distinguished from all other terns by their combination of a black crown, white forehead, and a variable black-tipped yellow bill.



**Life History:** Interior least terns arrive at breeding sites from late April to early June where they typically spend four to five months. Pairs go through an elaborate courtship period that includes courtship feedings and a variety of postures and vocalizations. Least terns nest in small colonies on exposed salt flats, river sandbars, or reservoir beaches. Nests are small scrapes in the sand, and usually two or three eggs are laid. The young are fairly mobile soon after hatching. Both parents feed the young and remain with them until fall migration. Terns will travel four or more miles (6+ km) from their breeding colonies to find the small fish that make up the major part of their diet.

**Habitat:** Interior least terns favor islands or sandbars along large rivers for nesting. The sand must be mostly clear of vegetation to be used by terns. Least terns prefer shallow water for fishing. Water levels must be low enough so that nests stay dry.

**Distribution:** The historic distribution of the interior least tern was the major river systems of the midwestern United States. These rivers included the Red, Rio Grande, Arkansas, Missouri, Ohio, and Mississippi river systems. Currently, they occur as small remnant colonies throughout their former range. In Oklahoma, interior least terns nest along most of the larger rivers, as well as at the Salt Plains National Wildlife Refuge near Jet, Oklahoma. Interior least terns winter in South America.

**Causes of Decline:** Many nesting areas have been permanently flooded by reservoirs and channelization projects. Unpredictable water discharge patterns below dams flood nesting areas. Overgrowth of brush and trees also eliminates remaining habitat. This prevents terns from using these areas as nesting sites. The recreational use of sandbars by humans is a major threat to the tern's reproductive success.

**Recovery Needs:** Primary recovery tasks for interior least tern populations include determining population trends and habitat requirements, increasing breeding populations, and developing public awareness of the needs of least terns through educational programs.

**Other information:** The recovery plan for the interior least tern was released in 1990. The United States Fish and Wildlife Service is working with various state and federal agencies to monitor and protect the least tern. In Oklahoma, they are working with the Nature Conservancy to protect tern habitat along the Arkansas River near Tulsa, and along the Canadian River near Norman.

*Information current as of April 1992*

**BACK**

## Ouachita Rock Pocketbook Mussel (*Arkansia wheeleri*)

**Status:** Endangered (56 FR 54950; October 23, 1991). Critical habitat has not been designated.

**Description:** The Ouachita rock pocketbook is a freshwater mussel. Its shell reaches a maximum size of 4.4 inches (11 cm) long, 3.4 inches (8.6 cm) high, and 2.4 inches (6 cm) wide. The shell is relatively thick, moderately inflated, and subovate. The outer surface is chestnut-brown to black with a silky luster. It is distinguished from other similar appearing species by distinctive details of its shell.



**Life History:** Very little is known about the life history of the Ouachita rock pocketbook. However, closely related species develop eggs during the fall and then release larvae during the spring. The larvae attach to fins, gills, or scales of fish until they mature. Adults feed by filtering out plankton and small particles from the water.

**Habitat:** The Ouachita rock pocketbook inhabits pools, backwaters, and side channels of certain rivers and large creeks in or near the southern slope of the Ouachita Uplift. The species occupies stable substrates containing gravel, sand, and other materials. The Ouachita rock pocketbook always occurs within large mussel beds containing a diversity of mussel species.

**Distribution:** The historical distribution of the Ouachita rock pocketbook included the Kiamichi River in southeastern Oklahoma, the Little River in southwestern Arkansas, and the Ouachita River in central Arkansas. Recent surveys have found it surviving in a small section of the Little River in Oklahoma, at one locality in the Ouachita River in Arkansas, and within an 88-mile (141 km) section of the Kiamichi River upstream from Hugo Reservoir. Other recent evidence of the species includes single shells recovered from Pine and Sanders Creeks in Texas.

**Causes of Decline:** The range of the Ouachita rock pocketbook has been reduced due to the construction and operation of dams and by decreases in water quality. These and other factors pose continuing threats to the species.

**Recovery Needs:** Many life history and habitat requirements of the Ouachita rock pocketbook are not well understood, and gathering information about these is a high priority. Protecting known populations and habitat, and restoring degraded populations and habitat, also are needed.

**Other information:** The Kiamichi River has an unusually large number of mussel species. However, it is believed that no more than 1,800 individuals of the Ouachita rock pocketbook survive in that river and fewer than 100 individuals survive in the Little River.

*Information current as of July 2002*

**NOTICE:** the Recovery Plan, particularly the Introduction and the Appendix, is a large document and may take a considerable amount of time (as much as an hour) to download using a typical dial-up connection. Your screen may go blank during this time, and not display any portion of a downloading document until enough information has been downloaded to display. The document should continue to

download and display more information until the file transfer is completed. Alternatively, you can right-click on the link, select "Save Target As ..." from the popup menu, give the file a name, select its download location, and click "Save." At that point, you should be able to download the document to your desired location and still be able to browse the Web (although at a slower rate). A popup window will demonstrate the progress of downloading the file and estimate the time needed for completion.

Click [HERE](#) to get a copy of the Recovery Plan (PDF, 13.4 MB); this Plan can also be downloaded in parts, as follow:

- [Part I - Introduction](#) (PDF, 1.35 MB)
- [Part II - Recovery and References](#) (PDF, 202 KB)
- [Part III - Implementation Schedule](#) (PDF, 115 KB)
- [Appendix A - Public Comments](#) (PDF, 11.7 MB)

Click [HERE](#) to get a copy of the Fact Sheet (PDF, 161 KB)

Click [HERE](#) to get a copy of the Recovery Plan News Release (MS Word, 91 KB)

**BACK**

## Red-cockaded Woodpecker (*Picoides borealis*)

**Status:** Endangered (35 FR 8495; June 2, 1970). Critical habitat has not been designated.

**Description:** The red-cockaded woodpecker averages about 7.25 inches (20 cm) long. It has a black-and-white barred back and a solid black cap and nape. It has prominent white cheek patches. The male has a tiny red tuft behind the eye, near the ear (the cockade). The call notes of the red-cockaded woodpecker are raspy and nasal sounding.

**Life History:** Red-cockaded woodpeckers live in extended family groups known as clans. Clans consist of a single breeding pair, young birds, and sons of the breeding male. The entire clan helps in territory defense. The breeding male can live for several years. When he dies, one of his sons typically inherits the breeding territory. Red-cockaded woodpeckers breed from late April to July. The breeding female lays between two and four eggs, and all members of the clan help incubate and feed the young. Red-cockaded woodpeckers eat various insects, spiders, and other invertebrates found under bark and in the dead limbs of trees.



**Habitat:** Red-cockaded woodpeckers live in old-growth (60-70+ years) loblolly, shortleaf, and especially slash and longleaf pine forests. Nesting and roosting cavities are made only in living pine trees over 60 years old. These trees produce large amounts of resin around the woodpeckers' cavities. The resin is thought to discourage potential predators, such as the black rat snake, from climbing the tree and attacking the woodpeckers. Ideal colony sites are located in parklike stands of pines with little or no understory growth. Foraging habitat of the woodpecker includes extensive pine or pine-hardwood forests. Fire plays an important part in maintaining red-cockaded woodpecker habitat by eliminating hardwood undergrowth.

**Distribution:** The historic distribution of the red-cockaded woodpecker included the southeastern United States. They ranged from Florida north to Virginia and west to eastern Texas and Oklahoma. In Oklahoma, they were restricted to the shortleaf pine area of southeastern Oklahoma. The red-cockaded woodpecker once occupied Bryan, Latimer, LeFlore, McCurtain, Pittsburg, and Pushmataha counties. The current distribution in Oklahoma includes only a limited area of McCurtain and Pushmataha counties. The Pushmataha colony was inactive in 1992.

**Causes of Decline:** Red-cockaded woodpeckers have declined primarily due to the loss of suitable habitat. Short-term-rotation timber management of private and public forests has eliminated much of the old-growth pine forest necessary to maintain healthy woodpecker populations.

**Recovery Needs:** The top recovery tasks for the red-cockaded woodpecker include continued monitoring of individual populations, protecting and managing woodpecker habitat on public and private land, and continued research of red-cockaded woodpecker ecology.

**Other information:** The construction of artificial cavities shows promise as a useful management technique for establishing new colonies. The original recovery plan was revised in 1985.

*Information current as of April 1992*

**BACK**



American Alligator  
(*Alligator mississippiensis*)

**Status:** Threatened due to similarity of appearance (50 FR 21059, June 4, 1987). Without critical habitat.

**Description:** Alligators are large, lizard-like reptiles with broadly rounded snouts. Adults are six (185 cm) to 12 (365 cm) feet long and can reach lengths of 15 (455 cm) or more

feet. They are blackish in appearance, but have pale crossbands on the back and vertical markings on the sides.

**Life History:** Females make nest mounds of grass and mud which insulate the eggs from drastic temperature fluctuations. Mounds may be two feet high and contain 30 to 50 eggs. The female will guard the nest until the young are ready to hatch. Incubation lasts from 60 to 70 days. At the end of incubation, the young begin making "chucking" sounds until the female uncovers the eggs. The young can grow a foot or more each year for several years. Both adults and young feed on a variety of animals, including fish, turtles, and other aquatic organisms.

**Habitat:** Alligators inhabit rivers, swamps, estuaries, lakes, and marshes.

**Distribution:** Alligators are found throughout the southeastern United States, from North Carolina to Texas. Oklahoma represents the northwestern most reaches of their range. The historic distribution in Oklahoma was limited to the Red River and Little River drainages in southeastern Oklahoma. Currently, alligators are considered to be an occasional visitor along the Red River in McCurtain County.

**Causes of Decline:** Alligators have declined in numbers due to overhunting and destruction of habitat. The young are at high risk from predation and human disturbance.

**Recovery Needs:** Top recovery tasks for the American alligator have included providing protection for the species (hunting and trade restrictions) and their habitat.

**Other information:** American alligator populations have responded well to protection and regulated hunting is now allowed in most states within the alligator's range.

*Information current as of April 1992*

**BACK**



## Leopard Darter (*Percina pantherina*)

**Status:** Threatened (43 FR 3715; January 27, 1978). Critical habitat has been designated.

**Description:** Leopard darters rarely exceed three inches (8 cm) in length. They have 11-14 large, dark spots on their sides. These spots contrast against a light background that ranges from pale olive on the back to yellowish-olive on the underside. The back of the fish has numerous saddles and bars.

**Life History:** Leopard darters typically live less than two years, but individuals older than three years have been found. Spawning occurs in March and April, but may occur as early as February, on gravel-bottomed riffles. The fertilized eggs are buried in gravel. The average clutch size is about 65 eggs. Young leopard darters begin to appear in May of each year. Food items include aquatic insects and microcrustaceans.

**Habitat:** Leopard darters are found in intermediate to larger streams. Typically, they are not found in smaller, headwater streams. From May to February, leopard darters prefer large, quiet pools with a rubble and boulder substrate. Spawning occurs on gravel substrates; however, the dominant riffle substrate may be gravel, rubble, boulder, and bedrock.

**Distribution:** Historically, the leopard darter was limited to upland, large stream habitats of the Little River drainage in Oklahoma and Arkansas. Currently, scattered populations are found within its historic range. In Oklahoma, it occurs within the Little River drainage (Mountain Fork, Glover, and Little Rivers) in LeFlore, McCurtain, and Pushmataha counties. In Arkansas, the leopard darter occurs in the Cossatot, Robinson Fork, and Mountain Fork Rivers in Howard, Polk, and Sevier Counties.

**Causes of Decline:** Leopard darters have never been common. The greatest threat to the survival of the species is the loss of habitat due to the construction of reservoirs. These impoundments also isolate populations, which further endangers the species. Logging activity, agricultural and industrial runoff, and gravel removal all pose threats as well.

**Recovery Needs:** Recovery of the leopard darter primarily involves managing and protecting its habitat and individual populations from known threats.

**Other information:** The recovery plan for the leopard darter was completed in 1984, and a revised draft is currently under preparation.

*Information current as of October 1997*

**BACK**



## Piping Plover (*Charadrius melodus*)

**Status:** Endangered in the watershed of the Great Lakes, threatened in the remainder of its range (50 FR 50726; December 11, 1985). Critical habitat has not been designated.

**Description:** The piping plover is a small shorebird about seven inches (18 cm) long with a wingspan of about 15 inches (38 cm). Adults have sand-colored upper parts and white undersides. During the breeding season, piping plovers have a single dark band across the breast and forehead. They can be distinguished from similar species by their bright orange legs.

**Life History:** Piping plovers arrive on their breeding grounds along the Atlantic Coast in late March and on their prairie breeding grounds in early May. Males defend territories and attract females with aerial displays. Piping plovers are monogamous and both parents participate in all stages of parental care. Four eggs are typically laid in a shallow nest

scrape and hatching occurs 25 to 31 days after completion of the clutch. Adults depart from breeding areas as early as the first week in July. Piping plovers feed on a variety of invertebrates, including worms, crustaceans, and insects.

**Habitat:** Piping plovers nest on sandy beaches along the ocean or lakes. Along rivers, piping plovers use the bare areas of islands or sandbars. They also nest on the pebbly mud of interior alkali lakes and ponds. Birds nesting on gravel have higher reproductive success than those nesting on alkali. During the winter, piping plovers use algal, mud, and sand flats along the Gulf Coast. Spoil islands in the intracoastal waterway are also used.

**Distribution:** Historically, piping plovers bred along the Atlantic Coast, on the Northern Great Plains, and around the Great Lakes. Piping plovers winter along the southern Atlantic and Gulf coasts, and in the Bahamas and West Indies. Although drastically reduced, remnant populations occur throughout their historic range. Piping plovers migrate through Oklahoma each spring and fall.

**Causes of Decline:** Piping plovers have been drastically reduced in number, due to the loss of beach habitat and to the modification of habitat through the channelization and damming of rivers. These practices eliminate sandbars and allow the growth of vegetation on nesting areas. Nesting success of piping plovers on beaches used by humans is much lower than on isolated beaches, because of disturbance.

**Recovery Needs:** Top needs for piping plover recovery include monitoring population trends, managing and protecting populations and their habitat, and further research on the general ecology of the species.

**Other information:** The piping plover recovery plan was completed in 1988. Hunters almost eliminated the species in the early 1900s. However, because of strict protection, populations recovered by the 1940s. The current decrease in numbers has resulted from habitat loss. Currently, the population of piping plovers is estimated at approximately 5,000 individuals.

*Information current as of April 1992*

**BACK**