

# Endangered and Threatened Species of Oklahoma



Oklahoma Cooperative Extension Service, Oklahoma State University  
Oklahoma Department of Wildlife Conservation • U.S. Environmental Protection Agency  
Oklahoma Department of Agriculture Plant Industries Division  
Oklahoma Natural Heritage Inventory Program • U.S. Fish and Wildlife Service

# Endangered and Threatened Species of Oklahoma

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\* ARKANSAS RIVER SHINER

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\* NOT INCLUDED IN DISCUSSION

## Preface

When the Endangered Species Act was passed in 1973, the course was set for a new direction in wildlife conservation. The act, which stated that endangered and threatened species of animals and plants... "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people," was the most far-reaching law ever enacted by any nation for the preservation of endangered species. The act created an international program involving the support of both the public and private sectors. It provides a framework for the federal government, the states, conservation organizations, individual citizens, businesses and industries, and foreign governments to work together to conserve endangered wildlife and plants throughout the world. Under the act, the Secretary of the Interior, acting through the U.S. Fish and Wildlife Service (USFWS), oversees the protection and conservation of all forms of animals and plants found to be in serious jeopardy.

Only species that are federally listed as endangered or threatened have been included in this publication. The information provided is general in nature. Specific information on species distribution, habitat, the Section 7 consultation process, availability of recovery plans, and

other aspects of the endangered species program can be obtained from:

U.S. Fish and Wildlife Service  
Oklahoma Ecological Services Field Office  
222 S. Houston, Suite A  
Tulsa, Oklahoma 74127  
Phone: 918-581-7458

The Oklahoma Department of Wildlife Conservation maintains a list of species that are considered endangered within the state and are protected by state law. Information regarding these state listed species may be obtained from:

Oklahoma Department of Wildlife Conservation  
1801 N. Lincoln, P.O. Box 53465  
Oklahoma City, Oklahoma 7315  
Phone: 405-521-3851

This publication is a cooperative effort between the U.S. Fish and Wildlife Service; the Oklahoma Cooperative Extension Service, Oklahoma State University; the Oklahoma Department of Agriculture Plant Industries Division; the U.S. Environmental Protection Agency; the Oklahoma Department of Wildlife Conservation; and the Oklahoma Natural Heritage Inventory Program.

# Introduction

As of August 4, 1992, 728 species had been added to the national list of endangered and threatened species. Twenty of these species have been recorded in Oklahoma, although the Eskimo curlew has not been observed in the state since 1948 and the eastern prairie-fringed orchid has not been found since 1918.

## Why Save Endangered Species?

Saving species is important to many people for a variety of reasons. People care about saving species for their beauty and the thrill of seeing them; for scientific and educational purposes; and for their ecological, historic, and cultural values. Each species plays an important role in the environment. When a species becomes endangered, it indicates that something is wrong with the environment on which we all depend. The measures we take to save endangered species will help ensure that the planet we leave for our children is as healthy as the planet our parents left for us.

## Causes of Decline

We can no longer blame the rapid loss of our wild animals and plants on "natural" causes. Habitat destruction is the single most serious threat to wildlife and plants. Other causes that can contribute to a species' decline include exploitation for commercial or other purposes, disease, predation, inadequate conservation laws, pollution, introduction of non-native species, or a combination of these factors.

## U.S. Fish and Wildlife Service

The primary objective of the U.S. Fish and Wildlife Service endangered species program is protecting endangered and threatened species and restoring them to a secure status in the wild. The USFWS' endangered species responsibilities include:

- Listing, reclassifying, and delisting species under the Endangered Species Act;
- Reviewing federal actions to ensure that they do not jeopardize the continued existence of listed species;
- Enforcing species protection under the act;
- Overseeing recovery activities for listed species;
- Providing for the protection of important habitat; and

- Providing grants to states to assist with their endangered species conservation efforts.

## What You Can Do To Help

- Find out which species in your area are endangered or threatened. Ask the U.S. Fish and Wildlife Service or the Oklahoma Department of Wildlife Conservation how you can help protect these species.
- Be informed about other wildlife and conservation issues in your area and tell others what you have learned.
- Visit one of the national wildlife refuges or the state wildlife management areas in Oklahoma. Become a volunteer or help out on special projects at a refuge or wildlife management area near your home.
- Join a conservation group.
- Report violations of wildlife laws to your local game ranger.
- Don't buy exotic or wild animals as pets. They are expensive and difficult to keep, and could be protected by law.
- Don't buy products made from endangered or threatened wildlife.
- Before traveling overseas, write to the U.S. Fish and Wildlife Service, Publications Unit, 130 Arlington Square, Washington, D.C. 20240, for a copy of the brochures "Facts about Federal Wildlife Laws" and "Buyer Beware," which explain what cannot be imported.
- Set an example by recycling and being careful not to litter. Balloons, discarded fishing line, and plastic six-pack rings can suffocate, entrap, or strangle wildlife. Participate in clean-up projects, or start your own project.
- Plan a vacation around observing wildlife in its natural habitat. Look for state, federal, or private wildlife conservation areas near your destination.
- Check your local library for reference books and directories, such as the "Conservation Directory" published by the National Wildlife Federation, for additional information.

## Species Account

### Western Prairie Fringed Orchid (*Platanthera praeclara*)

**STATUS:** Threatened (54 FR 39857; September 28, 1989). Critical habitat has not been designated.

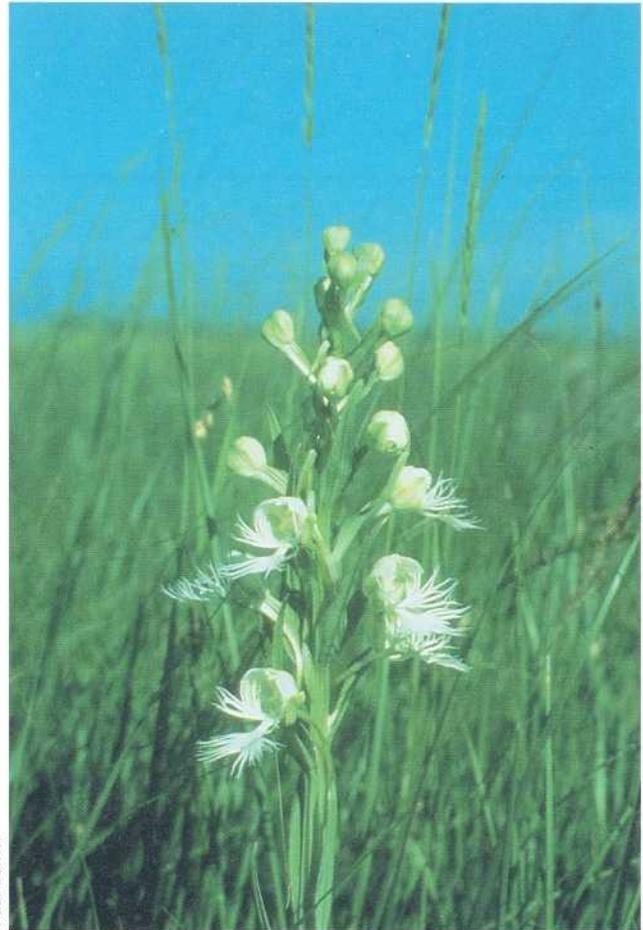
**DESCRIPTION:** The western prairie fringed orchid arises from a fleshy tuber. It grows from 1.25 to 3 feet (38-85 cm) tall. Each plant can have up to two dozen or more flowers arranged in a stalk. The flowers are white to creamy in color and more than an inch long. The leaves are long and thin and grow shorter closer to the flower stalk. The western prairie fringed orchid is distinguished from the eastern prairie fringed orchid by its slightly larger flowers, petal shape, and longer nectar spur.

**LIFE HISTORY:** The western prairie fringed orchid is a long-lived perennial. It emerges in May and blooms in June or in July further north. The flowers are fragrant at night and are pollinated by large sphinx moths.

**HABITAT:** The western prairie fringed orchid is a plant of the tallgrass prairie and requires direct sunlight for growth. It is most often found in moist habitats or sedge meadows. Western prairie fringed orchids have persisted in areas that have been lightly grazed, periodically burned, or regularly mowed. It is not yet understood how these activities affect plant survival. It may be that removal of dead grass mulch is beneficial, but heavy grazing is detrimental.

**DISTRIBUTION:** Historically, the western prairie fringed orchid was found in tallgrass prairies west of the Mississippi River. It occurred from extreme southern Canada south to northeastern Oklahoma. In Oklahoma, historical records (1975) exist for Craig and Rogers counties. Currently, extant populations of the orchid are found in Iowa, Kansas, Minnesota, Missouri, Nebraska, and North Dakota.

**CAUSES OF DECLINE:** The major factor contributing to the decline of the western prairie fringed orchid has been the conversion of native prairie to croplands. Fire suppression, overgrazing, and habitat fragmentation also have contributed to the decline of the species.



Paul Currier  
**Western Prairie Fringed Orchid (*Platanthera praeclara*)**

**RECOVERY NEEDS:** Research is being done to determine the effects of grazing, burning, and mowing on populations of the western prairie fringed orchid. Finding new populations and protecting known populations are other high priority tasks.

**OTHER INFORMATION:** The western prairie fringed orchid was described as a distinct species, separate from the eastern prairie fringed orchid in 1986. Both are threatened species.

Western Prairie Fringed Orchid  
*(Platanthera praeclara)*



## SPECIES ACCOUNT (supplement)

### Western Prairie Fringed Orchid

#### General Instructions

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the W. Prairie Fringed Orchid in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

Conversion of tallgrass prairie to other vegetative cover types has historically been the major reason for the decline of this specie. However, as a result of overgrazing, herbicide use, and, fire suppression, the plant is uncommon, even in remaining tallgrass prairie habitat.

Brush and weed control practices that include the use of herbicides on rangeland could be detrimental to the orchid. Conversely, practices that may maintain or improve habitat for this plant include: proper grazing use, prescribed burning, and proper use of native hay meadows.

#### Instructions

Consider the potential impacts of herbicide use on this plant when planning brush and weed control measures in suitable rangeland habitat. Contact the SCS state biologist if this plant is identified in tallgrass prairie rangelands.

## Species Account

### Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)

**STATUS:** Threatened (54 FR 39857; September 28, 1989). Critical habitat has not been designated.

**DESCRIPTION:** The eastern prairie fringed orchid arises from a fleshy tuber. The plant can grow up to three feet tall. The inflorescence is large and showy and may have up to 40 white flowers. The leaves are long and thin. It is distinguished from the western prairie fringed orchid by its smaller flowers [less than one inch (2.5 cm) long], more oval petals, and a shorter nectar spur.

**LIFE HISTORY:** The eastern prairie fringed orchid is a long-lived perennial plant. Its tuber rootstalk helps it survive grass fires. Fires and rain stimulate the plant to grow and flower. The plant emerges each year in May and flowering begins by late June. The flowers are pollinated at night by large sphinx moths.

**HABITAT:** The eastern prairie fringed orchid is found in moist to wet tallgrass prairie. In the eastern part of its range, it is found in wet sedge meadows.

**DISTRIBUTION:** Historically, the eastern prairie fringed orchid occurred east of the Mississippi River and in Iowa and Missouri. Scattered populations are found in Illinois, Indiana, Iowa, Maine, Michigan, New York, Ohio, Virginia, Wisconsin, and Ontario, Canada. A historic record exists for Choctaw County, Oklahoma. The plant has not been observed in Oklahoma within the past 150 years.

**CAUSES OF DECLINE:** The major factor in the decline of the eastern prairie fringed orchid has been a loss of habitat due to grazing, fire suppression, and agricultural conversion.



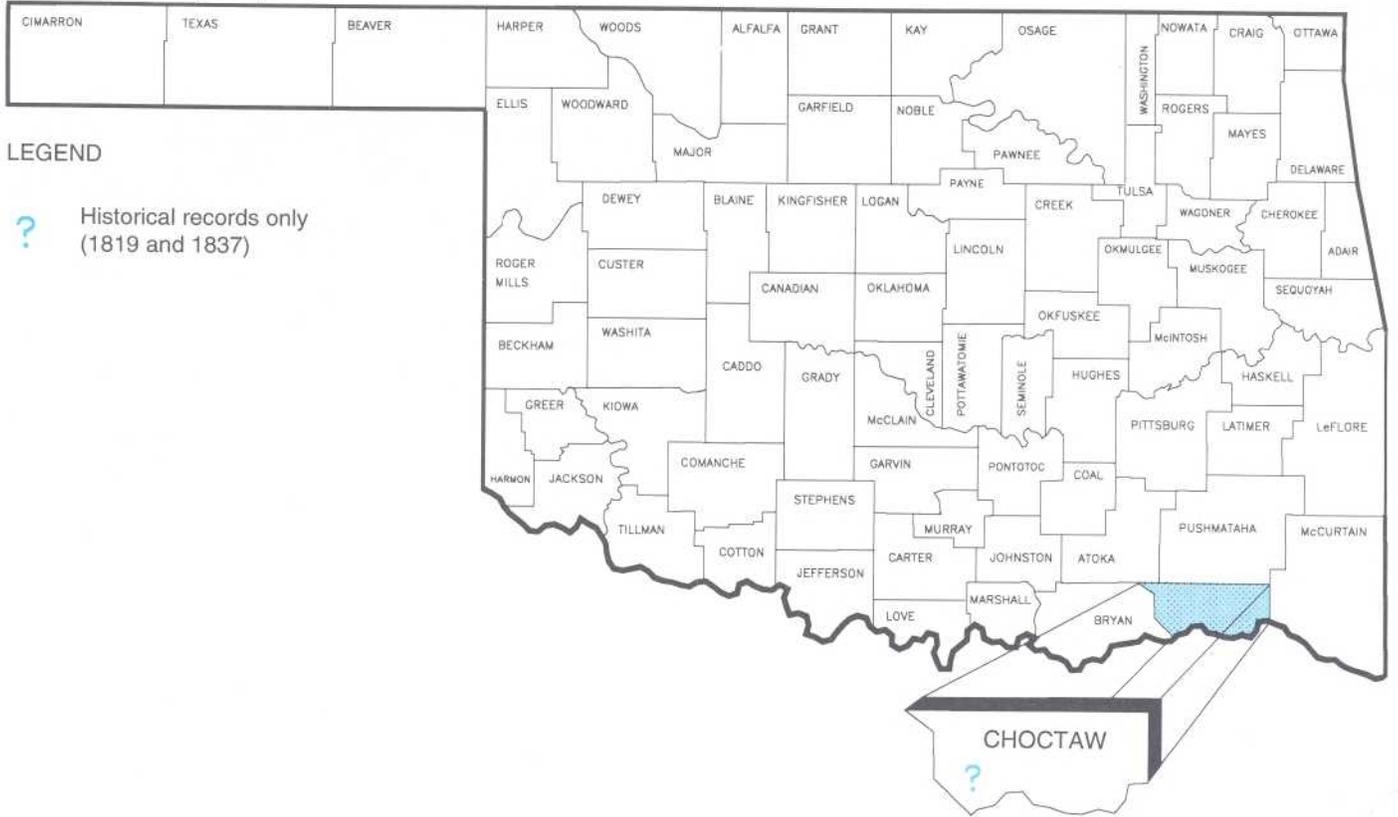
Marlin Bowles

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)

**RECOVERY NEEDS:** Populations of the eastern prairie fringed orchid are being monitored and new populations are being sought. It is important to maintain proper habitat for existing populations. This includes periodic burning to eliminate woody vegetation.

**OTHER INFORMATION:** The first collection (1819) of this species was Arkansas Territory, now Choctaw County. However, it has not been observed in Oklahoma since that time.

Eastern Prairie Fringed Orchid  
(*Platanthera leucophaea*)



**SPECIES ACCOUNT**  
(supplement)

**Eastern Prairie Fringed Orchid**

**General Instructions**

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the E. Prairie Fringed Orchid in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

**Land Treatment and Practice Considerations**

Conversion of tallgrass prairie to other vegetative cover types has historically been the major reason for the decline of this specie. However, as a result of overgrazing, herbicide use, and, fire suppression, the plant is uncommon, even in remaining tallgrass prairie habitat.

Brush and weed control practices that include the use of herbicides on rangeland could be detrimental to the orchid. Conversely, practices that may maintain or improve habitat for this plant include: proper grazing use, prescribed burning, and proper use of native hay meadows.

**Instructions**

Consider the potential impacts of herbicide use on this plant when planning brush and weed control measures in suitable rangeland habitat. Contact the SCS state biologist if this plant is identified in tallgrass prairie rangelands.

## Species Account

### Ouachita Rock-pocketbook (*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 4.5 inches (12 cm) long, three inches (8 cm) high, and two inches (5 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 each fall and then release larvae during the spring. The larvae attach to the fins, gills, or scales of fish until they mature. Adults feed by filtering out small particles from the water.

**HABITAT:** The Ouachita rock-pocketbook is found primarily in pools of small, slow-moving rivers. To a lesser extent, these mussels are present in stream-side channels and backwaters as well. They appear to prefer areas with cobble-gravel bottoms, although they are also found in sandy areas.

**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. Currently, it is limited to a five-mile (8 km) segment of the Little River in Arkansas and an 80-mile (130 km) stretch of the Kiamichi River upstream from Hugo Reservoir.

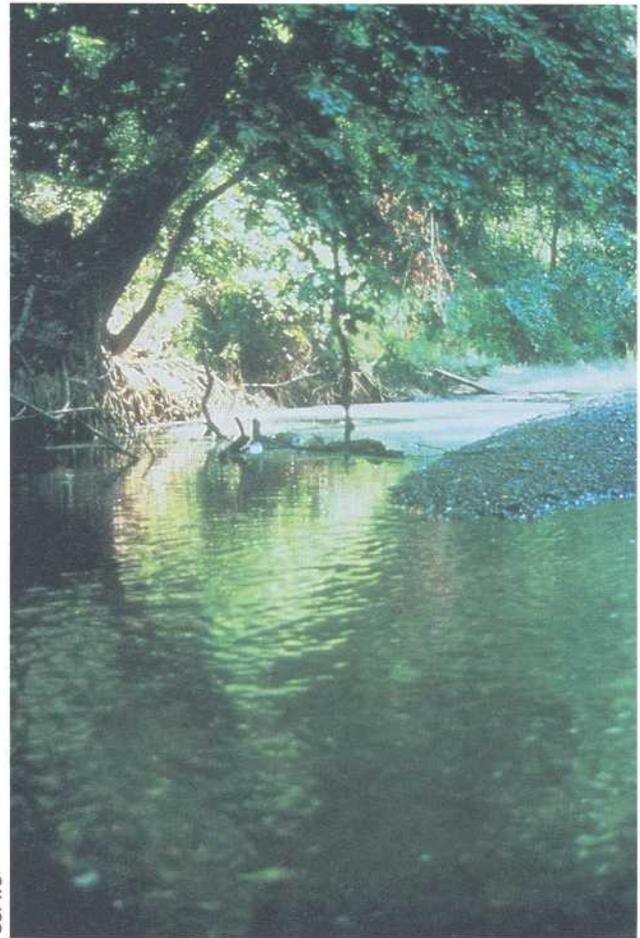
**CAUSES OF DECLINE:** The range of the Ouachita rock-pocketbook has been reduced due to the construction of dams and a decrease in water quality. Gravel dredging operations also pose a threat to the species.

**RECOVERY NEEDS:** The life history and habitat requirements of the Ouachita rock-pocketbook are not well understood and gathering information about these factors is a top priority. Continued surveying for additional populations, monitoring known populations, and protecting their habitat also are needed.

**OTHER INFORMATION:** The Kiamichi River has an unusually large number of mussel species. However, no more than 1,000 individuals of the Ouachita rock-pocketbook survive in the river and fewer than 100 individuals survive in the Little River.



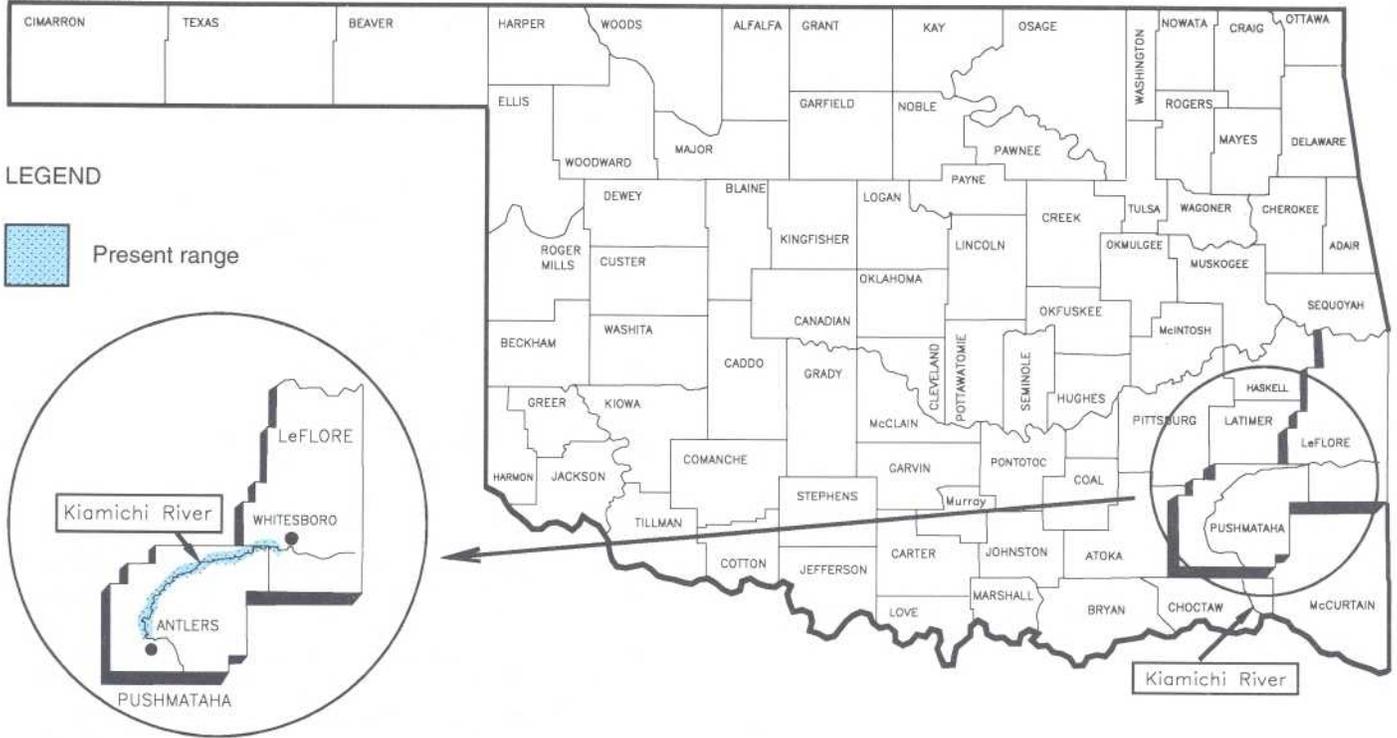
Pat Mehlhop-Cifelli



USFWS

Top: Ouachita Rock-pocketbook (*Arkansia wheeleri*). Below: Ouachita Rock-pocketbook habitat.

Ouachita Rock-pocketbook  
*(Arkansia wheeleri)*



## SPECIES ACCOUNT (supplement)

### Ouachita Rock-pocketbook

#### General Information

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Land treatment measures and conservation practices that may affect the Ouachita rock-pocketbook in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

#### Land Treatment and Practice Considerations

SCS assisted ponds and floodwater retarding structures are generally constructed on smaller headwater streams that do not provide habitat for this mussel. Projects on larger streams and rivers within the distribution area could destroy suitable habitat. Other threats include degradation of water quality by pesticides, chemicals, animal wastes, and sediments from agricultural and forestry practices.

Pest management and animal waste management plans that consider the impacts on stream water quality can reduce the threat of habitat loss. Protection of streamside habitat (buffer zones) and proper planning of access roads for logging activities can help minimize sediment loads in stream habitat.

#### Instructions

Pest management and waste management plans should consider the impacts on stream habitat and water quality. Impacts should be determined before planning dams and impoundments on streams near the confluence with listed rivers. The Fish and Wildlife Service should be contacted if there is a question about the occurrence of this specie at proposed dam sites.

## Species Account

### American Burying Beetle (*Nicrophorus americanus*)

**STATUS:** Endangered (54 FR 29652; July 13, 1989).  
Critical habitat has not been designated.

**DESCRIPTION:** The American burying beetle is a large (1.5 inch; 4 cm) beetle with a shiny black appearance. Wing covers have four, relatively large, orange spots, and the pronotum is red. The beetle feeds on carrion. It was formerly known as the giant carrion beetle.

**LIFE HISTORY:** The American burying beetle reproduces by burying a small vertebrate carcass (1-9 ounces; 35-250 grams). An underground chamber is formed around the buried carcass, and eggs are laid in a side tunnel exiting the chamber. The larva then feed on the carcass. A positive relationship exists between brood size and carcass size. In the field, brood size has been found to range from three to 31. The American burying beetle is unusual among insects in that both parents provide care to their young. Care involves guarding as well as feeding the young. Adults sometimes have more than one brood in a season. American burying beetles are active on warm (above 60°F or 15°C) nights. Individuals are known to live only about a year.

**HABITAT:** In Oklahoma, American burying beetles found in the Ouachita Mountains occur in oak-pine woodlands, open fields, and in the transition zone between the two. The other known Oklahoma population occurs on the western edge of the Ozark uplift. These beetles are found in oak-hickory forests and open grasslands. Habitat requirements for the American burying beetle are not fully understood at this time.

**DISTRIBUTION:** The historical distribution of the American burying beetle includes the eastern half of North America from southern Ontario, Canada, and the northern peninsula of Michigan to the southern Atlantic coastal plain. The western most known occurrence is a 1988 record from Dawes County, Nebraska. The current distribution includes Block Island, Rhode Island, as well as Bryan, Cherokee, Haskell, Latimer, LeFlore, Muskogee, Sequoyah, and Tulsa counties in Oklahoma. About 100 American burying beetles have been reintroduced to Penikese Island, Massachusetts. Their status is currently being monitored.



Andrea J. Kozol

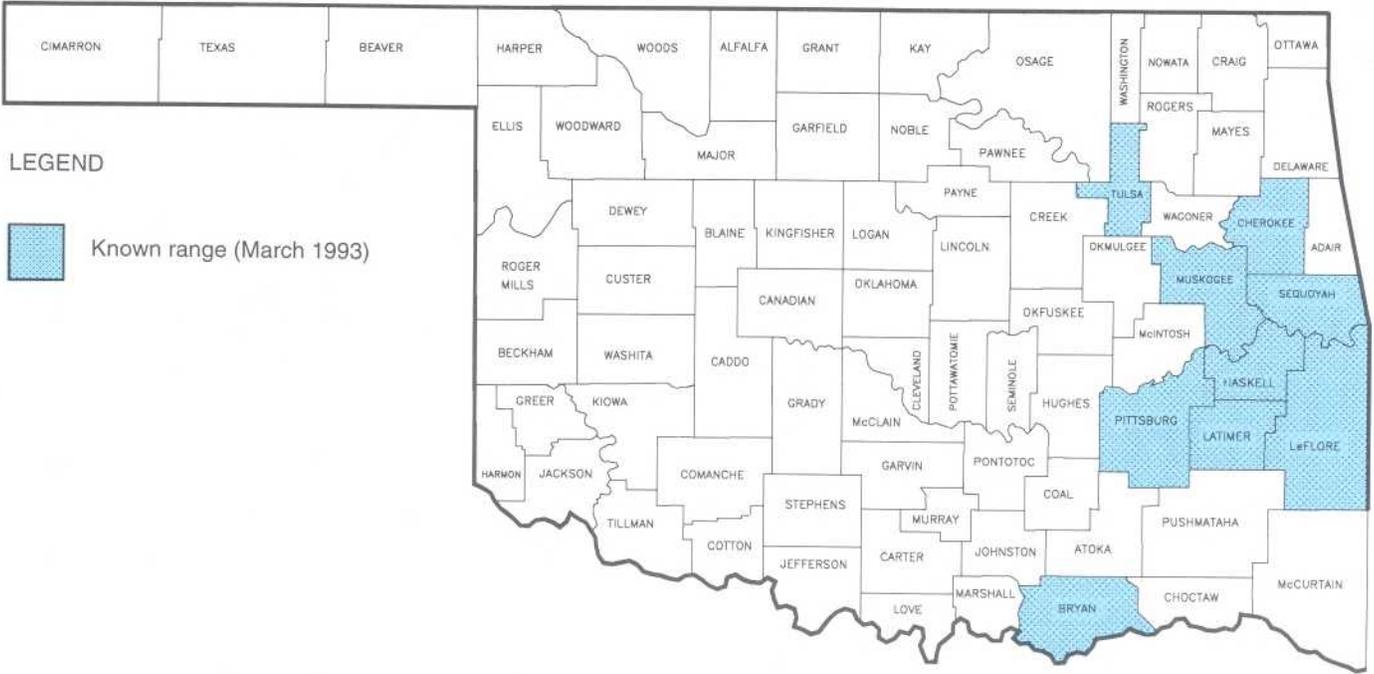
American Burying Beetle (*Nicrophorus americanus*)

**CAUSES OF DECLINE:** The cause for the decline of this species is undetermined. It may be a result of habitat fragmentation, habitat loss, carcass limitation, pesticides, disease, light pollution, or a combination of these factors.

**RECOVERY NEEDS:** The highest priority recovery tasks include: 1) protecting and monitoring extant populations, 2) maintaining captive populations, 3) continuing the Penikese Island reintroduction attempt, 4) conducting ecological studies, and 5) conducting field surveys for additional populations. The recovery plan was signed on September 27, 1991.

**OTHER INFORMATION:** Ongoing projects in Oklahoma include a study of the habitat preferences of the American burying beetle and surveys to locate additional populations. Other work includes a genetic comparison of the Oklahoma population with the Block Island population. The population size on Block Island is being estimated annually. Beetles originating from Block Island were used to establish captive populations at Boston University and the Cincinnati Zoo. A third captive population using beetles from Oklahoma is planned.

American Burying Beetle  
(*Nicrophorus americanus*)



## SPECIES ACCOUNT (supplement)

### American Burying Beetle

#### General Information

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Land treatment measures and conservation practices that may affect the American burying beetle in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

#### Land Treatment and Practice Considerations

Habitat requirements of this species are not fully understood and the causes for decline are undetermined. Consequently, only general statements about detrimental practices can be made. In Oklahoma, beetles are found in oak-hickory forests and open grasslands. It is assumed that conversion of these areas to other vegetative cover types or land uses would be detrimental to existing beetle populations. It is also assumed that pest management involving insecticides would be detrimental to existing populations.

#### Instructions

The Oklahoma Natural Heritage Inventory (ONHI) has site specific information on known populations in four eastern counties. Contact ONHI before planning potentially adverse practices such as land clearing and pest management (using insecticides) in counties with known beetle populations. Contact the SCS state biologist if beetles are discovered when installing treatment measures or practices.

## Species Account

### 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 10 or more large, dark spots on their back and sides. These spots contrast against a light background that ranges from pale olive on the back to yellowish-olive on the underside.

**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 on gravel-bottomed riffles. The fertilized eggs are buried in sand. 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 green algae.

**HABITAT:** Leopard darters are found in intermediate to larger streams within the Little River system. 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 during March and April 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.



Richard Standage, USFS

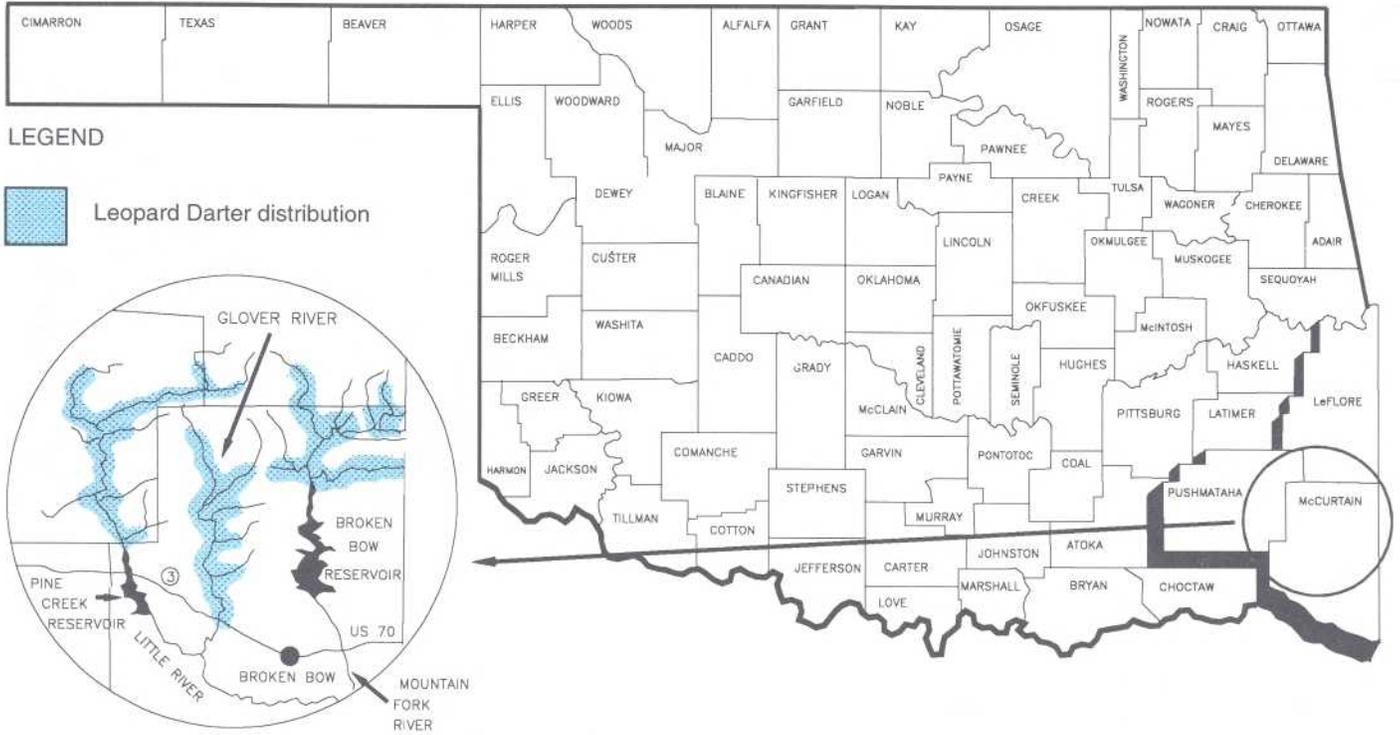
Leopard Darter (*Percina pantherina*)

**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 dams. Dams also isolate populations, which further endangers the species. Logging activity, agricultural and industrial run-off, and gravel removal all pose threats as well.

**RECOVERY NEEDS:** Top recovery tasks for the leopard darter include identification of habitat, research into its general ecology, and managing and protecting its habitat and individual populations.

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

Leopard Darter  
*(Percina pantherina)*



## SPECIES ACCOUNT (supplement)

### Leopard Darter

#### General Information

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Land treatment measures and conservation practices that may affect the Leopard Darter in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

Pond construction, floodwater retarding structures, and stream channel work on intermediate and large streams within the Little River drainage are construction activities that could adversely impact the leopard darter. Most SCS assisted pond construction occurs on smaller headwater streams that are not used by the leopard darter. Other threats include degradation of water quality by pesticides, chemicals, animal wastes, and sediments from agricultural and forestry practices.

Pest management and waste management plans that consider the impacts on stream water quality can reduce the threat of habitat loss. Protection of streamside habitat and proper planning of access roads for logging activities can help minimize sediment loads in streams.

#### Instructions

Pest management and waste management plans should consider the impacts on stream habitat and water quality. Some pesticide and chemical uses may be restricted within specific zones paralleling stream habitat. Product labels will identify the restricted use areas. SCS recommendations should be consistent with these restrictions. Impacts should be determined before planning dams and impoundments on streams within the distribution range. The Fish and Wildlife Service should be contacted if there is a question about the occurrence of this specie at proposed dam sites.

# Species Account

## Neosho Madtom (*Noturus placidus*)

**STATUS:** Threatened (55 FR 21148; May 22, 1990) without critical habitat.

**DESCRIPTION:** The Neosho madtom has features characteristic of all North American catfish, including scaleless skin and a relatively large head with sensory barbels. Adult Neosho madtoms average less than three inches (8 cm) in length. They have a brownish midline stripe and an overall mottled appearance. The light-colored edge of the adipose fin is the best characteristic to distinguish it from similar species.

**LIFE HISTORY:** Neosho madtoms are short-lived fish, only occasionally surviving more than three years. Little is known about the reproductive habits of the Neosho madtom. They are believed to spawn in June and July. In closely related species, eggs are laid under small stones, and the eggs and sometimes young fish are guarded by a parent. Adults will bury themselves in the gravel during the day and come out to feed at night. Larval, aquatic insects are the major food source of Neosho madtoms.

**HABITAT:** The preferred habitat of adult Neosho madtoms is shallow riffles with loose gravel bottoms. They are occasionally found in areas with sandy bottoms covered with leaf litter. Young Neosho madtoms are found in deeper pools, downstream from riffles.

**DISTRIBUTION:** Historically, the Neosho madtom was found in the Neosho, Cottonwood, Spring, and Illinois rivers in Kansas, Missouri, and Oklahoma. It is believed to be no longer present in the Illinois River and scattered through the rest of its historic range. In Oklahoma, it is present only in Ottawa and Craig counties.



Suzanne L. and Joseph T. Collins

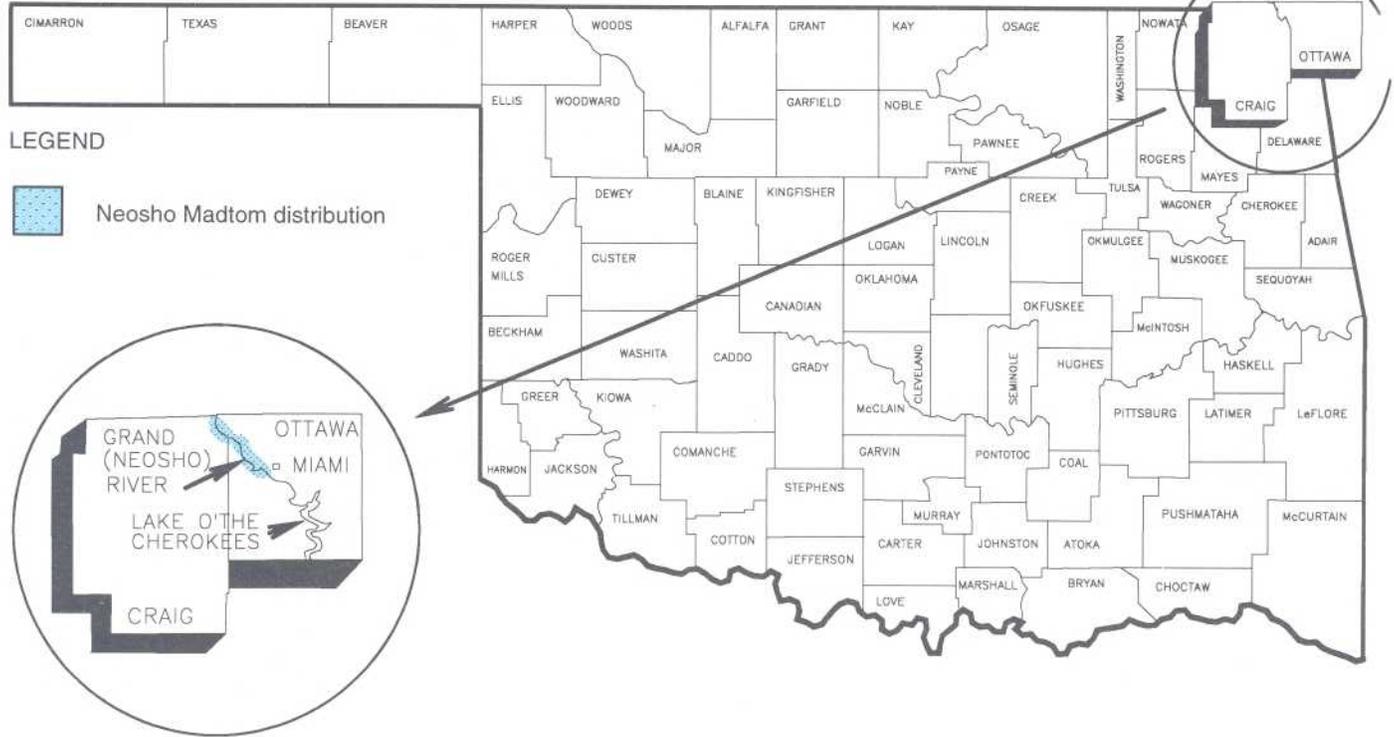
Neosho Madtom (*Noturus placidus*)

**CAUSES OF DECLINE:** The Neosho madtom has declined due to habitat destruction. Construction of dams, dredging of gravel, and an increase in water demands have contributed to habitat loss. Pollution from cattle feedlot runoff has adversely affected the fish as well.

**RECOVERY NEEDS:** Top recovery tasks for the Neosho madtom include further investigations on the biology of the fish, protecting current populations, and developing a reintroduction plan.

**OTHER INFORMATION:** The recovery plan for the Neosho madtom was approved in September of 1991.

Neosho Madtom  
(*Noturus placidus*)



## SPECIES ACCOUNT (supplement)

### Neosho Madtom

#### General Information

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Land treatment measures and conservation practices that may affect the Neosho Madtom in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

SCS assisted ponds, and floodwater retarding structures are generally constructed on smaller headwater streams that are not used by the madtom. Projects on larger streams and rivers within the distribution area could destroy suitable habitat. Other threats include degradation of water quality by pesticides, chemicals, animal wastes and sediments from livestock and agricultural activities.

Pest management and waste management plans that consider the impacts on stream water quality can reduce the threat of habitat loss. Protection of streamside habitat (buffer zones) will also improve aquatic habitat used by madtoms and other fish.

#### Instructions

Develop pest management and animal waste management plans that will protect stream habitat and water quality. Impacts should be determined before planning dams and impoundments on streams near the confluence with listed rivers. The Fish and Wildlife Service should be contacted if there is a question about the occurrence of this specie at proposed dam sites.

# Species Account

## Ozark Cavefish (*Amblyopsis rosae*)

**STATUS:** Threatened (49 FR 43965; November 1, 1984). Critical habitat has not been designated.

**DESCRIPTION:** The Ozark cavefish is pinkish-white and reaches a maximum length of two inches (5 cm). The head is flattened, and it has a slightly protruding lower jaw. The fish has no pelvic fin; the dorsal and anal fins are farther back than on most fish. The Ozark cavefish has only rudimentary eyes and no optic nerve.

**LIFE HISTORY:** The Ozark cavefish lives only in caves. It has no pigmentation and a loss of unused characters. However, it is well adapted to a cave environment through well-developed sensory papillae. They feed primarily on microscopic organisms, as well as small crustaceans and salamander larvae. The reproductive rate of Ozark cavefish is relatively low compared to most other fish.

**HABITAT:** Caves which have populations of the Ozark cavefish all have a relatively large source of nutrients, such as bat guano or blown leaf litter. Water quality in caves that contain cavefish is usually high. Ozark cavefish are able to tolerate the extremely low oxygen content of ground water found in caves. Cavefish tend to occur in flowing cave streams as opposed to quiet pools.

**DISTRIBUTION:** The Ozark cavefish is native to the Springfield Plateau of the Ozark Highlands (southwestern Missouri, northwestern Arkansas, and northeastern Oklahoma). Currently, 15 caves in this area have verified cavefish populations. In Oklahoma, populations are known to occur in Delaware County. There are historical records for Ottawa and Mayes counties.



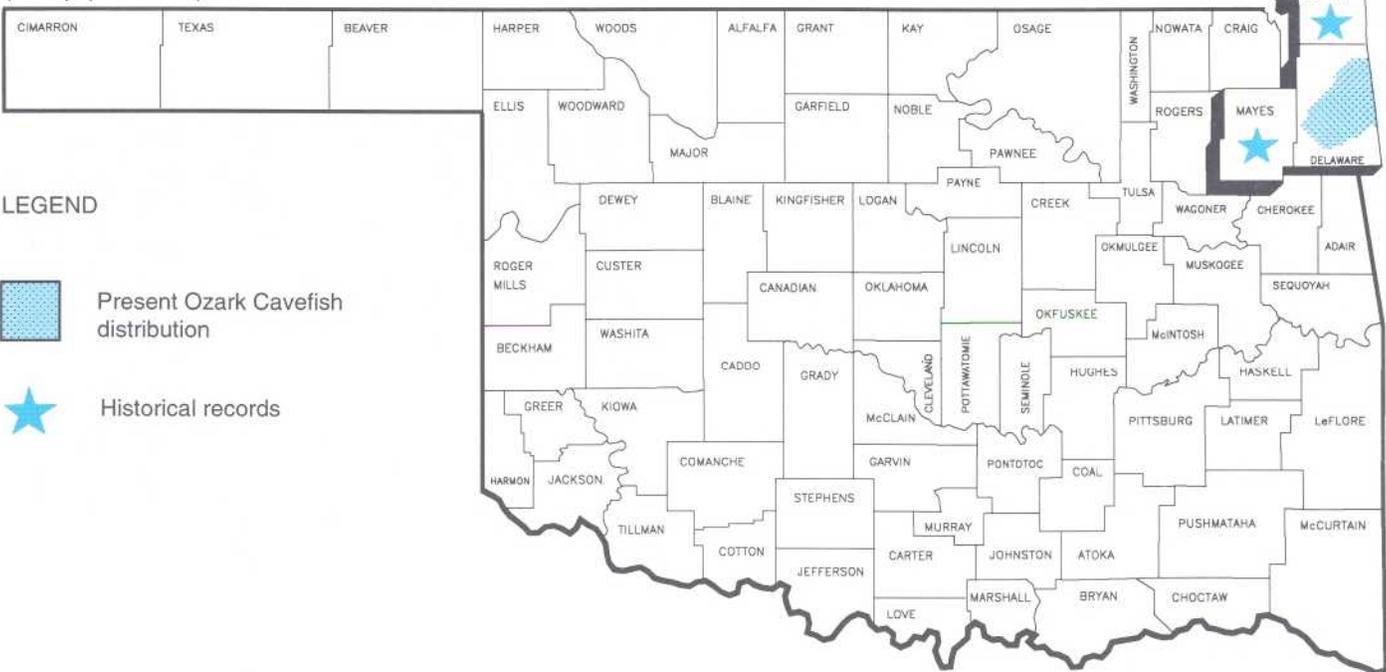
Ozark Cavefish (*Amblyopsis rosae*)

**CAUSES OF DECLINE:** Factors that have led to the decline of the Ozark cavefish include destruction of habitat, collecting of specimens, and disturbance by spelunkers.

**RECOVERY NEEDS:** Protection of caves containing cavefish is the most important task. This includes monitoring water quality that flows into caves and erecting fences or gates that limit access by humans, but that do not interfere with bat populations.

**OTHER INFORMATION:** The states of Arkansas, Missouri, and Oklahoma have each purchased a cave to protect the cavefish. In many caves, the major source of energy for the organisms on which cavefish feed is bat guano. Therefore, Ozark cavefish survival is dependent on the survival of bats, such as the endangered gray bat.

Ozark Cavefish  
(*Amblyopsis rosae*)



LEGEND

-  Present Ozark Cavefish distribution
-  Historical records

## SPECIES ACCOUNT (supplement)

### Ozark Cavefish

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and the Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the Ozark Cavefish in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

Degradation of ground water and surface water by pesticides, chemicals, and animal wastes can be detrimental to aquatic habitats within caves used by this specie. Pest management and waste management plans that protect water quality within the recharge areas of suitable caves can reduce the threat to this fish.

As stated in the Species Account, bat guano provides energy for organisms that are the primary source of food for cavefish. Consequently, the protection of bats and their cave habitats is also important to the cavefish.

#### Instructions

Develop pest management and animal waste management plans that will protect surface and groundwater quality in recharge areas of caves. Refer to the Species Account supplement on gray bats for additional information relative to protection of habitats for the cavefish and bats.

## Species Account

### American Alligator (*Alligator mississippiensis*)

**STATUS:** Reclassified to threatened due to similarity of appearance in Oklahoma on June 4, 1987 (50 FR 21059). The original classification was endangered (32 FR 4001; March 11, 1967) without critical habitat being designated.

**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.



Curtis J. Carley



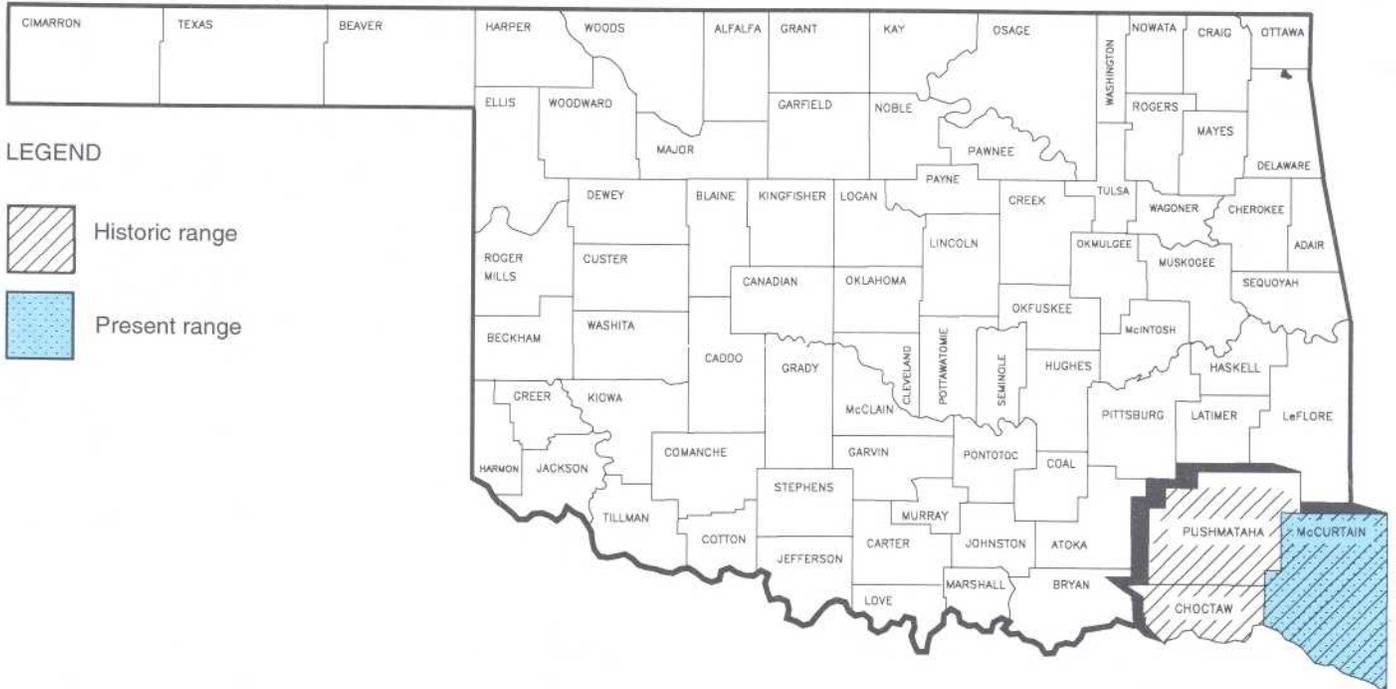
Berlin Heck

Top: American Alligator (*Alligator mississippiensis*).  
Bottom: American Alligator habitat.

**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.

American Alligator  
(*Alligator mississippiensis*)



## SPECIES ACCOUNT (supplement)

### American Alligator

#### General Information

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Land treatment measures and conservation practices that may affect the American Alligator in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

#### Land Treatment and Practice Considerations

Many wetlands, within the historic and present range of alligators, provide suitable habitat that is currently unoccupied. Drainage activities could eliminate these potential habitats and prevent future re-introductions and re-establishments. Conversely, wetland development, pond construction, and floodwater retarding structures could provide suitable habitat for future use.

#### Instructions

Consider the impacts of drainage activities on wetlands that could be used as habitat for alligators. Notify the SCS state biologist if evidence of alligators (nest mounds) or actual sightings are made within the present or historical range of this specie.

## Species Account

### Bald Eagle (*Haliaeetus leucocephalus*)

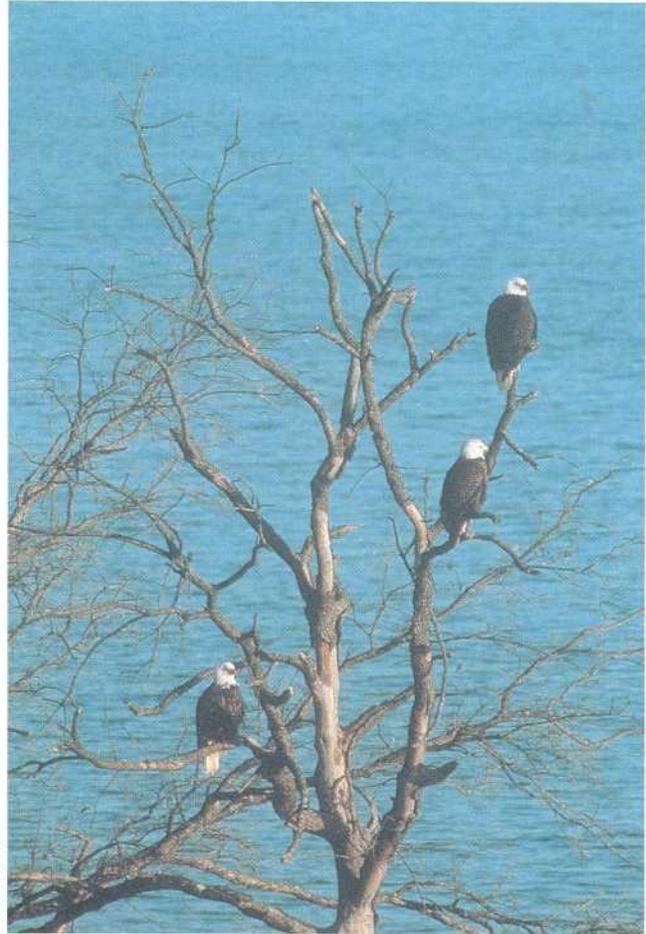
**STATUS:** Endangered (32 FR 4001, March 11, 1967; 43 FR 6233, February 14, 1978). Critical habitat has not been designated.

**DESCRIPTION:** The bald eagle is a large bird with a wingspan of 6 to 7.5 feet (180-230 cm). Adults are dark brown with a white head and tail and a large yellow beak. Immatures are dark with mottled white under the wings and at the base of the tail. The feet of both adults and immatures are bare of feathers.

**LIFE HISTORY:** Bald eagles are long-lived birds and do not achieve full adult plumage for four or five years. Eagles build their nests on the tops of tall trees or on cliffs. Nests can be six feet (180 cm) across and six to eight feet (180-250 cm) high. A pair of eagles will use the same nest year after year. An active nest is one which was attended by a pair even if one of the pair was immature. An inactive nest is one which was not attended by eagles during the year. A winter nest is one that was attended by pairs that disappear at about the same time that the northern wintering eagles migrate north. A productive nest is known to have fledged at least one young. In the southeastern United States, nesting activities may begin as early as September. Typically, two eggs are laid and they hatch after about 35 days. Fledging may take as long as 12 weeks and parents may care for their young for four to six weeks after fledging. Fish are a major component of the bald eagle's diet, but bald eagles will eat a variety of animals, including waterfowl, small mammals, and carrion.

**HABITAT:** Bald eagles require large trees or cliffs near water with abundant fish for nesting. They winter along oceans, rivers, lakes, or in areas where carrion is present.

**DISTRIBUTION:** The bald eagle is found throughout North America. In Oklahoma, wintering bald eagles can be seen near large rivers or reservoirs across the state. Wintering eagles are most common in the state between December and March. Historical records indicate that bald eagles once nested in Oklahoma. However, only four nests have been active in the last 10 years—one at the Robert S. Kerr Reservoir in Haskell County, one on the McAlester Ammunition Depot in Pittsburg County, one at Sequoyah National Wildlife Refuge in Sequoyah County, and one in Noble County.



Mike Brooks

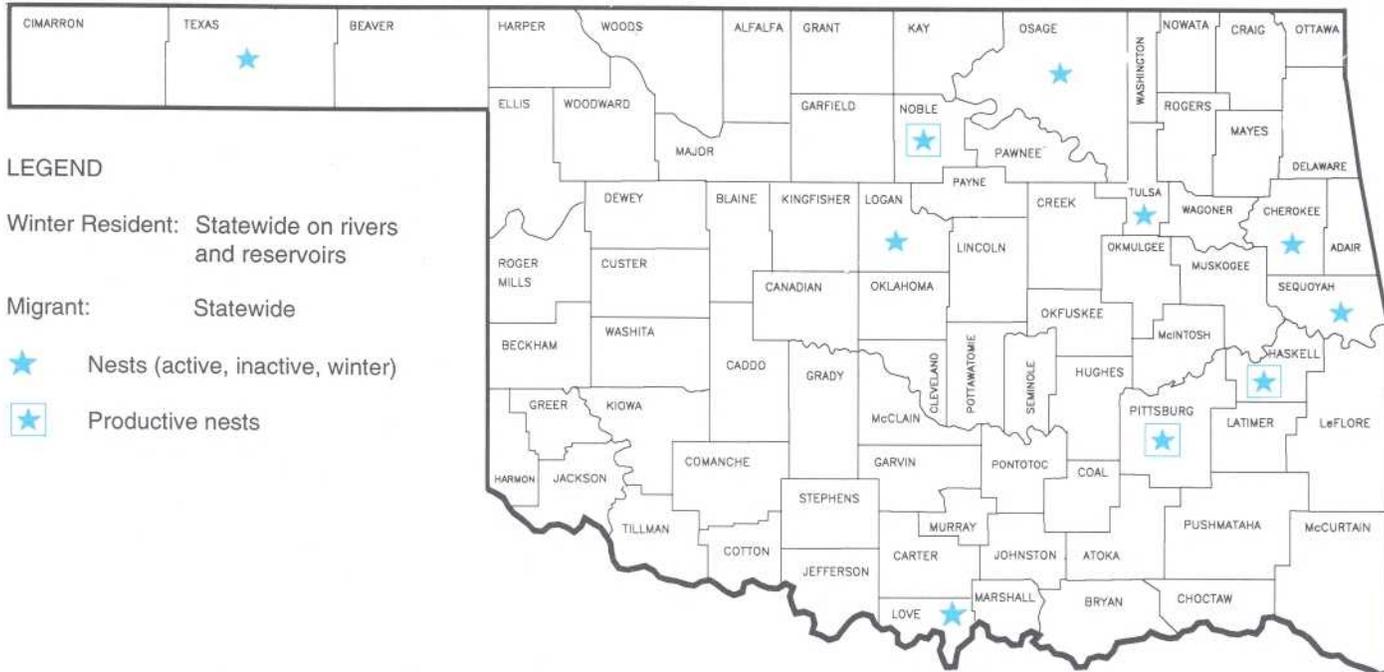
Bald Eagle (*Haliaeetus leucocephalus*)

**CAUSES OF DECLINE:** Bald eagles have declined in numbers due to pesticide-induced reproductive failure, loss of riparian habitat, and human disturbances, such as shooting, poisoning, and trapping.

**RECOVERY NEEDS:** Recovery needs for the bald eagle population include continued protection and management of their habitat, monitoring eagle populations, and re-establishing breeding populations throughout their historic range.

**OTHER INFORMATION:** In an effort to establish a breeding population in Oklahoma, more than 90 young bald eagles have been released in Oklahoma since 1985. Nationwide, bald eagle populations have been slowly increasing because of conservation programs.

Bald Eagle  
*(Haliaeetus leucocephalus)*



## SPECIES ACCOUNT (supplement)

### Bald Eagle

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the Bald Eagle in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

Pesticides that were so detrimental to nesting success have been banned for several years. However, pest management practices that degrade surface water quality are still a threat to eagles and other wildlife.

Suitable habitat consists of large trees along streams, rivers, wetlands, and large bodies of water. Channel work that would eliminate streamside habitat and fishery resources would be detrimental to wintering populations and reduce the opportunities for re-establishing nesting populations. Drainage practices that convert wetlands could also eliminate suitable habitat.

Construction of ponds, upstream floodwater retarding structures, and wetland development projects provide habitat that may be used by wintering and nesting eagle populations.

#### Instructions

Consider the impacts of channel work and drainage activities on suitable bald eagle habitat. Use pest management practices that will protect water quality in lakes, rivers, and wetlands. Notify the SCS state biologist if eagle nests are discovered at sites that have not previously been reported.

## Species Account

### American Peregrine Falcon (*Falco peregrinus anatum*)

**STATUS:** Endangered (35 FR 16047, October 1970; 35 FR 8495, June 2, 1970). Critical habitat has not been designated.

**DESCRIPTION:** The American peregrine falcon is crow-sized with a wingspan of about 3.5 feet (110 cm). They have a long tail and pointed wings. Peregrines are slate gray or dark brown above and whitish below. Their crown and nape are black. In addition, peregrines have a vertical "bandit's mask" pattern over the eyes. Their dark back separates them from the similar, sandy-brown prairie falcon.

**LIFE HISTORY:** Peregrine falcons are graceful and powerful fliers. They have been clocked at over 200 m.p.h. while diving after prey. Peregrines begin reproducing when they are three years old. They are monogamous and mate for life. Pairs perform elaborate aerial courtship displays at the start of the breeding season. Three to four eggs typically are laid, but nest failure is common, and juvenile mortality may be very high. Other birds are the primary prey of peregrine falcons.

**HABITAT:** Peregrine falcons nest on high cliffs, often near water where prey species are most common. They have successfully nested on skyscrapers in large cities where they feed mostly on pigeons.

**DISTRIBUTION:** Peregrine falcons are nearly worldwide in distribution. The race *Falco peregrinus anatum* once nested over much of North America. Currently, they nest in scattered areas throughout their historic range. Nesting has never been recorded in Oklahoma. However, peregrine falcons migrate through and occasionally winter in Oklahoma. They are most often observed along rivers or near large bodies of water.

**CAUSES OF DECLINE:** Shooting, human disturbance, and collecting all decreased peregrine falcon numbers. However, reproductive failure caused by pesticides was the major factor that led to their decline.

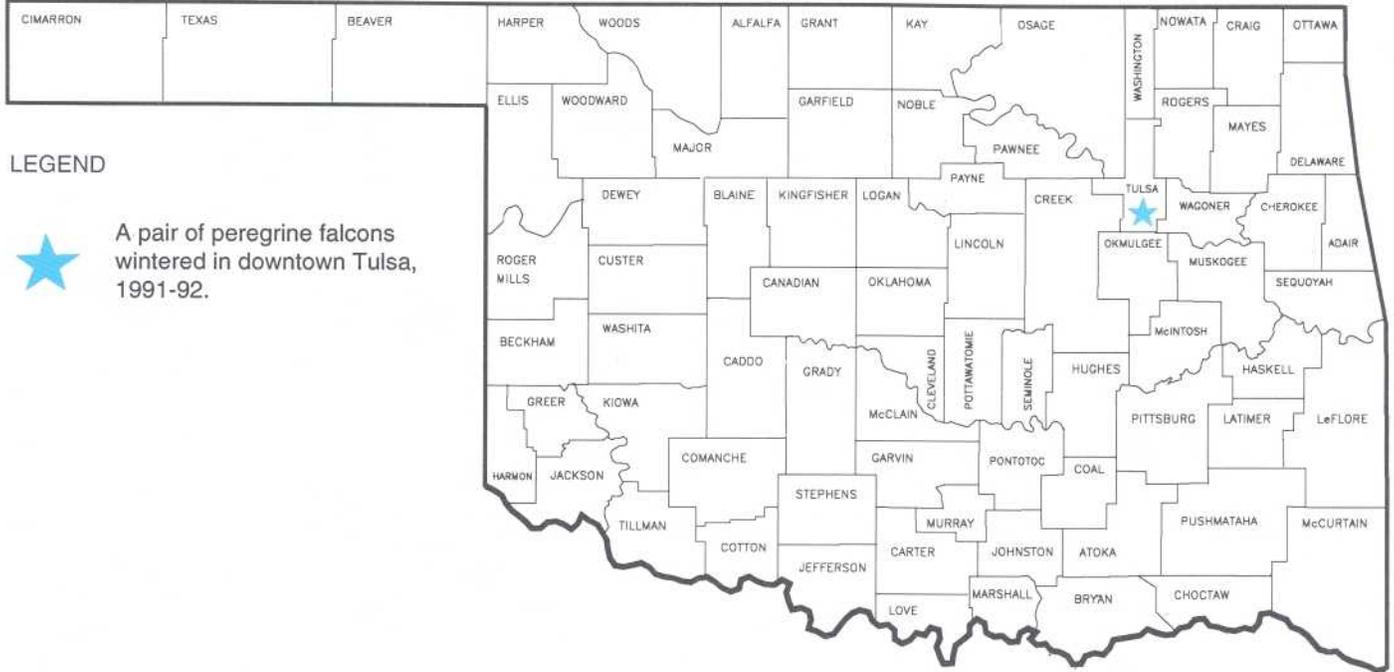


Adult male peregrine falcon

**RECOVERY NEEDS:** Banning the use of DDT has improved the nesting success of wild peregrine falcons. The primary recovery tasks include the continued measuring of pesticide levels and monitoring nesting success.

**OTHER INFORMATION:** The peregrine falcon recovery plan was revised in 1984. Much of the recovery progress is due to captive breeding and reintroductions.

American Peregrine Falcon  
(*Falco peregrinus anatum*)



LEGEND



A pair of peregrine falcons  
wintered in downtown Tulsa,  
1991-92.

## SPECIES ACCOUNT (supplement)

### Arctic Peregrine Falcon

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the Arctic Peregrine Falcon in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

#### Land Treatment and Practice Considerations

There are presently no identified SCS practices that are adversely affecting the recovery of this specie. The pesticides that were so detrimental to nesting success have been banned for several years.

#### Instructions

Notify the SCS state biologist if sightings of this bird are made. No other specific actions are required at this time.

## Species Account

### Arctic Peregrine Falcon (*Falco peregrinus tundrius*)

**STATUS:** Threatened (49 FR 10520; March 20, 1984).  
Critical habitat has not been designated.

**DESCRIPTION:** The Arctic peregrine falcon is very similar to the American peregrine falcon except that it is slightly smaller and paler.

**LIFE HISTORY:** The life history characteristics of the Arctic peregrine falcon are the same as the American peregrine falcon subspecies.

**HABITAT:** The Arctic peregrine falcon breeds on the Arctic tundra. In winter, it inhabits coastlines and mountains from Florida to South America.

**DISTRIBUTION:** The Arctic peregrine falcon breeds on the North American tundra and winters along the Gulf Coast from Florida west to eastern Mexico. It is also found in winter in Baja California, and south to Chile and Argentina. In Oklahoma, it is found statewide during spring and fall migration only.

**USES OF DECLINE:** The Arctic peregrine falcon has declined because of reproductive failure due primarily to pesticide poisoning.

**RECOVERY NEEDS:** This species has begun to recover since DDT was banned. Top recovery tasks include continued monitoring of pesticide levels and breeding success.

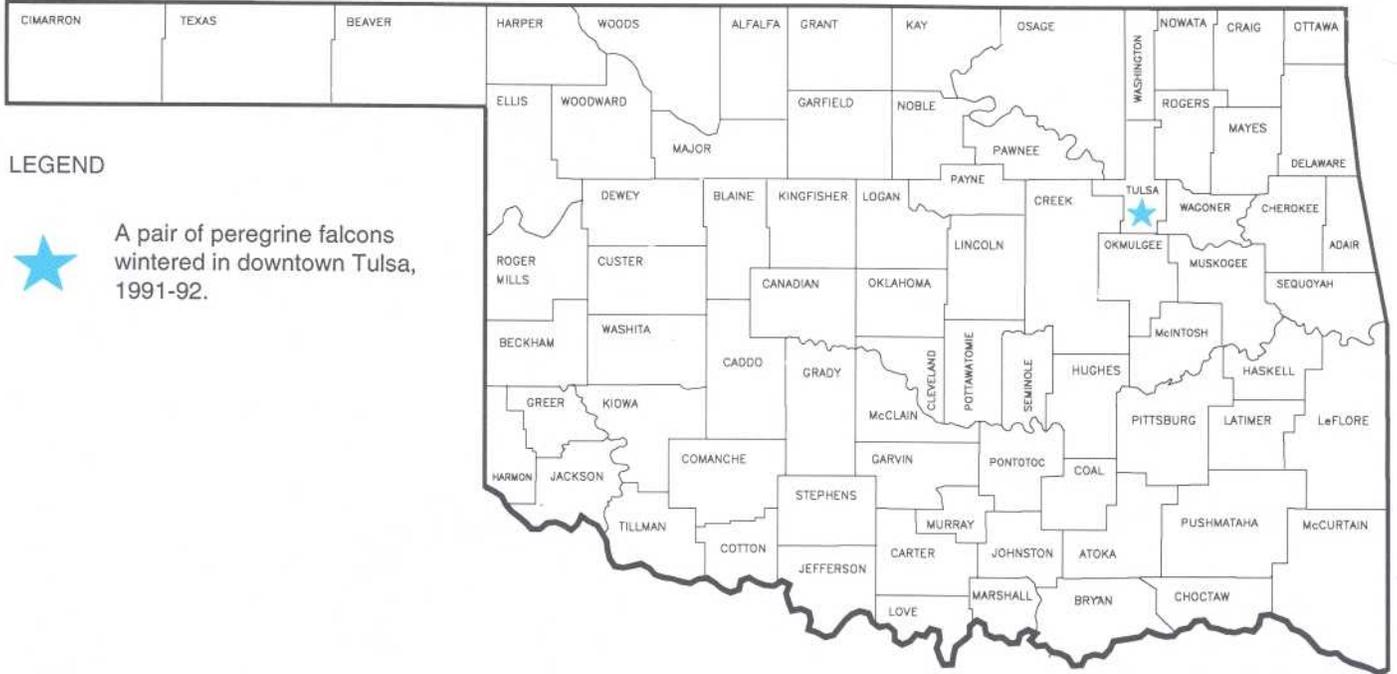
**OTHER INFORMATION:** The Arctic peregrine falcon was moved from endangered to threatened status in 1984. Population increases are due to reduced pesticide levels in the environment. A recovery team has been appointed, and a recovery plan for Alaska has been approved and is being implemented.



Tom Smylie, USFWS

Adult male peregrine falcon

Arctic Peregrine Falcon  
(*Falco peregrinus tundrius*)



LEGEND



A pair of peregrine falcons wintered in downtown Tulsa, 1991-92.

SPECIES ACCOUNT  
(supplement)

American Peregrine Falcon

General Information

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Land treatment measures and conservation practices that may affect the American Peregrine Falcon in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

Land Treatment and Practice Considerations

There are presently no identified SCS practices that are adversely affecting the recovery of this specie. The pesticides that were so detrimental to nesting success have been banned for several years.

Instructions

Notify the SCS state biologist if sightings of this bird are made. No other specific actions are required at this time.

## Species Account

### Whooping Crane (*Grus americana*)

**STATUS:** Endangered (32 FR 4001, March 11, 1967; 35 FR 8495, June 2, 1970). Critical habitat has been designated (43 FR 20938, May 15, 1978).

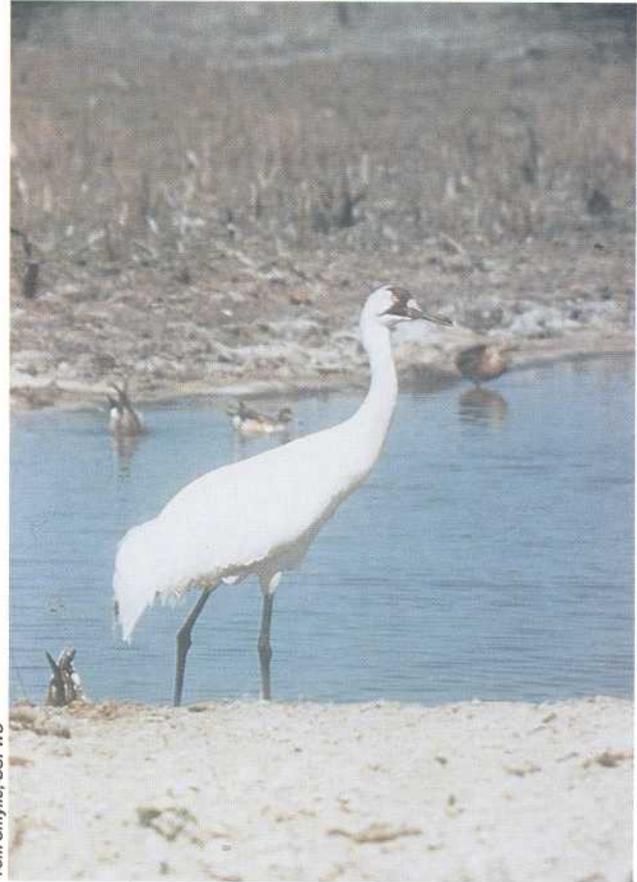
**DESCRIPTION:** At five feet (1.5 m), the whooping crane is the tallest American bird. It is a snowy white, long-necked bird with long legs. Its black primary feathers show only during flight. Adults have a red crown and a patch of black feathers below the eye. Young are whitish overall, but have a rusty-colored head and neck.

**LIFE HISTORY:** Whooping cranes can live more than 20 years in the wild. They are capable of breeding after three years and mate for life. Nest construction begins in late April. Nests are made of bullrush and are located in tall vegetation near water. Typically, two eggs are laid each year and both parents assist in the care of the young. Young stay with their parents during their first winter. Whooping cranes eat a variety of things, including insects, frogs, small birds, rodents, minnows, and waste grains. Blue crabs and clams are especially important food items on the wintering grounds.

**HABITAT:** Whooping cranes inhabit marshes and prairie potholes in the summer. In winter, they are found in coastal marshes and prairies.

**DISTRIBUTION:** Historically, whooping cranes were found from the Northwest Territories in Canada through the prairie provinces and northern prairie states to Illinois. A nonmigratory population existed in Louisiana. The whooping crane formerly wintered in the Carolinas, along the Texas Gulf Coast, and on the intermountain plateau of central Mexico. Currently, an experimental population summers in Idaho and winters in New Mexico. The main population breeds in northern Canada and winters along the Texas Gulf Coast. It passes through western Oklahoma each spring and fall during migration. The Salt Plains National Wildlife Refuge, near Jet, Oklahoma, is a very important migration stopover area. During migration, whooping cranes sometimes are sighted elsewhere in Oklahoma along rivers, in grain fields, or in shallow wetlands.

**CAUSES OF DECLINE:** Whooping cranes have declined primarily because of loss of wintering and breeding habitat. Shooting and collisions with powerlines or fences have been sources of mortality in recent years.



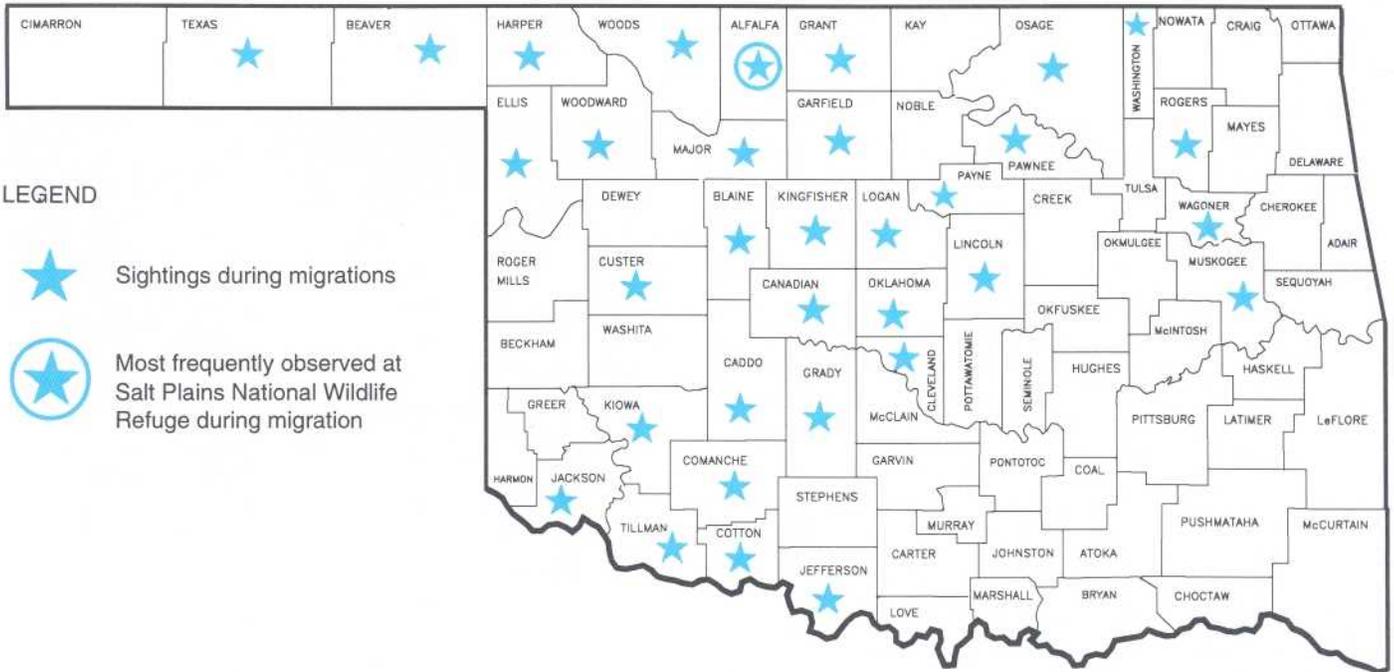
Tom Smylie, USFWS

Whooping Crane (*Grus americana*)

**RECOVERY NEEDS:** Top priorities for whooping crane recovery include increasing the main wild population to a minimum of 40 breeding pairs, increasing captive breeding efforts, and establishing at least two new wild populations.

**OTHER INFORMATION:** By the mid 1940s, only 15 whooping cranes were present in the wild. An intensive captive-breeding program and careful protection of wild flocks have slowly increased the number in the wild to more than 120.

Whooping Crane  
(*Grus americana*)



## SPECIES ACCOUNT (supplement)

### Whooping Crane

#### General Information

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Land treatment measures and conservation practices that may affect the Whooping Crane in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

Whooping cranes migrate through Oklahoma in the fall and winter. In addition to Salt Plains National Wildlife Refuge, cranes have been sighted in several western Oklahoma counties. Wetlands used during stopovers could be adversely impacted by drainage activities. Conversely, wetland development, pond construction, and floodwater retarding structures could provide additional stopover habitat. Other SCS practices are not expected to affect the whooping crane.

#### Instructions

Consider the impacts of drainage activities on wetlands that could be used as stopover areas. No other specific actions are required.

## Species Account

### 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.



Susan M. Haig, USFWS

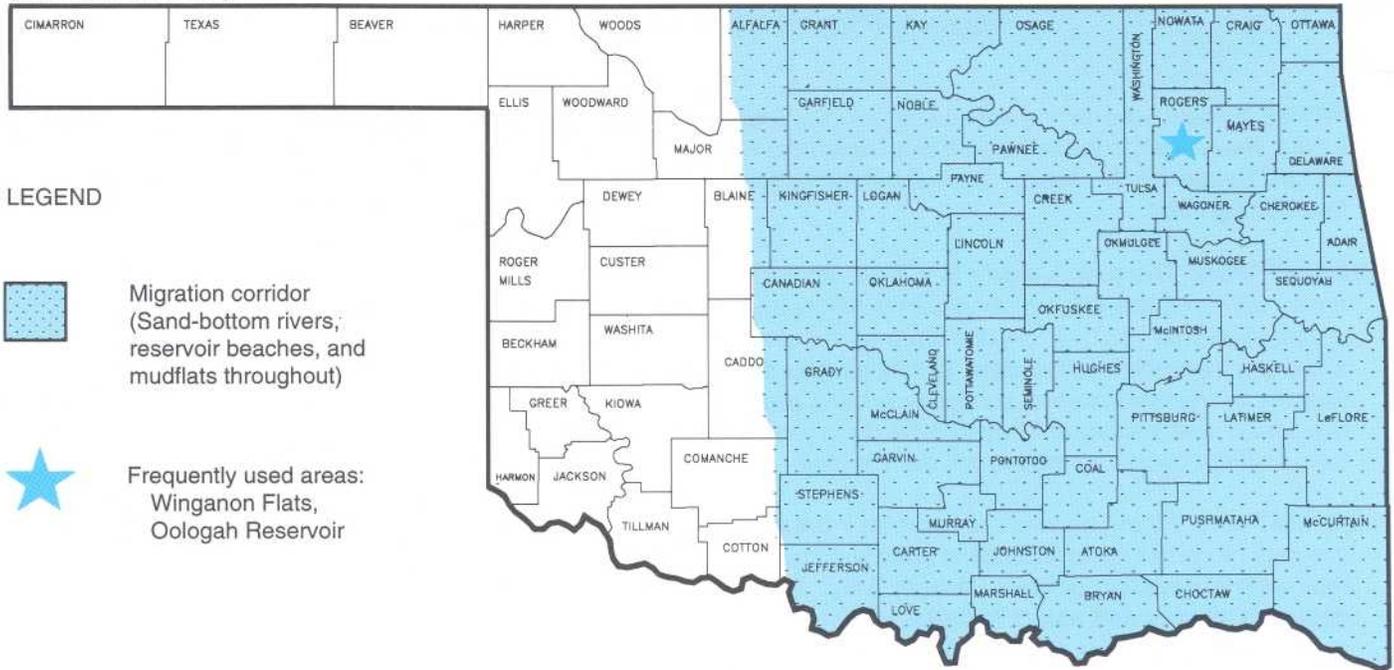
Piping Plover (*Charadrius melodus*)

**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.

Piping Plover  
(*Charadrius melodus*)



## SPECIES ACCOUNT (supplement)

### Piping Plover

#### General Information

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Land treatment measures and conservation practices that may affect the Piping plover in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

#### Land Treatment and Practice Considerations

Piping plovers migrate through Oklahoma in the fall and spring. During these times, the birds use shallow water wetlands, mudflats, saltflats and river sandbars. Drainage and channel projects that would eliminate these types of habitats would be detrimental. Shallow water wetland development would provide beneficial habitat for these birds.

#### Instructions

Consider the impacts of drainage activities on shallow water wetlands that provide habitat for this specie. No other specific actions are required.

## Species Account

### Interior Least Tern (*Sterna antillarum*)

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

**DESCRIPTION:** The 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:** 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. Least terns winter in South America.



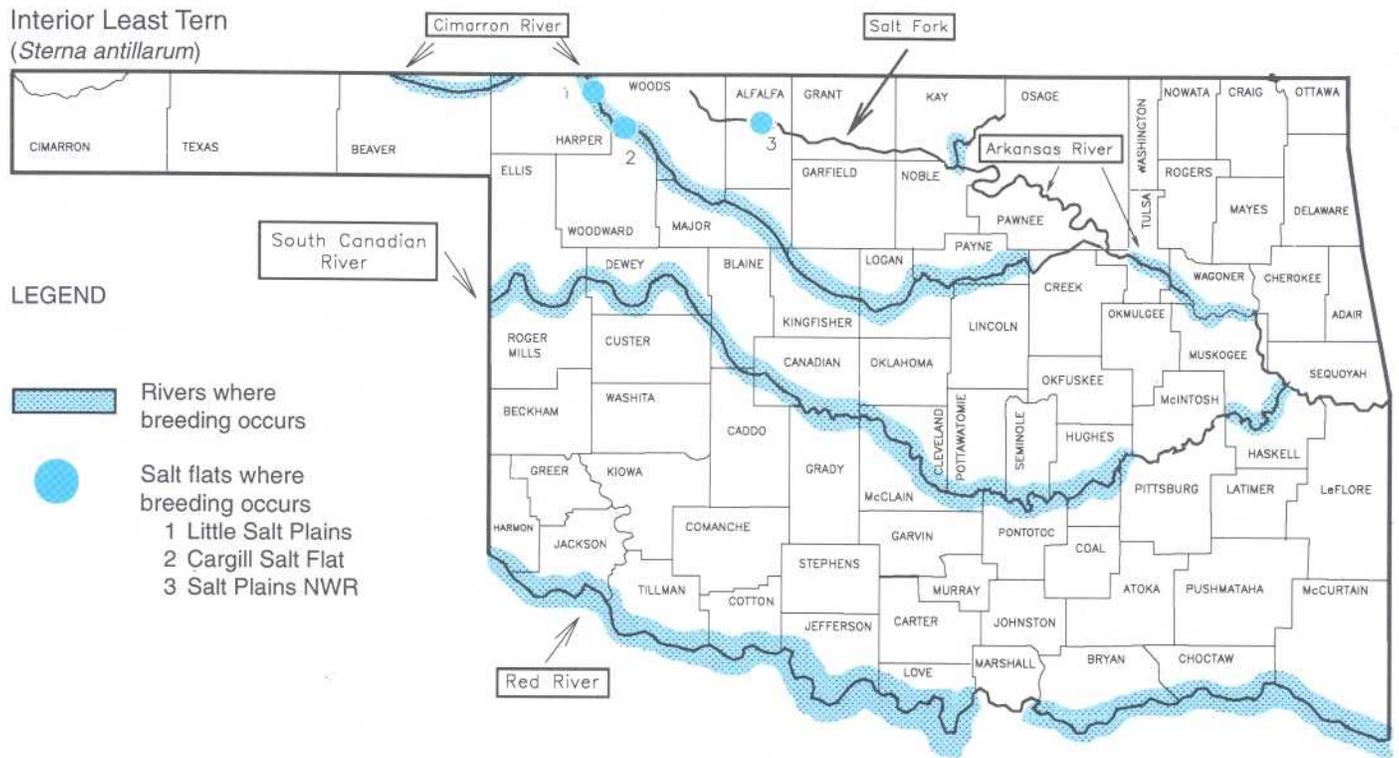
Interior Least Tern (*Sterna antillarum*)

**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 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.

Interior Least Tern  
(*Sterna antillarum*)



## SPECIES ACCOUNT

### Interior Least Tern (*Sterna antillarum*)

STATUS-Threatened (50 FR 21784; May 28, 1985), critical habitat not designated.

DESCRIPTION-The 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 black-tipped yellow bill.

LIFE HISTORY-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 river sandbars or beaches. Nests are small scrapes in the sand and usually two or three eggs are laid. The young are fairly mobile soon after hatching but stay near the nest for about three weeks. Both parents feed the young and remain with them until fall migration. Terns will travel up to 4 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 temporary 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 and general water levels must be low enough so 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 Colorado (in Texas), 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. 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. In addition, the elimination of floods along rivers allow brush and trees to grow on the 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-Top recovery tasks for 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 Conservatory to protect tern habitat along the Arkansas River near Tulsa, and with the United States Army Corps of Engineers to protect tern habitat at Optima Reservoir, in northwestern Oklahoma.

SPECIES AUTHORITIES-Roger Boyd, Baker University, Baldwin City, Kansas; Laura Hill, United States Fish and Wildlife Service, Tulsa, Oklahoma; John Sidle, United States Fish and Wildlife Service, Grand Island, Nebraska.

Date prepared: April/1992

## SPECIES ACCOUNT (supplement)

### Interior Least Tern

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection.

Land treatment measures and conservation practices that may affect the Interior Least Tern in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

#### Land Treatment and Practice Considerations

The least tern is generally associated with large river systems that contain exposed sand bars. These areas are used for nesting in spring and early summer. Wetlands and shallow water areas in the vicinity of nesting sites are used for feeding areas. Upstream flood control projects which influence flood levels on larger rivers could influence the development of sandbars used for nesting, but habitats used by terns are generally not effected by SCS nonproject activities. Beneficial practices could include brush and weed control on sandbars used for nesting, and shallow water wetland development. Drainage activities that eliminate shallow water areas near larger rivers could eliminate feeding areas.

#### Instructions

Consider the impacts of brush and weed control on sandbars in and adjacent to large streams and rivers. Protect shallow water wetlands adjacent to streams and rivers that are used for feeding areas. Notify the SCS state biologist if least tern nests are discovered during plan development.

## Species Account

### 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' cavity. 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.



Outdoor Oklahoma, Oklahoma Dept. of Wildlife Conservation

Red-cockaded Woodpecker (*Picoides borealis*)

**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.

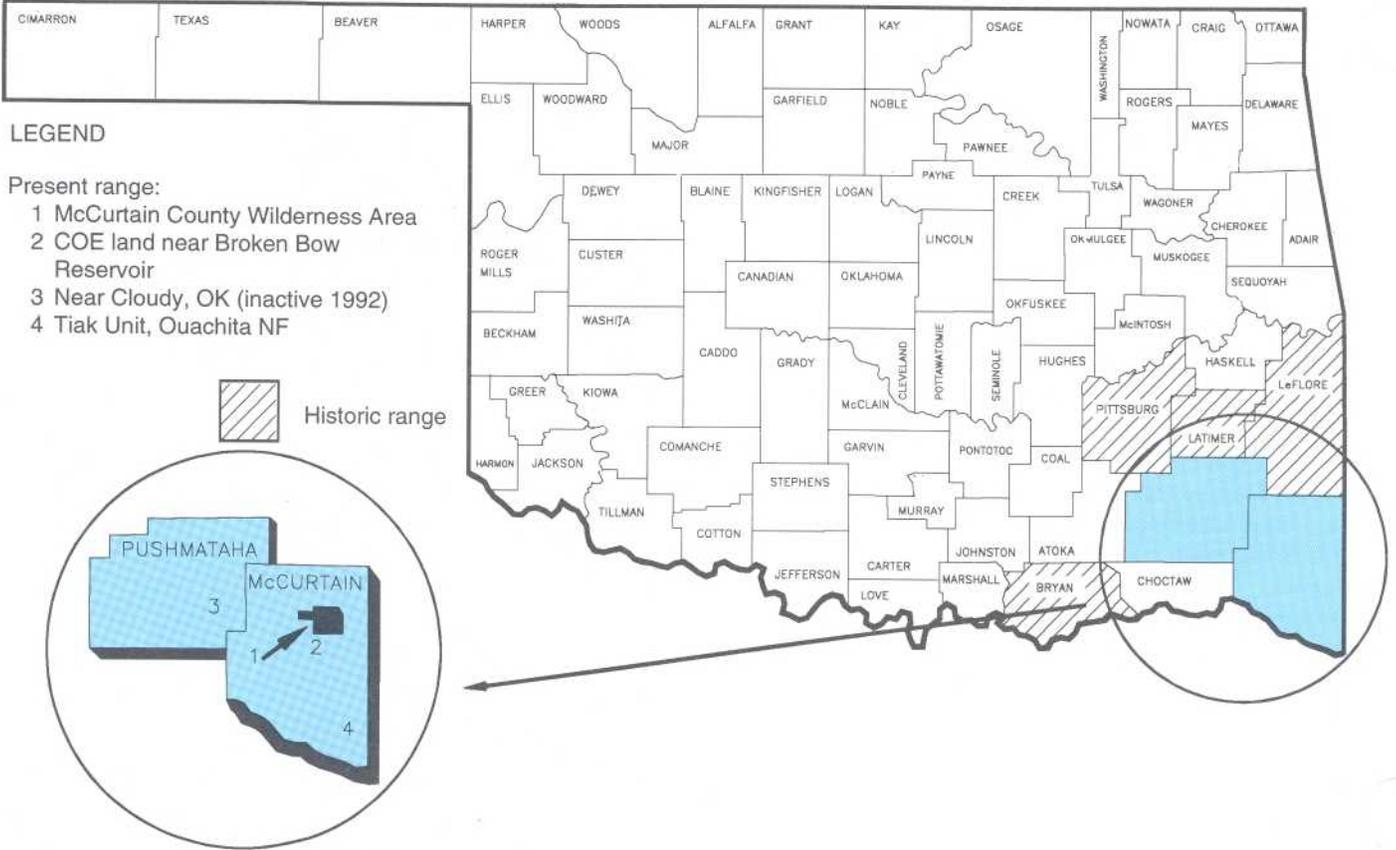
**RECOVERY NEEDS:** The top recovery tasks for the red-cockaded woodpecker include continued monitoring of individual populations, protecting and managing woodpecker habitat on public and private land, and continued research of red-cockaded woodpecker ecology.

**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.

Date prepared: April 1992

# Red-cockaded Woodpecker

*(Picoides borealis)*



## SPECIES ACCOUNT (supplement)

### Red-cockaded Woodpecker

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the Red-cockaded Woodpecker in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

Short-term rotation timber management has contributed to the loss of old-growth pine forests and large scale clear-cutting. Fire suppression has allowed hardwood undergrowth to develop in pine stands. These activities have eliminated much of the open, parklike, mature stands of pine that are required for red-cockaded woodpecker habitat.

Woodland improved harvesting and stand improvement practices do not necessarily improve habitat for this species. However, specific harvesting plans that would retain old-growth pine in the stand and achieve hardwood control could be developed for habitat development and maintenance. Proper woodland grazing and prescribed burning could also be used to maintain an open understory.

#### Instructions

Consider the potential impacts of harvesting and improvement practices on this species when developing plans on pine and pine/hardwood forests. Look for nest activity and inquire about the presence of this woodpecker when developing plans in areas that appear to provide suitable habitat.

The Oklahoma Natural Heritage Inventory (ONHI) has site specific information on known red-cockaded woodpecker populations in the identified counties. Contact ONHI when developing plans in old-growth pine stands. Contact the SCS biologist at any time that this woodpecker or its distinctive nest trees are observed.

## Species Account

### Black-capped Vireo (*Vireo atricapillus*)

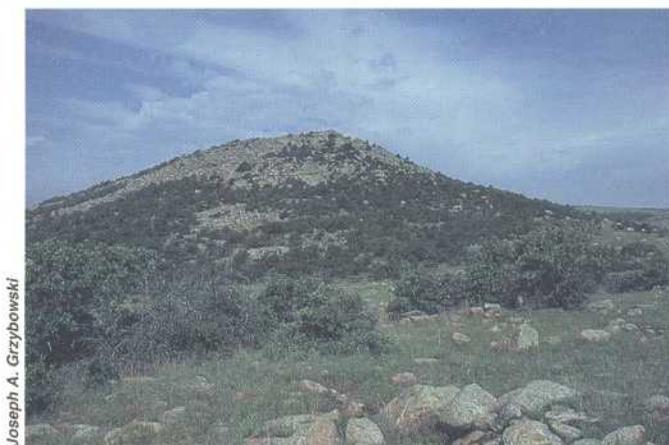
**STATUS:** Endangered (54 FR 37420; October 6, 1987) without critical habitat.

**DESCRIPTION:** The black-capped vireo is a songbird about 4.5 inches (12 cm) in length. Sexually mature males are olive green above and white below with faint yellow flanks. The crown and upper half of the head is black with a partial white eye-ring and lores. The iris is brownish-red and the bill is black. Females are duller in color than males and have a slate gray crown and underparts washed with greenish yellow. First year males are intermediate in coloration between adult males and females.

**LIFE HISTORY:** The male and female in a pair assist in nest construction and incubation. The female broods the young, while the male supplies most of the food during the nestling phase. Typically, three to four eggs are laid. The incubation period is 14 to 17 days, and the nestling period is 10 to 12 days. Breeding pairs are capable of producing more than one clutch per breeding season. The male cares for some or all of the fledglings, while the female re-nests-sometimes with another male. These birds are insectivorous, with beetles and caterpillars making up a large part of the diet.

**HABITAT:** Black-capped vireo habitat consists of scattered trees and brushy areas. The presence of oak trees appear to be more important to the vireo than junipers. Foliage that extends to ground level is the most important requirement for nesting. Most nests are between 15 and 50 inches (35-125 cm) above ground level and are screened from view by foliage. Territories are sometimes located on steep slopes, where trees are often clumped and intermediate in height. On level terrain, preferred black-capped vireo habitat is a mixture of shrubs and smaller trees that average from eight to 10 feet high (2.5-3.5 m). Black-capped vireos will no longer use sites where many trees are nearing full size.

**DISTRIBUTION:** The historic breeding distribution of the black-capped vireo extended south from south-central Kansas through central Oklahoma and Texas to central Coahuila, Mexico. At present, the range extends from Oklahoma south through the Edwards Plateau and Big Bend National Park, Texas, to at least the Sierra Madera in central Coahuila, Mexico. In Oklahoma, the black-capped vireo is found only in Blaine, Canadian, Caddo, and Comanche counties. The winter range of the black-capped vireo is not well known. It is thought to winter along the west coast of Mexico from southern Sonora to Guerrero.



Top: Black-capped Vireo (*Vireo atricapillus*).

Bottom: Black-capped Vireo habitat.

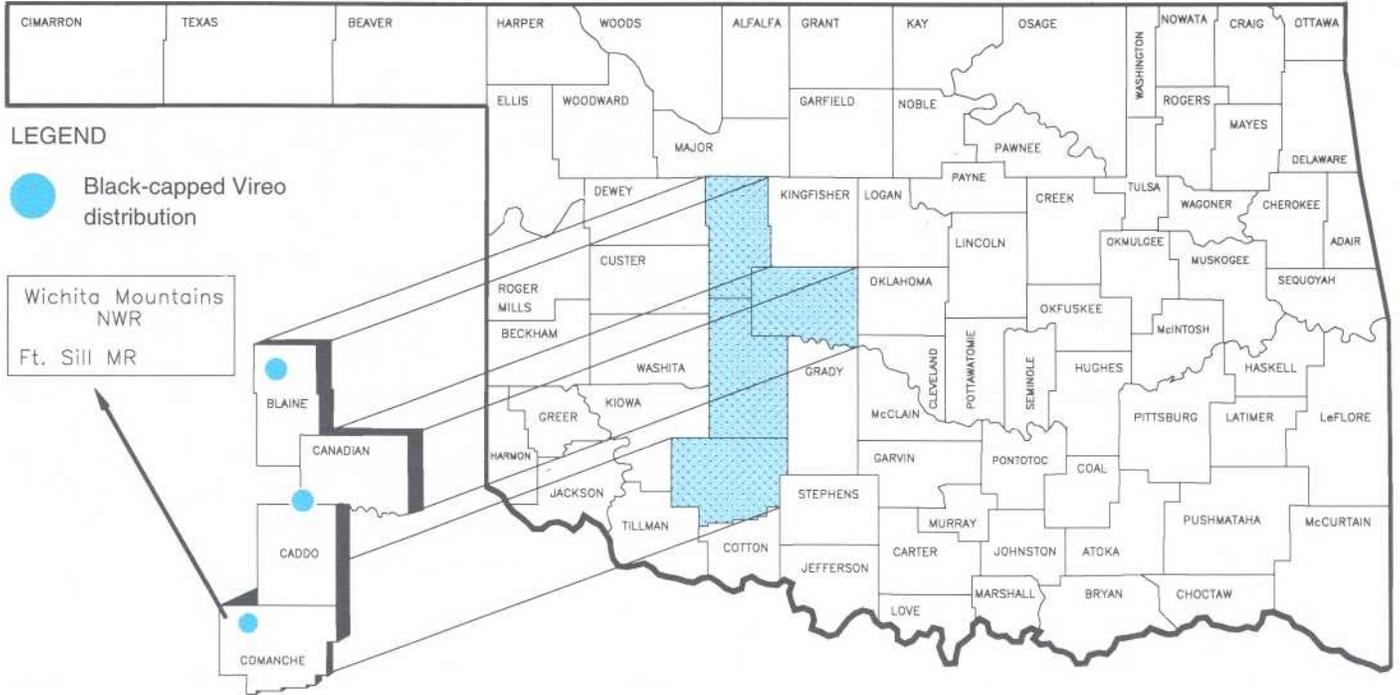
**CAUSES OF DECLINE:** The black-capped vireo is threatened by brown-headed cowbird (*Molothrus ate*) nest parasitism, human disturbance, and loss of habitat to urbanization, fire exclusion, grazing, and brush control.

**RECOVERY NEEDS:** The top recovery tasks for the black-capped vireo include: 1) determining where cowbirds pose a threat and controlling their numbers in vireo breeding areas, 2) determining threats to vireo winter habitat, and 3) determining how to manage habitat for the vireo.

**OTHER INFORMATION:** Ongoing projects in Texas and Oklahoma to recover the black-capped vireo include extensive cowbird trapping and cowbird egg removal from nests. Studies on the nesting ecology and population dynamics of the black-capped vireo are also contributing to our understanding of the species,

Date prepared: November 1991

Black-capped Vireo  
(*Vireo atricapillus*)



## SPECIES ACCOUNT (supplement)

### Black-capped Vireo

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the Black-capped vireo in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

#### Land Treatment and Practice Considerations

Preferred habitat is often associated with steep canyons and rough terrain such as that found in the Wichita Mountains and sandstone canyons of Caddo, Blaine, and Canadian Counties. Postoak, blackjack oak, and redcedar are common shrub and tree species in these habitats.

Cowbirds frequently lay eggs in the nest of vireos. When hatched, the cowbirds outcompete the smaller, less aggressive vireo young for food. This form of nest parasitism is largely responsible for poor reproduction and is a major reason for the vireo's decline. Cowbird populations are somewhat dependent upon livestock numbers. Consequently, stocking rates may have an impact on vireo nesting success in a few locations.

With these considerations in mind, brush control, overgrazing, and land use changes could be detrimental to the vireo. Planned practices in areas of known or suitable habitat that will maintain or improve habitat include: proper grazing use, prescribed burning, and brush management that will retain suitable habitat.

#### Instructions

The Oklahoma Natural Heritage Inventory (ONHI) has site specific information on known vireo populations in the identified counties. Contact ONHI when planning brush management, land clearing, or land use changes in areas of suitable habitat within the four listed counties. Contact the SCS state biologist at any time that the vireo is discovered on sites where potentially damaging practices are planned.

## Species Account

### Ozark Big-eared Bat (*Plecotus townsendii ingens*)

**STATUS:** Endangered (44 FR 69208; November 4, 1979) without critical habitat.

**DESCRIPTION:** The Ozark big-eared bat is the largest and reddest of the five subspecies of *P. townsendii*. The species is medium-sized and weighs from 0.2 to 0.5 ounces (5-13 g). It has very large (over 1 inch; 2.5 cm) ears that connect at the base across the forehead. The snout has prominent lumps. The Ozark big-eared bat closely resembles the eastern big-eared bat, but has tan instead of whitish underparts and brown instead of gray dorsal hair.

**LIFE HISTORY:** The Ozark big-eared bat uses caves all yeararound. Migration distances between hibernation and summer caves are known to range from four to 40 miles (6.5-65 km). Big-eared bats mate in the fall and store the sperm during the winter. Pregnancy occurs in the spring at the end of hibernation. Ozark big-eared bats give birth to a single offspring. Young bats grow quite rapidly and are capable of flight at three weeks and are weaned by six weeks. Ozark big-eared bats feed on moths and other insects.

**HABITAT:** Caves used by Ozark big-eared bats are located in karst regions dominated by oak-hickory or beech-maple-hemlock forests. The temperature of hibernation caves ranges from 40° to 50°F (4-9°C). Maternity colonies are located in caves that range in temperature between 50° and 59°F (10-15°C). Ozark big-eared bats forage along forest edge.

**DISTRIBUTION:** The distribution of the Ozark big-eared bat was probably limited to northwestern Arkansas, neighboring Oklahoma and Missouri. In Oklahoma, this subspecies is known to occur in Adair, Cherokee, Delaware, and Ottawa counties. There is a historical record for Sequoyah County.



Brenda Clark

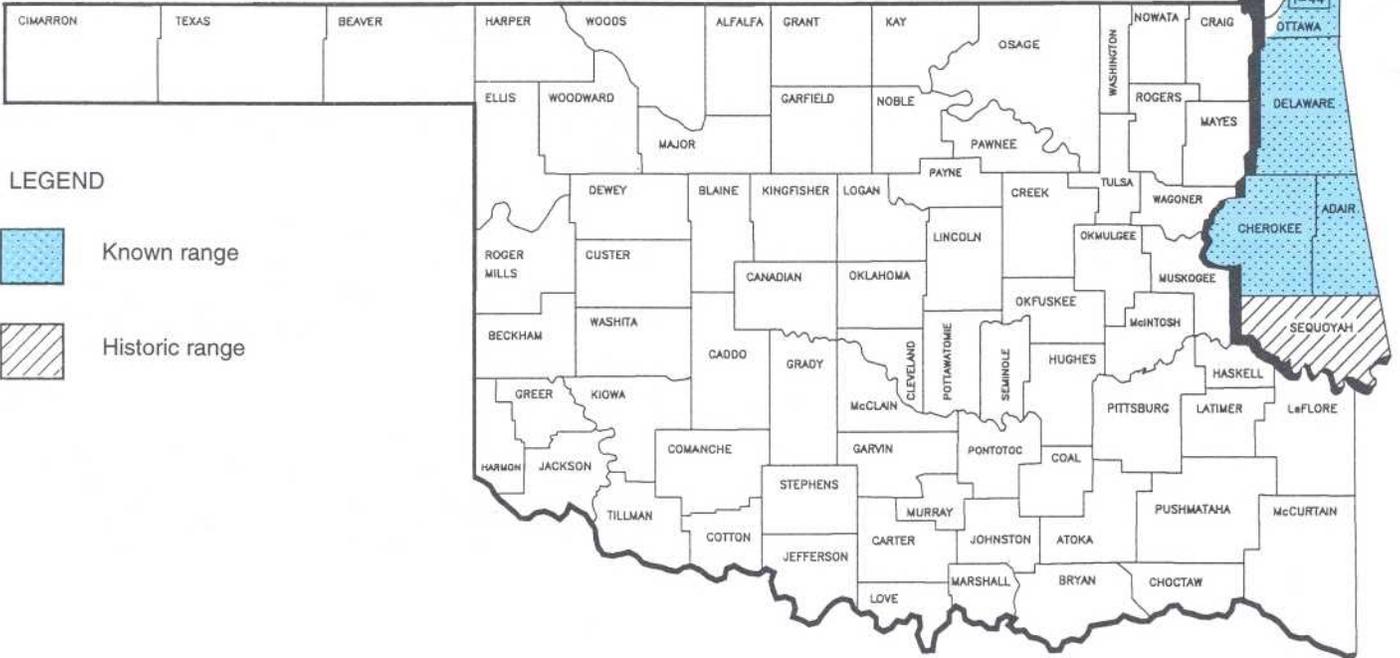
Ozark Big-eared Bat (*Plecotus townsendii ingens*)

**CAUSES OF DECLINE:** The Ozark big-eared bat was probably never very common. The species is intolerant of human disturbance, which causes them to abandon favorite roosts. Disturbance of hibernating bats causes them to use valuable fat stores and increases the probability of starvation during the winter. Disturbance of maternity colonies can cause significant mortality of the young.

**RECOVERY NEEDS:** The top recovery needs of the Ozark big-eared bat include: 1) monitoring of known populations and locating additional ones; and 2) protecting caves from human disturbance and vandalism.

**OTHER INFORMATION:** Gates or fences erected at cave entrances have been successful in protecting bats. A recovery plan was approved in 1984 and a revised draft is currently under preparation.

Ozark Big-eared Bat  
*(Plecotus townsendii ingens)*



## SPECIES ACCOUNT (supplement)

### Ozark Big-eared Bat

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the Ozark Big-eared Bat in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

Caves are essential habitat for the big-eared bat. SCS practices that could be detrimental to bats include pond construction, erosion control structures, and floodwater retarding structures that inundate cave entrances.

Since big-eared bats are dependent on flying insects for all of their food requirements, pest management practices that include the use of insecticides could be detrimental. Big-eared bats forage for insects along forest edges and openings. Consequently, large scale land clearing and land use changes that eliminate forest edge and interspersion could also be detrimental.

#### Instructions

The Oklahoma Natural Heritage Inventory (ONHI) has site specific information on caves used by big-eared bats in the identified counties. Contact ONHI when impoundments are being considered in locations that would inundate cave entrances within the five listed counties. Consider the potential impacts of insecticide use on flying insects in the vicinity of known bat caves and the impacts of large scale land use changes that would eliminate forest edge.

## Species Account

### Indiana Bat (*Myotis sodalis*)

**STATUS:** Endangered (32 FR 4001; March 11, 1967) with critical habitat designated.

**DESCRIPTION:** The Indiana bat is medium-sized. Its fur is dull gray and chestnut in color. The basal portion of the hairs of the back are a dull lead color. The calcar (the bone attached to the foot) is strongly keeled.

**LIFE HISTORY:** Indiana bats are migratory. Approximately 85 percent of the known population hibernates in just seven caves. Indiana bats mate in the fall and begin to enter hibernation in October. Males tend to be active longer into the fall, but are in hibernation by late November. Sperm is stored during the winter and females become pregnant soon after emergence in late March and early April. Young are born in June and July. Females and their young roost in small colonies (50 to 100 individuals) under tree bark during the summer months. Colonies are usually located along streams where the bats forage for flying insects. Not much is known about male roosting behavior. Young bats are able to fly approximately a month after birth.

**ABITAT:** For hibernation, Indiana bats need limestone caves with stable temperatures of 39° to 46°F (4-8°C) and 66 to 95 percent humidity. Low cave temperatures allow the bats to maintain a low metabolic rate throughout hibernation. Only a small percentage of caves meets the specific conditions required by Indiana bats. During the summer, they can be found under bridges, in old buildings, under tree bark, or in hollow trees. Indiana bats forage above small- to medium-sized streams. Streams lined with large, overhanging trees are preferred.

**DISTRIBUTION:** The Indiana bat is found primarily in the midwestern and eastern United States. The largest populations are in Arkansas, Indiana, Kentucky, Missouri, and Tennessee. Eastern Oklahoma is the western limit of its range. The present Oklahoma range includes Adair, Delaware, LeFlore, and Pushmataha counties. It is now rare in Oklahoma, and usually only scattered individuals are found. They may be in company with gray bats.

**CAUSES OF DECLINE:** Indiana bats are subject to both natural and human threats. Periodic flooding of winter caves and the collapse of cave or mine ceilings both pose threats. However, the most serious threat to Indiana bats is the disturbance of hibernating colonies by spelunkers or vandals. The commercialization of



Merlin D. Tuttle

Indiana Bat (*Myotis sodalis*)

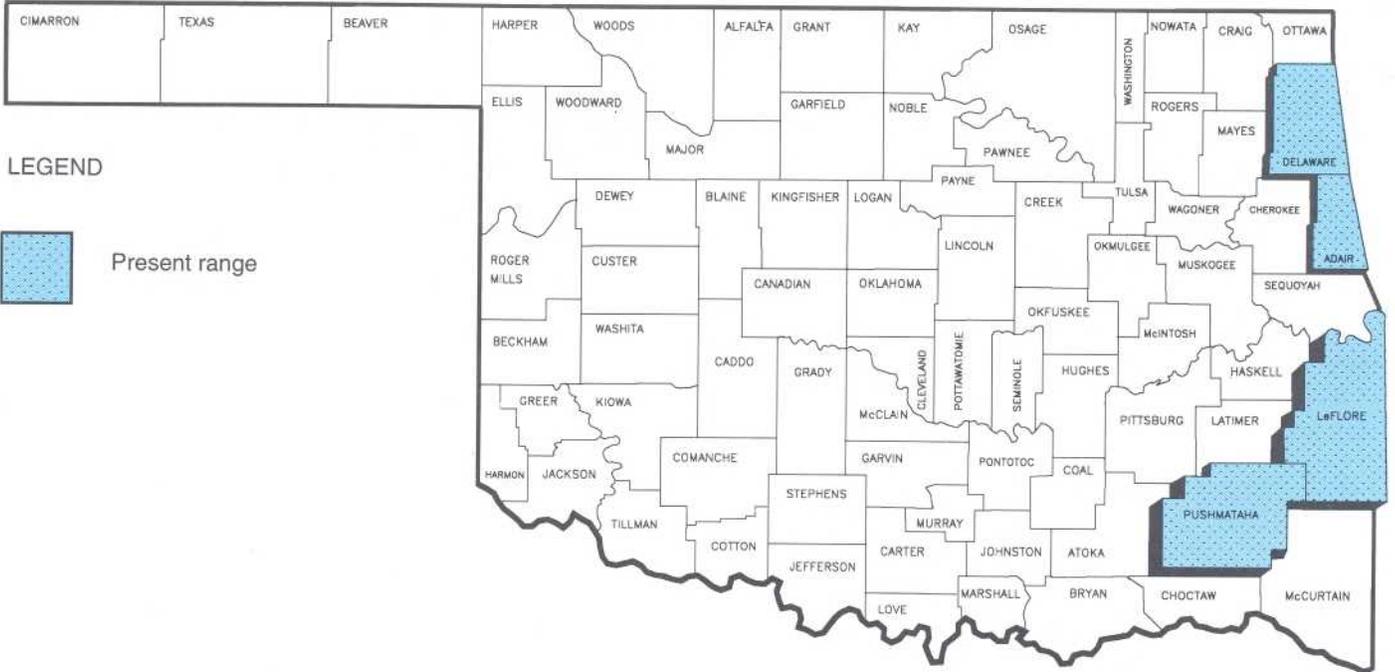
roosting caves, pesticides, and the channelization of streams also pose threats to the species.

**RECOVERY NEEDS:** The top recovery tasks for the Indiana bat include: 1) preventing disturbance to important winter caves by erecting warning signs and fences or gates, 2) protecting foraging areas and nursery roost habitat from destruction, and 3) educating the public of the consequences of disturbing hibernating bats and of the importance of bats in nature.

**OTHER INFORMATION:** Indiana bats hibernate from October to April and caves containing Indiana bats should not be entered during this time. Disturbance of hibernating bats is a major cause of the decline of the species. A recovery team has been appointed and the recovery plan was revised in 1983.

Date prepared: February 1992

Indiana Bat  
(*Myotis sodalis*)



## SPECIES ACCOUNT (supplement)

### Indiana Bat

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the Indiana bat in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where this T&E specie has been identified.

#### Land Treatment and Practice Considerations

Caves are essential habitat for Indiana bats. As stated in the Species Account, flooding of caves has resulted in habitat loss. SCS practices that could be detrimental to bats include pond construction, erosion control structures, and floodwater retarding structures that inundate cave entrances.

Since Indiana bats are dependent on flying insects for all of their food requirements, pest management practices that include the use of insecticides could be detrimental, especially when used in the vicinity of small to medium sized streams used for foraging. Channel stabilization and channel improvement projects that eliminate streamside trees and overhanging branches along these foraging streams could also be detrimental.

#### Instructions

The Oklahoma Natural Heritage Inventory (ONHI) has site specific information on caves used by the Indiana bat in the identified counties. Contact ONHI when impoundments are being considered on locations that would inundate cave entrances within the four listed counties. Consider the potential impacts of insecticide use on flying insects in the vicinity of streams and rivers used for foraging. Also determine the impacts of stream channel work that would eliminate streamside habitat used as foraging habitat.

## Species Account

### Gray Bat (*Myotis grisescens*)

**STATUS:** Endangered (41 FR 17740; April 28, 1976).  
Critical habitat not designated.

**DESCRIPTION:** The gray bat is a medium-sized bat with a wingspan of 10 to 11 inches (25-28 cm). It has grayish-brown fur and is the only bat in its range with unicolored dorsal hairs. The dorsal hairs of other bats within its range are bi- or tricolored. The wing membrane of the gray bat connects at the ankle instead of the base of the first toe as in other members of the genus.

**LIFE HISTORY:** Gray bats migrate each year between winter and summer caves. Mating occurs at winter caves in September. After copulation, females enter hibernation-males and juveniles continue feeding for several weeks. By early November, most gray bats are in hibernation. Adult females begin to emerge in late March, followed by juveniles and adult males. Females store sperm during the winter and become pregnant after emerging in the spring. A single offspring is born in late May or early June. Young begin to fly 20 to 25 days after birth. Gray bats feed on flying insects over bodies of water. Mayflies make up the major part of their diet.

**HABITAT:** Gray bats almost always roost in caves year-round. Historically, hibernation caves could contain well over a million individuals. Summer colonies can reach 250,000 individuals. Gray bats have very specific cave requirements. As a result, fewer than five percent of available caves are suitable. Winter caves must be very cold with a range in temperature between 42° and 52°F (6-11°C). Winter caves are deep with vertical walls. Summer caves must be warm (57-77°F or 14-25°C) or with restricted rooms that can trap the body heat of roosting bats. Summer caves are located close to rivers or lakes where the bats feed. Bats are known to range at least 12 miles (20 km) from their colony to feed.

**DISTRIBUTION:** Gray bat distribution is limited to limestone cave areas of the southeastern United States. Major populations are found in Alabama, Arkansas, Kentucky, Missouri, and Tennessee. Smaller populations may occur in surrounding states. In Oklahoma, the historic distribution probably was limited to the



Merlin D. Tuttle

Gray Bat (*Myotis grisescens*)

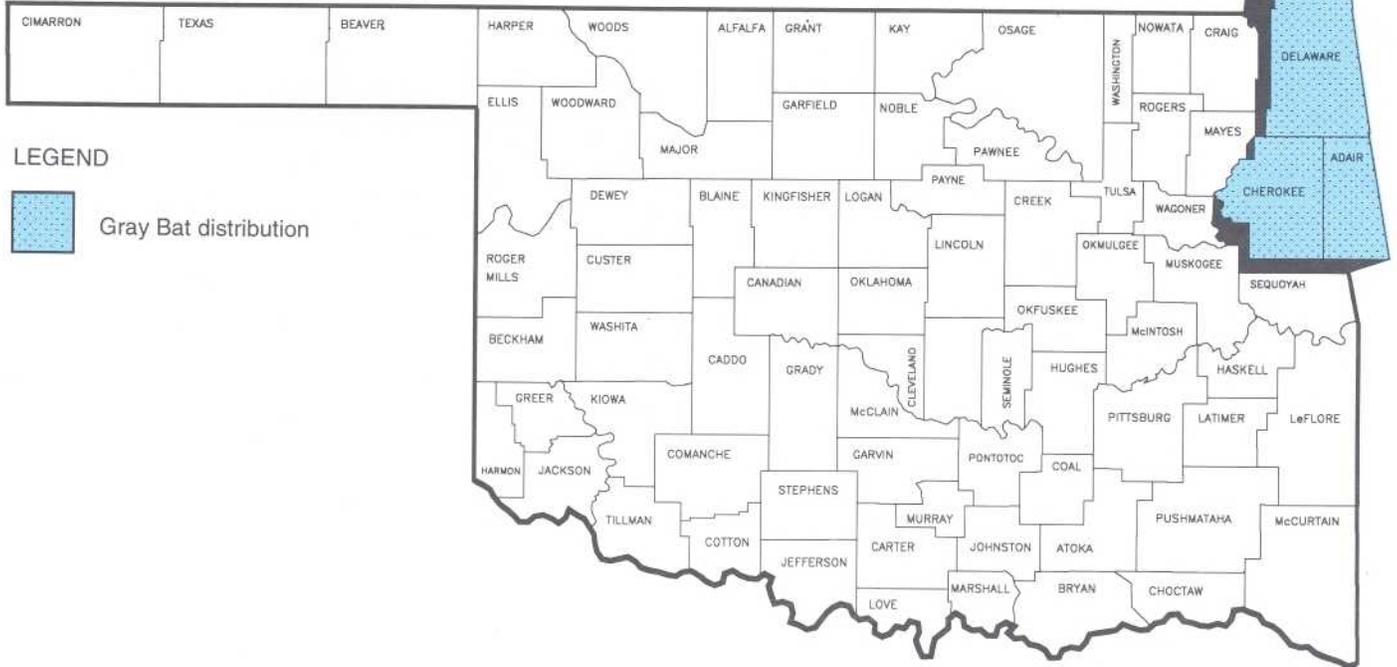
limestone region of the northeastern part of the state. At present, this bat is found in only four counties in northeastern Oklahoma-Adair, Cherokee, Delaware, and Ottawa. Gray bats may occur in caves in other counties, but there have been no recent sightings. No hibernation caves are known in Oklahoma.

**CAUSES OF DECLINE:** The gray bat is extremely vulnerable to human disturbances at roosting caves. This is especially true at hibernation and maternity caves. The gray bat also is threatened by pesticides, loss of habitat due to flooding by man-made impoundments, commercialization of caves, and improper gating of caves.

**RECOVERYNEEDS:** The top recovery tasks for the gray bat include: 1) acquiring and protecting caves; 2) controlling habitat destruction; and 3) educating the public about the danger human disturbance represents to the bat and about the ecological importance of the gray bat.

**OTHER INFORMATION:** Human disturbance at winter caves is energetically costly for bats and can significantly decrease their chances of surviving the winter. Disturbance of maternity caves in the summer can cause large-scale mortality of flightless young. Gates, fences, and signs are often used to keep people out of active gray bat caves.

Gray Bat  
(*Myotis grisescens*)



## SPECIES ACCOUNT (supplement)

### Gray Bat

#### General Information

Use the Species Account and this supplement as an aid in completing the form(s) for Environmental Evaluation Procedures in Nonproject Activities. These procedures require conservationists to determine the occurrence of threatened and endangered (T&E) species on the farm or ranch, determine whether or not planned measures are capable of affecting T&E species and, if so, develop alternatives for protection. Technical assistance will not be provided unless such alternatives for protection can be developed and agreed upon by the land user, SCS, and Fish and Wildlife Service.

Land treatment measures and conservation practices that may affect the Gray Bat in Oklahoma are briefly described below. A detailed environmental evaluation should be completed before these types of treatment measures are planned on lands where T&E species have been identified.

#### Land Treatment and Practice Considerations

Caves are essential habitat for gray bats. As stated in the Species Account, flooding of caves by impoundments has resulted in habitat loss. SCS practices that could be detrimental to the bats include pond construction, erosion control structures, and floodwater retarding structures that inundate cave entrances. Conversely, if these impoundments do not inundate cave entrances, the surface water created by these structures may produce insects and provide additional feeding areas. Wetland restoration and creation in the vicinity of caves would also provide beneficial habitat.

Since gray bats are dependent on flying insects for all of their food requirements, pest management practices that include the use of insecticides could be detrimental, especially when used in the vicinity of water bodies used as feeding areas.

#### Instructions

The Oklahoma Natural Heritage Inventory (ONHI) has site specific information on caves used by gray bats in the identified counties. Contact ONHI when impoundments are being considered in locations that would inundate cave entrances within the four listed counties. Consider the potential impacts of insecticide use on flying insects in the vicinity of rivers, lakes, and ponds within 12 miles of known gray bat caves.

# Appendix 1

## The Endangered Species Process

### The Listing Process

To list a species, the U.S. Fish and Wildlife Service follows a strict legal process to propose and later to adopt regulations that have the effect of law. The USFWS first publishes notices of review that identify U.S. species considered as "candidates" for listing. A priority system (based on degree and immediacy of threat and taxonomic factors) has been developed to direct efforts toward plants and animals with the greatest need for protection.

**By law, listing decisions must be based solely on the best available biological data.** Generally (but not always), the USFWS requires information on a species' distribution, biology, and threats in order to make a listing decision.

Although the USFWS usually initiates listing proposals, such actions may also start as a recommendation or petition from knowledgeable individuals or organizations. Any person may suggest that a species be listed, but adequate information must be presented for the USFWS to make a positive listing decision. As part of the listing process, the USFWS must decide if a species should be proposed for listing as endangered or threatened. An endangered species is one in danger of extinction throughout all or a significant portion of its range. A threatened species is one likely to become endangered within the foreseeable future.

Once a species has been chosen for possible listing, preproposal letters of inquiry are sent to species experts, federal and state agencies, and other interested organizations and individuals. If biological information supports the decision to continue the listing process, a proposed rule is then published in the Federal Register. All interested parties are encouraged to comment and provide additional information and submit statements at any public hearings that may be held. The comment period is usually 60 days, and the public has 45 days to request a public hearing.

Within one year of publication of a listing proposal, one of three possible courses of action must be taken:

- 1) A final listing rule is published;
- 2) If the available biological information does not support the listing, the proposal is withdrawn; or
- 3) If, at the end of one year, there is substantial disagreement within the scientific community concerning the biological justification of the listing, the proposal may be extended for a maximum of six months. After that

time, a decision must be made on the basis of the best scientific information available.

If approved, the final listing rule generally becomes effective 30 days after publication in the Federal Register. After a species is listed, its status is reviewed at least every five years to determine if federal protection is still warranted.

### The Consultation Process

Section 7 of the Endangered Species Act requires that all federal agencies consult with the USFWS on endangered and threatened species. This consultation requirement involves all actions authorized, funded, or carried out by federal agencies. There are two categories of consultations-informal and formal.

#### Informal Consultation Steps:

- Federal agency (or designated agent) contacts the USFWS for a list of endangered or threatened species in the project area and/or for information on the species.
- Federal agency (or designated agent) then makes a determination on whether the proposed action "may affect" the listed species. They may prepare a biological assessment to help make this determination.
- If it is determined by the federal agency or agent (and agreed upon by the USFWS) that the action would have no effect on the listed species, then no further consultation is necessary.
- If it is determined that the proposed action may affect listed species, then the federal action agency must initiate formal consultation with the USFWS.

#### Formal Consultation Steps:

- The federal action agency initiates formal consultation with the USFWS in writing, and includes a description of the proposed action, the specific area of the proposed action, any federally listed species that may be affected by the action, how the proposed action may affect the listed species, and any other information available.
- The USFWS has up to 90 days to complete a biological opinion on the effects of the action on listed species. The purpose of the biological opinion is to determine whether or not the project will jeopardize the continued existence of a listed species or adversely modify its

critical habitat. Formal consultation concludes at the end of the 90 days, unless the consultation period is extended by mutual agreement with the federal action agency and the USFWS.

## The Recovery Process

Recovery is the process by which the decline of an endangered or threatened species is stopped or reversed (and threats to its survival are removed so that its long-term survival in nature can be assured). The primary goal of this process is the maintenance of secure, self-sustaining wild populations of species to the point where they no longer require the protection of the Endangered Species Act.

The steps in the USFWS' recovery program are:

- 1) Identify those ecosystems and organisms that face the highest degree of threat.
- 2) Determine tasks necessary to reduce or eliminate the threats.
- 3) Apply the resources available to the highest recovery tasks.
- 4) Reclassify and delist the species as appropriate.

The first step in the recovery process is the development of species-specific recovery goals and the identifi-

cation and ranking of species information and management needs in terms of their relative importance and timing for recovery. This information is usually set forth in a recovery plan for each listed species.

A recovery plan delineates, justifies, and schedules the research and management actions necessary to support recovery of a species, including those that (if successful) are likely to permit reclassification or delisting of the species. These recovery plans are comprehensive documents that identify all known recovery actions for a species and associated costs by all cooperating agencies. They serve as a blueprint for private, federal, and state interagency cooperation in the implementation of recovery actions.

Coordination among federal, state, and local agencies; academic researchers; conservation organizations; private individuals; and major land users is perhaps the most essential ingredient for the development and implementation of an effective recovery program. In its role as coordinator of the recovery process, the USFWS must emphasize cooperation and teamwork among all involved parties.

The recovery planning process provides opportunities for public participation, since commitments and partnerships from various segments of society are required in order for the process to succeed.

## Appendix 2

### State Listed Endangered and Threatened Species

In 1985, the Oklahoma Wildlife Commission was empowered to create and maintain a list of Oklahoma's endangered and threatened species. Species which may be considered for state listing are those native species which reproduce, migrate, or overwinter in Oklahoma.

To be included on the state endangered species list, a native species' prospect for survival in Oklahoma must be in extreme jeopardy. A state threatened species is a native species that is not currently in danger of extirpation in Oklahoma, but is likely to become endangered or threatened in the foreseeable future if special protection and management efforts are not implemented.

The following species have been listed as state endangered and state threatened by the Oklahoma Wildlife Conservation Commission:

#### State Endangered

Cave crayfish (*Cambarus tartarus*)

Neosho mucket (*Lampsilis rafinesqueana*)

Longnose darter (*Percina nasuta*)

#### State Threatened

Arkansas River shiner (*Notropis girardi*)

Blackside darter (*Percina maculata*)

Federally listed endangered or threatened species are automatically included on Oklahoma's state list in the same category.

For further information on state listed species, please contact:

Oklahoma Department of Wildlife Conservation

1801 N. Lincoln, P.O. Box 53465

Oklahoma City, Oklahoma 73152

Phone: 405-521-3851.