Ozark Plateau National Wildlife Refuge

"Our Vision of the Future"

Fifteen thousand acres of Ozark native mature oak-hickory and oak-hickory-pine forests the green, gently rolling hills of the Ozark Plateau National Wildlife Refuge. Hidden below the green canopy lie karst substrate with rocky outcroppings, cliffs, and caves. Protected from future development this continuous forest acts as a purification system, recharging the land with clean water.

Descending into the canopy, Ozark big-eared bats maneuver precisely, quickly, and effortlessly. Gliding through the open tunnels created by the interwoven canopy and the forest floor below, the bats silently stalk the plentiful supply of moths and other insects which the healthy forest has provided. Like the rugged terrain on which they stand, large native oaks and hickories appear rough and gnarled, their outstretched limbs providing safety and security to the many nesting interior forest migratory birds. Fires periodically cleanse the forest of invasive species and dense shrub understory, leaving the old trees scarred and the soil primed for new growth. Grasses and wildflowers sprout and give color to the blackened landscape. Natural springs seep up from the porous karst substrate, feeding the creeks and streams with clear, fresh natural water, free of the effects of human contaminants.

The forest floor is abundant with life. Salamanders and snakes lie protected under stones and fallen limbs, box turtles graze lazily on mayapples, and tree frogs croak nearby. From a rock outcrop, an unseen cave mouth exhales a cool wind. Carved by water and time, each cave is a unique underground labyrinth of passages, healthy, hidden and undisturbed. Caves serve as the home to a myriad of underground dwellers, including colonies of bats that expertly navigate the maze. In their wake, the bats deposit guano, essential energy in a lightless world. Under colonies of grey bats, fresh guano piles give the appearance of a slowly shifting cave floor as the teaming larvae of flies and beetles churn. In clear, shallow underground streams and pools, colorless cavefish, cave crayfish, isopods, and amphopods move about leisurely, while orange and black salamanders hurriedly scurry out of sight.

The Refuge understands the threats to the ecoregion and acts to be truly successful in its mission to preserve and protect the Ozarks ecosystem, and recover the federally listed threatened and endangered Ozark cave species, and other unique resources. The Refuge cannot achieve its mission by itself, and therefore forms strong partnerships, the key to success. The Refuge acts as a good neighbor in cooperation with numerous surrounding private landowners, tribes, conservation organizations, and agencies. Biologists are busy monitoring cave and forest resources and implementing strategic habitat conservation in the Ozark landscape to help the Refuge better manage for future generations.

School and youth groups, conservation organizations, private individuals, and representatives from tribes and numerous agencies use the Mary & Murray Looney Education & Research Center just outside a small town. They are seeking information and are welcomed by friendly, knowledgeable volunteers and staff who explain the recreational and educational opportunities for visitors. Children and adults walk the narrow, primitive hiking trails through forests and along winding streams. People actively participate in hands-on discussions about cave and karst resources and other Ozark forest assets such as Neotropical songbirds, healing herbs, and edible plants near the cozy, rustic education cabin. Local caver volunteers assist with cave mapping and management. Also university students study and conduct research on important surface and subterranean resources. During their time at the Refuge, visitors slow down and free themselves from the pressures and activities of human society. Visitors leave the Refuge with a lasting connection with nature and appreciation for the beauty and ecological importance of Ozarks caves, creatures, forests and waters.

CHAPTER 1: INTRODUCTION

This document is a Comprehensive Conservation Plan (CCP) designed to guide management of Ozark Plateau National Wildlife Refuge (Refuge or NWR) for the next fifteen years. The CCP provides a description of the desired future conditions and long-range guidance to accomplish the purposes for which the Refuge was established. The CCP and accompanying Environmental Assessment (EA) address U.S. Fish & Wildlife Service (Service) legal mandates, policies, goals, and National Environmental Policy Act (NEPA) compliance. The EA (Appendix A) presents two alternatives for habitat and wildlife management, visitor services, and facilities management that consider issues and opportunities on the Refuge. It also identifies, describes, and compares the consequences (or impacts) of implementing the two management alternatives (including current management) on the physical, biological, and human environments described in the CCP. The final CCP will be developed though modifications made after the internal review, state and tribal review, and finally public review process and will replace current management direction when it is completed.

The CCP is divided into five chapters. *Chapter 1: Introduction* provides information about why the Service is developing this CCP, a brief overview of the Refuge including its establishment, authorizing legislation, and description of its purposes and information on the National Wildlife Refuge System (Refuge System, System) and the laws, policies, and guidance that sets the stage for management direction. *Chapter 2: The Planning Process* explains the process used to develop the CCP consistent with planning requirements. *Chapter 3: Refuge Resources and Current Management* explains the landscape setting; physical, biological, and socio-economic environment; and the current management programs on the Refuge. *Chapter 4: Management Direction* describes the goals, objectives, and strategies for future management within the next 15 years (Proposed Alternative in EA). Finally, *Chapter 5: Plan Implementation and Monitoring* describes the various tools the Refuge will use to implement the management direction presented in this CCP.

1.1 Purpose and Need for the CCP

The purpose of comprehensive conservation planning is to provide long-range guidance for the management of national wildlife refuges, as mandated by the National Wildlife Refuge Improvement Act of 1997 (Improvement Act). The CCP will enhance the management of Ozark Plateau National Wildlife Refuge by:

- providing a clear statement of direction for the future management of the Refuge
- providing long-term continuity in Refuge management
- communicating the Service's management priorities for the Refuge to their partners, neighbors, visitors, and the general public

- providing an opportunity for the public to help shape the future management of the Refuge
- ensuring that management programs on the Refuge are consistent with the mandates of the Refuge System and the purposes for which the Refuge was established
- ensuring that the management of the Refuge is consistent with Federal, State, and local plans
- providing a basis for budget requests to support the Refuge's needs for staffing, operations, maintenance, and capital improvements

The CCP is needed to provide guidance and rationale for management actions and will be used by the Refuge Manager and staff as a reference document when developing work plans, step-down plans, and when making management decisions. Through the development of goals, objectives, and strategies (Chapter 4), this CCP describes how the Refuge contributes to the overall mission of the National Wildlife Refuge System, fulfills the purposes designated for the Refuge, and outlines working with partners to achieve conservation at a landscape level. The CCP is needed to provide a vision for the Refuge and to provide management direction for furthering scientific research, inventorying and monitoring, protection, restoration, maintenance, and management of compatible public uses of Refuge resources for the next 15 years.

The Federal Cave Resources Protection Act of 1988-Public Law 100-691 (16 U.S.C. 4301 et seq. 102 Stat. 4546) established requirements for the management and protection of caves and their resources on Federal lands, including allowing the land managing agencies to maintain confidentiality of cave locations, and requiring permits for any removal or collecting activities in caves on Federal lands. Numerous caves and considerable surrounding upland and riparian forest used as buffer zones, foraging habitat, and protection of ground water recharge areas, have been lost to urban, agricultural, and industrial development. Reservoir development, highways, power line and pipeline right-of-way construction, and cave commercialization also impact these resources. As population growth and development increases in the Ozarks, the threat of human disturbance increases. Because of the sensitive nature of cave resources accidental and intentional human disturbance is becoming one of the largest threats to these resources. Therefore, this CCP is also needed to ensure that the Refuge continues to conserve fish, wildlife, and cave habitat in the face of human development, climate change, and related stressors.

The goals developed for the Refuge during this planning process include the following:

- **Goal 1: Landscape-level Context**
  Collaborate with multiple partners to implement Strategic Habitat Conservation on a landscape-level in order to prevent extinction and recover federally listed threatened and endangered Ozark cave species as well as prevent the need for listing other Ozark species of concern.

- **Goal 2: Wildlife Habitat & Population Management**
  Protect, enhance, conserve and restore Ozark natural caves, springs, streams, aquifers, wetlands, watersheds, forests, and groundwater recharge areas to prevent extinction and recover federally listed cave species as well as prevent the need for listing other native species including migratory birds and other species of concern in the Ozarks to promote natural species diversity on a landscape-level.

- **Goal 3: Visitor Services**
  Provide safe, high quality, compatible, wildlife dependent use opportunities for visitors, students, and nearby residents, to give them an understanding of the importance and value of Ozark cave, spring, aquifer, stream, wetland, watershed, groundwater recharge area, and forest wildlife habitat conservation efforts.

- **Goal 4: Refuge Infrastructure & Administration**
  Provide administrative support and appropriate facilities required to ensure that Refuge goals and objectives are met through effective landscape conservation management of Ozark habitats, fish and wildlife, and visitor services and for the primary purpose of preventing extinction and recovering federally listed threatened and endangered Ozark cave species.

By preparing this CCP, documenting our goals and objectives, and involving our partners and the public in the process, we can gain a better understanding of the issues and possible solutions from all sides. Sustaining the nation's fish and wildlife resources is a task that can be accomplished only through the combined efforts of governments, businesses, organizations, and citizens. This CCP will help explain how the Ozark Plateau NWR fits into the larger landscape and what our role is in protecting our natural resources for present and future generations.

1.2 Refuge Overview: History of Establishment, Acquisition, and Management

1.2.1 Refuge Establishing Authorities and Purpose(s)

National wildlife refuges are established under a variety of legislative acts and administrative orders and authorities. These orders and authorities include one or more specific purposes for which the refuge lands are acquired. The purposes are of key importance in refuge planning, and are the foundation for management decisions. The purposes of a refuge are specified in, or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit.

By law, refuges are to be managed to achieve their purposes, and unless otherwise indicated by the establishing document the following rules apply:

- Purposes dealing with the conservation, management, and restoration of fish, wildlife, and plants, and their habitats take precedence over other management and administration purposes.
- When in conflict, the purpose of an individual refuge may supersede the Refuge System mission.
- Where a refuge has multiple purposes related to fish, wildlife, and plant conservation, the more specific purpose will take precedence in instances of conflict.
- When an additional unit is acquired under a different authority then that used to establish the original unit, the addition takes on the purpose(s) of the original unit, but the original unit does not take on the purpose(s) of the addition

The establishing authorities for the Ozark Plateau NWR include:

- Endangered Species Act of 1973 (16 U.S.C. subsection 1534, as amended) "...to conserve (A) fish or wildlife which are listed as endangered species or threatened species...or (B) plants which are listed as endangered species or threatened species..."

Other authorities for land acquisition and related purposes of the Ozark Plateau NWR include:

- Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742(b)(1)) "...for the development, advancement, management, conservation, and protection of fish and wildlife resources …for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude."
- Migratory Bird Conservation Act of 1929, as amended (16 U.S.C. 715d) "…for use as an inviolate sanctuary ...for any other management purposes ...for migratory birds."

- Federal Cave Resources Protection Act of 1988 (Pub. L. 100-691, Sec. 2, Nov. 18, 1988, 102 Stat. 4546.).
- Land and Water Conservation Fund Act of 1965, as amended (16
- U.S.C. 460l-4 through 11), (land acquisition fund source).

The Ozark Plateau NWR purpose(s) of establishment (1986) is to:

- Prevent the extinction and aid in recovery of federally listed threatened and endangered Ozark cave species;
- Reduce the need for future listing of species of concern in the Ozarks;
- Protect large continuous stands of Ozark forest essential to interior forest nesting migratory birds; and
- Provide important environmental educational opportunities identifying the need for protecting fish and wildlife and other karst resources of the Ozarks.

The Refuge was established to protect and recover species like the Ozark big-eared bat. (Credit: Shea Hammond)

1.2.2 History of the Refuge

The Endangered Species Act of 1973, as amended (Federal Register, Vol. 44, No. 232, Friday, November 30, 1979) gave the Service the responsibility to prevent extinction of federally listed threatened and endangered species and assure their recovery. Four eastern Oklahoma Ozark cave species were listed as federally threatened or endangered during the 1960's, 70's, and 80's. These include:

- Indiana bat, originally listed as endangered under the Endangered Species Preservation Act of 1966 and currently listed as endangered under the Endangered Species Act of November 30, 1973;
- Gray bat, listed as endangered on April 28, 1976;
- Ozark big-eared bat, listed as endangered on November 30, 1979;
- Ozark cavefish, listed as a threatened on December 3, 1984.

The recovery plans approved by the Service for all four species identify long-term habitat protection and management through acquisition of land and conservation easements as priority tasks necessary to recover these species. The National Wildlife Refuge System is the Service's land management division provides long-term habitat protection and management necessary to fulfill the Service's responsibilities identified under the Endangered Species Act to recover these

species. To accomplish this, the Service acquired the first tract for federally listed Ozark cave species recovery in 1985 and the Ozark Plateau National Wildlife Refuge was officially established on April 1, 1986 as a satellite refuge of Sequoyah National Wildlife Refuge. The first tract acquired was 80 acres surrounding cave AD-10, still a major Ozark big-eared bat maternity cave and hibernacula. The Refuge was first called Oklahoma Bat Caves National Wildlife Refuge, but the name was changed in 1995 to reflect the actual landscape or ecosystem approach to management and implementation of Strategic Habitat Conservation, which benefits numerous Ozark fish and wildlife resources. Since the Southwest Region (Region 2) of the Service has the lead for recovering the Ozark big-eared bat, whose distribution is mostly in the Ozarks of eastern Oklahoma (with a few found in western Arkansas), establishment of the Ozark Plateau NWR was an important step towards recovery for the species.

Refuge cave (OT-13). (Credit: Steve Hensley)

In addition, the Federal Cave Resources Protection Act was passed in 1988 (Pub. L. 100-691, Sec. 2, Nov. 18, 1988, 102 Stat. 4546.). This Act further increased the importance and need for the Refuge because it required the Service, as well as all other federal agencies, to identify all significant caves on federal lands as invaluable and irreplaceable parts of the Nation's natural heritage. It also indicated that these caves are threatened due to improper use, increased recreational demand, urban spread, and a lack of protection. The Act emphasized the need for partnering on a landscape level because it required the Service to secure, protect, and preserve significant caves and their natural resources and foster increased cooperation and exchange of information for scientific, educational, and recreational purposes.

Establishment of the Refuge was a joint effort among many partners. (Credit: rivannadesigns.com)

Ozark Plateau National Wildlife Refuge's establishment was only possible through a joint effort of a number of partners including private individuals and landowners, private conservation and caving organizations, universities, tribes, and municipal, county, state and federal agencies. These included private landowners, The Nature Conservancy, Land Legacy, Trust for Public Land, Oklahoma Natural Heritage Inventory, Oklahoma Natural History Museum, National Speleological Society (Tulsa Regional Oklahoma Grotto, Central Oklahoma Grotto, Buffalo River Grotto, Boston Mountain Grotto, Middle Ozark Lower Earth Society), Oklahoma State University, University of Oklahoma, Northeastern State University, Southeastern Oklahoma State University, University of Central Oklahoma, Rogers University, University of Arkansas, Arkansas State University, University of Missouri, Southwest Missouri State University, Arkansas Game and Fish Commission, Oklahoma Department of Wildlife Conservation, Missouri Department of Conservation, Cherokee Nation, Eastern Shawnee Nation, Miami Nation, Modoc Nation, Osage Nation, Peoria Nation, Quapaw Nation, Seneca Cayuga Nation, Wyandotte Nation, U.S. Forest Service Natural Resource Conservation Service, and National Park Service. These individuals, organizations, and agencies have worked together and coordinated efforts among three states and three Service Regions over the past twenty years to protect the fish and wildlife resources in the Ozarks.

The Nature Conservancy played a major role in Ozark Plateau NWR's establishment. TNC worked with landowners, cavers, other conservation organizations, universities, and the Service and other agencies to help identify priority areas and implemented a major effort to acquire funding for acquisition. They were instrumental in acquiring a direct appropriation, with the help of Congressman Mike Synar, from the Land and Water Conservation Fund to acquire the first tracts in the 1980's and worked with The Wildness Society for additional Land and Water Conservation Funds in the early 1990's. TNC initially acquired most of tracts and eventually sold them to the Refuge as the Service was able to work through its realty process. Other partners playing major roles in acquisition of the Refuge were Land Legacy, National Speleological Society (Tulsa Regional Oklahoma Grotto), Oklahoma Department of Wildlife Conservation, Cherokee Nation, and a number of volunteers and private landowners who were truly concerned about protecting natural resources in the Ozarks. The National Speleological Society and their local chapter, the Tulsa Regional Oklahoma Grotto, also held land for the Service to allow time for completion of the realty process.

In addition, a portion of the Refuge was acquired to offset impacts to federally listed endangered gray bats and threatened Ozark cavefish and migratory birds from past lead and zinc mining in northeast Oklahoma, southwest Missouri, and southeast Kansas at one of the oldest and largest Superfund sites in the nation, the Tri-State (Tar Creek) Superfund Site. The impacts from the mining were identified during one of the early Natural Resources Damage Assessments for this Superfund Site. In its July 2000 Final Partial Restoration Plan that addressed injuries to migratory birds and threatened and endangered species (gray bat and Ozark cavefish) from releases of hazardous chemicals from abandoned lead and zinc mining activities at the Superfund Site in Ottawa County, the Service outlined a plan for partial compensation to the public. The plan includes acquisition and protection of a gray bat maternity cave and a potential Ozark cavefish site in Ottawa County, as well as additional gray bat and cavefish habitat in Ottawa and Adair Counties.

On February 9, 2005, the U. S. Fish and Wildlife Service approved the NEPA compliance documents including an Environmental Assessment, Land Protection Plan, and Conceptual Management Plan to expand the Ozark Plateau NWR. These took into consideration comments from the public on the draft documents and from public meetings and a public hearing. Ozark Plateau NWR was approved to acquire additional land or easements from willing sellers and donors, up to 15,000 acres in Adair, Delaware, Ottawa, Cherokee, Craig, Mayes, and Sequoyah Counties, Oklahoma. These tracts will generally be forested tracts that will protect valuable foraging areas and movement corridors for the federally listed endangered bats, as well as watersheds and ground water recharge areas important for maintaining surface and ground water quality for the federally listed threatened Ozark cavefish. In addition, sites will take into consideration appropriate geological formations including caves, springs, aquifers, losing and gaining streams, sinkholes, buffs and talus cracks. Expansion of the Refuge has also provided additional opportunities for various outdoor recreational activities, environmental education, interpretation, and scientific research.

1.2.3 Ozark Plateau NWR Management Units

As of 2012, Ozark Plateau NWR consists of nine management units in Adair, Cherokee, Delaware, and Ottawa Counties, totaling 4,093.35 acres. This includes 3,572.35 acres in fee title, 162 acres in purchased management easements from private landowners and TNC, and 359 acres in management agreements with the Cherokee Nation and City of Tulsa (see Table 1-1).

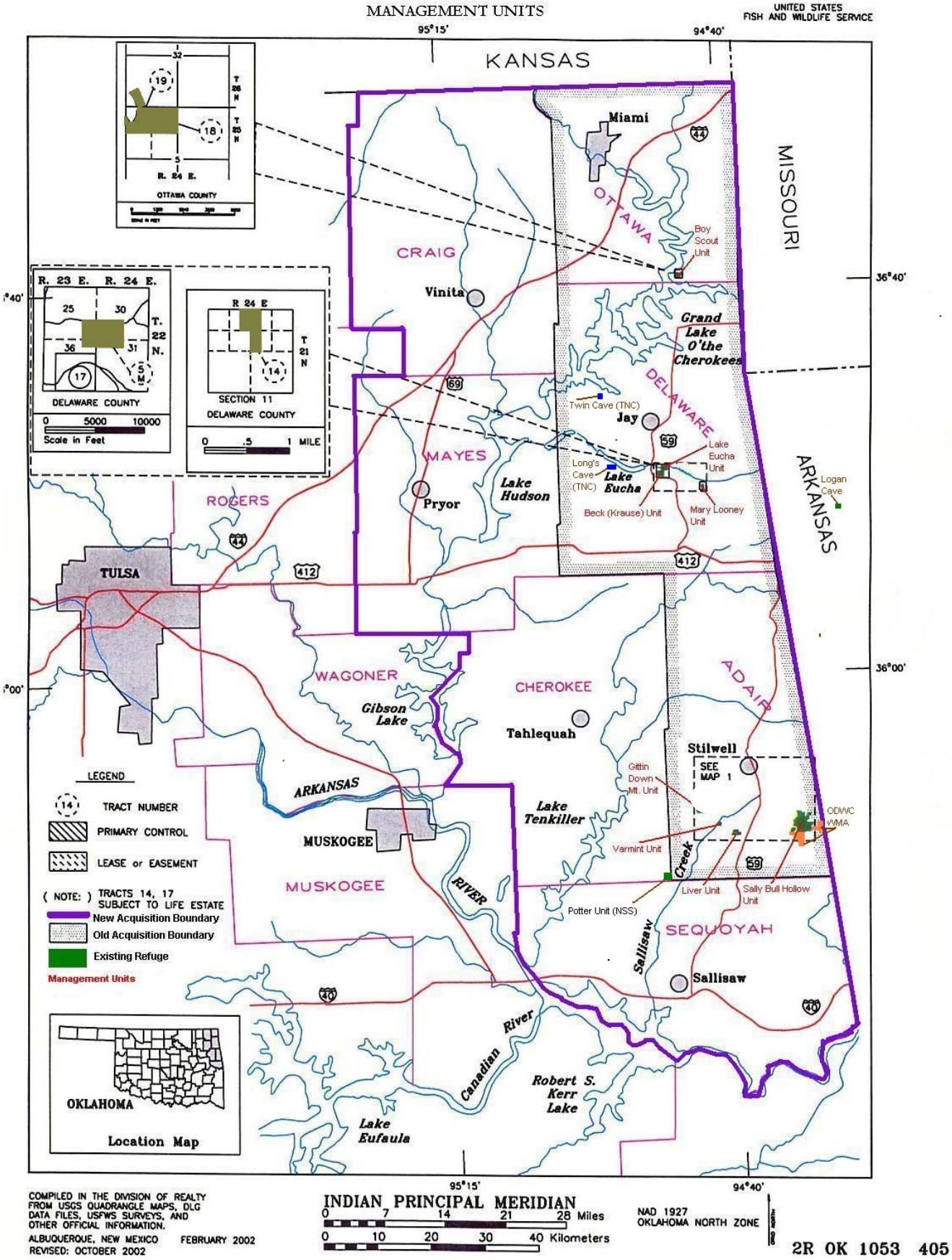
Table 1-1. Ozark Plateau National Wildlife Refuge Area (Acres) by County and Tract Type
March 2, 2012**; (**Acres based on abstract data)

	Fee-Title Tracts (acres)	**Conservation Easement Tracts (acres)**	**Conservation Agreement Tracts (acres)**
Adair County	Sally Bull Hollow (2,280) Gittin' Down Mtn. (480) Liver (90) **2,850 acres**	Gittin' Down Mtn. (TNC / 90) Varmint (Cole / 60) Joens (Joens / 12) **162 acres**	Liver (Cherokee Nation / 120) **120 acres**
Cherokee County	Potter (189) **189 acres**	n/a	n/a
Craig County	n/a	n/a	n/a
Delaware County	Mary & Murray Looney (95) Beck (Krause) (360) **455 acres**	n/a	Lake Eucha (City of Tulsa / 239) **239 acres**
Mayes County	n/a	n/a	n/a
Ottawa County	Boy Scout (78.35) **78.35 acres**	n/a	n/a
Sequoyah County	n/a	n/a	n/a
TOTAL	**3,572.35 acres**	**162 acres**	**359 acres**
Total land managed by Ozark Plateau National Wildlife Refuge (2012) = 4,093.35 acres			

Overlooking the Sally Bull Hollow Unit in fall. (Credit: Steve Hensley)

Management units of Ozark Plateau NWR are identified, acquired, and/or managed based upon impact to federally listed threatened or endangered Ozark cave species, including cave habitat, groundwater recharge areas, foraging areas, and movement corridors important to these species as well as other species of concern. In addition, Ozark Plateau NWR's management units play a role in conserving continuous tracts of mature oak-hickory or oak-hickory-pine Ozark forest, beneficial to nesting and migrating Neotropical birds as well as cave species. The following are the nine different management units of the Refuge discussed throughout this CCP: Alvin Arthur Beck (Beck), Boy Scout, Gittin Down Mountain, Lake Eucha, Liver, Mary and Murray Looney, Mutt Potter (Potter), Sally Bull Hollow, and Varmint (see Figure 1-1).

Figure 1-1 OZARK PLATEAU NATIONAL WILDLIFE REFUGE



Beck Unit

The Beck Unit is a 360- acre area made up continuous mature oak-hickory-pine upland forest along bluffs overlooking Spavinaw Creek with sloughs and wetlands in the bottom used by nesting and migratory Neotropical birds and as foraging areas and movement corridors by endangered bat species. A large spring is on the Unit that may provide cavefish and cave crayfish habitat. Also, the Beck Unit controls runoff into Spavinaw Creek and a portion of the ground water recharge for caves on the Lake Eucha Unit. There are 25 acres of pasture and 17 acres of native prairie, and 318 acres of oak-hickory-pine forest.

Boy Scout Unit

This is a 78-acre fee title area of mature oak-hickory-pine upland forest and a small area of oak-hickory bottomland forest with sloughs and wetlands. There also is a major gray bat maternity cave with 10,000 to 15,000 gray bats raising their young there in the summer. The area is also used by nesting and migratory Neotropical birds and as a foraging area and movement corridor by endangered gray bats. It is on an arm of Grand Lake of the Cherokee, on the Grand River, which provides foraging for the endangered gray bats.

Gittin Down Mountain Unit

This Unit consists of 480 acres in fee title plus a 90-acre conservation easement with TNC. It contains a major gray bat maternity cave, with over 20,000 bats during the summer; and other caves used by both gray and Ozark big-eared endangered bat species. Also, it adjoins 20 acres owned by the NSS that contains the largest known Ozark big-eared bat hibernaculum with generally over 300 bats during the winter. The area contains a continuous stand of high quality mature Ozark oak-hickory upland forest used by nesting and migratory Neotropical birds and foraging endangered bats.

AD14 cave entrance in winter. (Credit: Steve Hensley)

Lake Eucha Unit (Eucha Unit)

There are 239 acres on the upper end of Lake Eucha along Spavinaw Creek managed through an easement with the City of Tulsa. It is made up of mature oak-hickory-pine upland forest and oak-hickory bottomland forest with sloughs and wetlands and small areas of old field. These areas are used by nesting and migratory Neotropical birds and as a foraging area and movement corridor by endangered Ozark big-eared bats and gray bats. There is a major cave on the Unit with possible historic Ozark big-eared bat use. Also it includes a portion of Spavinaw Creek, a

clear rocky bottom Ozark smallmouth bass stream used for water supply by the City of Tulsa and as foraging habitat by the gray bats.

Liver Unit

This Unit consists of 90 acres in fee title and 120 acres managed through a conservation agreement with the Cherokee Nation. It is covered by high quality continuous mature Ozark oak-hickory upland forest on steep hill sides. This forest provides excellent habitat for nesting and migratory Neotropical birds and foraging endangered Ozark big-eared bats and gray bats. Also, it contains one of the largest known federally listed endangered Ozark big-eared bat maternity caves with generally around 300 bats. This cave is also a major Ozark big-eared bat hibernaculum.

Mary & Murray Looney Unit (Looney Unit)

This management Unit encompasses 95 acres in fee title on Spavinaw Creek in Delaware County about three miles north of Colcord, Oklahoma. The area contains a major gray bat maternity cave, used by 15,000 to 20,000 gray bats during the summer and also used by the federally threatened Ozark cavefish and species of concern cave crayfish. The stream departing the cave enters Spavinaw Creek, a clear rocky bottom Ozark smallmouth bass stream used for water supply by the City of Tulsa and as foraging habitat by the gray bats. Mature high quality oak-hickory bottomland and oak-hickory-pine upland forest with sloughs and wetlands in the bottom used by nesting and migratory Neotropical songbirds and waterfowl and as a foraging area and movement corridor by migratory bald eagles and federally endangered gray bats.

Refuge staff at Mary & Murray Looney's historic cabin. (Credit: Shea Hammond)

This Unit is significant because the Mary & Murray Looney family that owned the land and cabins prior to donating them to the Refuge were honored by the National Speleological Survey for their great contributions to the local caving community including starting the Central Oklahoma Grotto chapter of NSS. Mary Looney, considered to be "the Mother of Oklahoma caving", founded the first private cave reserve to be established in the United States, now known to be the Mary & Murray Looney Unit of Ozark Plateau NWR (Graening, 2011). In addition to protecting and preserving the caves and surrounding habitat on this Unit, and in accordance with Service guidance on "Connecting People with Nature", the Looney Unit is also used as a place to provide education and scientific research opportunities. The Looney family's historical cabin home was renovated

through a Maintenance Action Team Project with maintenance personnel from five Oklahoma National Wildlife Refuges, to be utilized as an education and research center (called the Mary & Murray Looney Education & Research Center, a.k.a. the MMLERC), as well as the current Refuge Headquarters site. The MMLERC offers a space to provide educational programming focusing on environmental awareness and conservation of wildlife and other resources in the Ozarks. It also provides a base for scientific research and training for conservation organizations, schools, universities, Tribal Nations, and state and federal agencies in addition to high-quality, interpretive experiences for local children and families.

Potter Unit

The Potter Unit of the Ozark Plateau NWR consists of 189 acres of exceptional high quality mature oak-hickory-pine upland forest and narrow bands of mature bottomland hardwood along two small rocky bottom intermittent streams and three small man-made impoundments. It is in the southeast corner of Cherokee County and adjoins the Oklahoma Department of Wildlife Conservation's Cookson Wildlife Management Area to the north. There are two caves on the tract used by federally listed endangered Ozark big-eared bats and gray bats plus numerous other Ozark cave, forest, and stream species ranging from about 200 species of migratory birds and diverse reptile and amphibian populations to outstanding deer and turkey populations. There is a natural bridge across one of the streams on the property, indicating the entire valley had been a cave at one time and has collapsed. One of the caves on the property is a very important major Ozark big-eared bat cave and contains about 1,500 feet of mapped passage. This cave was once used for commercial cave tours in the 1920's and 30's and the area was a popular tourist attraction-with an old rock dam providing a swimming area and dances taking place in a large cave room near its entrance. In addition, the old historic wagon road between Sallisaw and Tahlequah cross the property, with remains of old rock bridge abutments. Also several archeological sites are found on the property. Because of the sensitive nature of the important Ozark big-eared bat caves and the exceptional natural resources on this Unit and the federally endangered bat's lack of ability to tolerate human disturbance, the Unit is only open to scientific purposes by prior arrangement with the Refuge.

Crystal Cave stream flows on the Potter Unit. (Credit: Steve Hensley)

Sally Bull Hollow Unit of the Ozark Plateau National Wildlife Refuge. (Credit: Shea Hammond)

Sally Bull Hollow Unit

The Unit encompasses 2,280 acres in fee title of high quality continuous mature Ozark oak-hickory upland forest on steep hill sides with numerous bluff faces. There are also narrow high quality oak-hickory bottomland forest, and intermittent rocky bottom Ozark streams used by nesting and migratory Neotropical birds and foraging endangered bats. Numerous important Ozark big-eared bat and gray bat caves are found on this Unit. It also contains the largest known cave in Oklahoma, with almost 9 miles of mapped passage. It is within the Lee Creek drainage basin, an Oklahoma State scenic river, with high gradient, spring fed tributaries. The area of the cave is underlain by Mississippian and Pennsylvanian age sedimentary rocks. The AD-14 Cave complex has developed in the Pitkin formation (Mississippian). The cave system is capped by a sandstone of the Hale formation (Pennsylvanian) and is underlain by the Fayetteville formation (predominately shales). The cave is geologically isolated from other caves in eastern Oklahoma therefore enhancing the probability for unique fauna.

Varmint Unit

This is a 60-acre easement with a private landowner. It is dominated by high quality continuous mature Ozark oak-hickory upland forest on steep hill sides used by nesting and migratory

Neotropical birds and foraging endangered bats. It contains a major federally listed endangered Ozark big-eared bat maternity cave that is also used as an Ozark big-eared bat hibernaculum and adjoins Cherokee Nation land with a very important cave also used as a maternity site for these bats.

1.3 Planning Context

The Ozark Plateau National Wildlife Refuge is part of a national system of more than 550 refuges. The U.S. Fish and Wildlife Service places an emphasis on managing individual refuges in a manner that reflects the National Wildlife Refuge System mission. As a result, the CCP must contribute to meeting the overall system mission and goals.

1.3.1 The U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service is the principal Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service has a primary responsibility to manage and protect Federal trust species, which includes migratory birds, threatened species, endangered species, inter-jurisdictional fish, marine mammals, and other species of concern. In addition to the National Wildlife Refuge System the Service also operates national fish hatcheries, fishery resource offices, and Ecological Services field stations. The Service enforces Federal wildlife laws, manages migratory bird populations, restores nationally significant fisheries, administers the Endangered Species Act, conserves and restores wildlife habitat such as wetlands, and helps Native American tribal governments and foreign governments with their conservation efforts. It also oversees the Federal Assistance Program, which distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to State fish and wildlife agencies.

The mission of the U.S. Fish and Wildlife Service is:
"working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people"

1.3.2 The National Wildlife Refuge System

The National Wildlife Refuge System (Refuge System, System, NWRS) is the only existing system of federally owned lands managed chiefly for the conservation of wildlife. Founded in 1903 by President Theodore Roosevelt with the designation of Pelican Island as a refuge for brown pelicans, the Refuge System consists of over 97 million acres in over 551 refuges and 38

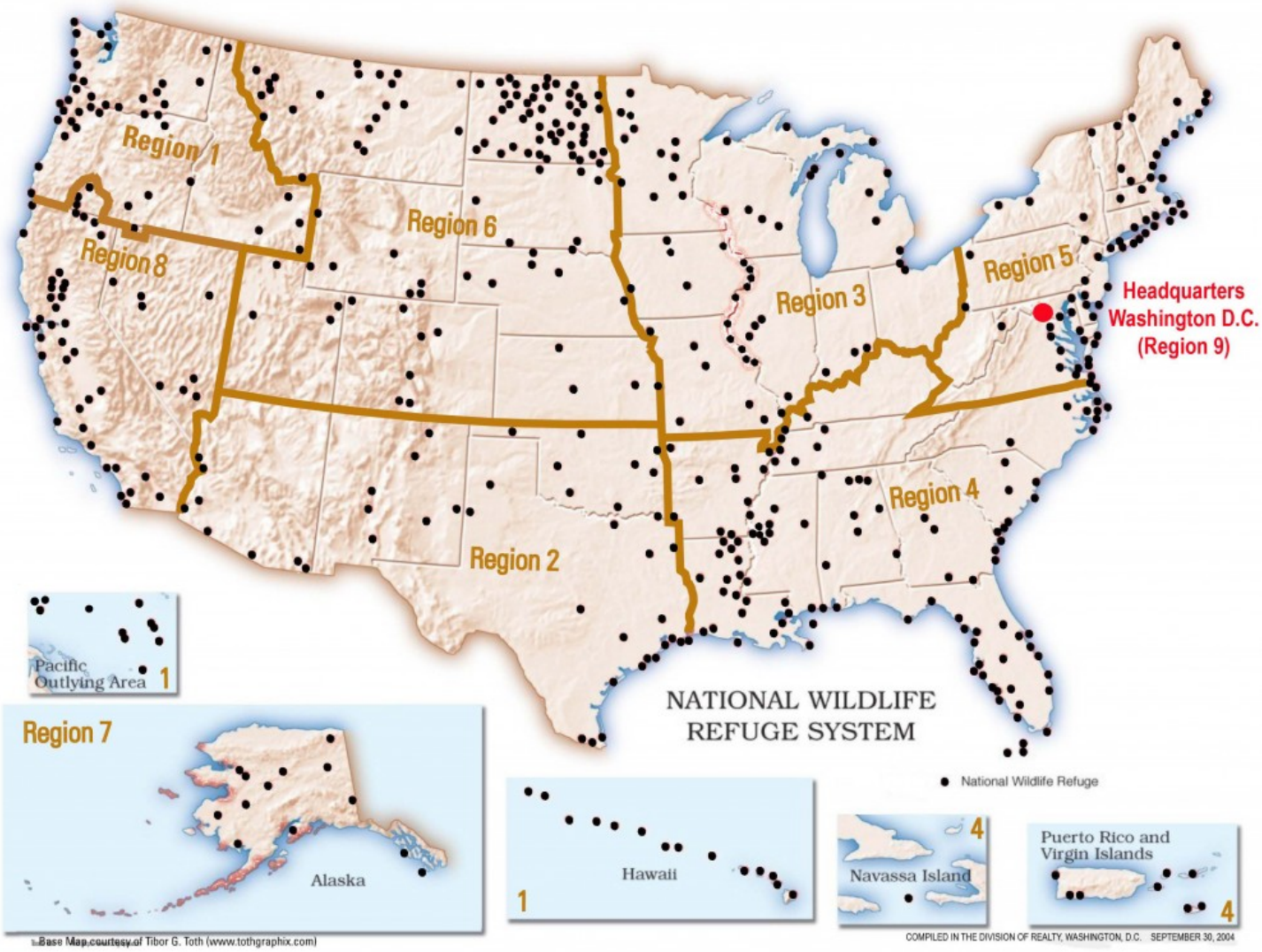
wetland management districts in all 50 states and U.S. territories. National wildlife refuges host a tremendous variety of plants and animals supported by a variety of habitats from arctic tundra and prairie grasslands to subtropical estuaries. Most national wildlife refuges are strategically located along major bird migration corridors ensuring that ducks, geese, and songbirds have rest stops on their annual migrations. Many refuges are integral to the protection and survival of plant and animal species listed as endangered. The Refuge System is the world's largest collection of lands and waters set aside specifically for the conservation of wildlife and ecosystem protection (see Figure 1-2).

The mission of the Refuge System is:
"to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57).

The goals of the Refuge System are to:

- conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered;
- develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges;
- conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts;
- provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); and
- foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

Figure 1-2. National Wildlife Refuge System.



1.3.2.1 Legal and Policy Guidance

Refuge management and administrative activities are dictated, in large part, by the legislation that created the unit and its purposes and goals. However, other laws, regulations, and policies also guide management. The Refuge is guided by the mission and goals of the Refuge System, Service Policy, Federal laws and executive orders, and international treaties. A complete list of the laws, policies, treaties and executive orders that pertain to the conservation and protection of natural and cultural resources on national wildlife refuges is provided in Appendix G.
Key laws and policies directly related to comprehensive conservation planning are discussed below.

National Wildlife Refuge System Improvement Act of 1997
The National Wildlife Refuge System Administration Act, as amended, states that each refuge shall be managed to fulfill both the mission of the Refuge System and the purposes for which the individual refuge was established. It also requires that any use of a refuge be a compatible use—a use that will not materially interfere with nor detract from, in the sound professional judgment of the refuge manager, fulfillment of the mission of the Refuge System or the purposes of the Refuge.

The 1997 amendments to the National Wildlife Refuge System Administration Act of 1966 identified a number of principles to guide management of the Refuge System. They include the following:

- Conserve fish, wildlife, and plants, and their habitats within the System
- Maintain the biological integrity, diversity, and environmental health of the System
- Coordinate, interact, and cooperate with adjacent landowners and State fish and wildlife agencies
- Maintain adequate water quantity and quality to meet Refuge and System purposes and acquire necessary water rights
- Maintain hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education as the priority general public uses of the System
- Provide opportunities for compatible priority wildlife-dependent public uses with the System
- Provide enhanced consideration for priority wildlife-dependent public uses over the other general public uses in planning and management
- Provide increased opportunities for families to experience priority general public uses, especially traditional outdoor activities such as fishing and hunting
- Monitor the status and trends of fish, wildlife, and plants in each refuge

The Improvement Act establishes the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; requires a comprehensive conservation plan for

each refuge by the year 2012; and provides guidelines and directives for the administration and management of all areas in the Refuge System, including wildlife refuges, areas for the protection and conservation of fish and wildlife threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas.

To maintain the health of individual refuges, and the National Wildlife Refuge System as a whole, managers must anticipate future conditions. Managers must endeavor to avoid adverse impacts and take positive actions to conserve and protect refuge resources. Effective management also depends on acknowledging resource relationships and acknowledging that refuges are parts of larger ecosystems. Refuge managers work together with partners—including other Refuges, Federal and State agencies, Tribal Nations, Native American organizations and entities, nongovernmental organizations and individuals—to protect, conserve, enhance, or restore all native fish, wildlife, plants, and their habitats.

Appropriate Use Policy

This policy describes the initial decision process the refuge manager follows when first considering whether to allow a proposed use on a refuge. The refuge manager must find a use appropriate before undertaking a compatibility review of the use. An appropriate use as defined by the Appropriate Use Policy (603 FW 1 of the Service Manual) is a proposed or existing use on a refuge that meets at least one of the following four conditions:

- The use is a wildlife-dependent recreational use as identified in the Improvement Act.
- The use contributes to the fulfilling of the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Improvement Act was signed into law.
- The use involves the take of fish and wildlife under State regulations.
- The use has been found to be appropriate as specified in Section 1.11 (603 FW 1 of the Service Manual).

Chapter 5 of this CCP includes additional information on appropriateness of refuge uses.

Compatibility Policy

Lands within the Refuge System are different from other multiple use public lands in that they are closed to all public uses unless specifically and legally opened. The Improvement Act states, "... the Secretary shall not initiate or permit a new use of a Refuge or expand, renew, or extend an existing use of a Refuge, unless the Secretary has determined that the use is a compatible use and that the use is not inconsistent with public safety."

In accordance with the Improvement Act, the Service has adopted a Compatibility Policy (603 FW 2 of the Service Manual) that includes guidelines for determining if a use proposed on a national wildlife refuge is compatible with the purposes for which the refuge was established. A

compatible use is defined in the policy as a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the refuge. Sound professional judgment is defined as a finding, determination, or decision that is consistent with the principles of sound fish and wildlife management and administration, available science and resources (funding, personnel, facilities, and other infrastructure), and applicable laws.

The Service strives to provide priority public uses when they are compatible. If financial resources are not available to design, operate, and maintain a priority use, the refuge manager will take reasonable steps to obtain outside assistance from the State and other conservation interests.

Additional information regarding Compatibility Determinations (CDs) is provided in Chapter 5 and the CDs prepared in association with this CCP are provided in Appendix B.

Biological Integrity, Diversity, and Environmental Health Policy
The Improvement Act directs the Service to "ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans..". To implement this directive, the Service has issued the Biological Integrity, Diversity, and Environmental Health Policy (601 FW 3 of the Service Manual), which provides policy for maintaining and restoring, where appropriate, the biological integrity, diversity, and environmental health of the Refuge System. The policy is an additional directive for refuge managers to follow while achieving the refuge purpose(s) and Refuge System mission. It provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuge and associated ecosystems. Further, it provides refuge managers with an evaluation process to analyze their refuge and recommend the best management direction to prevent further degradation of environmental conditions and restore lost or severely degraded components where appropriate and in concert with refuge purposes and the Refuge System mission. When evaluating the appropriate management direction for refuges, refuge managers will use sound professional judgment to determine their refuges' contribution to biological integrity, diversity, and environmental health at multiple landscape scales.

1.3.3 Landscape Level Context

1.3.3.1 Climate Change

Department of the Interior Secretarial Order 3226 states that "there is a consensus in the international community that global climate change is occurring and that it should be addressed in governmental decision making… This Order ensures that climate change impacts are taken

into account in connection with Departmental planning decision making". Additionally, it calls for the incorporation of climate change into long-term planning documents such as this CCP.

The U.N. Intergovernmental Panel on Climate Change (IPCC) reports that the increase of carbon dioxide (CO_2) within the earth's atmosphere is causing more extreme changes to the Earth's climates, such as record high temperatures, variations in precipitation, sea level rise, and atmospheric circulation changes, among others (Hegerl, et al., 2007). The IPCC also concludes that substantial climate changes will cause major shifts in ecosystem structure and function, species' ecological interactions, and species' geographical ranges. These projected changes have enormous implications for management of fish, wildlife, and their habitats around the world.

The U.S. Department of Energy's *Carbon Sequestration Research and Development* defines carbon sequestration as "...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere". Conserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. The actions proposed in this CCP would conserve or restore land and habitat, and would thus retain existing carbon sequestration on the refuge. This in turn contributes positively to efforts to mitigate human-induced global climate change. Vegetated land is a tremendous factor in carbon sequestration. Terrestrial biomes of all sorts - grasslands, forests, wetlands, tundra, and desert - are effective both in preventing carbon emission and acting as a biological "scrubber" of atmospheric CO_2. The Department of Energy report's conclusions noted that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere. One Service activity in particular - prescribed burning - releases CO_2 directly into the atmosphere from the biomass consumed during combustion. However, there is actually no net loss of carbon, since new vegetation quickly germinates and sprouts to replace the burned-up biomass and sequesters or assimilates an approximately equal amount of carbon as was lost to the air (Boutton *et al.* 2006).

The Service's strategic approach to climate change will emphasize three strategies that are often used to describe responses to climate change- Adaptation, Mitigation, and Education. *Adaptation* is an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. It refers to the management actions we take to reduce the impacts of climate change – reactive and anticipatory. *Mitigation* is human intervention to reduce the sources or enhance the sinks of greenhouse gases. It involves our agency's "carbon footprint" by using less energy, consuming fewer materials, and altering land management practices, such as water pumping and feed/production. Mitigation is also achieved through terrestrial carbon sequestration. *Education* is helping people learn and discover, thereby creating awareness and empathy, and ultimately leading to changes in human behavior. It is a fundamental conservation tool and a public service responsibility. In the context of climate change, education means helping Service employees,

our national and international partner, and constituencies (e.g. the public, Congress) understand that climate change is real and happening now; it threatens fish and wildlife resources we have come to value; and each of us can do something meaningful to reduce the threats.

Climate change could have a number of possible effects on the Refuge in addition to a general temperature increase, including: reduced rainfall and surface water supplies, deterioration of water quality, decreased habitat availability for many species, changes in vegetation communities, modification of migratory bird patterns, loss of breeding grounds for ducks and other waterfowl, loss of some species along with the introduction of new species, and significant increases in energy costs. Possible effects were a substantive consideration in the development of the objectives and strategies in this CCP (see Chapter 4: Goal 1, Objective 4). Implementation of all the strategies for monitoring and surveys will emphasize identification and analysis of the effects of climate change on the various habitats and species. Also, implementation of all strategies will emphasize energy conservation and/or use of alternative energy source when feasible.

1.3.3.2 National Plans and Initiatives

USFWS Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change (2010)

The U.S. Fish and Wildlife Service climate change strategy establishes a basic framework within which the Service will work as part of the larger conservation community to help ensure the sustainability of fish, wildlife, plants and habitats in the face of accelerating climate change. The plan is implemented through a dynamic action plan that details specific steps the Service will take during the next five years to implement the Strategic Plan. The plan focuses on three key strategies to addressing climate change: Adaptation, Mitigation, and Engagement. For the Service, adaptation is planned, science-based management actions that we take to help reduce the impacts of climate change on fish, wildlife, and their habitats. Mitigation involves reducing our "carbon footprint" by using less energy, consuming fewer materials, and appropriately altering our land management practices. Mitigation is also achieved through biological carbon sequestration, the process in which CO_2 from the atmosphere is taken up by plants through photosynthesis and stored as carbon in tree trunks, branches and roots. Engagement involves reaching out to Service employees; local, national and international partners in the public and private sectors; key constituencies and stakeholders; and everyday citizens to join forces and seek solutions to the challenges to fish and wildlife conservation posed by climate change.

Partners in Flight North American Landbird Conservation Plan

Partners in Flight (PIF) is a cooperative effort involving partnerships among private individuals, philanthropic foundations, conservation groups, professional organizations, industry, the academic community, and local, State, and Federal government agencies. Partners in Flight was created in 1990 in response to growing concerns about declining populations of many land bird

species and to emphasize the conservation of birds not covered by existing conservation initiatives. Bird conservation plans, are developed in each region to identify species and habitats most in need of conservation, to establish objectives and strategies to provide needed conservation, to establish objectives and strategies to provide needed conservation activities, and to implement and monitor progress on the plans.

PIF North American Landbird Conservation Plan
This plan summarizes the conservation status of landbirds across North America, illustrating broad patterns based on comprehensive, biologically-based species assessment. The plan identifies species most in need of attention at the continental scale, recognizing the additional species will need attention in each region and outlines ways in which continental scale issues and objectives relate to regional conservation efforts. The plan identifies 100 landbird species that warrant inclusion on the Partners In Flight Watch List due to a combination of threats to their habitats, declining populations, small population sizes, or limited distributions. Nationwide, 28 species require immediate action to protect small remaining populations, and 44 are in need of management to reverse long-term declines. Additional information on this plan can be found at http://www.pwrc.usgs.gov/pif/cont_plan/. Ozark Plateau NWR occurs within PIF Physiographic Area #19, the Ozark/Ouachitas as summarized below (in section 1.3.3.3). Additional information can also be found at http://www.blm.gov/wildlife/pl_19sum.htm.

1.3.3.3 Regional Plans and Initiatives

North American Bird Conservation Initiative: Bird Conservation Region Descriptions (2000)
The purpose of the North American Bird Conservation Initiative (NABCI) is to ensure the long-term health of North America's native bird populations by increasing the effectiveness of existing and new bird conservation initiatives, enhancing coordination among the initiatives, and fostering greater cooperation among the continent's three national governments and their people. In 1999, the U.S. NABCI approved a framework for delineating ecologically-based planning, implementation, and evaluation units for cooperative bird conservation in the U.S. and Canada known as Bird Conservation Regions (BCRs). Bird Conservation Regions are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. Ozark Plateau NWR is located within BCR 24 (Central Hardwoods). The entire area is dominated by an oak-hickory deciduous forest inhabited by interior forest species, such as cerulean warbler, worm-eating warbler, and Louisiana waterthrush. The region includes some of the most extensive forests in the middle of the continent and is probably a source for populations of these birds for many surrounding areas. Among early succession birds, this is the last major stronghold of the eastern Bewick's wren. Restoration of prairie, glade, and barren habitat is a conservation priority. Although wood ducks are the primary breeding waterfowl, the region holds more significance for waterfowl as a migratory staging area. The floodplains of the river systems exhibit a diversity of habitats (e.g., floodplain forests, emergent wetlands, and submerged aquatic beds), all of which are utilized by migrating waterfowl. Large concentrations

of waterfowl, including mallard, lesser scaup, and canvasback, are common during both spring and fall migration. Threats to the habitats of the region include agricultural conversion of floodplain habitats and urbanization.

TNC Ozarks Ecoregional Conservation Assessment
The Ozarks ecoregion encompasses nearly 34 million acres in parts of Missouri, Arkansas, Oklahoma, Illinois, and a small corner of Kansas. Along with the Ouachita region to the south, the Ozarks form the only significant highland region in mid-continental North America. Parts of this region have been continually exposed for at least 225 million years. Because of high habitat diversity and antiquity of the landscape, Ozark biota are characterized by an unusually high level of species disjunctions and endemism, with more than 160 endemic species documented from the ecoregion. (Ozarks Ecoregional Conservation Assessment, The Nature Conservancy, November 2003)

Partners In Flight Bird Conservation Plan for the Ozark/Ouchitas
The Refuge is located in the Ozark/Ouachita physiographic area, which is largely blanketed by oak-hickory, oak-pine and pine forest ecosystems. Many bird species of Partners in Flight (PIF) conservation priority have centers of abundance in this region. For example, relative abundance data from the Breeding Bird Survey (BBS) indicate that the physiographic area supports over 30% of the world's breeding population of Whip-poor-wills, over 15% of the world's Kentucky warblers and summer tanagers, and over 10% of the worm-eating warblers, yellow-billed cuckoos, and Acadian flycatchers. Conservation efforts in the physiographic area have a proportionately greater ability to impact such species as declines or increases in areas with large percentages of a species global population have a greater effect on their global abundance than if similar rates of increase or decline occur where there are fewer individuals. Further, the reproductive success of forest-breeding birds in the Ozark/Ouachitas appears to be above that needed to sustain local populations, and offspring from birds breeding in the physiographic area may be the sources of individuals that colonize other geographic areas where reproductive rates of forest birds are extremely low. Research in the midwest has shown that such "source-sink" dynamics result primarily from the effects of high levels of brood parasitism and nest predation in areas where forest fragments fall below a size of approximately 4,000 hectares (10,000 acres) or where forest coverage across broad landscapes falls below 70%. Therefore, maintaining the forested landscapes needed to support source populations of forest birds is probably the single most important contribution that the Ozark Plateau NWR can make to the conservation of non-game birds.

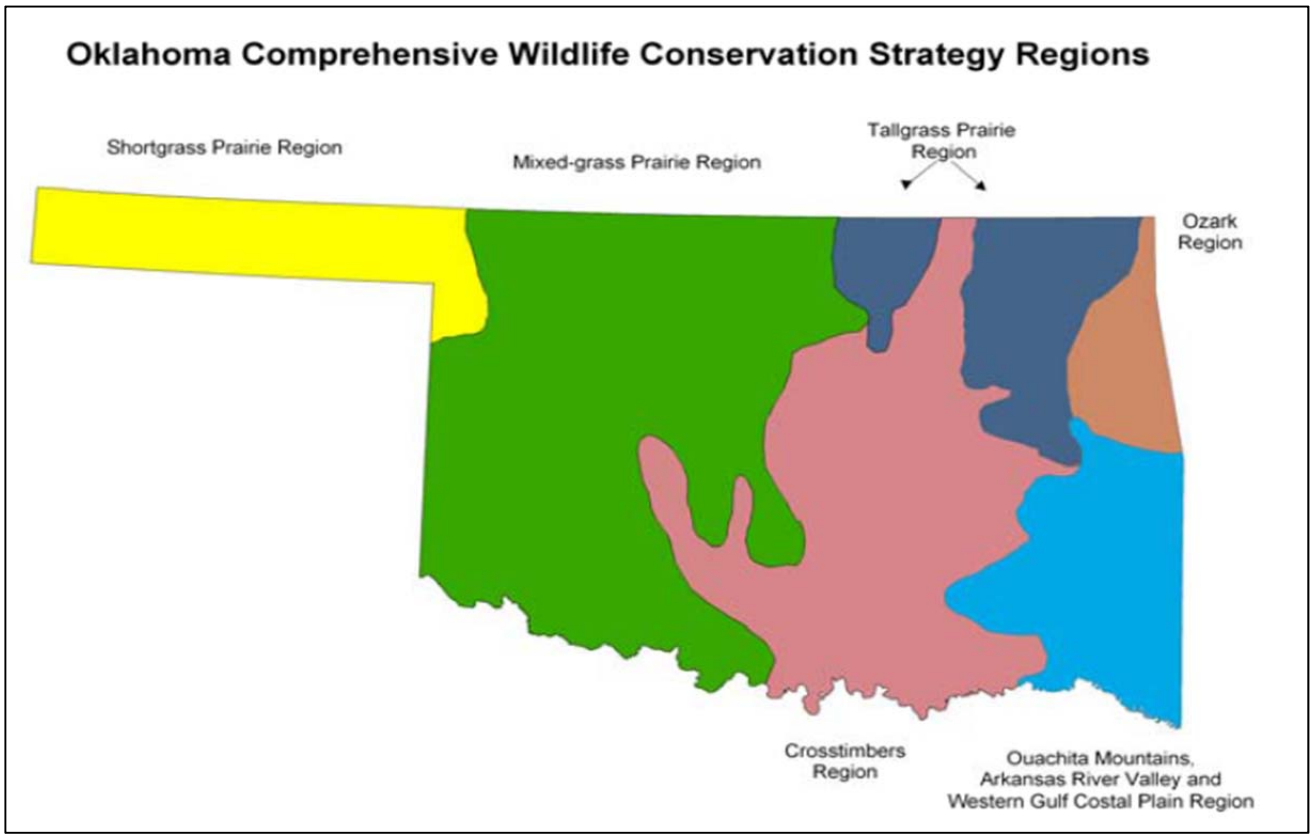
1.3.3.4 State and Local Plans and Initiatives

Oklahoma Comprehensive Wildlife Conservation Strategy (2006)
The wildlife action plan is required to assess the condition of the state's wildlife and habitats, identify the problems they face, and outline the actions that are needed for long term

conservation. The strategy identifies a variety of actions aimed at preventing wildlife from declining to the point of becoming endangered. By focusing on conserving the natural lands and clean waters that provide habitat for wildlife, the strategy has important benefits for wildlife and people. In addition to specific conservation projects and actions, the strategy describes many ways we can educate the public and private landowners about effective conservation practices.

For purposes of the Comprehensive Wildlife Conservation Strategy, the State of Oklahoma has been divided into six large regions (Short Grass Prairie Region; Mixed-grass Prairie Region; Tallgrass Prairie Region; Crosstimbers Region; Ouachita Mountain; Arkansas River Valley and Western Gulf Coastal Plain Region; and Ozark Region) (see Figure 1-3). Each of these regions encompasses one to three of Bailey's Sections and one to three of Omernik's Ecoregions. The authors of the plan attempted to reconcile the differences between the ecological regions proposed by Bailey / USFS with those proposed by Omernik / EPA by grouping together similar regions. In so doing, they believe that the Conservation Strategy can be applied by agencies using either ecological classification system. Additionally, these regions are similar to the Bird Conservation Regions recently developed under the North American Bird Conservation Initiative. The Bird Conservation Regions were adapted from Omernik's classification system and are used widely by the U.S. Fish and Wildlife Service, Joint Ventures and other conservation partners.

Figure 1-3. Oklahoma Comprehensive Wildlife Conservation Strategy Regions



The Refuge is primarily located within the Ozark Region, which is often referred to as the Ozark Highlands. This region encompasses all or portions of six counties in northeastern Oklahoma: Ottawa, Delaware, Mayes, Cherokee, Adair, and Sequoyah. It is equivalent to the Ozark Highlands and the Boston Mountains in both Bailey's and Omernik's ecological classification systems.

1.3.3.5 Other Refuge Plans

Ozark Plateau National Wildlife Refuge Expansion Environmental Assessment, Land Protection Plan, and Conceptual Management Plan (2005)
The plan enhanced habitat protection in a seven-county area (Adair, Cherokee, Craig, Delaware, Mayes, Ottawa and Sequoyah) of northeast Oklahoma by expanding the acquisition boundary by up to 15,000 acres total. This plan protects caves and critical cave watersheds for endangered species, forest habitat for resident and Neotropical migratory birds, and the natural biological diversity values.

1.3.3.6 Species-specific Plans and Initiatives

Ozark Big-Eared Bat Revised Recovery Plan (1995)
On November 30, 1979 the Ozark big-eared bat (*Plecotus townsendii ingens* [Handley]) was listed as endangered under the Endangered Species Act of 1973, as amended (Federal Register, Vol. 44, No. 232, Friday, November 30, 1979). Considerable progress has been made on recovery tasks for the Ozark big-eared bat since 1984. In order to update biological information and management techniques and identify important new recovery tasks, the original recovery plan was revised in 1995. The Revised Recovery Plan presents an ecosystem approach to recovering the Ozark big-eared bat. Not only have the tasks presented in the plan benefitted the Ozark big-eared bat, but they have protected a number of other Ozark cave and surface fish and wildlife resources. In addition, there was an approved 5-year Review of the Ozark big-eared bat in 2008.

Gray Bat Recovery Plan (1982)
This plan was designed to provide decision makers with an orderly set of events which, when carried to a successful completion, would lead to the recovery of the gray bat species. The plan established priorities for protection and management of caves, public education, and monitoring procedures. Most recently, in 2009, the latest five-year review was completed for this recovery plan and overall this species is recovering, and numbers have increased significantly in many areas. This species' range has expanded in some areas (e.g., Georgia, Indiana, and Kansas) and gray bats are using many caves on the Refuge that were not known prior to the completion of the 1982 Recovery Plan.

Ozark Cavefish Revised Recovery Plan (1989)
The Ozark Cavefish is one of the most cave adapted vertebrates known, and this specialization to the cave environment exposes the species to the negative effects of cave disturbances and may limit its ability to recover from even minor perturbations. This, combined with the shrinking of its known range, was the basis for the species being recognized as threatened in 1984. The Refuge has based much of its cave, aquifer, ground water recharge area, watershed, and forest resources management in efforts to protect this vulnerable fish species.

1.3.3.7 Coordination with the State of Oklahoma, Tribal Nations, and Other Entities

The Service is required to consult and coordinate with affected private landowners, state conservation agencies, Tribal Nations, and other local and federal agencies. The Service is required to ensure effective coordination, interaction, and cooperation in a timely and effective manner with the State and tribes during the course of acquiring and managing refuges. Under the Refuge Administration Act of 1966 and 43 CFR 24, the Director and the Secretary's designee is required to ensure the Refuge System regulations and management plans are to the extent practicable, consistent with State laws, regulations, and management plans. As such, the Service will ensure this CCP complements the State of Oklahoma's, Cherokee Nation's, and other Tribal Nations' efforts to conserve fish and wildlife and their habitats, as well as increase support for the Refuge System's conservation efforts by also working together with nongovernmental organizations and the public (see Chapter 2, pages 2-2 through 2-3 for the dates and locations of scoping meetings with the public, ODWC, and the Cherokee Nation).

This CCP recognizes that both the Service and the ODWC have authority and responsibilities for management of fish and wildlife species on the Refuge. The State's, Cherokee Nation's, and other Tribal Nations' participation throughout this planning process are essential to developing an effective comprehensive conservation plan for Ozark Plateau NWR. By finding common objectives, partners can support one another's conservation goals on the larger landscape scale.

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