

**Ozark Plateau National Wildlife Refuge  
Proposed Refuge Expansion  
Environmental Assessment**



Prepared for:

U.S. Fish and Wildlife Service  
Southwest Region  
September 2002

# MISSION STATEMENTS

## THE U. S. FISH AND WILDLIFE SERVICE



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

## THE NATIONAL WILDLIFE REFUGE SYSTEM



The mission of the National Wildlife 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.

## *Table of Contents*

I. Executive Summary .....	1
II. Purpose Of And Need For Action .....	9
Purpose .....	9
Need .....	11
Authorities and Funding .....	12
III. Alternatives .....	15
Alternative A: No Action .....	15
Alternative B: Proposed Action .....	16
IV. Affected Environment .....	21
Climate and Air Quality .....	21
Geology and Soils .....	21
Water Resources .....	22
Vegetation .....	22
Fish and Wildlife .....	23
Land Use .....	26
Public Use and Recreation .....	26
Cultural Resources .....	26
Socioeconomic Resources .....	27
Regional Socioeconomic Context .....	27
Refuge Revenue Sharing .....	28
V. Environmental Impacts Of Proposed Action And Alternatives .....	31
Alternative A: No Action .....	31
Climate and Air Quality .....	31
Geology and Soils .....	31
Water Resources .....	32
Vegetation .....	32
Fish and Wildlife .....	32
Threatened and Endangered Species .....	33
Land Use .....	34
Public Use and Recreation .....	34
Cultural Resources .....	35
Socioeconomic Resources .....	36
Regional Socioeconomic Context .....	36
Refuge Revenue Sharing .....	36
Alternative B: Proposed Action .....	37
Climate and Air Quality .....	37
Geology and Soils .....	37
Water Resources .....	37
Vegetation .....	38
Fish and Wildlife .....	39
Threatened and Endangered Species .....	39
Land Use .....	40
Public Use and Recreation .....	41

Cultural Resources .....	43
Socioeconomic Resources .....	43
Regional Socioeconomic Context .....	43
Refuge Revenue Sharing .....	43
Relocations .....	44
VI. Cumulative Impacts .....	45
VII. Consultation and Coordination with Others .....	47
List of Preparers .....	48
Ozark Plateau National Wildlife Refuge Proposed Refuge Expansion Land Protection Plan .....	1-20
Appendix A: References .....	1-2
Appendix B: Glossary of Terms and Acronyms .....	1-4
Appendix C: Federal Laws and Regulations Applicable to Preservation and Management of Fish and Wildlife Resources and the Oklahoma State Cave Protection Law .....	1-6
Appendix D: Conceptual Management Plan .....	1-13
Interim Compatibility Determination	
Hunting	
Recreational Fishing	
Wildlife Observation	
Wildlife Photography	
Environmental Education	
Interpretation	

## I. *Executive Summary*

The U.S. Fish and Wildlife Service (Service) proposes to expand the Ozark Plateau National Wildlife Refuge (formerly known until November, 1995 as the Oklahoma Bat Caves National Wildlife Refuge). Currently including 3,067 acres in Adair, Delaware, and Ottawa Counties, Oklahoma, the Refuge is proposed to be expanded to include units in Cherokee, Craig, Mayes, and Sequoyah Counties. A total of 11,933 acres of protected habitats would be added to the project area to bring the total refuge acreage to 15,000 acres. Figure 1 shows the project focus areas within the seven-county project area. **Habitats would be protected by acquiring lands in fee title or in conservation/access/management easements at fair market value from willing sellers and donors.**

The seven county area is considered because it encompasses the known distribution of the federally-listed endangered Ozark big-eared bat (*Corynorhinus townsendii ingens*), and gray bat (*Myotis grisescens*), and threatened Ozark cavefish (*Amblyopsis rosae*) and a portion of the endangered Indiana bat (*Myotis sodalis*) range in eastern Oklahoma and the Service's Southwest Region (Region 2). Essential caves, movement corridors, and foraging habitat for the bats and ground water recharge areas supplying water to the aquifers used by the cavefish may be found in all seven counties. Also, the enlarged project area, as the name change signifies, reflects project goals of implementing an ecosystem approach for protection of habitats for a number of Service trust resources in the Ozarks. These include federally-listed endangered, threatened, and candidate species and other species of concern and migratory birds. In addition, it will aid in protection of the natural biological diversity characteristic of the Ozark Plateau region. To be successful, this ecosystem approach will have to be coordinated with protection and management efforts in the Ozarks of Oklahoma, Arkansas and Missouri and the Service's Regions 2, 3, and 4. Environmental education will help coordinate and promote the importance of such an approach in protecting these Ozark resources. A 15,000-acre refuge would encompass 0.51 percent of the total acreage in the seven counties.

In 1985 the 10 tracts of land with caves listed in the environmental assessment establishing the Oklahoma Bat Caves National Wildlife Refuge (now the Ozark Plateau National Wildlife Refuge) were the only known endangered Ozark big-eared bat or gray bat colony caves available for acquisition at that time in Oklahoma. Also, the threatened Ozark cavefish had been recorded from one of the caves. To date, sixteen tracts totaling 3,067 acres of fee, easement, and cooperative management agreement lands have been acquired. Four of the 10 sites identified in the 1985 environmental assessment have been protected. Since then additional bat and cavefish caves have been discovered in Oklahoma. Additional Ozark big-eared bat caves were identified in the 1995 Final Ozark Big-eared Bat Revised Recovery Plan (Recovery Plan) as needing protection through acquisition or to safeguard the existing bat populations from human disturbance. Expansion of the Ozark Plateau National Wildlife Refuge approved acquisition area was one of the primary recovery tasks outlined in the Recovery Plan.

The Recovery Plan presents an ecosystem approach to recovering the Ozark big-eared bat. Not only will tasks presented in the plan benefit the Ozark big-eared bat, but they will protect a number of other Ozark cave and surface fish and wildlife resources. Pertinent tasks and their priorities outlined in the Recovery Plan are as follows:

<u>Task No.</u>	<u>Priority</u>	<u>Task</u>
1.1	1	Obtain long-term authority to manage and protect colony sites.

- |     |   |  |
|-----|---|--|
| 1.2 | 1 | Enhance management of the Oklahoma Bat Caves National Wildlife Refuge (now the Ozark Plateau National Wildlife Refuge).                |
| 1.3 | 1 | Expand approved acquisition area for the Oklahoma Bat Caves National Wildlife Refuge (now the Ozark Plateau National Wildlife Refuge). |
| 1.4 | 2 | Add new approved areas for land acquisition in eastern Oklahoma, western and north central Arkansas, and southern Missouri.            |

Also, the refuge will help implement tasks from recovery plans for other federally-listed cave species in eastern Oklahoma. Tasks from the Gray Bat Recovery Plan (1982) include:

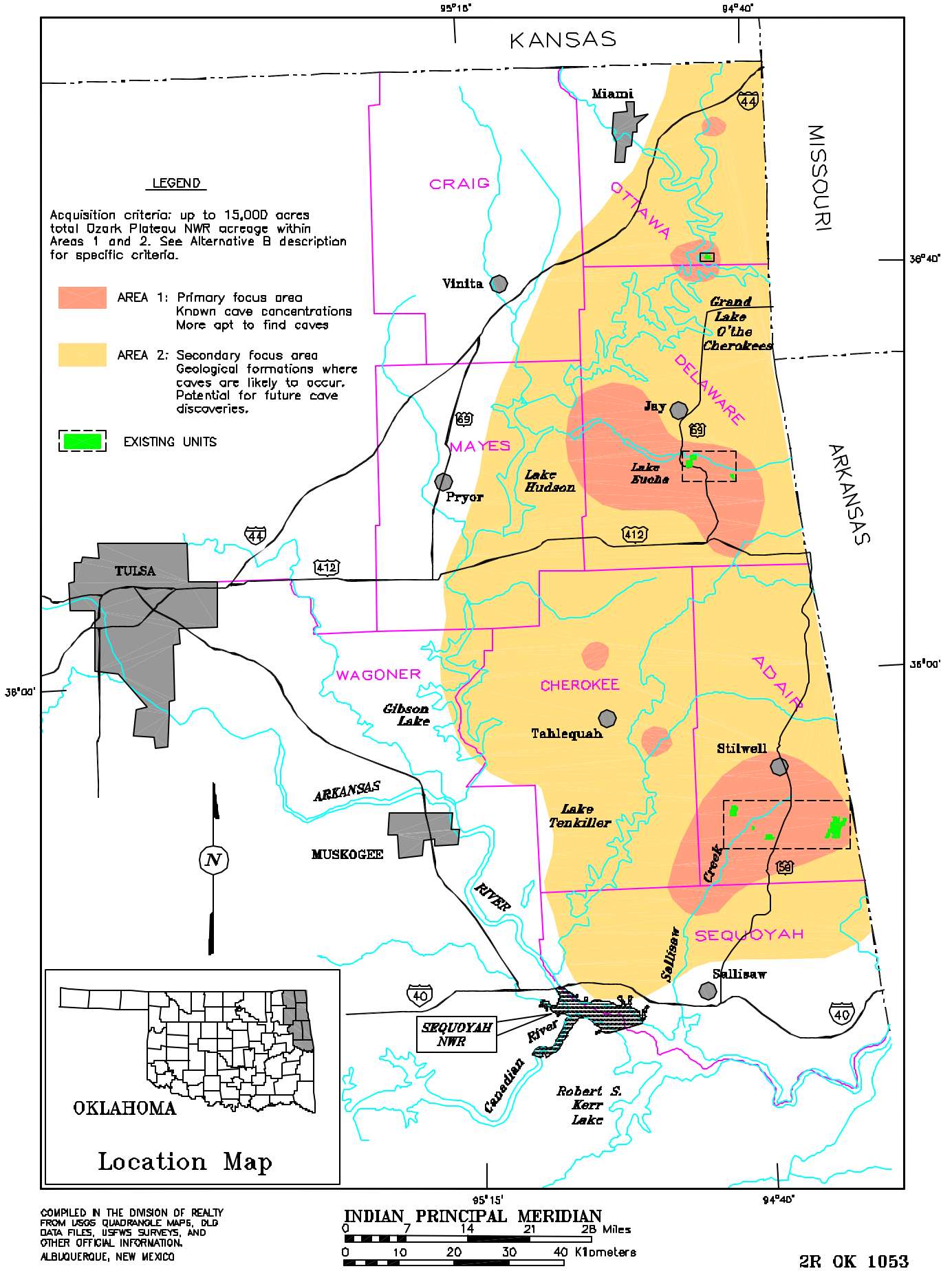
<u>Task No.</u>	<u>Task</u>
1.	Prevent disturbance to important roost habitat
2.	Maintain, protect, and restore foraging habitat
3.	Monitor population trends

Figure: 1

# OZARK PLATEAU NATIONAL WILDLIFE REFUGE PROPOSED EXPANSION AREA

UNITED STATES  
DEPARTMENT OF THE INTERIOR

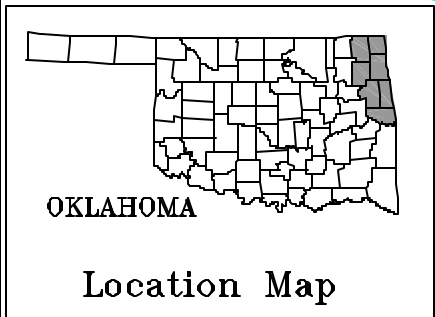
UNITED STATES  
FISH AND WILDLIFE SERVICE



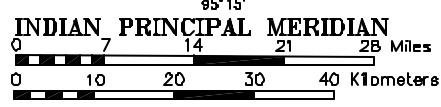
**LEGEND**

Acquisition criteria: up to 15,000 acres total Ozark Plateau NWR acreage within Areas 1 and 2. See Alternative B description for specific criteria.

- AREA 1: Primary focus area  
Known cave concentrations  
More apt to find caves
- AREA 2: Secondary focus area  
Geological formations where caves are likely to occur.  
Potential for future cave discoveries.
- EXISTING UNITS



COMPILED IN THE DIVISION OF REALTY FROM USGS QUADRANGLE MAPS, BLD DATA FILES, USFS SURVEYS, AND OTHER OFFICIAL INFORMATION. ALBUQUERQUE, NEW MEXICO



Tasks from the Recovery Plan for the Indiana Bat (1983) include:

<u>Task No.</u>	<u>Task</u>
1.	Prevent disturbance to important hibernacula
2.	Maintain, protect, and restore foraging and nursery habitat
3.	Monitor population trends
4.	Public education
5.	Research

Tasks from the Ozark Cavefish Recovery Plan (1989) include:

<u>Task No.</u>	<u>Task</u>
1.	Study local and regional hydrological patterns
2.	Provide protection and management for recovery caves
3.	Develop and implement a monitoring program

**This proposal submits a comprehensive long-term view, first recognized in the Ozark Big-Eared Bat Revised Recovery Plan and other recovery plans, that as yet undiscovered caves and associated surface habitats may need protection throughout the multi-county northeast Oklahoma karst (limestone geological formations) and sandstone region.** Bats may also use caves in sandstone formations, known as talus cracks, as well as caves in limestone formations, especially in the southern portion of their range such as southern Adair and Sequoyah Counties. The Ozark big-eared bat, gray bat, Indiana bat, and Ozark cavefish and a host of other species that depend on the caves, ground water aquifers, and surface biotic communities are essential elements of the natural biological diversity of the Ozark Plateau.

Expansion of the Ozark Plateau National Wildlife Refuge will do much to help accomplish the goals, objectives, and strategies of the Service's Ozark Plateau Ecosystem Plan (now being prepared by the Service's Ozark Plateau Ecosystem Team, comprised of karst and cave-oriented staff in three Service Regions including the Southwest Region 2, the Southeast Region 4, and sponsored by the Great Lakes/Big Rivers Region 3). Although the Ozark Plateau Refuge is officially in the Arkansas/Red Rivers Ecosystem Team of the Service's Southwest Region, it also fits into the Ozark Ecosystem characteristics criteria. The goals presented in the Ozark Plateau Ecosystem Plan include:

Develop partnerships to accomplish resource management and region-wide information gathering and research while promoting public involvement and education to achieve ecosystem management goals.

Restore, maintain, and enhance habitat and populations of all state and federally listed and candidate species.

Work to see populations and habitats of North America's birds protected, restored, and enhanced through coordinated efforts at international, national, regional, state, and local levels, guided



by sound science and effective management.

Protect, manage, and restore aquatic communities and where possible restore and enhance natural processes necessary to support and sustain biodiversity.

Protect, restore, and manage special communities and geologic features such as cliffs, sinkholes ponds, fens, oxbows, and sloughs, caves, springs, glades, savannas (oak, oak pine, pine), and prairie communities.

Karst conservation and restoration

In cooperation with other agencies and private landowners, help to protect, manage, and restore forest communities and where possible restore and enhance natural processes necessary to support and sustain biodiversity.

Reduce contamination of natural resources from point and non-point sources.

Facilitate environmentally responsible use of natural resources to enhance biodiversity while contributing to economic stability, quality of life, and traditional uses and values of the Ozarks.

Improve awareness of the Ozark Ecosystem.

Evaluate the success of ecosystem management in the Ozarks through the development of effective techniques that adequately assess and monitor the health of the environment.

In addition, the Service's Arkansas/Red Rivers Ecosystem Team states that protection of biological diversity and recovery of listed species are two of its principal objectives for the ecosystem. Some of the Arkansas/Red Rivers Ecosystem Team's more specific objectives and strategies pertaining to the Ozarks include:

- Conserving and restoring focus habitats such as cave systems and native upland forest and savannah habitats
- Maintaining and improving surface and ground water quality for conservation of fish and wildlife resources.
- Conserving, restoring, and recovering focus species, such as migratory birds and listed, proposed, candidate, and species of concern.

This proposal is a true ecosystem-based plan that considers many interrelated resources, issues, concerns, and opportunities, including the human presence within the Ozark ecosystem. This will provide long term habitat protection for a number of Fish and Wildlife Service trust resources dependant on the forests, streams, springs, caves, wetlands, and ground water recharge areas characteristic of the karst topography of the Ozarks. It will help:

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

The alternatives considered in this document are **A. No Action, and B. Acquisition in fee title or easement through purchase or donation at fair market value from willing sellers/donors of 11,933 acres of additional lands scattered throughout the counties of Adair, Craig, Cherokee, Delaware, Mayes, Ottawa, and Sequoyah to bring the total project acreage to 15,000 acres.**

The total estimated acquisition cost of the proposed expansion is approximately \$3.2 million at this time. This is only an estimate based on recent comparable sales and the eventual cost may fluctuate depending on the market trends in area real estate markets. The refuge has benefited from the generosity of a number of land donors who want to leave a permanent legacy for conservation and some landowners continue to express interest in donating their lands in fee or easement.

The refuge has acquired lands via a settlement for the Tri-State (Tar Creek) Superfund Site Natural Resources Damage Assessment. 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, and additional gray bat and cavefish habitat in Ottawa and Adair Counties.

The Fish and Wildlife Service makes annual payments to county governments to help compensate them for Service lands taken out of the property tax base. These Revenue Sharing payments are based on a formula and are not meant to equalize what the previous property tax payments were. The Service makes revenue sharing payments to county governments for any lands acquired in fee to help compensate them for lands taken out of the property tax base. The payments can be used for any governmental purpose.

## II. Purpose Of And Need For Action

### Purpose

The original purposes of the Oklahoma Bat Caves National Wildlife Refuge were:

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

... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. 715d (Migratory Bird Conservation Act)

... for conservation purposes 7 U.S.C. 2002 (Consolidated Farm and Rural Development Act)

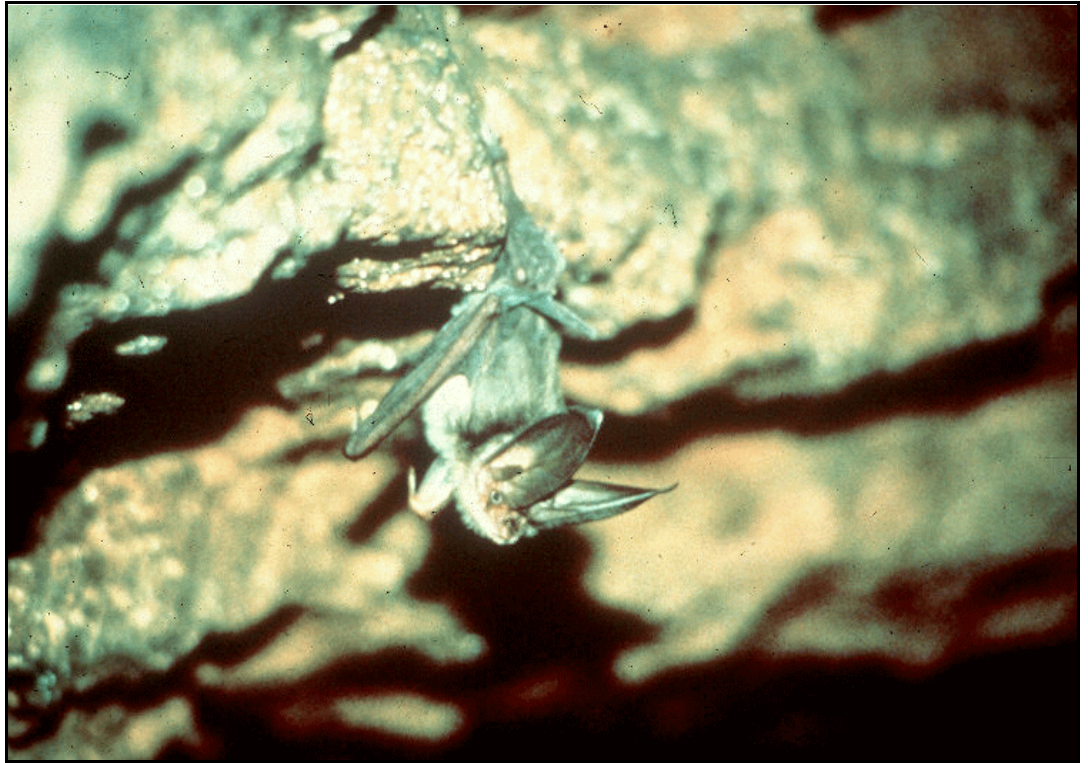
Another acquisition authority for this current expansion proposal is the Fish and Wildlife Act of 1956, as amended. When the refuge was established in 1985, a more specific goal was also cited to “protect ...cave units used as maternity and hibernacula by endangered Ozark big-eared and gray bats. Additionally, the adjacent forested-riparian areas, which are used by the endangered bats for feeding and cover purposes would be protected.” The Ozark Plateau NWR was established to:

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

This is being accomplished through an ecosystem approach that provides long term habitat protection for a number of fish and wildlife resources dependant on forests, streams, springs, caves, wetlands, and ground water recharge areas characteristic of the karst topography of the Ozarks.

The Final Ozark Big-eared Bat Revised Recovery Plan of 1995 specifically recommended “acquisition and management of essential caves known to be used for Ozark big-eared bat maternity sites and hibernacula to assure the continuing existence... of the bat and its eventual recovery.” It also

recommended that a “search be conducted for unknown essential Ozark big-eared bat maternity caves and hibernacula for the next 10 years or until potential sites have been exhausted. Because of the disparity between summer and winter population estimates, it would appear undiscovered essential caves, especially hibernacula have yet to be discovered.” Also, the recovery plans for the gray



*The Ozark big-eared bats use caves to raise their young and hibernate during the winter. Photo by Dr. Brenda Clark*

bat, Indiana bat, and Ozark cavefish identify the need for protecting cave, forest, stream, and other karst resources in the Ozarks essential to these federally listed species.

The expanses of unfragmented Ozark oak-hickory forests still present in much of the seven-county project area are also now recognized for their importance to the thousands of migratory birds that inhabit the forests for breeding, feeding and migration to and from breeding and wintering areas. Many of the cave sites are within or adjacent to these forested sites.

Protection of caves, large contiguous stands of related interior forest tracts, springs, and riparian areas would:

- Protect federally-listed endangered Ozark big-eared, gray, and Indiana bat hibernacula and maternity colonies and foraging habitats.
- Protect federally-listed threatened Ozark cavefish caves, springs, and groundwater recharge areas.
- Protect other cave fauna and migratory songbird habitat.
- Prevent forest fragmentation and promote natural biological diversity.
- Provide habitat protection for 8 species of concern and contribute to protection of biological diversity in the Ozarks ecosystem.

By protecting habitats containing rare fauna, Endangered Species Act listing actions may be avoided.

## **Need**

Resource Issues - Threats to fish and wildlife habitats include disturbances to cave animals and other cave resources by humans; clearing for new home sites, recreational sites and agriculture; and contamination of underground water through drainage from septic systems, debris and trash dumping in sinkholes and runoff from concentrated animal feeding operations. Numerous caves and considerable surrounding upland and riparian forest used as buffer zones and foraging habitat, 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. Human disturbance to cave animals is presently the biggest threat. As population growth and development increases in the Ozarks, the threat of human disturbance increases. Because accidental and intentional human disturbance to cave animals and cave formations can be, at worst, devastating to those cave resources, the Service, other federal and state agencies, non-profit conservation organizations, local chapters (grottos) of the National Speleological Society (NSS), and individual landowners are concealing many cave locations from the general public. Exact cave locations, and therefore, many instances of individual cave landownerships, cannot be discreetly identified on maps associated with this proposal, or using other descriptors that could lead to on-the-ground cave locations by the general public. This is also mandated by the Federal Cave Resources Protection Act of 1988-Public Law 100-691 (16 U.S.C. 4301 et seq. 102 Stat. 4546) which established requirements for the management and protection of caves and their resources on Federal lands, including allowing the land managing agencies to withhold the location of caves from the public, and requiring permits for any removal or collecting activities in caves on Federal lands. The Service is required to follow Federal laws over and above agency policies or regulations. Specifically, the Federal Cave Resource Protection Act identifies significant caves on federal land as being invaluable and irreplaceable parts of the nation's natural heritage and in some instances, threatened due to improper use, increased recreational demand, urban spread, and lack of specific statutory protection. The purposes of the Act are to secure, protect, and preserve these caves for the perpetual use, enjoyment, and benefit of all people and to foster increased cooperation and exchange of information between the government and those who use caves on federal land for scientific, educational, and recreational purposes.

Resource Opportunities - Expansion of the refuge would provide additional opportunities for recreation on tracts with gated caves for hunters, wildlife observers, wildlife photographers, and for environmental education, interpretation, and scientific research. Opportunities for controlled and supervised approved visitation inside caves for wildlife observation and photography, environmental education, interpretation and scientific research would also increase. The expansion plan also allows for protecting important caves, springs, foraging areas, buffer areas, and ground water recharge areas that will be found during future surveys required by priority recovery plan tasks. Protection of karst areas will also help protect underground aquifers from potential future contamination, a concept already recognized by some entities concerned about their watersheds used for municipal and local water supply, such as the City of Tulsa and the Cherokee Nation.

## **Authorities and Funding**

The primary acquisition authority for acquiring lands or easements is the Endangered Species Act of 1973, as amended. Other acquisition authorities that may be used include the Migratory Bird Conservation Act of 1929, as amended (for appropriate properties), and the Fish and Wildlife Act of 1956, as amended.

The primary funding authority that could supply monies to purchase lands and easements would be the Land and Water Conservation Fund Act. This fund comes from leasing bonuses, production

royalties, and rental revenues for federally held offshore oil, gas, and sulphur extraction. A secondary funding authority for appropriate properties would be the Migratory Bird Conservation Act of 1929. The Migratory Bird Conservation Fund is made up of receipts from sales of the Migratory Bird Hunting and Conservation Stamp (or Federal Duck Stamp) and revenues from import duties on arms and ammunition. Duck Stamps are purchased by both non-hunters and hunters (who must have them to hunt waterfowl). None of the acquisition funds will come from general income tax revenues.

Recently, funding has also come from the Natural Resource Damages Assessment and Restoration (NRDAR) program whereby industries assessed for pollution damages to fish and wildlife resources contribute funding for habitat protection under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (also known as the Superfund Act). This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Agency biologists help restore natural resources degraded by pollution from contaminant releases at hazardous substance sites using the NRDAR regulations. The goals of the NRDAR program are to restore the habitats and biological resources to the condition they would have been had hazardous substances not been released, and to compensate the public for the loss of ecological services and human uses. These funds will be used to provide habitat for the Service trust resources impacted by the mining by purchasing high quality areas threatened by development and protecting them from future loss. These properties are in Ottawa and Adair Counties and were evaluated as part of the Tri-State (Tar Creek) Superfund Site settlement. The National Environmental Policy Act (NEPA) requirements for alternative evaluation, public notice, and public meetings for expenditure of these funds were accomplished under the planning procedures required by the NRDAR program.



*Cave aquatic fauna, like this threatened Ozark cave fish, need water of high quality. Photo by Ken Collins.*

### III. Alternatives

The alternatives considered in this document are **A. No Action, and B. Acquisition in fee title or easement through purchase or donation at fair market value from willing sellers/donors of 11,933 acres of additional lands scattered throughout the counties of Adair, Craig, Cherokee, Delaware, Mayes, Ottawa, and Sequoyah to bring the total project acreage to 15,000 acres.**

#### **Alternative A: No Action**

Under this alternative the Service would not expand the existing Ozark Plateau National Wildlife Refuge in Adair and Delaware Counties into the four additional counties of Cherokee, Craig, Mayes, and Sequoyah and would not add 11,933 acres of protected habitats to the project area to bring the total refuge acreage to 15,000 acres. However, the Service would continue to do other cave protection and endangered species conservation activities in the region.

The Service is already working in partnership with other entities to protect caves and surrounding habitat necessary for assuring the continuing existence and aiding in the recovery of federal trust (listed on the federal endangered or threatened species lists) cave species. In addition to acquiring fee title and conservation easements, the Service has also purchased management easements from private landowners and The Nature Conservancy. It has also developed management agreements with the City of Tulsa and the Cherokee Nation for certain tracts of land and established an inter-agency agreement with the Ozark National Forest in Arkansas to coordinate cave and karst management. In addition, the Service worked with the Oklahoma Department of Wildlife Conservation (ODWC) to develop a project to protect caves and foraging habitat on private land that is funded through Section 6 of the Endangered Species Act. The Service's Partners for Fish and Wildlife Program has also been used to assist private landowners in protecting caves and foraging habitat on their lands.

Future plans for protecting caves and other habitat in karst areas used by listed cave species, will probably involve agreements with The Nature Conservancy, Trust for Public Land, National Speleological Society and their local chapters (grottos), Bat Conservation International, development of a memorandum of understanding (MOU) with the Cherokee Nation, working with the ODWC to protect cave and karst resources on some of their Wildlife Management Areas, and possibly working with the U.S. Army Corps of Engineers on some of their land. These actions and different combinations of them are some of the options the Service is already using to protect cave and karst sites in the seven-county project area. However, it has become clear over the years that these efforts will not be sufficient on their own to achieve the listed species' recovery. Current efforts do not provide the guaranteed long-term protection, necessary for assuring continuing existence and recovery, as mandated in recovery plan tasks, that would be afforded by addition to the National Wildlife Refuge System.

#### **Alternative B: Acquisition in fee title or conservation easement through purchase or donation at fair market value from willing sellers/donors of 11,933 acres of additional lands scattered throughout the counties of Adair, Craig, Cherokee, Delaware, Mayes, Ottawa, and Sequoyah to bring the total project acreage to 15,000 acres**

The 1995 Final Revised Recovery Plan for the Ozark Big-eared Bat listed ten properties with essential caves (essential to the continuing existence of the Ozark big-eared bat because they are used as maternity sites and/or hibernacula) and 43 limited-use sites (sites used by single individuals and small groups of Ozark big-eared bats), transient sites (sites used infrequently by relatively large numbers of Ozark big-eared bats between periods of colony formation and hibernation), and possible-use sites (sites with signs of bat use such as scattered guano and moth wings). These known caves are scattered throughout Adair, Delaware, and Cherokee Counties, Oklahoma, and are identified in

the Recovery Plan as needing protection. These, along with the important gray bat, Indiana bat, and Ozark cavefish sites, are the most important known areas in need of long term protection to assure the continuing existence and aid in the recovery of the federally-listed species. Based on population and distribution information and known geological formations, there are evidently a number of unknown sites important to the species. Cooperative efforts with other state and federal agencies, private conservation organizations, and universities are now underway to locate these sites. Therefore, new areas will likely be identified in the future.

The seven county area is being considered because it encompasses the known distribution of the federally-listed endangered Ozark big-eared bat, and gray bat, and threatened Ozark cavefish and a portion of the endangered Indiana bat range in eastern Oklahoma. It would protect essential caves, movement corridors, and foraging habitat for the bats and ground water recharge areas supplying water to the aquifers used by the cavefish in seven county area. The enlarged project area would also aid in implementing an ecosystem approach for protection of habitats for a number of Service trust resources in the Ozarks. These trust resources include federally-listed endangered, threatened, and candidate species, other species of concern, and migratory birds. In addition, it will aid in protection of the natural biological diversity characteristic of the Ozark Plateau region.

This proposal also acknowledges that there may be undiscovered caves in the seven counties containing karst or sandstone formations and/or within the Ozark big-eared bat, gray bat, Indiana bat, and Ozark cavefish historic range that may have significant natural biodiversity values and may need protection. However, because these areas have not yet been discovered, the tract sizes of these potential cave properties will have to be determined. Caves important to these species are most likely to be located in Areas 1 and 2 identified in Figure 1. It appears that the areas that the Service will focus most on will still be in Adair and Delaware Counties, with additional sites most likely to be found in southern Ottawa County and Eastern Cherokee County (Primary Focus Area 1). However, based on geological and distribution information, important habitat may be found throughout the seven county area identified in Figure 1 (Secondary Focus Area 2). The 15,000-acre figure is an estimated summation of known and currently unknown cave properties that either, are already protected, or could potentially be protected in the seven-county project area within the National Wildlife Refuge System.

The following criteria would be used to determine whether an individual tract should be acquired. The first set of criteria are threshold criteria--tracts must meet all the threshold criteria before considering the secondary set of criteria. The secondary criteria are not in priority order and would be used flexibly in relation to each other with an eye to the site's overall contribution to the conservation goal. The more secondary criteria that can be met, the more desirable the tract would be for protection. The criteria are:

#### Threshold Criteria

- Willing seller/participant
- The presence of federally-listed endangered or threatened bats, cavefish, or other endangered, threatened, or "species of concern" Ozark fauna or a history of the presence of such species with reintroduction feasible
- The presence of significant karst (or sandstone) geological formations, especially a cave entrance on the site, or the site overlays an important cavern reach, even if the entrance is not on the site, but the entrance can still be protected on an adjacent property
- The site is listed in the Ozark big-eared bat, gray bat, Indiana bat, Ozark cavefish, or other



federally-listed species' recovery plans, or directly contributes to goals of the recovery plans for the endangered or threatened species present

- The site contains prime feeding areas and movement corridors for federally-listed endangered bats and/or portions of groundwater recharge areas for federally-listed threatened cavefish caves.

## Secondary Criteria

- Proximity to existing protected areas
- Restorability - ease and cost factors--forested areas are more desirable than pastures which are more desirable than crop fields)
- No minimum size, but large tracts are preferred (recognizing that larger tracts maximize ecological integrity and are necessary for area-sensitive species).
- Vulnerability to, and threat of, irreversible development (e.g., proposed buildings)
- Vulnerability to human-caused disturbance (e.g., nearby roads or buildings, and history of disturbance) and feasibility of protecting the site from future disturbance
- The site contributes to other needs such as quality unfragmented large expanses of Ozark oak-hickory interior forest for birds, or spring or stream reach containing a species of concern

In addition to fee title acquisition, the Service could acquire conservation easements, which are often referred to as non-development easements. A conservation easement is a legal agreement a landowner makes to restrict the type of development that can occur on the property. Landowners donate or sell conservation easements to protect their land from inappropriate development while retaining private ownership. The buyer pays the landowner for the transfer of those development rights. General terms of an easement would include acquisition of rights considered necessary to achieve habitat protection goals. The buyer and the landowner would negotiate the exact terms specifically for each tract. Easement restrictions would be attached to the land and easements are recorded at the county courthouse just like deeds. Subsequent landowners must continue to abide by the restrictions. Landowners would retain title to and occupation of their property. The landowner still pays taxes on the land, but does not have to allow public access to the land unless he or she grants permission. Typically, an easement means new residences or other significant buildings will not be built on the remainder of the property. The landowner may donate the conservation easement to receive a tax benefit, if the easement is perpetual. This may be especially beneficial in reducing income and estate taxes. The presence of an easement may also reduce property taxes, depending on the county assessor's procedures for dealing with conservation easements. The Service has had considerable success obtaining easements in other parts of the country and already has two easements on this Refuge.

Another tool the Service uses to acquire lands, particularly from elderly landowners, is to grant them a life use of the property. This means the elderly person can live on the property for the rest of his/her life, or until he/she moves off the property. The person does not have to pay property taxes. The payment for the property is prorated based on a formula that uses the person's age and life expectancy. This benefits both the landowner, who feels tied to the land, and the Service who retains the vigilance of the landowner in protecting the land.

The current total estimated acquisition cost of the proposed expansion is approximately \$3.2 million, which is only an estimate based on recent comparable sales. The eventual cost may fluctuate depending on the market trends in area real estate markets. It can reasonably be expected to increase because all the counties are growing in population and the additional trends of both recreational and retirement development are now apparent in the region.

### **Alternatives Considered but Rejected**

Lesser acreage and fewer county project area alternatives were considered, but rejected because they did not fully contribute to the Priority 1 goals of the Ozark Big-eared Bat Recovery Plan, did not provide the permanent long term protection required by the gray bat, Indiana bat, and Ozark cavefish recovery plans, and did not meet the requirements of the Tar Creek Superfund Restoration Plan. They are also not adequate enough to support achieving the refuge's purpose, nor fully meet the resource needs outlined above. Alternatives consisting solely of protection, restoration, and education efforts by other public and private entities are already ongoing with, or without, expansion of the refuge. It has become clear over the years that these efforts will not be sufficient on their own to achieve the listed species' recovery.

Another alternative that was proposed was a large, three-state, three Fish and Wildlife Service Region (the Great Lakes-Big Rivers Region, the Southeast Region, and the Southwest Region) super project encompassing scattered land protection throughout the entire Ozark Mountains in Missouri, Arkansas, and Oklahoma. Karst and cave protection and partnership efforts are already underway in those other states and other Service Regions with such entities as the U.S. Forest Service, National Park Service, and state game and fish agencies and private conservation organizations that meet the particular needs of all of those entities. Mounting an effort to establish such a super project would be very difficult and time consuming because of the number of stakeholders and issues raised. In the meantime, habitats might be degraded and further declines in rare and endangered species might occur before such a project could be fulfilled. However, groups such as the Karst Resource Support Team (KaRST) (an organization of private conservation organizations, landowners, state and federal agencies, and universities to protect karst resources in the Ozarks), and the Service's Ozark Plateau Ecosystem Team, are exploring together ways to share technical expertise, staff and material resources, and ideas so that their collective chances of success can be improved.

## **IV. Affected Environment**

### **Climate and Air Quality**

The area receives from 35 to 55 inches of precipitation per year with relatively little snow and almost constant high humidity that keeps temperatures relatively mild throughout the year.

Air quality in the seven-county Ozark Plateau project area is generally excellent because of its primarily rural nature. There may be scattered sites having lesser quality air due to local industries and urban concentrations of vehicles. Dust from unpaved roads is a scattered local problem. The existing Refuge is designated Class 1 land under the guidelines provided in the 1977 Clean Air Act, a classification that contains provisions to maintain high air quality.

### **Geology and Soils**

The key geologic feature common throughout the Ozark Plateau project area is the presence of karst geological formations. Karst formations are bedrock of limestone and chert that were deposited in the shallow inland seas during the Mississippian Period (365-330 million years ago). Since limestone can be dissolved by acidic runoff, underground caverns and streams, sinkholes, and other formations typical of karst areas have formed during the millions of years that have passed. The Ozarks are also known for their hilly topography, which resulted from uplifting during and since the Pennsylvanian Period (330-315 million years ago). Northwestern Arkansas and southwestern Missouri also share the Ozark Mountains' distinctive geology and topography. Geologic formations of karst caves and sinkholes are found throughout the area and are the reason for the distinctive cave environments that support diverse and unique animal communities. In the northern portion of the area (Ottawa and Delaware Counties) cave forming formations are the St. Joe and Boone formations with some possibly found in the Cotter formation. Further south (in Adair County) caves are more likely to be found in the Pitkin limestone and Hale formation. Even further south (in southern Adair County and Sequoyah County) cave habitat can be found in large talus cracks in areas of Atoka sandstone. On the west side (Cherokee, Craig, and Mayes Counties) the St. Joe, Pitkin, and Hale formations are where caves are most likely to occur.

Economic mineral resources in the area include limestone, shale, cement, tripoli, sand and gravel. Oil and gas are also produced, but not in the major quantities as other parts of Oklahoma are known for. Mining is one of the lowest, or the lowest, industry in all seven counties, in terms of annual earnings (Government Information Sharing Project).

In Ottawa County the Tri-State lead and zinc mining area near Miami and Picher often produced the Nation's records for zinc production between 1918 and 1945. No mining has occurred there since 1974, and now the tailing piles and groundwater contamination have led to the site's designation as an Environmental Protection Agency Superfund Site. (See also the: Tar Creek Superfund Site, Final Partial Restoration Plan and Environmental Assessment).

Soils in the proposed project area have been influenced by the karst and sandstone geology and hilly topography, and range from sandy loams to heavy clays to rock outcrops, with various loams predominating. Loam is a soil textural class that is influenced to varying degrees by silt, sand, and clay. Loams are considered the best soil texture for agriculture. Soil associations that dominate the project area include the Enders-Conway-Hector and the Hector-Pottsville associations (Oklahoma Comprehensive Water Plan). For a detailed description of soil series, see the U.S. Department of Agriculture, Natural Resources Conservation Service's Soil Survey publication for the desired county.

### **Water Resources**

The Ozarks are known for their clean springs, clear cold streams, deep reservoirs, and important underground aquifers that supply water to towns and agriculture. A major aquifer in the region is the Roubidoux, a deep aquifer located predominantly in Delaware and Ottawa Counties. One of

Tulsa's principal water sources is an aquifer in Delaware County underlying some existing and proposed Refuge lands. Karst regions are particularly vulnerable to underground water contamination because karst formations can easily catch surface runoff, transfer it to underground water bodies, and transfer it back to other surface water bodies. Typical practices such as septic systems, confined animal feeding operations, and dumping trash and debris "out of sight" in sinkholes all jeopardize ground water quality in the Ozarks.

Grand Lake, Lake Hudson, Fort Gibson Lake, Tenkiller Lake, Robert Kerr Lake, Webber's Falls Lake, Lake Eucha, Spavinaw Lake, and Green Leaf Lake are known throughout the project area, for their aesthetic, recreational, and water supply qualities. Their existence drives much of the area's recreation-related development and economic sectors.

Significant water courses in the project area include the Spring River, Neosho (Grand) River, Spavinaw Creek, Illinois River, Barren Fork, Flint Creek, Sallisaw Creek, and Lee Creek.



*The Ozark Plateau National Wildlife Refuge is largely within an area of rolling hills and deciduous forests. Photo by Steve Hensley.*

## **Vegetation**

Northeastern Oklahoma is part of the Ozark Plateau geographic area containing hilly, deciduous (trees that drop their leaves in the fall) forests in Bailey's Oak-Hickory Forest Ecoregion and supports an oak-dominated deciduous forest community. The principal oak species are blackjack, post oak, black oak, southern red oak, Shumard oak, pin oak, bur oak, and white oak. Hickory species include black hickory, shagbark hickory, and mockernut hickory. Typical under story vegetation includes flowering dogwood, eastern redbud, green brier, poison ivy, May apple, white sassafras, and coralberry. Valleys in floodplains contain silver maple, river birch, American elm, eastern cottonwood, American sycamore, American linden, and various oaks. The Ozark chinquapin tree (*Castanea pumila* var. *ozarkensis*), a species of concern, is scattered throughout the forested areas.

## **Fish and Wildlife**

The area has a wildlife complement typical of Midwestern deciduous forests. The karst formations, however, support a diverse array of vertebrate and invertebrate species that not only are endemic to the Ozark Plateau, or Oklahoma, but are sometimes unique to each cave because of their isolation from one another. Because cave ecosystems often develop their own endemic species complements, it is possible that numerous undescribed and uncataloged fauna may exist in the recently discovered, or yet undiscovered, caves. Three new species of insects have recently been identified from one Refuge cave.

The forested areas surrounding the caves are also important for bat foraging and for breeding and migrating species that need unfragmented tracts of forest to support their basic needs for food, water, and cover.

The area encompasses the existing known range of the federally endangered Ozark big-eared bat (Corynorhinus townsendii ingens) in Oklahoma. The Ozark big-eared bat is generally associated with caves, cliffs, and rock ledges in well drained, oak-hickory Ozark forests. Maternity caves and hibernacula occur in a number of different surroundings, from large continuous blocks of forest, to smaller forest tracts interspersed with open areas. Federally endangered gray bats (Myotis grisescens), federally endangered Indiana bats (Myotis sodalis), federally threatened Ozark cavefish (Amblyopsis rosae), and species of concern cave crayfish (Cambarus tartarus), also use caves in the area, and frequently the same caves. Bald eagles (Haliaeetus leucocephalus) now listed as federally threatened, are found on the refuge and in northeastern Oklahoma because of the abundant reservoirs and rivers. The longnose darter (Percina nasuta), a federal species of concern, is found in one stream in the area (Lee Creek). Other federal species of concern found in the area include the eastern small-footed bat (Myotis leibii), the southeastern big-eared bat (Corynorhinus rafinesquii), the southeastern bat (Myotis austroriparius), the bat cave isopod (Caecidotea macropoda), the Bowman's cave amphipod (Stygobromus bowmani), and the Ozark cave amphipod (Stygobromus ozarkensis).

**TABLE 1**  
**ENDANGERED, THREATENED, and SPECIES OF CONCERN**

Ozark big-eared bat ( <u>Corynorhinus townsendii ingens</u> )	Endangered
Gray bats ( <u>Myotis grisescens</u> )	Endangered
Indiana bat ( <u>Myotis sodalis</u> )	Endangered

Ozark crayfish ( <u>Cambarus aculabrum</u> )	Endangered
Ozark cavefish ( <u>Amblyopsis rosae</u> )	Threatened
Neosho madtom ( <u>Noturus placidus</u> )	Threatened
Bald eagle ( <u>Haliaeetus leucocephalus</u> )	Threatened
Eastern small-footed bat ( <u>Myotis leibii</u> )	Species of Concern
Southeastern bat ( <u>Myotis austroriparius</u> )	Species of Concern
Southeastern big-eared bat ( <u>Plecotus rafinesquii</u> )	Species of Concern
Longnose darter ( <u>Percina nasuta</u> )	Species of Concern
Ozark cave crayfish ( <u>Cambarus tartarus</u> )	Species of Concern
Bowman's cave amphipod ( <u>Stygobromus bowmani</u> )	Species of Concern
Ozark cave amphipod ( <u>Stygobromus ozarkensis</u> )	Species of Concern
Bat cave isopod ( <u>Caecidotea macropoda</u> )	Species of Concern
Ozark chinquapin ( <u>Castanea pumila</u> var. <u>ozarkensis</u> )	Species of Concern

Game animals in the area include white-tailed deer, gray and fox squirrels, cottontail rabbits, raccoons, bobwhite quail, mourning doves, wild turkeys, mallard ducks, and wood ducks. Furbearers include raccoon, beaver, coyotes, red foxes, and bobcats. Sport fish include smallmouth and largemouth bass; channel, blue, and flathead catfish; and several sunfish species.

## Land Use

Rural land uses still predominate the seven-county Ozark Plateau project area. Livestock grazing, cropping (especially sorghum, wheat, soybeans, and hay/alfalfa), and a newer phenomenon: confined animal feeding operations for poultry and hogs, are typical agricultural activities throughout the area. Forest products from timber operations are a source of income for some landowners.

Tourism, including hunting and fishing, stimulate recreational developments including resorts, campgrounds, lake marinas, vacation homes, and associated support services. A newer trend in the Ozarks is residential retirement development. Retirees are attracted by the relatively inexpensive land prices and the desirable esthetics of the rural, rolling wooded hills, and small town atmospheres.

The increasing population growth in the region is also stimulating changes in land use from agricultural to urban development uses, such as residential, commercial, and industrial development, primarily near the larger towns and cities.



*Like many cave species, this Ozark cave crayfish is a pale color.  
Photo by Steve Hensley.*

## Public Use and Recreation

The public participates in hunting, fishing, hiking, camping, nature observation, and caving (cave exploration) on wild lands in the project area. Deer, turkey, squirrel, raccoon, bobwhite quail, and rabbit, are the most commonly hunted animals. Some waterfowl hunting occurs in lake and wetland areas. Fishing and boating is popular in the larger streams, rivers, lakes, and reservoirs.

Caving is popular wherever caves are accessible. Serious cavers may, or may not, belong to several grottos (local chapters of the National Speleological Society), or other organized caving groups in the region. Other casual visitors also may visit accessible caves. Most serious cavers recognize, appreciate, and try to minimize their impacts on cave formations and resources. Vandalism to caves and disturbance to the animals and formations in the caves from casual, and even malicious, visitors is a serious concern for those who appreciate and study cave resources. The Service and its conservation partners acknowledge the important roles that serious, conservation-minded cavers have played in the understanding and protection of the Ozarks' cave resources and want to continue those positive relationships.

## Cultural Resources

The Ozarks are the home of several Native American nations and are famous for being the relocation site for the Cherokee (from the Carolinas and Georgia) and the Choctaws (from Georgia and Florida at the end of their "Trail of Tears" forced relocations in the early 1800's. Now these nations have a significant influence on the past and present culture of the area and many of the people claim Native American ancestry. Other Native American nations in the seven-county area include the Creeks,



Delaware, Eastern Shawnee, Miami, Modoc, Muskogee, Osage, Ottawa, Peoria, Quapaw, Seneca-Cayuga, and Wyandotte. Archeological sites may be extant throughout the region, wherever encampments of early indigenous people occurred.

The Ozarks also are significant for their history involving their use by early Native Americans, later forced relocation of Native Americans from the east and west, the westward expansion of European-American settlers and freed African-Americans after the Civil War. Numerous historic sites dot the region such as homes, buildings, cemeteries, farmsteads, and settlements. Significant sites within the project area include original tribal government locations, Chief Sequoyah's home, Tsa La Gi Cherokee Village, Fort Gibson Stockade, the Tri-State Mining area in Ottawa County, and a number of local museums associated with early settlement and timber industry.

## **Socioeconomic Resources**

### ***Regional Socioeconomic Context***

The socioeconomic region in which the proposed Refuge expansion is located contains Adair, Cherokee, Craig, Delaware, Mayes, Ottawa, and Sequoyah Counties--basically the northeast corner of Oklahoma. All the counties are primarily in the hinterland of Tulsa, Oklahoma. However, the eastern counties next to Arkansas also are in the hinterlands of Fayetteville, Arkansas, and Fort Smith, Arkansas, the largest and closest cities to provide certain services and amenities that are unattainable within the counties. Western Arkansas is one of the fastest growing areas in the nation and the related development is moving toward eastern Oklahoma. Such growth will probably result in substantial increases in Oklahoma land values in the future. The 2000 population ranges for all seven Oklahoma counties in the project area was between 14,950 and 42,521, with all but 2 counties in the 30,000+ range. The region retains a rural flavor, even though some individual cities and towns are bustling with economic activity.

Population change can be an indicator of economic vitality, the types of economic sectors that are likely to be strong, probable development and disturbance impacts on wildlife habitat, and trends in real estate markets. The following table shows population changes in the seven counties between the 1990 and 2000 censuses.

**TABLE 2**  
**PROJECT AREA COUNTY POPULATION GROWTH BETWEEN 1990-2000**

County	1990 Population	2000 Population	Number Increase	Percent Increase
Adair	18,421	21,038	2,617	14.2
Cherokee	34,049	42,521	8,472	24.9
Craig	14,104	14,950	846	6.0
Delaware	28,070	37,077	9,007	32.1
Mayes	33,366	38,369	5,003	15.0
Ottawa	30,561	33,194	2,633	8.6
Sequoyah	33,828	38,972	5,144	15.2

Source: Bureau of the Census

The primary economic sectors (categories of economic activities) in the region include manufacturing, government, services, agriculture (including timber), and retail trade (Government Information Sharing Project). Although, not listed as a specific economic sector, tourism is an increasing contribution to local economies, especially through the sectors of services and retail trade. Other economic sectors in the project area include construction; finance, insurance, and real estate; transportation/utilities; wholesale trade; agricultural services; and a small amount of mining.

### ***Refuge Revenue Sharing***

Land acquired in fee by the Service is removed from the county tax rolls. To help offset lost tax revenues, the county receives an annual payment in lieu of taxes, as provided by the Refuge Revenue Sharing Act of 1935 (16 U.S.C. 7145:49 Stat. 383, as amended). Monies for these federal payments to counties come from revenues derived from the nationwide sale of refuge products and privileges. These funds are distributed based on one of the three following formulas that provides the highest return to the county:

- Seventy-five cents per acre,
- Twenty-five percent of the net revenue received from the operation of the refuge, or
- Three-fourths of one percent of the appraised value of the property, which must be reappraised by the Service every five years. (Usually this formula is the one applied.)

If not enough revenues are available in the fund to make full payments, the Service distributes the funds proportionately nationwide. Congress is authorized to make up the difference. For Fiscal Year 2001, the Fish and Wildlife Service paid Adair County \$2,445, or about 52 percent of the \$4,712 it was entitled to under the above formula for the 2,165 acres listed as owned by the refuge at that time. The Service paid Delaware County \$1,151 or, again, about 52 percent of the \$2,217 it was entitled to for the 420 acres listed as owned by the Refuge at the time.

Refuge Revenue Sharing payments usually exceed the property taxes paid by the previous private landowners in cases where agricultural exemptions exist. The payment figure varies due to local land price trends and at what level Congress appropriates additional funds to make up the shortfall. The

Service is required to reappraise its refuge lands every 5 years to allow for adjustments in the payments to account for local land price trends. Private landowners continue to pay property taxes on lands which the Service holds conservation easements on.

## **V. Environmental Impacts Of Proposed Action And Alternatives**

### **Alternative A - No Action**

This alternative would mean that the status quo would be maintained, essentially allowing present land uses and trends to continue within the seven-county area. Some Service acquisition from willing sellers could continue in Adair, Delaware, and Ottawa Counties, where the Refuge is already established, on some of the known cave sites that need protection. Cooperative management agreements with landowners and protection by other entities, such as The Nature Conservancy and The Trust for Public Land, could continue. The Refuge would continue working with its numerous partners in the non profit organization; academic; state, federal, and local agency; business; tribal; cities; and landowner ranks to achieve various protection efforts.

### **Climate and Air Quality**

This alternative would have no significant effect on climate, which results from global conditions. Air quality would likely worsen in the project area, as increasing population brings more vehicles and air-polluting industries. The faster growing counties like Delaware could experience more of a decline in air quality than slower growing counties like Craig.

### **Geology and Soils**

This alternative would not significantly protect geological features and soils. The region's karst geologic formations could be greatly affected by future population growth and development. The vulnerability of karst geology to contamination from such sources as construction, septic systems, confined animal feeding operations, transportation hazardous materials spills, etc., could be a significant concern in the future, especially to those towns that use underground aquifers as water sources.

Since many mineral estates are held by third parties in the project area, this alternative should have no impact on minerals development or extraction in the expansion area. Mining is not now a significant economic sector in the project area and would likely not become one in the future.

As anticipated development proceeds in the seven-county area, soils will be disturbed on developed sites. Without measures to protect soils, such as silt curtains or revegetation, this may lead to some increased erosion and siltation into water bodies.

## **Water Resources**

Under this alternative there may be some increased siltation into some water bodies as a result of soil disturbances from anticipated development in the area. The degree of effect would depend on the type of development and its nearness to any of those water bodies. The threat of polluted urban runoff will also increase. Oils, solvents, pesticides, and fertilizers are common in urban runoff.

Again, as discussed in the section above, underground aquifers may be affected by the various human developments that could introduce contaminants into the area's karst formations. Anticipated population growth will increase this threat, as well as bring about more consumer demand for underground water.

The area's recreational water bodies will experience more use and crowding in some cases. Heavily used waters may be threatened by increased pollution from boating and other water-related recreation.

This alternative would have no effect on ownership and use of water rights outside of Service acquisitions within the current Refuge boundary.

## **Vegetation**

The trend of urban and agricultural development would probably continue with attendant impacts on vegetation and habitats. Development would cause more clearing of the hardwood forests the region is known for. Large expanses of forest could get broken up by development causing fragmentation of those forests. As the plant communities are diminished, the land's ability to hold water would decrease. Disturbance of intact vegetative communities could result in more invasion of exotic weeds.

Ongoing management activities on the current Ozark Plateau National Wildlife Refuge lands are intended to protect and restore the integrity and function of intact native biotic communities of the Ozarks. These activities include reestablishing native plants and grazing and timber management. For the most part, these management activities have not been necessary because most of the tracts that have been acquired are already in a desired habitat condition and only need protection from disturbance or development.

## **Fish and Wildlife**

Without protection of habitats in the proposed expansion area from anticipated development, some animal populations may decline due to loss of habitat. Many animals need unbroken expanses of habitat to meet all their needs for food, water, cover, and breeding. Development often results in habitat fragmentation and subsequent reduction in the populations of certain animal species. This region of Oklahoma is known for its high wildlife diversity and abundance and this quality could be reduced by further habitat loss. Ongoing habitat protection initiatives such as the Service's cooperative agreements with landowners, technical assistance, and the limited land acquisition by non profit conservation organizations and the State could reduce the loss of some of the caves and unfragmented forests.

The Service would continue to work with landowners, state agency and tribal partners, non-profit conservation organizations, local grottos, and Oklahoma colleges to accomplish as much habitat protection and endangered species recovery possible without land acquisition.

***Threatened and Endangered Species*** - Although some protection could continue with the Service's cooperative agreements and the limited acquisition by non profit conservation organizations and the State, the goal of assuring the continuing existence and complete recovery of the Ozark big-eared bat, gray bat, Indiana bat, Ozark cavefish, and other rare or threatened endemic cave dwelling species will not likely be achievable under the No Action alternative. The Final Revised Ozark Big-eared Bat Recovery Plan listed providing long term protection through habitat acquisition as a major

action necessary to assure the continuing existence and achieve recovery, even though every other listed action is being pursued to the maximum extent possible. Some species not now listed, may need to be listed at some point in the future because the continuing actions under this alternative may not be able to protect sufficient habitats for those species.



*This cave salamander represents the unique diversity of animals found in the Ozark karst region. Photo by Steve Hensley.*

## **Land Use**

Based on the population growth trends noted in the affected environment section of this document, it is likely some of the farms and other large unimproved properties in the proposed boundary expansion area could be converted to residential, recreational, other agricultural uses such as confined animal feeding operations, timber production, and commercial development in the long term. This effect would vary among the counties based on their rate of population growth. For example, Delaware County would likely experience more development impacts than Craig County. Nearby western Arkansas, near Fayetteville and Fort Smith, is one of the fastest growing areas in the nation and the related development is moving toward eastern Oklahoma. Such growth will probably result in considerable change in land use and substantial increases in Oklahoma land values in the future.

The current refuge acreage of 2,568 acres in Adair encompasses about 0.7 percent of the total land area (368,450 acres identified by the Government Information Sharing Project) in Adair County. The current refuge acreage of 420 acres in Delaware County encompasses about 0.09 percent of the total land area (474,080 acres) in Delaware County. The current refuge acreage of 78 acres in Ottawa County encompasses about 0.03 percent of the total land area (301,696 acres) in Ottawa County.

## **Public Use and Recreation**

The economic incentives for urban development, with potential higher economic returns than hunting clubs, hunting leases, or unimproved open space may decrease available hunting areas in the seven-county area project area. Opportunities for other public uses and recreation that depend on open spaces, such as fishing, hiking, and birdwatching, will also decrease with continued development.

The trend of recreational development associated with the large reservoirs in northeast Oklahoma and northwest Arkansas will likely increase the number of marinas, launching pads, and vacation homes on those reservoirs. Those water bodies will likely get more crowded, especially with faster, high-powered boats and more personal watercraft, such as jet skis and wind surfers.

The ongoing habitat and cave protection activities that will still occur under this alternative will have minimal effect on overall outdoor public recreation in the seven-county area. In the scattered sites where refuge acquisition, landowner agreements and non-profit organizations' land acquisition occur, there are limitations on caving. The threat of cave vandalism and potential harm to rare, threatened, and endangered species, even unintentional, and liability issues on privately owned caves, have spurred construction of cave gates and fences on refuge, non-profit, and private caves. However, several grottos have participated in cave mapping and cave biological inventory projects for acquired or protected caves, which give them opportunities to contribute to meaningful, lasting endeavors while being able to explore these caves.

## **Cultural Resources**

Protection of cultural resources would be an optional action by private landowners, whether or not they participate in any voluntary cooperative conservation program of any agency or non profit organization. The National Historic Preservation Act does not require cultural resource protection on private lands. If non profit organizations acquire lands for preservation of native habitat, they are not required by law to protect cultural resource sites. However, most land preservation organizations are sensitive to cultural resource protection on their acquired properties and would likely take steps to preserve those resources. Federal and state public agency programs are required to protect cultural resources under the National Historic Preservation Act, or are sensitive enough to the issue to take the necessary steps to exercise protection of those resources.

## **Socioeconomic Resources**

### ***Regional Socioeconomic Context***

The trend toward increased population and development in the project area means further decline of the influence of the agricultural economic sector in the socioeconomic character and culture of the region. Rapidly growing counties, like Delaware, and those in western Arkansas, are evolving a more urban culture with attendant growths in several economic sectors, such as construction, finance and real estate, transportation and utilities, retail trade, and services.

A related effect of this is change in property tax revenues as properties formerly having agricultural exemptions, and thus paying lower taxes, would be converted to properties paying higher residential or commercial property tax rates. However, urban development also requires more infrastructure delivery and services from the local government and this is more expensive to deliver to remote, formerly rural sites.

If the refuge is not expanded, other methods of protecting caves, springs, and interior forest habitats will continue as discussed above. A number of different entities are pursuing those actions in scattered locations and their socioeconomic impacts would likely be negligible. Neighbors' lifestyles would not change. Some economic sectors involved with development, such as construction, will have an overall slight reduction in potential opportunities as protected lands would no longer be available for development.

### ***Refuge Revenue Sharing***

Refuge Revenue Sharing payments, currently being made for existing refuge lands, would continue. For Fiscal Year 2001, the Fish and Wildlife Service paid Adair County \$2,445, or about 52 percent of the \$4,712 it was entitled to under the above formula for the 2,165 acres listed as owned by the refuge at that time. The Service paid Delaware County \$1,151 or, again, about 52 percent of the \$2,217 it was entitled to for the 420 acres listed as owned by the Refuge at the time. Refuge lands will be reappraised every five years to get updated fair market values for those lands so that the payments can be adjusted appropriately. Adair and Delaware Counties are currently receiving those payments. The Ottawa County 78-acre acquisition occurred in Fiscal Year 2002--too recent for the Fiscal Year 2001 payment. In the meantime the Service and Congress continue to explore ways to try to get the payments up to the 100% entitlement level. As other agriculturally exempted lands are converted to non-agricultural development, their property tax payments will go up.



**Alternative B: Acquisition in fee title or conservation easement through purchase or donation at fair market value from willing sellers/donors of 11,933 acres of additional lands scattered throughout the counties of Adair, Craig, Cherokee, Delaware, Mayes, Ottawa, and Sequoyah to bring the total project acreage to 15,000 acres**

**Climate and Air Quality**

This alternative should not have any significant effect on climate, which results from global climate factors. Since 15,000 acres is a tiny portion of the airshed over more than 2,963,229 acres in the seven-county project area, land acquisition will also not appreciably affect overall air quality. However, protections of large continuous stands of Ozark forest from future loss, will do its share in protecting the climate and air quality through carbon sequestration affecting ozone production and other air pollutants. On a localized basis, leaving vegetative cover on land does not contribute to dust and other pollutants like land clearing and industrial urban development do.

**Geology and Soils**

The protection of Ozark caves, springs, streams, forests, watersheds, and ground water recharge areas under this alternative would preserve caves and associated karst or sandstone geological formations and ground water aquifers from loss of integrity and contamination. Lands left in an undeveloped state would not contribute as much soil erosion and sedimentation as would cleared lands. Again, however, the contribution of 15,000 acres protected is small within an overall 2.9 million-acre project area.

**Water Resources**

This alternative would help to protect streams, springs, lakes, and underground water sources in karst areas where portions of watersheds and groundwater recharge areas are protected. Uncleared lands would not contribute as much sedimentation into surface and subsurface water bodies. Lands not available for development would not stimulate demand for water resources. A 15,000-acre refuge would encompass 0.51 percent of the total seven-county land area. Therefore, these beneficial effects will not overcome the deleterious effects of increasing population growth and development on the demand for, and quality of, water resources. However, the City of Tulsa and the Cherokee Nation have recognized the benefit of karst protection initiatives and acquisition in the current refuge area in preserving the quantity and quality of some of their underground water resources.

## Vegetation

This alternative could reduce the extent of Ozark forest fragmentation caused by development in the seven-county project area. An additional 11,933 acres over the current refuge acreage would protect vegetation over the long term. The Ozark chinquapin tree, a plant species of concern mentioned above would benefit from this alternative. Undisturbed refuge lands would not be an initial source of exotic weeds. The Service may acquire some cave properties that need initial vegetation restoration and weed control.



*The Ozark Plateau region is known for its cool clear streams. Photo by Steve Hensley.*

## Fish and Wildlife

This alternative will, through an ecosystem approach, provide long term habitat protection for a number of Fish and Wildlife Service trust resources dependant on forests, streams, springs, caves, wetlands, and ground water recharge areas characteristic of the karst and sandstone topography of the Ozarks. Protection of habitats of the other species listed above is important, even to the extent that cave properties without Ozark big-eared bats present, may still be protected if other species benefit. One goal of the proposal is to protect sufficient habitat so that other karst-related species will not have to be listed as federally threatened or endangered. Another goal is to protect large continuous stands of Ozark forest essential both for feeding areas for bats and nesting areas for migratory birds that need unbroken expanses of interior (as opposed to edge) forests for their breeding requirements. This alternative will benefit many such species including various warblers, thrushes, vireos, etc.

The project area contains some of the most diverse, least disturbed, and extensive Ozark caves, springs, streams, ground water aquifers, and forest systems in Oklahoma. In addition to helping assure the continuing existence and recovery of the federally-listed endangered Ozark big-eared bat, gray bat, Indiana bat, and threatened Ozark cavefish the acquisition will provide additional benefits by:

- Helping protect valuable watersheds and ground water recharge areas
- Preserving habitat for other federally-listed and candidate species and species of concern
- Conserving migratory songbird habitat
- Preventing forest fragmentation
- Promoting biological diversity
- Protecting other cave and interior forest resources.
- Providing environmental educational opportunities

***Threatened and Endangered Species*** - This alternative was largely based on the recommendations of the Ozark Big-Eared Bat Final Revised Recovery Plan in addition to the gray bat, Indiana bat, and Ozark cavefish recovery plans for habitat protection needs sufficient to assure the continuing existence and recovery of these species. While the Ozark Big-Eared Bat Recovery Plan was one of the chief drivers in the design of this alternative, it provides an ecosystem based approach, that will benefit numerous other karst/sandstone-related species to the same degree as the Ozark big-eared bat, as they share many of the same locations. This alternative will contribute to the recovery of other listed species that use these same habitats. As stated before, one goal of this proposal is to protect sufficient habitat so that other karst/sandstone-related species will not have to be listed as threatened or endangered.

An Intra-Service Section 7 Biological Evaluation Form was prepared for this proposed action. A Section 7 (referring to Section 7 of the Endangered Species Act of 1973, as amended) biological evaluation is required for all major Federal actions. The Service's Tulsa Ecological Services Office concurred with the Intra-Service Section 7 Biological Evaluation determination on March 23, 2001 that the expansion of the refuge to 15,000 acres would have no adverse effect on listed threatened or endangered species.

## Land Use

A fifteen thousand-acre refuge would encompass 0.51 percent of the total acreage in the seven counties. Some counties, such as Adair and Delaware, will probably have proportionally more refuge

acreage because they have more caves that have already been protected, or have more caves identified in the Final Big-eared Bat Recovery Plan (or other plans) that need protection.

The Service is required to survey any potential acquisition for the presence of contaminants, or hazardous materials, or other hazardous conditions such as abandoned open wells. Since rural properties are generally acquired, typical considerations include household and farm chemicals, small household dumps, and above-ground or underground fuel storage tanks. Acquisition will not take place within the Tri-State (Tar Creek) Superfund Site and there are no other Superfund or other large, serious sites in the seven-county area known at this time. The proximity of any possible acquisitions to confined animal feeding operations will also be considered because of the potential for nitrate and phosphate contamination in karst geological formations. Increasing residential and urban development in the karst geological formations poses an increased potential for underground aquifer contamination from septic tanks and sewage treatment facilities.

Acquired properties are generally in rural areas. Most are wooded, some have been used for grazing or cropping. Properties acquired in fee will generally not be used for any agricultural purposes anymore, so that habitats can grow back to a wild condition. Properties with conservation/non development easements can continue to be used for agriculture, although indiscriminate pesticide use would be discouraged because of the negative impact on bats, birds, and other wildlife and their food sources.

## **Public Use and Recreation**

The 1991 Action Plan for Management at Oklahoma Bat Caves National Wildlife Refuge (Action Plan), the earliest management plan for the Refuge, recommended that cave openings be gated or fenced to protect vulnerable cave animals from disturbance and vandalism. This is still important for caves occupied by federally-listed endangered or threatened species or species of concern. However, this document acknowledged that hunting on the surface could be allowed by specific permission from the Refuge management staff at the Sequoyah National Wildlife Refuge in Vian, Oklahoma, which oversees management of the Ozark Plateau National Wildlife Refuge.

The Conceptual Management Plan outlines public recreation opportunities that could be made available on suitable tracts acquired in fee. Lands acquired with a conservation/access/management easement may not be available for public use, as the landowner retains the right to exclude the public. Some refuge tracts may have limited road access and are basically unimproved, so only primitive access may be possible. Hunting could occur on certain sites that are large enough without disturbing sensitive cave resources, especially the tracts with large expanses of interior forest. Smaller, isolated properties may not be large enough for a quality hunting experience or the safety of adjacent landowners. The land, on which the Service has a management agreement with the City of Tulsa on the upper end of Lake Eucha, is used for fishing and camping, but the recreational use is managed by the City of Tulsa. Fishing may be possible on other areas, if a tract is purchased with a harvestable fishery resource on it and access is available, and it is compatible with refuge purposes.

Although many caves have been gated, both on refuge and private properties, the caving community has still had opportunities to explore those caves in order to map them, gate them, inventory their animals and cave formations, and clean up trash and litter left by vandals. The Service and the several local grottos of the National Speleological Society (NSS) have had a positive relationship since the Refuge came into existence. There is a national memorandum of understanding (MOU) between the NSS and the Service on cave conservation. The grottos' knowledge of cave resources and expertise in carefully and safely negotiating the sometimes treacherous cave passages have contributed much to the knowledge of Ozark caves. This relationship is expected to continue with expansion of the Refuge, bringing more opportunities for cavers to both enjoy their sport and contribute to many facets of cave management and knowledge that will be used in the future. The Service is generally not interested in acquiring "show caves" for the casual and frequent enjoyment of the general public. Environmental education opportunities could exist at some protected caves and the need for public outreach about conservation of caves and cave animals was recommended in the 1991 Action Plan. For example, the Boy Scouts already use one cave to teach cave ecology to Boy Scouts by observing the emergence of gray bats from a safe distance during the summer and entering the cave in small groups during the winter, when the gray bats are not present.

Several Oklahoma universities are already assisting with research on some caves. Since the primary purpose for establishing the national wildlife refuge is wildlife conservation, extensive surveys, particularly of endangered species, are conducted yearly to track population trends. This information provides the basis for habitat management decisions and for monitoring their success. Surveys include baseline vegetation surveys, cave and aquatic invertebrate surveys, stream fish surveys, herpetological surveys, migratory and breeding bird surveys, small mammal surveys, federally-listed bat and cavefish surveys, surface and groundwater quality monitoring, and cave mapping. Academic research on refuge lands is encouraged and currently being conducted, as well as research by other agencies, because their findings provide additional information that assists with habitat management



*Cave gates can take different forms and have been found to be successful in helping to recover threatened or endangered cave species. Photo by Steve Hensley.*

Other non consumptive uses including wildlife observation and photography and nature interpretation may be possible on the surface or in caves that are not critical habitat for rare species, or at times of the year when bats are not present, or as part of supervised or sanctioned visits by the Refuge or local NSS grottos.

## **Cultural Resources**

The Service, as are all other federal agencies, is required to protect cultural resources on all acquired lands under Section 106 of the National Historic Preservation Act of 1966, the Archeological Resources Protection Act of 1979 and the Antiquities Act of 1906 by consulting with the State Historic Preservation Officer or the Oklahoma Archeological Survey regarding the protection of any potential cultural resource sites on specific properties proposed for acquisition. If any archaeological or historical resources are acquired in the expanded area, refuge management activities are supposed to protect or minimize impact on such resources. If cultural resources are found during construction of any Refuge facility, the Service is required to salvage or protect those resources. For those lands remaining in private ownership, it is a voluntary consideration by the private landowner to ensure protection of these resources.

## **Socioeconomic Resources**

### ***Socioeconomic Context***

As noted above, the seven-county project area is experiencing a trend of population growth and urbanization. This will continue if the refuge is expanded. A 15,000-acre refuge would encompass 0.51 percent of the total seven-county land area. Therefore, socioeconomic impacts are not expected to be very visible or widespread. Under this alternative, acquisition by the Service would occur over a period of several to many (over 5-20 or more) years and be dependent on funding, the desire of property owners to sell or donate land or easements, and the degree of success of alternative conservation measures implemented by the Service or other entities. It is not anticipated that Service acquisition would create any abrupt changes in local community economies, since the majority of personal livelihoods in the seven-county project area are derived from non-agricultural jobs. Some economic sectors involved with development, such as construction, will have an overall slight reduction in potential opportunities as acquired lands would no longer be available for development.

Refuge expansion should not significantly affect the lifestyles of neighboring landowners. Most of the cave or forested sites that would be protected are in rural areas and this rural condition would continue if the refuge expanded.

### ***Refuge Revenue Sharing***

For Fiscal Year 2001, the Fish and Wildlife Service paid Adair County \$2,445, or about 52 percent of the \$4,712 it was entitled to under the above formula for the 2,165 acres listed as owned by the refuge at that time. The Service paid Delaware County \$1,151 or, again, about 52 percent of the \$2,217 it was entitled to for the 420 acres listed as owned by the Refuge at the time. Refuge Revenue Sharing payments usually exceed the property taxes paid by the previous private landowners in cases where agricultural exemptions existed. The figure would vary due to local land price trends and at what level Congress appropriates additional funds to make up the shortfall. Private landowners would continue to pay property taxes on lands which the Service holds conservation easements or management agreements on. If the Service acquired the 11,933 acres within the expansion area in fee, Refuge Revenue Sharing payments may be estimated at \$24,000 (at 100% entitlement) based on the total estimated acquisition cost of the proposed expansion of \$3.2 million. At a 52% entitlement, such as the fiscal year 2001 payment, the payment may be estimated at \$12,480. Amounts going to each of the seven counties would be proportional to the percentage of refuge-owned land within each county. The Service recognizes that percentages of full entitlement payments have declined during the 1990's and is pursuing opportunities to increase funding for the program in the fiscal years beyond FY 2001.

While county governments may perceive a loss in property tax revenues attributable to Service ownership, because most Ozark Plateau acquisitions are in remote rural locations, county

governments are spared the expense of infrastructure and services delivery to those locations. Delivery of roads; sewers; electricity; water; police, fire and school bus services could cost more to provide to remote rural areas than those properties might pay in taxes.

### **Relocations**

Any persons, businesses, or farms displaced as a result of fee simple acquisition for the refuge would be entitled to relocation assistance in accordance with the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. A relocation specialist would personally assist anyone directly affected by Service acquisition who requests such assistance. This assistance is also available to tenants and grazing lessees, but not hunting lessees, unless they owned or rented substantial improvements.

Mining would be detrimental to cave integrity and the security of bat and other cave species, therefore, the Service would attempt to acquire sub-surface mineral rights where they are available and affordable. However, many people desire to retain those rights, or they are held by third parties. Limestone and dolomite are the primary mineral resources in the area, but mining is generally a lesser economic sector in the project area. However, to assure protection of the sensitive karst resources, the Service would generally pursue sub-surface mineral rights where possible.



## **VI. Cumulative Impacts**

Cumulative impacts are those that result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions. Therefore, the impacts of this proposed expansion of 11,933 acres must be added to the impacts of the original action which established the refuge. There do not appear to be any reasonably foreseeable future federal actions, which need to be included in this analysis.

To date, the Service has acquired about 3,067 acres in fee, easement, and management agreement in Adair, Delaware, and Ottawa Counties. Acquisitions will continue to be limited by funding and the existence of willing sellers. As stated previously, the current refuge acres encompass about 0.7 percent of the total land area in Adair County, 0.09 percent in Delaware County, and 0.03 percent in Ottawa County. If the refuge expanded to the full 15,000 acres within all seven counties, it would take up 0.51 percent of the total seven-county project area. This would not entail a significant impact on any resource or issue of the affected environment.

## VII. Consultation and Coordination with Others

Private landowners, The Nature Conservancy, Trust for Public Land, Oklahoma Department of Wildlife Conservation, Oklahoma Natural Heritage Inventory, Oklahoma Natural History Museum, Arkansas Game and Fish Commission, Cherokee Nation, Tulsa Regional Oklahoma Grotto, Central Oklahoma Grotto, Buffalo River Grotto, Boston Mountain Grotto, 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, U.S. Forest Service, and the Fish and Wildlife Service have worked together over the past twenty years to protect fish and wildlife resources of eastern Oklahoma's and western Arkansas' Ozark forest, streams, springs, and caves.

Since the Ozark Plateau National Wildlife Refuge (originally the Oklahoma Bat Caves National Wildlife Refuge) was established in 1985 as a part of the Sequoyah National Wildlife Refuge Complex, Service staff have continually kept local, municipal, county, state and Congressional officials and agencies apprized of its activities and land acquisitions. Cooperative partnerships with landowners to protect and manage caves on private property have been successful. Numerous collaborative research, monitoring, protection, mapping, and management ventures with the above-listed entities have helped to turn the Ozark big-eared and gray bats' populations from the brink of extinction to the road to recovery and helped assure the continuing existence of other federally-listed species and reduce the need for future listing of species of concern.

This environmental assessment, land protection plan and draft concept management plan will be distributed to public officials, affected federal, state, and local agencies, non profit conservation and caver organizations, academic institutions involved in cave research, affected landowners, and individuals who have expressed an interest in the refuge or cave and habitat protection. These documents will undergo a 60-day public review before a final decision is made on the boundary expansion proposal. Commenters are encouraged to forward their comments via letter, fax, or e-mail to the U.S. Fish and Wildlife Service, Division of Planning, P.O. Box 1306, Albuquerque, New Mexico 87103; or fax: 505-248-6874; or e-mail: jeannie\_wagnergreven@fws.gov.

## **List of Preparers**

Ray Gurule

Cartographer, U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico

Steve Hensley

Refuge Manager, Ozark Plateau National Wildlife Refuge, U.S. Fish and Wildlife Service, Region 2, Vian, Oklahoma

Kelly Thompson

Administrative Assistant, U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico

Jeannie Wagner-Greven

Wildlife Biologist, U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico

**Ozark Plateau National Wildlife Refuge  
Proposed Refuge Expansion  
Land Protection Plan**



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*Table of Contents*

Project Description ..... 2

Threat to or Status of Resource to be Protected ..... 3

Proposed Action and Objective ..... 4

Protection Alternatives ..... 5

    No Action ..... 5

    Acquisition and/or Management by Others ..... 6

    Acquisition by the Service ..... 7

        Threshold Criteria ..... 7

        Secondary Criteria ..... 8

        Fee Title ..... 8

        Conservation/Access/Management Easement ..... 8

        Combination of Fee and Easement ..... 9

The Protection Array ..... 10

Acquisition Alternatives ..... 12

    Purchase Using the Land and Water Conservation Fund (LWCF) ..... 12

    Purchase Using the Migratory Bird Conservation Fund (MBCF) ..... 12

    Purchase Using Natural Resources Damage Assessment Funds ..... 12

    Donation ..... 12

    Partial Donation ..... 13

    Life Use ..... 13

Coordination of the Proposal With the Affected Public ..... 13

Socio-cultural Impacts ..... 14

Some Aspects of Selling or Donating Land or Partial Interests To the Fish and Wildlife Service .. 17

Table 1: Summary of Proposed Action ..... 18

## ***Project Description***

The U.S. Fish and Wildlife Service (Service) proposes to expand the Ozark Plateau National Wildlife Refuge (formerly known until 1995 as the Oklahoma Bat Caves National Wildlife Refuge). Currently in Adair, Delaware, and Ottawa Counties, Oklahoma, the Refuge is proposed to be expanded to include Cherokee, Craig, Mayes, and Sequoyah Counties. Figure 1 of the Environmental Assessment shows the project focus areas within the seven-county project area. A total of 11,933 acres of protected habitats would be added to the project area to bring the total refuge acreage to 15,000 acres. **Habitats would be protected by acquiring lands in fee title or in conservation/access/management easements at fair market value from willing sellers and donors.**

The seven county area is considered because it encompasses the known distribution of the federally-listed endangered Ozark big-eared bat (*Corynorhinus townsendii ingens*), and gray bat (*Myotis grisescens*), and threatened Ozark cavefish (*Amblyopsis rosae*) and a portion of the endangered Indiana bat (*Myotis sodalis*) range in eastern Oklahoma and the Service's Southwest Region (Region 2). It is to assure long term protection of important habitat necessary to assure the continuing existence and aid in recovery of these federally-listed species, as directed in their recovery plans. Essential caves, movement corridors, and foraging habitat for the bats and ground water recharge areas supplying water to the aquifers used by the cavefish may be found in all seven counties. Also, the enlarged project area, as the name change signifies, reflects project goals of implementing an ecosystem approach for protection of habitats for a number of Service trust resources in the Ozarks. These, include federally-listed endangered, threatened, and candidate species and other species of concern and migratory birds. Also, expansion of the Ozark Plateau National Wildlife Refuge will help accomplish the goals, objectives, and strategies of the Service's Ozark Ecosystem Plan (now in draft form). In addition, it will aid in protection of the natural biological diversity characteristic of the Ozark Plateau region. In addition, the Service's Arkansas/Red Rivers Ecosystem Team states that protection of biological diversity and recovery of listed species are two of its principal objectives for that ecosystem. To be successful, this ecosystem approach will have to be coordinated with protection and management efforts in the Ozarks of Oklahoma, Arkansas and Missouri and the Service's Regions 2, 3, and 4. A 15,000-acre refuge would encompass 0.51 percent of the total acreage in the seven counties.

Because of the Karst (limestone substrate) geology and extensive high quality forest in the seven county area, it is highly possible that a number of important caves and other sites essential to the continuing existence and recovery of these federally-listed species and migratory birds have not yet been found. For this reason, some acreage allowance must be given for those possible conditions wherein a newly discovered cave or other important area could be protected through acquisition of fee title or a conservation easement

### **Threat to or Status of Resource to be Protected**

The Ozark Plateau National Wildlife Refuge was established initially in 1985 to protect the endangered Ozark big-eared bat, the endangered gray bat, the threatened Ozark cavefish, and many other cave species that were declining in population. The need to acquire "essential and limited use caves" over and above the non-acquisition measures was a primary recommendation of the 1995 Final Revised Ozark Big-eared Bat Recovery Plan (Plan) in order to achieve recovery for that species and provide sufficient protection for the other cave species. The Plan was prepared by the Ozark Big-eared Bat Recovery Team (Recovery Team), a group of academic, Service, Oklahoma Department of Wildlife Conservation, nonprofit organization, and individual bat experts brought together to work out a plan to save the species from extinction and to recover its population to a self sustaining level. The Plan also recommended an ecosystem approach to protect surface areas for bat feeding and movement corridors and other for fish and wildlife resources, in addition to protecting important

caves. While the Plan focuses on strategies to recover Ozark big-eared bats, those strategies will also assist in assuring the continuing existence and recovery and preventing the need for future listing of other cave, karst, spring, stream, and interior forest species. Pertinent tasks and their priorities outlined in the Recovery Plan are as follows:

<u>Task No.</u>	<u>Priority</u>	<u>Task</u>
1.1	1	Obtain long-term authority to manage and protect colony sites.
1.2	1	Enhance management of the Oklahoma Bat Caves National Wildlife Refuge (now the Ozark Plateau National Wildlife Refuge).
1.3	1	Expand approved acquisition area for the Oklahoma Bat Caves National Wildlife Refuge (now the Ozark Plateau National Wildlife Refuge).
1.4	2	Add new approved areas for land acquisition in eastern Oklahoma, western and north central Arkansas, and southern Missouri.

Threats to fish and wildlife habitats include disturbances to cave animals and other cave resources by humans; clearing for new home sites, recreational sites, highway and power line construction, and agriculture; and contamination of underground water through drainage from septic systems, debris and trash dumping in sinkholes, and runoff from concentrated animal feeding operations. Human disturbance to cave animals is a major threat because it is one of the leading mortality factors, for cave animals. People want to visit caves for many purposes, some of them for destructive activities. **For this reason, specific known caves, and therefore, specific tracts cannot be identified in the environmental assessment or this land protection plan, other than with code names.** To protect these sensitive resources and the landowner’s privacy, exact cave locations, and therefore, many instances of individual cave land ownerships, cannot be discreetly identified on maps associated with this proposal, or using other descriptors that could lead to on-the-ground cave locations. This is also mandated by the Federal Cave Resources Protection Act of 1988-Public Law 100-691 (16 U.S.C. 4301 et seq. 102 Stat. 4546) which established requirements for the management and protection of caves and their sensitive resources. However, criteria for sites needing protection will be given so that people will have an understanding of what kinds of sites protection will be sought for. As population growth and development increases in cave areas, the threat of human disturbance increases.

### **Proposed Action and Objective**

The Service proposes to expand the Ozark Plateau National Wildlife Refuge from its current 3,067-acre refuge sites in Adair, Delaware, and Ottawa Counties, Oklahoma up to a total of 15,000 acres of mostly scattered cave, spring, riparian, and “interior forest” (unbroken expanse of forest) tracts into an additional four counties: Craig, Cherokee, Mayes, and Sequoyah.

Protection of caves, large contiguous stands of related interior forest tracts, springs, wetlands, and riparian areas would:

- Protect federally-listed endangered Ozark big-eared, gray, and Indiana bat hibernacula and maternity colonies and foraging habitats.
- Protect federally-listed threatened Ozark cavefish caves, springs, and groundwater recharge areas.

- Protect other cave fauna and migratory songbird habitat.
- Prevent forest fragmentation and promote natural biological diversity.
- Provide habitat protection for 8 species of concern and contribute to protection of biological diversity in the Ozarks ecosystem.



By protecting habitats containing rare animals, Endangered Species Act listing actions may be avoided.

The total estimated acquisition cost of the proposed expansion is approximately \$3.2 million at this time. This is only an estimate based on recent comparable sales and the eventual cost may fluctuate depending on the market trends in area real estate markets. The refuge has benefited from the generosity of a number of land or easement donors who want to leave a permanent legacy for conservation, and some landowners continue to express interest in donating their lands in fee or easement.

Any lands acquired would become part of the Ozark Plateau NWR and become part of the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. A Conceptual Management Plan included with this document presents a general outline of how new refuge units would be operated and managed. Management details will be developed in a formal refuge Comprehensive Conservation Plan scheduled to begin in fiscal year 2003, with public involvement in accordance with the National Environmental Policy Act of 1969 (NEPA).

## **Protection Alternatives**

### ***No Action***

This alternative includes the status quo, or what the Service and other entities are already doing, and would continue doing, if the proposed action was not started to protect habitats and promote the recovery of listed species and species of concern, migratory birds, and the biological diversity of the Ozarks ecosystem. It includes the continuing presence of the existing refuge in Adair and Delaware Counties. The Service; Oklahoma state agencies such as the Oklahoma Department of Wildlife Conservation and the Parks and Recreation Department; non profit conservation organizations such as The Nature Conservancy and the Trust for Public Land; various grottos (local chapters of the National Speleological Society); various academic entities; volunteer groups such as The Boy Scouts; and private landowners have been actively working together to try to save Ozark big-eared bats, gray bats, Indiana bats, Ozark cavefish, a host of other karst-related species in decline, migratory birds, and other species present in the unique Ozark ecosystem. Actions accomplished by these partners include gating of important caves, cave mapping, cave cleanup, inventories of cave species, educating the public about cave conservation, law enforcement monitoring to prevent cave disturbances, and working with land owners to assist them with management of their caves and surface fish and wildlife resources.



*Volunteers from caver organizations have helped install many cave gates in the Ozark Plateau region. Photo by Steve Hensley.*

Although, some effort have been made in the recovery of the endangered bats without significant additions to the Refuge, the Recovery Team does not believe that full recovery can be achieved without expansion of the refuge to achieve permanent protection of a number of other essential and limited use caves and surface bat feeding areas.

#### ***Acquisition and/or Management by Others***

This alternative assumes a full scale commitment and effort by other federal and state agencies, non profit conservation organizations, and private landowners to acquire and/or manage caves. If these other entities had the financial and staff resources to fully and permanently protect the “essential and limited use caves” identified in the Recovery Plan for the Ozark big-eared bats, additional Service acquisition efforts would not be needed. Although these other entities are making important contributions to protect vulnerable habitats, their financial and staff resources to acquire and manage a number of scattered properties are limited. In addition, the Endangered Species Act tasks the Service with implementation of listing and recovery efforts to assure the continuing existence of federally-listed species.

A number of private landowners are also doing an exemplary job of managing their own properties with wildlife conservation, karst geological formation protection, and watershed protection in mind. However, properties kept in the private sector cannot be assured of perpetual protection. Subsequent heirs or owners may not always have the financial resources or commitment to follow through with long term protection.

#### ***Acquisition by the Service***

The Fish and Wildlife Service can protect a number of sites within the National Wildlife Refuge System under a common refuge designation and a general management plan. The Ozark Plateau

National Wildlife Refuge is already established with a number of similar units in Adair, Delaware, and Ottawa Counties and has staff and resources dedicated to its management under the oversight of the Sequoyah Refuge Complex in Vian, Oklahoma.

The Service recognizes that it is not in the position to protect every single cave site or tract of Ozark forest, just as other agencies, organizations, and private landowners can not protect every site either. Some landowners do not want to sell their lands, or easements on them. Sometimes landowners need to sell their land faster than the Service can budget for the money and another entity may be ready and capable to step in to buy and manage the land.

The following criteria would be used to determine whether an individual tract should be acquired. The first set of criteria are threshold criteria--tracts must meet all the threshold criteria before considering the secondary set of criteria. The secondary criteria are not in priority order and would be used flexibly in relation to each other with an eye to the site's overall contribution to the conservation goal. The more secondary criteria that can be met, the more desirable the tract would be for protection. The criteria are:

### ***Threshold Criteria***

- Willing seller/participant
- The presence of federally-listed endangered or threatened bats, cavefish, or other endangered, threatened, or "species of concern" Ozark fauna or a history of the presence of such species with reintroduction feasible
- The presence of significant karst (or sandstone) geological formations, especially a cave entrance on the site, or the site overlays an important cavern reach, even if the entrance is not on the site, but the entrance can still be protected on an adjacent property
- The site is listed in the Ozark big-eared bat, gray bat, Indiana bat, Ozark cavefish, or other federally-listed species' recovery plans, or directly contributes to goals of the recovery plans for the endangered or threatened species present

- The site contains prime feeding areas and movement corridors for federally-listed endangered bats and/or portions of groundwater recharge areas for federally-listed threatened cavefish caves.

### ***Secondary Criteria***

- Proximity to existing protected areas
- Restorability - ease and cost factors--forested areas are more desirable than pastures which are more desirable than crop fields)
- No minimum size, but large tracts are preferred (recognizing that larger tracts maximize ecological integrity and are necessary for area-sensitive species).
- Vulnerability to, and threat of, irreversible development (e.g., proposed buildings)
- Vulnerability to human-caused disturbance (e.g., nearby roads or buildings, and history of disturbance) and feasibility of protecting the site from future disturbance
- The site contributes to other needs such as quality unfragmented large expanses of Ozark oak-hickory interior forest for migratory birds, or spring or stream reach containing a species of concern

### ***Fee Title***

Fee acquisition by the Service would provide permanent protection of the important caves and associated surface tracts. Refuge managers would have complete freedom to manage those tracts as their management plans recommend. The Service would make annual payments to county governments, called refuge revenue sharing payments, to help offset the loss of property tax payments for those tracts acquired and taken off the tax rolls. It is not possible to acquire in fee all the cave properties that need protection in perpetuity. Many landowners are not interested in selling and sufficient funding is not always available to acquire every tract when a seller is ready to sell.

### ***Conservation/Access/Management Easement***

Conservation easements are often referred to as non-development easements. The buyer pays the landowner for the transfer of certain rights. Easement restrictions get recorded at the courthouse just like deeds and future landowners would be required to abide by those restrictions. The restrictions, however, usually lower the dollar value of the land. The landowner may sell or donate a perpetual (forever) conservation easement to the Service and may receive income and estate tax benefits from the donation. The landowner still pays property taxes on the land, but does not have to allow public access to the land, unless he or she grants permission. The federal government would make no refuge revenue sharing payment to the county for conservation easements it holds.

The Service and the landowner would negotiate the exact terms of a conservation easement on a case by case basis for each tract. General terms of an easement would include acquisition of rights considered necessary to achieve habitat protection and/or management goals. The landowner would retain title to and occupation of the property. Property rights that could be acquired include, but are not limited to the following:

- Development Rights--All types of surface development including, but not limited to, construction of buildings, roads, pipelines, power lines, or other structures.

- Disturbance of Vegetation Rights--Clearing or burning of any vegetation or other activities such as grazing, impoundment of water, or application of herbicides or other chemicals that could impact vegetation or wildlife.
- Right to Control Access--The right to control access to and/or through property.
- Water Rights--The right to use defined quantities of surface and/or subsurface water.
- Rights not acquired in the easement would remain with the landowner. The more rights the landowner grants, the more the purchase price approaches full fee value.

The Refuge already has a few tracts that it has easements on. This gives the refuge both access to the caves and management rights for the caves on those tracts. It also gives the refuge law enforcement authority to enforce the laws against disturbing the caves. It enables landowners who want to conserve their properties for wildlife, but who may not have the financial and technical resources, to do it. This alternative frees the Service from having to make revenue sharing payments on those tracts. If the landowner also resides on the tract, he serves as a more constant presence to discourage cave disturbance. Since the landowner is able to give or deny the public permission to enter the property, it also frees the Service from liability concerns, having to provide public use facilities, or monitor hunters and other recreational users. However, some landowners are not interested in selling or donating easements. They want to get rid of the property and/or they need the money from the sale of the property.

### ***Combination of Fee and Easement***

This alternative basically includes the proposed project, which is really a combination of fee and easement and it continues what the existing refuge is doing already. Several tracts were acquired through easements. This is the most flexible alternative, as far as landowners are concerned. Landowners may also enter into agreements with the Service to receive assistance in managing caves or surface habitat for wildlife or for technical advice to help landowners manage these resources on their own. Landowners retain all their rights under such agreements. The Partners for Fish and Wildlife program coordinated through the Service's Ecological Services state office in Tulsa works with landowners throughout Oklahoma to restore, manage, and enhance private properties for the benefit of fish and wildlife.

The Service is not interested in acquiring "show caves" for frequent or commercial public visits that would disturb bats and other cave species contributing to their further decline. The nation has many show caves, both public and commercial, that the curious and casual public visitor is encouraged to patronize.

### **The Protection Array**

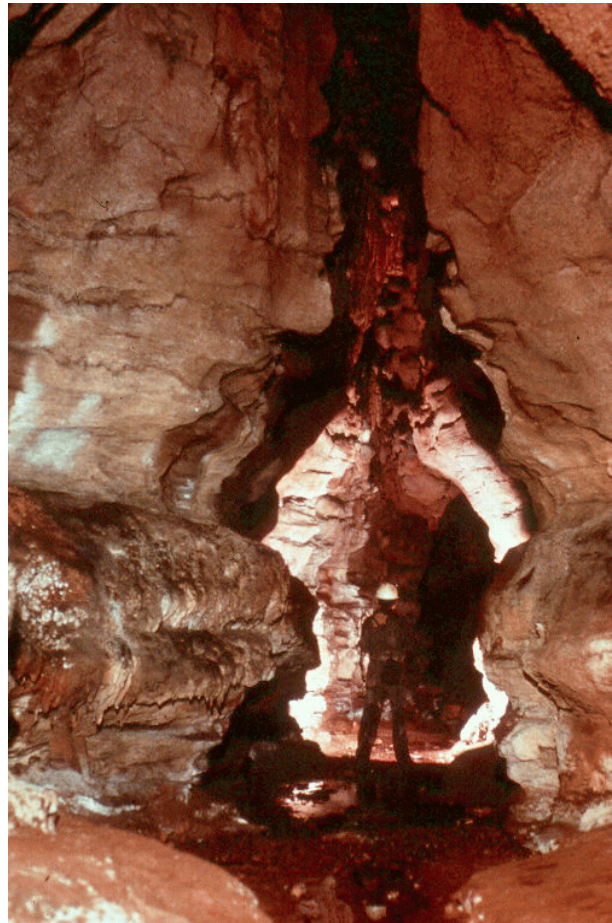
The Service must comply with NEPA, all the other applicable laws, executive orders, and policies for the maximum level of protection (i.e., fee title acquisition of up to 15,000 acres in all seven counties) and the Service director must approve the maximum level of protection in order for the Service to implement that plan. However, in the real world, that maximum level may not be achievable for many years because it is on a willing seller basis and is dependent on the Service being able to get the funds necessary to buy all the desired tracts that may come up for sale. Those two conditions may not be fully achievable for many years. However, progress toward some of the Ozark Big-eared Bat, gray bat, Indiana bat, and Ozark cavefish recovery and migratory bird habitat protection goals can be made if at least a minimum level of protection could be achieved, which would be voluntary agreements by landowners to take necessary steps to protect their cave sites, spring sites, streams, or forest expanses. These steps could include: monitoring to prevent unwanted disturbance, avoidance of improper insecticide use that might decrease the bats' food source or seep into caves and kill other cave species, avoidance of trash dumping in sinkholes, avoidance of septic seepage and waste liquid drainage into underground aquifers, and avoidance of excessive groundwater pumping that might deplete underground aquifers.

Cave entrance gates are the only way to fully secure caves from unwanted disturbance because constant monitoring is usually not possible. The Service or its partners will do everything they can to help a landowner install a cave gate, including paying for and installing the gate under a formalized contract agreement. Under

such an agreement, the landowner still retains all rights and privileges of ownership.

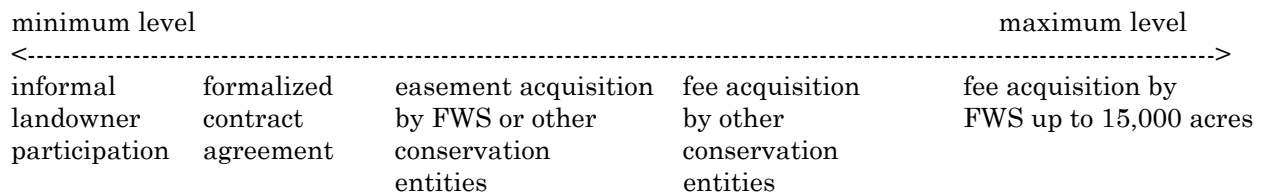
The Service and its conservation partners acknowledge the important roles that serious, conservation-minded cavers have played in the understanding and protection of the Ozarks' cave resources and want to continue those positive relationships. The refuge will continue to work with legitimate caver groups to map caves, inventory cave resources, build cave gates, and clean up caves littered by trespassers.

The ultimate realistic scenario in the Ozark area joint conservation efforts will probably end up as a combination of the following in terms of minimum to maximum Service participation:



*Some of the Ozark Plateau's Karst region's caves have beautiful and impressive formations. Photo by Steve Hensley.*

### The Protection Array



### Acquisition Alternatives

#### ***Purchase Using the Land and Water Conservation Fund (LWCF)***

The main acquisition authority for acquiring lands or easements for this project is the Endangered Species Act of 1973, as amended. The primary funding authority that could supply monies to purchase lands and easements would be the Land and Water Conservation Fund Act. This fund

comes from leasing bonuses, production royalties, and rental revenues for federally held offshore oil, gas, and sulphur extraction. None of the acquisition funds will come from general income tax revenues.

### ***Purchase Using the Migratory Bird Conservation Fund (MBCF)***

Since one of the purposes of the refuge is for protection of migratory birds, it may be possible in limited circumstances, to pay for acquisition fee or easements on migratory bird habitat with Migratory Bird Conservation Funds (also known as “duck stamp” money because migratory bird hunters have to buy these federal stamps in order to hunt those birds). This fund would probably not be used very much for the Ozark Plateau refuge.

### ***Purchase Using Natural Resources Damage Assessment Funds***

The refuge may also acquire lands via a settlement for the Tri-State (Tar Creek) Superfund Site Natural Resources Damage Assessment and Restoration (NRDAR). 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 mining activities at the Tar Creek Superfund Site in Ottawa County, the Service outlined a plan for partial compensation to the public. The plan included acquisition and protection of a bat cave in Ottawa and Adair Counties. The National Environmental Policy Act (NEPA) requirements for alternative evaluation, public notice, and public meetings for expenditure of these funds were accomplished under the planning procedures required by the NRDAR program.

### ***Donation***

Landowners may donate their land or an easement on their land and may receive certain estate or income tax benefits. A donated easement must be perpetual in order for the landowner to receive estate or income tax benefits. Two landowners have already donated 420 acres, including very important cave and forest resources, to the refuge and there is the potential of three additional donations in the future.

### ***Partial Donation***

Landowners may donate partial interests in an entire parcel, such as an access, management, or conservation (non development) easement, or they may carve out a portion of a parcel and donate all or part of the real interests in that severed area. When considering this method, each landowner will benefit in a way that is specific to the situation, as far as individual tax or estate circumstances occur.

### ***Life Use***

Sometimes landowners, family members, or tenants who are elderly want to remain on their property for the rest of their lives, or until they have to leave their homes permanently, and this provision allows that. The selling price is adjusted downward based on a formula that takes the resident’s age and life expectancy into account. This benefits the resident by preventing the disruptive impact of relocation, while the presence of a resident helps the refuge staff deter unwanted disturbance or poaching from the public. The Service still technically owns the property and the remaining resident is not responsible for property taxes.

### **Coordination of the Proposal With the Affected Public**



Private landowners, The Nature Conservancy, Trust for Public Land, Oklahoma Department of Wildlife Conservation, Oklahoma Natural Heritage Inventory, Arkansas Game and Fish Commission, Cherokee Nation, Tulsa Regional Oklahoma Grotto, Central Oklahoma Grotto, Buffalo River Grotto, Boston Mountain Grotto, Oklahoma State University, University of Oklahoma, Northeastern State University, Southeastern Oklahoma State University, University of Central Oklahoma, Rogers State University, University of Arkansas, Arkansas State University, U.S. Forest Service, and the Fish and Wildlife Service have worked together over the past twenty years to protect fish and wildlife resources of eastern Oklahoma's and western Arkansas' Ozark forest, streams, springs, and caves.

Since the Ozark Plateau National Wildlife Refuge was established in 1985 as a part of the Sequoyah National Wildlife Refuge Complex, Service staff have continually kept local, municipal, county, state and Congressional officials and agencies apprised of its activities and land acquisitions. Cooperative partnerships with landowners to protect and manage caves on private property have been successful. Numerous collaborative research, monitoring, protection, mapping, and management ventures with the above-listed partners have helped to turn the Ozark big-eared and gray bats' populations from the brink of extinction to the road to recovery and these cooperative partnerships will continue.

This environmental assessment, land protection plan and draft concept management plan will be distributed for a 60-day review to public officials, affected federal, state, and local agencies, non profit conservation and caver organizations, academic institutions involved in cave research, affected landowners, and individuals who have expressed an interest in the refuge or cave and habitat protection. Responses from these entities will help shape the Service's decision whether to start the proposed refuge expansion or not.

When the refuge completes its comprehensive conservation planning (CCP) that will design and guide the refuge's future management and public use, these same entities will have a contributing role in designing the kind of management and public use the refuge will have for the next 15 years.

### **Socio-cultural Impacts**

The trend toward increased population and development in the project area means further decline of the influence of the agricultural economic sector in the socioeconomic character and culture of the region. Rapidly growing counties, like Delaware, are evolving a more urban culture with similar growths in several economic sectors, such as construction, finance and real estate, transportation and utilities, retail trade, and services.

A 15,000-acre refuge would encompass 0.51 percent of the total seven-county land area. Therefore, socioeconomic impacts are not expected to be very visible or widespread. Refuge holdings will comprise a higher percentage of Adair, Delaware, Ottawa, and Cherokee Counties because there are more caves in those counties. Under this alternative, acquisition by the Service would occur over a period of several to many (over 5-20 or more) years and be dependent on funding, the desire of property owners to sell or donate land or easements, and the degree of success of alternative conservation measures implemented by the Service or other entities. It is not anticipated that Service acquisition would create any abrupt changes in local community economies, since the majority of personal livelihoods in the seven-county project area are derived from non-agricultural jobs. Some economic sectors involved with development, including construction, finance and real estate, transportation and utilities, retail trade, and services will have an overall slight reduction in potential opportunities as acquired lands would no longer be available for development.

Refuge expansion should not significantly affect the lifestyles of neighboring landowners. Most of the cave or forested sites that would be protected are in rural, and mostly wooded areas and this rural

condition could continue, even as nearby lands become developed. The land use status quo would remain on unacquired lands within the boundary extension areas (as it does with unacquired lands within the current approved Refuge boundary). Private landowners within refuge boundaries will retain full access, use, and control of their lands. These landowners will continue to use their lands as they see fit and sell their lands to anyone they choose.

The Service, as are all other federal agencies, is required to protect cultural resources on all acquired lands under Section 106 of the National Historic Preservation Act of 1966, the Archeological Resources Protection Act of 1979 and the Antiquities Act of 1906 by consulting with the State Historic Preservation Officer and the Oklahoma Archeological Survey regarding the protection of any potential cultural resource sites on specific properties proposed for acquisition. If any archeological or historical resources exist in the expanded area and are acquired, refuge management activities are supposed to protect or minimize impact on such resources. If in the course of construction of any Refuge facility cultural resources are found, the Service is required to salvage or protect such resources. For those lands remaining in private ownership, it is a voluntary consideration by the private landowner to ensure protection of these resources.

Land acquired in fee by the Service is removed from the county tax rolls. To help offset lost tax revenues, the county receives an annual payment in lieu of taxes, as provided by the Refuge Revenue Sharing Act of 1935 (16 U.S.C. 7145:49 Stat. 383, as amended). Monies for these federal payments to counties come first from revenues derived from the nationwide sale of refuge products and privileges (such as grazing fees on refuges that use grazing as a management tool). These funds are distributed based on one of the three following formulas that provides the highest return to the county:

- Seventy-five cents per acre,
- Twenty-five percent of the net revenue received from the operation of the refuge, or
- Three-fourths of one percent of the appraised value of the property, which must be reappraised by the Service every five years. (Usually this formula is the one applied.)

If not enough revenues are available in the fund to make full payments, the Service distributes the funds proportionately nationwide. Congress is authorized to make up the difference and it makes an appropriation every year to add to the refuge revenues. In recent years both the revenues and appropriations have not been enough to fully make up the difference that the formula says the county is entitled to. The Service and Congress recognize that percentages of full entitlement payments have declined during the past decade and are exploring opportunities to increase funding for the program in the future.

For Fiscal Year 2001, the Fish and Wildlife Service paid Adair County \$2,445, or about 52 percent of the \$4,712 it was entitled to under the above formula for the 2,165 acres listed as owned by the refuge at that time. The Service paid Delaware County \$1,151 or, again, about 52 percent of the \$2,217 it was entitled to for the 420 acres listed as owned by the Refuge at the time. The Ottawa County 78-acre acquisition occurred in Fiscal Year 2002--too recent for the Fiscal Year 2001 payment. Refuge Revenue Sharing payments usually exceed the property taxes paid by the previous private landowners in cases where agricultural exemptions exist. The payment figure varies due to local land price trends and at what level Congress appropriates additional funds to make up the shortfall. The Service is required to reappraise its refuge lands every 5 years to allow for adjustments in the payments to account for local land price trends. Private landowners continue to pay property taxes on lands, which the Service holds conservation easements on.

When the Service or other entities acquire lands for habitat protection, they are not developed and thus, do not require the delivery of services or infrastructure from the county government. In remote rural areas it is often more expensive for a county government to provide law enforcement, fire protection, school busing, roads and road maintenance, social and other services than it receives in property taxes from those developed properties.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970- Public Law 01-646.

This law protects landowners who sell land to the federal government. It is supposed to ensure that appraisals are fair and abide by professional standards so that the government does not purposely "low ball" its offers to sellers. It also protects residential and business tenants. Several key points of the act that landowners should be aware of are:

- 1) An appraisal of the property must be done to Department of Justice standards. The appraiser, whether a contractor or a government staff appraiser, must have sufficient education and experience to perform the appraisal.
- 2) The landowner must be invited and given the opportunity to accompany the appraiser around his property, although the landowner is free to decline.
- 3) A government review appraiser, who is well experienced and knowledgeable will review the appraisal (or multiple appraisals if the expected value is over \$1 million) and either approve it, have it sent back to the appraiser to redo or correct, or reject it. The review appraiser must approve a value, which must be provided to the landowner in a "statement of just compensation" This value becomes the government's offering price to the landowner.
- 4) The landowner, his/her farm or business, residential tenants, and business tenants are entitled to relocation benefits (this excludes hunting lessees, unless the lessee has a substantial facility on the property). The government must assure that they can move to a "decent, sanitary and safe" residence or facility. A government relocation specialist will personally assist the landowner and tenants to

relocate. Some people decide it is time in their life to quit their farm or other business at this point and sell out. Livestock will be relocated to comparable pastures.

### **Some Aspects of Selling or Donating Land or Partial Interests To the Fish and Wildlife Service**

When the Fish and Wildlife Service negotiates with a landowner to purchase property, it performs many functions the seller would otherwise have to pay for in a private transaction, such as the boundary survey and the appraisal. The seller generally deals directly with the government; a broker/agent is not needed unless the landowner so desires. The government will not pay an agent's commission. The landowner is supposed to pay up any local taxes previously owed on the land. The statement of just compensation, which is the approved appraised value of the property is generally the government's final offer; counter offers are not made by either party as is often the case in private transactions.

The landowner is entitled to retain the subsurface mineral interest in the land, if he does not want to sell it. Many times this interest has already been "severed" and is owned by a third party. The government would often like to purchase mineral rights, but they are usually not for sale or are prohibitively expensive. The owner of the mineral interest has the right to exploit those minerals without paying royalties to the government. The refuge manager gives the operator a "special use permit" to drill or mine. The refuge manager works with the operator in a reasonable manner to reduce or minimize any adverse environmental impacts of the mineral exploitation (such as slant drilling under a lake, instead of on the lake).

The Service is required to inspect property it is considering acquiring for the presence of contaminants or hazardous conditions to avoid incurring liability to the government for excessive cleanup costs or health or safety liabilities to staff or visitors. The Service, because of its mission to conserve wildlife, also does not want to acquire properties with contaminants or hazardous conditions that could harm wildlife. Again, the landowner has the right to accompany this inspector on the site inspection. If any significant contaminant or hazardous (e.g. an abandoned uncapped well) condition is found, the government may decide not to purchase or receive a real interest in the property (even if it is just an easement), unless the landowner agrees to clean up or remedy the condition legally.

**TABLE 1 : SUMMARY OF PROPOSED ACTION**

EXPANSION OF OZARK PLATEAU NWR IN FEE AND EASEMENT UP TO 15,000 ACRES

IMPORTANT KNOWN AREAS IN NEED OF LONG TERM PROTECTION TO ASSURE THE CONTINUING EXISTENCE AND AID IN THE RECOVERY OF THE FEDERALLY-LISTED OZARK BIG-EARED BAT, GRAY BAT, INDIANA BAT, AND OZARK CAVEFISH

Current Refuge Acreage= 3,067 Acres (not all acquired tracts are listed here)

Site or Cave Code	Ownership	Type of Protection*	Minimum Preferred Acquisition*	Protection Priority	Estimated Acreage**
1 near term	private	FWS acquire	easement	1	1,026
2 near term	private	FWS acquire	easement	2	720
3 near term	private	FWS acquire	easement	3	70
4 near term	private	FWS acquire	easement	4	160
5 near term	private	FWS acquire	easement	5	100
6 near term	private	FWS acquire	easement	6	335
7 near term	private	FWS acquire	easement	7	288
8 near term	private	FWS acquire	easement	8	520
9 near term	non profit	FWS acquire	easement	9	50
10 near term	private	FWS acquire	easement	10	897
11 near term	private	FWS acquire	easement	11	200
12 near term	private	FWS acquire	easement	12	100
AD-10	private	FWS acquire	easement	1=	TBD
AD-13	private	FWS acquire	easement	1=	TBD
AD-14	FWS/private	partially acquired	easement	1=	2,023 (130 acquired)
AD-15	private	FWS acquire	easement	1=	TBD
AD-16	private	FWS acquire	easement	1=	TBD
AD-24	private	FWS acquire	easement	1=	TBD
AD-125	private	FWS acquire	easement	1=	2,023
AD-19	private	could vary	agreement	2=	TBD
AD-21	private	could vary	agreement	2=	TBD
AD-22	private	could vary	agreement	2=	TBD
AD-29	private	could vary	agreement	2=	TBD
AD-30	private	could vary	agreement	2=	TBD
AD-41	private	could vary	agreement	2=	TBD
AD-12	private	could vary	agreement	2=	TBD

Cave Code	Ownership	Type of Protection*	Minimum Preferred Acquisition*	Protection Priority	Estimated Acreage
AD-42	private	could vary	agreement	2=	TBD
AD-49	private	could vary	agreement	2=	TBD
AD-50	private	could vary	agreement	2=	TBD
AD-53	private	could vary	agreement	2=	TBD
AD-54	private	could vary	agreement	2=	TBD
AD-57	private	could vary	agreement	2=	TBD
AD-65	private	could vary	agreement	2=	TBD
AD-69	private	could vary	agreement	2=	TBD
AD-76	private	could vary	agreement	2=	TBD
AD-87	private	could vary	agreement	2=	TBD
AD-89	private	could vary	agreement	2=	TBD
AD-92	private	could vary	agreement	2=	TBD
AD-93	private	could vary	agreement	2=	TBD
AD-95	private	could vary	agreement	2=	TBD
AD-110	private	could vary	agreement	2=	TBD
AD-111	private	could vary	agreement	2=	TBD
AD-118	private	could vary	agreement	2=	TBD
AD-134	private	could vary	agreement	2=	TBD
AD-142	private	could vary	agreement	2=	TBD
AD-164	private	could vary	agreement	2=	TBD
AD-167	private	could vary	agreement	2=	TBD
AD-186	private	could vary	agreement	2=	TBD
AD-188	private	could vary	agreement	2=	TBD
AD-199	private	could vary	agreement	2=	TBD
AD-206	private	could vary	agreement	2=	TBD
AD-211	private	could vary	agreement	2=	TBD
AD-215	private	could vary	agreement	2=	TBD
AD-221	private	could vary	agreement	2=	TBD
CZ-19	private	could vary	agreement	2=	TBD
AD-145	private	could vary	agreement	2=	TBD

Cave Code	Ownership	Type of Protection*	Minimum Preferred Acquisition*	Protection Priority	Estimated Acreage
CZ-35	private	could vary	agreement	2=	TBD
DL-4	private	could vary	agreement	2=	TBD
DL-21	private	could vary	agreement	2=	TBD
AD-127	private	could vary	agreement	3=	TBD
CZ-18	private	could vary	agreement	3=	TBD
AD-150	private	could vary	agreement	3=	TBD
AD-152	private	could vary	agreement	3=	TBD
AD-153	private	could vary	agreement	3=	TBD
AD-205	private	could vary	agreement	3=	TBD

AD= Adair County, CZ= Cherokee County, DL= Delaware County  
TBD - to be determined

\*The Service's proposed action is fee or easement acquisition, with a minimum preferred action of easement acquisition on Near Term and Priority 1 cave sites, although it is the landowner's choice what type of protection or acquisition could be placed on a site

1\*\*Acreages and configurations of these tracts (other than the near term tracts) are generally not known at this time (TBD-to be determined). Acquisition of fee or easement interests up to 15,000 acres may be reached before all these caves could be acquired and other protection methods may occur on these sites.

1= known essential use caves (Ozark Big-eared Bat Recovery Plan)  
2=known limited use caves (Ozark Big-eared Bat Recovery Plan)  
3=potential use caves (Ozark Big-eared Bat Recovery Plan)

Based on population and distribution information and known geological formations, there are evidently a number of unknown sites important to the species. Cooperative efforts with other state and federal agencies, private conservation organizations, and universities are now underway to locate these sites. Therefore, new areas will likely be identified in the future.

See also Figure 1 in the Environmental Assessment for primary and secondary focus area delineations within the 7-county project area.

## Appendix A

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## Appendix B

### Glossary of Terms and Acronyms

**alternatives** - Under NEPA, an environmental assessment should present the environmental impacts of the proposal and the alternatives in comparative form including a no action alternative and reasonable alternatives not within the agency's jurisdiction.

**aquifer**- underground water contained in water-holding geological layers

**biological diversity** - This refers to the variety of life and its processes.

**biotic community** - An assemblage of interrelated plants and animals that together inhabit a defined location.

**conservation** - Preserving natural resources for future generations while using them wisely, as opposed to exploitation or total nonuse.

**conservation easement** - A legal agreement with a property owner to restrict the clearing of habitat, construction, or other activities within a specified zone which may be detrimental to wildlife, or their habitat, in return for financial benefit such as a payment or an income or estate tax reduction.

**consumptive use** - refers to a public use in the pursuit of killing, mortally wounding, taking or removing of a plant or animal natural resource, such as hunting, fishing, or berry picking.

**ecosystem** - The interrelationships and functions of naturally occurring living and nonliving things in any area of reference, and the sum total of the biotic (plant and animal) community and the physical environment it depends on. The Service recognizes that humans are also part of the ecosystem and that they both affect it and are affected by it.

**emergent** - Vegetation that has vegetative structures above the water line and is rooted below water.

**endangered species** - Any species in danger of extinction throughout all or a significant portion of its range.

**endemic** - Native or confined to a certain region; having a comparatively restricted distribution.

**environmental assessment** - A concise public document that serves to aid an agency's compliance when no environmental impact statement is necessary. It shall include brief discussions of the need for the proposal, alternatives, environmental impacts of the alternatives, and a listing of agencies and persons consulted.

**exotic** - A plant or animal species not native to the area and introduced intentionally or unintentionally.

**fee title** - Title to real property belonging to a person, business, or government where full and unconditional ownership exists.

**fen** - a low, flat, marshy wetland

**Fish and Wildlife Service trust resources** - Natural resources, such as plant and animal species,

or habitat types, such as wetlands that the Fish and Wildlife Service is specifically required by law, and has primary jurisdiction over, to protect. Trust resources usually refers to federally threatened or endangered species, migratory birds, certain marine mammals, and anadromous fishes (such as salmon) that migrate across state lines.

**habitat** - The environment in which a plant or animal naturally occurs--its "living space."

**hibernaculum/hibernacula** (plural) - place where the bats hibernate over the winter

**interior forest** - describes a larger, unbroken area of forest with little edge (such as next to a road or another cover type such as cropland or developed land). Many animal species need these types of forest to meet certain of their life requirements, such as summer breeding areas. Edge habitats often bring more competitor species or predator species encounters that interfere with these interior forest-oriented species.

**invertebrates** - Animals without a backbone, such as insects or snails.

**karst** - geological formations primarily of limestone and characterized by caves, sinkholes, underground streams

**less-than-fee protection** - Protection of a unit of land through means other than through fee ownership, such as a conservation easement.

**market value** - The amount in cash, or on terms reasonably equivalent to cash, for which in all probability the property would be sold by a knowledgeable owner willing but not obligated to sell to a knowledgeable purchaser who desired, but is not obligated to buy.

**maternity caves** - caves used by bats to raise their young

**neotropical migratory birds**- numerous species of birds that spend the winter in the Caribbean, Central and South America and migrate in the springtime across the Gulf of Mexico to their breeding and nesting areas in North America

**non consumptive use** - refers to a public use that does not result in killing, mortally wounding, taking or removing of a plant or animal natural resource, such as wildlife observation, wildlife photography, environmental education, or nature interpretation.

**Partners for Fish and Wildlife** - A program offered by the Service that can assist landowners in improving wildlife habitats on their lands. It sometimes involves cost sharing for improvements between the agency and the landowner.

**property rights** - The total of the rights pertaining to property ownership.

**property tax** - Ad valorem tax imposed by local governments based on the value of property within their jurisdiction.

**raptors** - Birds of prey such as eagles, hawks, falcons, owls, and vultures.

**revegetation** - Regrowth or planting of a plant community on a disturbed site. Revegetation may be assisted by site preparation planting and treatment, or it may occur naturally.

**riparian** - Of or relating to land lying immediately adjacent to a water body and having specific characteristics of that transitional area, such as riparian vegetation. A stream bank is an example of

a riparian area.

**riverine** - A wetland system associated with a river or stream.

**roost caves** - caves used by bats to sleep during the day or when they are not feeding

**scoping** - Process for determining the scope of issues to be addressed and for identification of significant issues relevant to the proposed action during environmental review.

**sinkhole** - a depression in the ground underlain by limestone caused by erosion of the limestone bedrock.

**species** - Any populations of organisms that interbreed successfully in the wild when mature.

**terrestrial** - Living on or in, or growing from the land, as opposed to *aquatic*, which means having to do with living on or in water.

**threatened species** - Any species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

**tripoli** - a porous, lightweight siliceous (resembling silica, or sand) rock derived from chert and siliceous limestone

**under story** - Plant species found below the canopy of trees in forested areas.

**watershed** - A drainage or catchment area of a stream or lake.

### **Acronyms and Abbreviations**

<b>CCP</b>	Comprehensive Conservation Plan
<b>COE</b>	U.S. Army Corps of Engineers
<b>EA</b>	Environmental Assessment
<b>FONSI</b>	Finding of No Significant Impact
<b>LPP</b>	Land Protection Plan
<b>LWCF</b>	Land and Water Conservation Fund
<b>MBCA</b>	Migratory Bird Conservation Act
<b>MBCC</b>	Migratory Bird Conservation Commission
<b>MBCF</b>	Migratory Bird Conservation Fund
<b>NEPA</b>	National Environmental Policy Act
<b>NRCS</b>	Natural Resources Conservation Service
<b>NSS</b>	National Speleological Society
<b>NWR</b>	National Wildlife Refuge
<b>NWRS</b>	National Wildlife Refuge System
<b>OCC</b>	Oklahoma Corporation Commission
<b>ODWC</b>	Oklahoma Department of Wildlife Conservation
<b>Refuge</b>	Ozark Plateau National Wildlife Refuge
<b>SCORP</b>	State Comprehensive Outdoor Recreation Plan
<b>Service</b>	U.S. Fish and Wildlife Service
<b>USDA</b>	U.S. Department of Agriculture
<b>USDI</b>	U.S. Department of Interior

Wildlife Commission Commission that oversees ODWC

## Appendix C

### **FEDERAL LAWS and REGULATIONS APPLICABLE to PRESERVATION and MANAGEMENT of FISH and WILDLIFE RESOURCES and the OKLAHOMA STATE CAVE PROTECTION LAW**

Antiquities Act of 1906 (34 Stat. 225). Provided for protection of artifacts and historical objects and their recovery by accredited institutions.

Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711; 40 Stat. 755). Implements treaties with Great Britain (for Canada), Mexico, Japan, and Soviet Union for protection of migratory birds whose welfare is a Federal responsibility; provides for regulations to control taking, possessing, selling, transporting, and importing of migratory birds and provides penalties for violations.

Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r; 45 Stat. 1222). Authorizes acquisition, development, and maintenance of migratory, bird refuges; cooperation with other agencies in conservation; and investigations and publications on North American Birds.

Migratory Bird Hunting Stamp Act 1934 (16 U.S.C. 718 - 718h; 48 Stat. 451). Requires that all waterfowl hunters, sixteen (16) years of age or older possess a valid "duck stamp"; required use of "duck stamp" net revenue to acquire migratory bird refuges and waterfowl production areas.

Cave Resources Protection Act of 1988 (16 U.S.C. 4301 et seq. 102 Stat. 4546) which established requirements for the management and protection of caves and their resources on Federal lands, including allowing the land managing agencies to withhold the location of caves from the public, and requiring permits for any removal or collecting activities in caves on Federal lands.

Criminal Code Provisions of 1940 (18 U.S.C. 41), as amended. States the intent of Congress to protect all wildlife within Federal sanctuaries, refuges, fish hatcheries, and breeding grounds, and provides that anyone except in compliance with rules and regulations promulgated by authority of law, who hunts, traps, or willfully disturbs any such wildlife, or willfully injures, molests, or destroys any property of the United States on such land or water shall be fined up to \$500.00 or imprisoned for not more than six (6) months or both.

Bald and Golden Eagles Protection Act of 1940 (16 U.S.C. 668- 668d; 54 Stat. 250). Provides for protection of the bald eagle (the national emblem) and the golden eagle.

Refuge Trespass Act of June 25, 1948 (18 U.S.C. 41; 62 Stat. 686). The Act makes it unlawful to hunt, trap, capture, willfully disturb, or kill any bird or wild animal, or take or destroy the eggs of any such birds on any lands of the United States set apart or reserved as refuges or breeding grounds for such birds or animals by any law, proclamation, or executive order, except under rules and regulations of the Secretary. The Act also protects Government property on such lands.

Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat. 1119). Approved August 8, 1956, the Act established a comprehensive fish and wildlife policy and directed the Secretary to provide continuing research, extension and information services; and directed development, management, and conservation of fish and wildlife resources.

Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4; 76 Stat. 653). Authorizes appropriate, incidental, or secondary recreational use on conservation area administered by the Secretary of the

Interior for fish and wildlife purposes.

Wilderness Act (16 U.S.C. 1131; 78 Stat. 890). Establishes the wilderness system as a supplement to the purposes for which units of the National Wildlife Refuge System are established.

Land and Water Conservation Fund Act of 1965. This Act provides financial assistance to the States for outdoor recreation, primarily in (1) planning; (2) acquisition of land, water, or interests in land or waters; or (3) development.

In addition to assistance to the States, the Land and Water Conservation Fund Act provides that not less than 40 percent of the annual appropriation shall be available for Federal purposes. Funds appropriated for Federal purposes shall be made available for the acquisition of land, waters, or interests in land or waters for the (1) National Park System, (2) National Forest System, (3) National Wildlife Refuge System, and (4) Bureau of Land Management.

The appropriations provided by Land and Water Conservation Fund Act are derived from Outer Continental Shelf leases, tax on motorboat fuels, and sale of certain surplus Federal lands. The Act also increased Land and Water Conservation Fund authorization for FY 1978 and the following years through FY 1989.

The Fish and Wildlife Service utilizes four basic acquisition authorities which are allowed through the funding authority of Land and Water Conservation Fund Act to purchase land and water, including (1) Endangered Species Act of 1973; (2) Recreation Act of 1962; (3) Fish and Wildlife Act of 1956, except for migratory waterfowl areas; and (4) any areas authorized as additions to the National Wildlife Refuge System by specific Congressional Acts.

National Historic Preservation Act of 1966 (16 U.S.C. 470, *et seq.*; 80 Stat. 915). The Act provides for the preservation of significant historical features (buildings, objects, etc.) through a grant-in-aid program to the States. Establishes a National Register of Historic Places. Federal Agencies are required to consider the effects of their actions on buildings, etc., included or eligible for inclusion in the National Register.

National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd, 668ee; 80 Stat. 927). Consolidates the authorities for the various categories of areas previously established that are administered by the Secretary of the Interior for the conservation of fish and wildlife, including species that are threatened with extinction. All lands, waters, and interests therein administered by the Secretary as wildlife refuges, etc., are hereby designated as the National Wildlife Refuge System. Provides, according to the Act, that the Secretary may authorize hunting and fishing to the extent practicable and consistent with State fish and wildlife laws and regulations.

The National Environmental Policy Act of 1969, NEPA (42 U.S.C. 4321, *et seq.*; 83 Stat. 852). Declares the national policy to encourage a productive and enjoyable harmony between man and his environment. Section 102 of that Act directs that "to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall ... insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations. . . "

Section 102 (2)c of the National Environmental Policy Act requires all Federal Agencies, with respect to major Federal actions significantly affecting the quality of the human environment, prepare a detailed statement on:

- (i) The environmental impact of the proposed action;
- (ii) Any adverse environmental effect which cannot be avoided should the proposal be implemented;
- (iii) Alternatives to the proposed action;
- (iv) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity;
- (v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Use of Off-Road Vehicles on Public Lands (Executive Order 11644, as amended by Executive Order 11989). Provides policy and procedures for regulating off-road vehicles.

Endangered Species Act of 1973 (16 U.S.C. 1531, *et seq.*; 87 Stat. 884). This Act provides for the conservation of threatened and endangered species of fish, wildlife, and plants by Federal action and by encouraging State programs. Specific provisions include: (1) authorizes the listing and determination of critical habitat of endangered or threatened species and requires consultation with the Service on any federally funded or licensed project that could affect any of these species or their habitat; (2) prohibits unauthorized taking, possession, sale, transport, etc. of endangered species; (3) authorizes an expanded program of habitat acquisition; (4) authorizes the establishment of cooperative agreements and grant-in-aid to States which establish and maintain an active, adequate program for endangered and threatened species; and (5) authorizes the assessment of civil and criminal penalties for violating the Act or regulations.

National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57) This Act provides clarification of the mission of the National Wildlife Refuge System and general management principles for the more than 500 refuges in the system. It identifies six priority public uses that are wildlife dependent that require consideration in the management of refuges: hunting, fishing, wildlife observation, photography, interpretation and environmental education. All other proposed public uses must be examined for their compatibility with the purposes for which each refuge is established.

Refuge Revenue Sharing Act of 1935, as amended in 1978, (16 U.S.C. 715s; 92 Stat. 1319). Makes revenue sharing applicable to all lands solely or primarily administered by the Service, whereas previously it was applicable only to areas in the National Wildlife Refuge System. The new law makes payments available for any governmental purpose, whereas the old law restricted the use of payments to roads and schools. For fee (acquired) lands, the new law provides a payment of 75 cents per acre, 3/4 of 1 percent of fair market value, or 25 percent of net receipts, whichever is greater, whereas the old law provided a payment of 3/4 of 1 percent adjusted cost or 25 percent of net receipts, whichever was greater. For reserve (public domain) lands, the law provides for a payment of 25 percent of net receipts. The new law authorizes appropriations to make up any short-fall in net receipts to make payments in the full amount for which counties are eligible. The old law provided that if the net receipts were insufficient to make the full payment, the payment to each county would be reduced proportionately.

National Wildlife Refuge Regulations for the most recent fiscal year (50 CFR Subchapter C; 43 CFR 3101.3-3). Provides regulations for administration and management of wildlife refuge areas including mineral leasing, exploration, and development.

Emergency Wetland Resources Act of 1986. (S.B. 740) Provides for 1) an extension of Wetlands Loan Act until September 30, 1988; 2) sale of admission permits at certain National Wildlife Refuges; 3)



increasing the price of the Migratory Bird Hunting and Conservation Stamp to \$10.00 in hunting years 1987 and 1988, \$12.50 for hunting years 1989 and 1990, and \$15.00 for each hunting year thereafter; 4) transfers import duties collected on arms and ammunition to Migratory Bird Conservation Fund ; 5) establishment of National Wetlands Priority Conservation Plan; 6) use of Land and Water Conservation Fund monies for acquisition of wetlands for migratory birds; 7) inclusion of wetlands in statewide outdoor recreation plans; 8) acquisition of wetlands; 9) certain restrictions on use of eminent domain in wetland acquisition; and 10) continuation of National Wetlands Inventory Project.

North American Wetlands Conservation Act of 1990. Encourage partnership among public agencies and other interests to: (1) protect, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife; (2) maintain distribution of migratory bird populations; and (3) sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan.

Appropriations provided by the North American Wetland Conservation Act are derived from Federal Aid in Wildlife Restoration Act (Pittman-Robertson) funds and proceeds from migratory bird fines, penalties, and forfeitures under the Migratory Bird Treaty Act. Appropriations are not to exceed \$15 million beginning in FY 1991 and continuing through 1994. Allocation of funding from the Act provides at least 50 percent, but not more than 70 percent of available funds for projects in Canada and Mexico. At least 30 percent, but not more than 50 percent of available funds will be appropriated for projects in the United States.

Food Security Act (Farm Bill) of 1990 as amended (HR2100) The provisions of the 1990 farm bill makes the goals of the U.S. Department of Agriculture farm and conservation programs more consistent. The conservation reserve, conservation compliance, and sodbuster and swampbuster provisions of the bill encourage reduction of soil erosion, retention of wetlands, and reduces protection of surplus commodities

#### Oklahoma Cave Protection Law (1967)

##### SECTION 1789. Caves or caverns, injuring.

It shall be unlawful for any person to willfully or knowingly break, break off, crack, carve upon, write, or otherwise mark upon, or in any manner destroy, mutilate, deface, mar or harm any natural material found in any cave or cavern located on any public lands or other lands owned by the United States, the State of Oklahoma, or any county, municipality, school district or other instrumentality of government, or on private property without the prior written consent of the owner; to kill, harm or disturb any plant or animal life found in any cave or cavern, and, whether inside or outside a cave, any fish of the genera chologaster, typhichthys or amblyopsis (commonly known as cavefish, springfish or blindfish), any salamander of the genus typhlotriton (commonly known at the Ozark blind, grotto or spring salamander), or the species Eurycea Lucifuga (commonly known as cave salamander); to discard litter or refuse in any cave, or dump or cause to be dumped any garbage, sewage, trash, industrial waste or pollution into any cave, cavern or natural subterranean drainage system; providing nothing in this act shall be construed as prohibiting the commercial mining of bat guano or the destruction of any predatory terrestrial mammal or poisonous snake seeking shelter within a cave if such destruction is not otherwise unlawful.

*Laws 1967, c. 87, sec. 1. Emerg. effective April 19, 1967 SECTION 1790. Penalties.*

*Any person violating any provision of this Act shall be punished by a fine not exceeding Five Hundred*

*Dollars (\$500.00) or by imprisonment for not exceeding twelve (12) months, or by both such fine and imprisonment.*

*Laws 1967, c. 87, Sec. 2. Emerg. effective April 19, 1967*

## Appendix D

### Conceptual Management Plan: Expansion of the Ozark Plateau National Wildlife Refuge

#### I. Introduction

This conceptual management plan for lands that the Service might acquire for the Ozark Plateau National Wildlife Refuge within Adair, Delaware, Cherokee, Craig, Makes, Ottawa, and Sequoyah Counties in Oklahoma presents a general outline on how those tracts would be managed. The lands discussed would be purchased from willing sellers (fee title), accepted as donations, or managed through conservation easements or agreements. As a conceptual plan, it does not provide extensive detail, pinpoint exactly where facilities would be, or show exactly where public use facilities would be located. Those details will be included in a formal refuge comprehensive conservation plan (CCP) estimated to be started in fiscal year 2006 with input from the public and in accordance with the National Environmental Policy Act, as well as the compatibility requirements in the National Wildlife Refuge System Administrative Act as amended by the National Wildlife Refuge System Improvement Act, and the Refuge Recreation Act. However, this plan should answer those questions commonly posed by the public during the planning and public involvement process.



*Recreational objectives do provide opportunities for limited hunting. Photo courtesy of [wildlifedepartment.com](http://wildlifedepartment.com).*

## II. Mission and Goals of the National Wildlife Refuge System

With the passage of the National Wildlife Refuge System Improvement Act of 1997, the mission of the National Wildlife 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.”

**Refuge System Goals.** The Fish and Wildlife Service Director’s Order No. 132 states the following goals to guide the administration, management, and growth of the system:

- a. To fulfill our statutory duty to achieve refuge purpose(s) and further the System mission.
- b. Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- c. Perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.
- d. Conserve a diversity of fish, wildlife, and plants.
- e. Conserve and restore, where appropriate, representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems.
- f. To foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

### **Ozark Plateau National Wildlife Refuge (NWR) Purpose.**

Refuge purpose statements are primary to the management of each refuge within the System. The purpose statement along with the Mission of the NWRS are the bases upon which primary management activities are determined. These statements are the foundation from which “allowed” uses of refuges are determined through a defined “compatibility” process.

The Ozark Plateau NWR was acquired primarily under the Endangered Species Act of 1973, as amended. The original purposes of the Ozark Plateau National Wildlife Refuge was ...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...” 16 U.S.C. subsection 1534 (Endangered Species Act of 1973); “... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act); and “for conservation purposes” 7 U.S.C. 2002 (Consolidated Farm and Rural Development Act).

An additional acquisition authority for this current expansion proposal is the Fish and Wildlife Act of 1956, as amended. Thus, the addition of the Fish and Wildlife Act of 1956 adds new language to the official purposes of the refuge. The additional purposes of the newly acquired lands would be:

“...for the development, advancement, management, conservation, and protection of fish and wildlife resources . . .” 16 U.S.C. 742(a)(4) and “. . . 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 . . .” 16 U.S.C. 742(b)(1) (Fish and Wildlife Act of 1956)

**Established Refuge Objectives:** The Ozark Plateau NWR was established to:

- Assure the continuing existence and aid in recovery of federally-listed endangered and threatened 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.

This is being accomplished through an ecosystem approach that provides long term habitat protection for a number of fish and wildlife resources dependant on forests, streams, springs, caves, wetlands, and ground water recharge areas characteristic of the karst topography of the Ozarks.



*Ozark big-eared bat maternity colonies are sensitive to human disturbance. Photo by Steve Hensley.*

A Draft Comprehensive Conservation Plan (CCP) planned for 2006 will establish a variety of objectives relative to the protection of endangered species, migratory birds, and the provision of public use and recreation opportunities.

**Endangered Species Protection:** Objectives provide for the employment of strategies that maintain and protect the appropriate habitat to assure the continuing existence and aid in recovery of federally-listed endangered and threatened Ozark cave species and reduce the need for future listing of species of concern in the Ozarks. Federally-listed endangered and threatened species that benefit from establishing the Ozark Plateau NWR are: the Ozark big-eared bat (*Corynorhinus townsendii ingens*), gray bats (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), and Ozark cavefish (*Amblyopsis rosae*). Species of concern that also could benefit from the refuge are: the eastern small-footed bat (*Myotis leibii*), southeastern bat (*Myotis austroriparius*), southeastern big-eared bat (*Corynorhinus rafinesquii*), Ozark cave crayfish (*Cambarus tartarus*), Bowman's cave amphipod (*Stygobromus bowmani*), Ozark cave amphipod (*Stygobromus ozarkensis*), Bat cave isopod (*Caecidotea macropoda*), and Ozark chinquapin (*Castanea pumila var. ozarkensis*).

**Migratory Bird Management:** Objectives provide for protecting large continuous stands of Ozark forest essential to interior forest nesting migratory birds. This employs strategies that protect and develop habitat for migratory songbirds and waterfowl. In recent years some migratory songbird species, particularly some species using interior forest habitat have declined. Habitat for forest-dwelling species can be provided by managing forest on the Ozark Plateau NWR in large blocks to

maintain extensive contiguous areas. Numerous wood ducks use the refuge's forested stream corridors and will benefit from their protection.

**Public Use and Recreational Use Management:** Because of the sensitive and vulnerable nature of the federally-listed cave species and other cave, spring, stream, and forest resources, public use and recreational objectives provide for the employment of least intrusive strategies for environmental education and scientific research; opportunities for wildlife viewing and photography; hiking, and limited hunting and fishing opportunities.

**Cultural Resource Protection:** Additional refuge objectives provide for employment of strategies that offer the fullest protection possible to cultural resources that may be found on refuge lands.

**Research, Investigations, and Research Natural Areas:** Refuge objectives provide for the employment of strategies that encourage and provide financial and logistical support for research and field study projects that offer a promise of discovering information important to the successful accomplishment of the refuge program. It is also an objective of the refuge management program to recognize and protect one area under the Research Natural Area special designation.

### **III. Management of the Lands to be Acquired**

Any land added to the Ozark Plateau NWR will be managed in a manner that will best fulfill the refuge purposes for which they are to be acquired, as noted earlier. In general, the Ozark Plateau NWR will be managed through an ecosystem approach designed to protect Service trust resources, such as federally-listed species and migratory birds in the Ozarks. This will be accomplished not only through management of Service lands but also by developing partnerships with other state and federal agencies, tribes, conservation organizations and private landowners in the Ozarks. Numerous other Ozark natural resources will benefit from such management.

The following discussion represents a set of general approaches to managing the Ozark Plateau NWR. They follow 3 broad topical areas: Wildlife and Habitat Management including population monitoring; Recreational Uses; and Refuge Administration and Facilities Management.

#### **A. WILDLIFE, HABITAT MANAGEMENT, & POPULATION MONITORING**

**Wildlife & Habitat Management.** It is necessary to implement a management strategy based on an ecosystem approach that will provide long term protection for Service trust resources in the Ozarks, including federally-listed species and migratory birds. This will help assure the continued existence, recovery, and potential delisting of federally-listed species, and prevent the necessity for listing species of concern on both public and private lands. Major features that are required to accomplish this are as follows:

- Limit disturbance and habitat degradation by controlling access to important caves by maintaining confidentiality of sensitive cave locations and constructing fences, cave gates, and interpretative signs.
- Protect foraging habitat, movement corridors, resting and roosting areas, migratory bird habitat, and ground water recharge areas to assure ground water quality by protecting the large continuous stands of Ozark forest on and surrounding the refuge through controlled fire, appropriate timber and livestock management practices, protecting and re-establishing native vegetation, and boundary marking and fencing.
- Develop and maintain partnerships with private landowners, conservation organizations, and

state and federal agencies. This can be done through the use of conservation agreements, the Partners for Fish and Wildlife Program, and Section 6 of the Endangered Species Act.

- Inform landowners, conservation organizations, and agency personnel of the importance of protecting caves and surrounding Ozark forest habitat.
- Because of accelerating development in the Ozarks, the imminent threat of forest fragmentation and other habitat destruction, and escalating land prices, important areas meeting the project's acquisition criteria should be acquired in fee and/or easements from willing sellers as soon as possible.
- Support the addition of new approved areas for land protection in Oklahoma, Arkansas, and Missouri by other Service and State and Federal agencies and coordinate efforts across state and Service regional boundaries to assist in the protection of essential caves identified in Priority Tasks 1.3, 1.4, 3.1, and 3.2 of the Ozark big-eared bat recovery plan and in the preceding Land Protection Plan.
- Map the caves and their recharge areas to identify their extent, openings, overlying land use and drainage patterns where problems may arise.
- Continue searching for important caves, document base line conditions on the refuge, and monitor populations of both listed and species of concern to determine if management activities are effective.

The Service will manage habitats on lands it acquires consistent with the purposes for which those lands were acquired, i.e., to restore and maintain habitats for endangered and threatened species and to maintain habitat for other native plant and wildlife species that use the same habitats.

A refuge management goal is protection and restoration of the integrity and function of the intact native biotic communities of the Ozarks including caves, springs, streams, wetlands, forests, watersheds, and ground water recharge areas. Some areas may need reestablishment of native plants and other habitat manipulations to restore native biological diversity and to start the process of biotic community recovery.

**Population Monitoring.** Since the primary purpose for establishing a national wildlife refuge is wildlife conservation, extensive surveys, particularly of endangered species, are conducted yearly to track population trends. This information provides the basis for habitat management decisions and for monitoring their success. Surveys include baseline vegetation surveys, cave and aquatic invertebrate surveys, stream fish surveys, herpetological surveys, migratory and breeding bird surveys, small mammal surveys, federally-listed bat and cavefish surveys, surface and groundwater quality monitoring, and cave mapping. Once the refuge is expanded a schedule will be developed to do baseline inventory of plants, animals, etc. Academic research on refuge lands is encouraged and currently being conducted, as well as research by other agencies, because their findings provide additional information that assists with habitat management.

## **B. RECREATIONAL USE OPPORTUNITIES AND MANAGEMENT**

Because of the sensitive and vulnerable nature of the federally-listed cave species and other cave, spring, stream, and forest resources, public use and recreational opportunities is limited and will need to be monitored to assure protection of the resources. However, recreational objectives do provide for employment of strategies for environmental education and scientific research;

opportunities for wildlife viewing and photography; hiking on undeveloped trails, and limited hunting and fishing. To assure protection of a number of these resources that are sensitive to disturbance, the area will be managed mainly as a walk-in area, with no vehicular access.

**Fishing Access, Boat Passage and Private Property Access.** Owners of private property will not be prevented from getting to their property. Boating and fishing will continue anywhere where they previously legally occurred, if compatible. At present the refuge provides only limited fishing simply because few fishing sites have been acquired, but if opportunities arise in the future, the Service will strive to develop them, if they are otherwise compatible with refuge purposes.

**National Wildlife Refuge System Priority Recreational Uses.** The National Wildlife Refuge System Improvement Act of 1997 ensures that six priority wildlife-dependent recreational uses are strongly considered for integration into refuge programs provided they are determined compatible with the purposes for which the refuge was established, and the Mission of the National Wildlife Refuge System as defined earlier. These six priority wildlife-dependent uses are:

“... hunting, fishing, wildlife observation and photography, and environmental education, and interpretation.”

The Act also insures that on lands added to the Refuge System existing compatible wildlife-dependent recreational uses will continue, pending completion of a comprehensive conservation plan (CCP) for the refuge (to be started for the Ozark Plateau Refuge in fiscal year 2006). The Act ensures that the public is given an opportunity to participate in the process that determines whether or not an activity is compatible. Additionally, any management recommendations to discontinue uses found not to be compatible would most likely undergo National Environmental Policy Act (NEPA) compliance wherein the public is, once again, given the opportunity to participate. If an existing use is legal, compatible, safe, consistent with sound fish and wildlife management principles, and otherwise in the public interest, the Service assesses whether it has the funding and staffing to administer that program. If those resources are insufficient, the new law requires the Service to aggressively seek out partners to assist in implementing that program. For example, assistance from state conservation officers on a refuge in another state enabled that understaffed refuge to have at least a limited hunting program. Only after exhausting all possibilities for assistance from partners, can the Service prohibit an otherwise compatible, safe and sound wildlife-dependent public recreational use.

**Recreational Uses at Ozark Plateau NWR.** Currently the refuge allows deer, turkey, and small game hunting, wildlife observation, photography, environmental education, and interpretation within the limits of existing infrastructure development (there are no developed roads, trails, or viewing areas) and existing limited staff availability to ensure meaningful experiences for visitors. Fishing is allowed on a portion of the refuge, Spavinaw Creek, which is owned by the City of Tulsa, but is managed through an easement by the Service.

**Uses on Lands to Be Acquired.** Similar opportunities will likely be available on newly purchased lands, dependent on site-specific qualities or constraints. All new lands will be evaluated for what they are capable of in the way of providing wildlife-dependent priority public recreational uses. Reasonable accommodation for waterfowl hunting is planned for properties that may be acquired with Migratory Bird Conservation Funds (duck stamps).

**Certain Potential Fishing Opportunities Dependent on Achieving Habitat Management Objectives.** If areas are acquired that provide fishing opportunities and fishing would not conflict with refuge management objectives, the Service will make every effort to provide additional fishing opportunity in that area.



## C. REFUGE ADMINISTRATION & FACILITIES MANAGEMENT

Any acquisitions would become part of the National Wildlife Refuge System as units of the Ozark Plateau National Wildlife Refuge.

**Staffing.** The refuge currently has a manager, but no other permanent, full time employees. It is at present managed as a unit of the Sequoyah National Wildlife Refuge Complex. The refuge occasionally hosts volunteers and researchers.

**Headquarters Location.** The refuge manager currently shares an office with the Ecological Services Field Office in Tulsa, Oklahoma and Sequoyah NWR headquarters one mile south of Vian, Oklahoma and Interstate Highway 40. There are potential plans for a headquarters site in an existing building on land donated to the Service, along Spavinaw Creek in Delaware County, north of Colcord, Oklahoma. Refuge offices are generally open from 7:30 a.m. to 4:00 p.m., Monday through Friday.

**Refuge Budget.** The budget for the refuge covers salaries, equipment maintenance, supplies, routine equipment and construction material purchases, the fire management program, law enforcement expenses, endangered species recovery expenses, and special project funds. Much of these expenses are currently absorbed by the Sequoyah NWR complex which shares staff and other resources with the Ozark Plateau NWR. Currently, the refuge manager is the only full time staff employee solely dedicated to the Ozark Plateau Refuge.

Refuge expansion to a full 15,000 acres with most refuge sites anticipated to be concentrated in Adair, Delaware, Cherokee and Ottawa Counties could entail an increase in the refuge budget to cover additional salaries for a refuge biologist and a law enforcement officer--a reasonable staff complement for a new refuge. This would be estimated to cost about \$406,000 in the first year, but would go down to about \$185,000 in subsequent years. Other operations and maintenance annual costs could reasonably be expected to increase an additional \$25,000 over the current budget of \$5,000 (which excludes the refuge manager's salary). An estimated \$283,000 in one-time costs would be needed in the long run to accomplish some cave gating, do plant and animal surveys, do Geographic Information Systems (GIS) mapping of refuge units, do some land surveys, renovate some donated buildings for refuge headquarters, and some lesser miscellaneous operating needs.

**Oversight.** The Southwest Regional Office is located in Albuquerque, New Mexico, and provides oversight of refuge administration and management. The Regional Office also provides technical assistance on matters such as engineering, public use planning, and land acquisition.

**Facilities.** The Service is responsible for maintaining facilities on its lands. Upon acquisition of any property, the Service will evaluate the condition and any need for retaining any structures or buildings. Structures or buildings may be kept for Service use, sold off for relocation to another site, sold for salvage or destroyed. If a structure is on, or eligible to be on, a state or national register of historic places, it can not be destroyed. It must be maintained or properly disposed of to an entity that will maintain it.

**Roads.** The Service is responsible for the management and maintenance of its own roads within refuge property. Public agencies retain the right to maintain any public roads that go through Service property.

**Fencing and Signage.** The Service is responsible for maintaining and signing its boundary fences and any public use facilities it develops. Any new fencing needed would also be the Service's responsibility.

The Service will continue to install gates on cave entrances to protect the cave geological resources, water, and cave animals from disturbance. Gate installation on cave entrances is the most important management tool used to protect cave resources.

## INTERIM COMPATIBILITY DETERMINATION

**Use:** Hunting

**Refuge Name:** Ozark Plateau National Wildlife Refuge

**Establishing and Acquisition Authorities:** Original refuge - The Endangered Species Act of 1973, as amended, the Migratory Bird Conservation Act of 1929, as amended, and the Consolidated Farm and Rural Development Act.

Expanded refuge - All of the authorities of the original refuge and the Fish and Wildlife Act of 1956, as amended.

**Refuge Purposes:** The purposes for the original refuge and the expanded refuge are:  
... to conserve (A) fish or wildlife which are listed as endangered species or threatened species .... or (B) plants ... 16 U.S.C. 1534 (Endangered Species Act of 1973)

... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. 715d (Migratory Bird Conservation Act)

... for conservation purposes 7 U.S.C. 2002 (Consolidated Farm and Rural Development Act) The expanded refuge will also have the new purposes covered under the Fish and Wildlife Act of 1956 of "...for the development, advancement, management, conservation, and protection of fish and wildlife resources . . ." 16 U.S.C. 742(a)(4) and " . . . 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 . . ." 16 U.S.C. 742(b)(1) (Fish and Wildlife Act of 1956).

The refuge was established to:

- Assure the continuing existence and aid in recovery of federally-listed endangered and threatened Ozark cave species (Ozark big-eared bat, gray bat, Indiana bat, and Ozark cavefish),
- Reduce the need for future listing of species of concern in the Ozarks, and
- Protect large continuous stands of Ozark forest essential to interior forest nesting migratory birds.

This will be accomplished through an ecosystem approach that protects a number of Ozark fish and wildlife resources. When the refuge was established in 1985, a more specific goal was also cited to "protect ...cave units used as maternity and hibernacula by endangered Ozark big-eared and gray bats. Additionally, the adjacent forested riparian areas, which are used by the endangered bats for feeding and cover purposes would be protected."

**National Wildlife Refuge System Mission:** 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.

**Description of Use: Hunting**

At present the refuge provides only limited hunting. Because of the sensitive nature of the federally-listed cave species and other cave, spring, stream, and forest resources, public use and recreational opportunities are limited and will need to be monitored to assure protection of the resources.

However, recreational objectives do provide opportunities for limited hunting. Deer, turkey, squirrel, rabbit, bobwhite, racoon, and coyote hunting could be possible on surface refuge tracts away from cave entrances. Deer hunting may be archery, muzzle loader, shotgun, or rifle, except in areas near residences and other structures, that will be limited to archery only for safety reasons. If the refuge acquires migratory waterfowl habitat, migratory waterfowl hunting may be possible. However, it is not planned or anticipated that acquisition of migratory waterfowl habitat will be targeted, except as incidental to acquisition of federally-listed endangered or threatened Ozark cave species or interior forest bird habitat. Racoon and coyote hunting is limited to walk in only.

**Availability of Resources:** Most of the refuge's units are in rugged remote rural, woodland, hilly areas. Some refuge units have sufficient acreage to afford safe and quality hunting experiences without disturbing cave resources. Hunting may not be available on sites with ungated caves. At this time most parking facilities are limited to a few automobiles on dirt roads. The refuge is currently managed as a satellite of the Sequoyah National Wildlife Refuge Complex in Vian, Oklahoma. Ozark Plateau National Wildlife Refuge's staff consists of a manager who is assisted by personnel from the Sequoyah National Wildlife Refuge for biological, clerical, law enforcement, and maintenance support. Staff oversight is required for implementing and monitoring hunting activities.

**Anticipated Impacts of the Use:** Since human disturbance is the primary threat to the endangered bat species and other cave species survival, any proposed public uses near the caves must be carefully considered and evaluated. If there is any question that a public use may harm Service trust species, the refuge manager must always decide for wildlife protection over public use. The geological formations can also be damaged by human disturbance. Hunting practiced only on surface habitats may have only temporary or negligible effects on Service trust resources as long as hunting does not take place from within a cave or at a cave entrance.

**Public Review and Comment:** This compatibility determination was circulated for public review and comment with the Draft Conceptual Management Plan, the Environmental Assessment, and Land Protection Plan for the proposed Refuge Expansion for 60 days in 2002. The National Wildlife Refuge System Improvement Act of 1997 ensures hunting, one of the six priority wildlife-dependent recreational uses, is considered for integration into refuge programs provided it is determined to be compatible with the purposes for which the refuge was established. The Act ensures that lands added to the Refuge System with existing compatible wildlife-dependent recreational uses will continue, pending completion of a comprehensive conservation plan for the refuge. Hunting has been a traditional use of some of the land considered for acquisition. Continuation of hunting may be an issue, but if managed appropriately, should not affect accomplishment of the refuge purposes. The Act ensures that the public is given an opportunity to participate in the process that determines whether or not an activity is compatible.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible With Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

No discharging of firearms will be allowed in caves or within 100 meters of the entrances of important caves with sensitive resources that might be disturbed, except under special circumstances where it is considered compatible. Cave entrances may not be used as stands or blinds.

All state and federal hunting laws and license requirements will be followed.

Federal and/or State law enforcement agencies will ensure legal compliance, safety, and protection of refuge resources. Adequate staffing and funding or assistance from other agencies must be available to ensure a safe and quality hunting experience.

Public or legal access to refuge units must be available. Refuge units must be of sufficient size to accommodate safe and quality hunting experiences without endangering neighboring private properties.

More allowances for unit size and availability may be made for archery hunting over firearm hunting, i.e., smaller units may be able to accommodate archery hunting, but not firearm hunting. Vehicle and/or all-terrain vehicle use may be restricted to prevent damage to refuge resources. Many of the refuge dirt roads are on steep terrain and may be vulnerable to erosion exacerbated by frequent vehicle use.

The refuge manager must avoid disturbance to caves during maternity periods and limit disturbance during hibernation periods.

The refuge manager must determine whether each proposed hunting program on the refuge will not materially interfere with or detract from the purposes for which the refuge was established.

The refuge manager must determine an appropriate daily hunter capacity limit for each refuge unit where hunting will take place, so that hunter experiences are safe and high quality and that resources will not be impaired. The refuge manager must implement appropriate hunter capacity control measures as needed.

**Justification:** The Service believes one of the key needs of our society is hunting leading to an appreciation and advocacy of our natural resources. This is also a key goal for the Ozark Plateau National Wildlife Refuge, as well, because ignorance of the unique bat and other wildlife species that use the refuge habitats has contributed to their endangerment and decline. One of the primary refuge system tenets is that appreciation of these resources will lead to support for resource protection and the purposes of the refuge.

**Signatures:    Refuge Manager:** \_\_\_\_\_  
(Signature and Date)

**Concurrence: Regional Chief:** \_\_\_\_\_  
(Signature and Date)

**Mandatory 10- or 15-year Re-evaluation Date:** \_\_\_\_\_ 2012 \_\_\_\_\_

## INTERIM COMPATIBILITY DETERMINATION

**Use:** Recreational Fishing

**Refuge Name:** Ozark Plateau National Wildlife Refuge

**Establishing and Acquisition Authorities:** Original refuge - The Endangered Species Act of 1973, as amended, the Migratory Bird Conservation Act of 1929, as amended, and the Consolidated Farm and Rural Development Act.

Expanded refuge - All of the authorities of the original refuge and the Fish and Wildlife Act of 1956, as amended.

**Refuge Purposes:** The purposes for the original refuge and the expanded refuge are:  
... to conserve (A) fish or wildlife which are listed as endangered species or threatened species .... or (B) plants ... 16 U.S.C. 1534 (Endangered Species Act of 1973)

... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. 715d (Migratory Bird Conservation Act)

... for conservation purposes 7 U.S.C. 2002 (Consolidated Farm and Rural Development Act)  
The expanded refuge will also have the new purposes covered under the Fish and Wildlife Act of 1956 of "...for the development, advancement, management, conservation, and protection of fish and wildlife resources . . ." 16 U.S.C. 742(a)(4) and "... 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 . . ." 16 U.S.C. 742(b)(1) (Fish and Wildlife Act of 1956).

The refuge was established to:

- Assure the continuing existence and aid in recovery of federally-listed endangered and threatened Ozark cave species (Ozark big-eared bat, gray bat, Indiana bat, and Ozark cavefish),
- Reduce the need for future listing of species of concern in the Ozarks, and
- Protect large continuous stands of Ozark forest essential to interior forest nesting migratory birds.

This will be accomplished through an ecosystem approach that protects a number of Ozark fish and wildlife resources. When the refuge was established in 1985, a more specific goal was also cited to "protect ...cave units used as maternity and hibernacula by endangered Ozark big-eared and gray bats. Additionally, the adjacent forested riparian areas, which are used by the endangered bats for feeding and cover purposes would be protected."

**National Wildlife Refuge System Mission:** 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.

**Description of Use:** Recreational fishing

At present the refuge provides only limited fishing. Because of the sensitive nature of the federally-listed cave species and other cave, spring, stream, and forest resources, public use and recreational opportunities are limited and will need to be monitored to assure protection of the resources. However, recreational objectives do provide opportunities for limited fishing. Fishing is allowed on a portion of the refuge, on Spavinaw Creek, owned by the City of Tulsa, but with the cave and forest resources managed through an easement by the Service. If the refuge acquires migratory waterfowl habitat, or threatened or endangered fish and aquatic species habitat, sport fishing may be possible, if a sport fishery also occurs there. However, it is not planned or anticipated that acquisition of migratory waterfowl habitat will be targeted, except as incidental to acquisition of federally-listed endangered or threatened Ozark cave species or neotropical migratory bird habitat. If areas are acquired that provide additional fishing opportunities and do not conflict with refuge management objectives, the Service will make every effort to provide additional fishing in that area. Sport fishing on streams or lakes on, or adjacent to, refuge units would be anticipated to be bank or boat fishing with low user numbers. Also, because most of the aquatic habitat on the refuge is limited to small Ozark streams and subsurface aquatic habitat, fishing tournaments will not be possible on the refuge.

**Availability of Resources:** Acquisition of sport fishery habitat is not a specific goal of the Ozark Plateau National Wildlife Refuge, although such habitat may be acquired incidental to acquisition of endangered or threatened species and migratory bird habitat. Most of the refuge's units are in remote rural, woodland, hilly areas. Some refuge units may be on, or adjacent to streams or lakes and may be able to afford safe and quality fishing experiences without disturbing cave resources. At this time most parking facilities are limited to a few automobiles on dirt roads. The refuge is currently managed as a satellite of Sequoyah National Wildlife Refuge Complex in Vian, Oklahoma. Its staff consists of a manager who is assisted by personnel from the Sequoyah National Wildlife Refuge for biological, clerical, law enforcement, and maintenance support. Staff oversight is required for implementing and monitoring fishing activities.

**Anticipated Impacts of the Use:** Since human disturbance is the primary threat to the endangered bat species and other cave species survival, any proposed public uses near the caves must be carefully considered and evaluated. If there is any question that a public use may harm Service trust species, the refuge manager must always decide for wildlife protection over public use. The geological formations can also be damaged by human disturbance. Fishing occurring only on surface habitats may have only temporary or negligible effects on Service trust resources as long as fishing does not take place from within a cave or at a cave entrance.

**Public Review and Comment:** This compatibility determination will be circulated for public review and comment with the Draft Conceptual Management Plan, the Environmental Assessment, and Land Protection Plan for the proposed refuge expansion for 60 days in 2002. The National Wildlife Refuge System Improvement Act of 1997 ensures fishing, one of the six priority wildlife-dependent recreational uses, is considered for integration into refuge programs provided it is determined compatible with the purposes for which the refuge was established. The Act insures that lands added to the Refuge System with existing compatible wildlife-dependent recreational uses will continue, pending completion of a comprehensive conservation plan for the refuge. Because of the lack of suitable surface aquatic habitat, there has only been limited fishing on most of the land considered for acquisition. Therefore, fishing should not be an issue. However, the Improvement Act ensures that the public is given an opportunity to participate in the process that determines whether or not an activity is compatible.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible With Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

No fishing will be allowed in caves or within 100 meters of the entrances of important caves with sensitive resources that might be disturbed, except under special circumstances where it is considered compatible.

All state and federal fishing laws and license requirements will be followed.

Federal and/or State law enforcement agencies will ensure legal compliance, safety, and protection of refuge resources. Adequate staffing and funding or assistance from other agencies must be available to ensure a safe and quality fishing experience.

Public or legal access to refuge units must be available. Access to the water body must be safe.

Vehicle and/or all-terrain vehicle use may be restricted to prevent damage to refuge resources. Many of the refuge dirt roads are on steep terrain and may be vulnerable to erosion exacerbated by frequent vehicle use.

The refuge manager must avoid disturbance to caves during maternity periods and limit disturbance during hibernation periods.

The refuge manager must determine whether each proposed fishing program on the refuge will not materially interfere with or detract from the purposes for which the refuge was established.

The refuge manager must determine an appropriate daily angler capacity limit for each refuge unit where fishing will take place, so that fishing experiences are safe and high quality and that resources will not be impaired. The refuge manager must implement appropriate angler capacity control measures as needed.

**Justification:** The Service believes one of the key needs of our society is fishing leading to an appreciation and advocacy of our aquatic natural resources. This is also a key goal for the Ozark Plateau NWR, as well, because ignorance of the unique bat and other wildlife, including aquatic species, that use the refuge habitats has contributed to their endangerment and decline. One of the primary refuge system tenets is that appreciation of these resources will lead to support for resource protection and the purposes of the refuge.

**Signatures: Refuge Manager:** \_\_\_\_\_  
(Signature and Date)

**Concurrence: Regional Chief:** \_\_\_\_\_  
(Signature and Date)

**Mandatory 10- or 15-year Re-evaluation Date:** \_\_\_\_\_2012\_\_\_\_\_



## INTERIM COMPATIBILITY DETERMINATION

**Use:** Wildlife Observation

**Refuge Name:** Ozark Plateau National Wildlife Refuge

**Establishing and Acquisition Authorities:** Original refuge - The Endangered Species Act of 1973, as amended, the Migratory Bird Conservation Act of 1929, as amended, and the Consolidated Farm and Rural Development Act.

Expanded refuge - All of the authorities of the original refuge and the Fish and Wildlife Act of 1956, as amended.

**Refuge Purposes:** The purposes for the original refuge and the expanded refuge are:  
... to conserve (A) fish or wildlife which are listed as endangered species or threatened species .... or (B) plants ... 16 U.S.C. 1534 (Endangered Species Act of 1973)

... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. 715d (Migratory Bird Conservation Act)

... for conservation purposes 7 U.S.C. 2002 (Consolidated Farm and Rural Development Act)  
The expanded refuge will also have the new purposes covered under the Fish and Wildlife Act of 1956 of "...for the development, advancement, management, conservation, and protection of fish and wildlife resources . . ." 16 U.S.C. 742(a)(4) and "... 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 . . ." 16 U.S.C. 742(b)(1) (Fish and Wildlife Act of 1956).

The refuge was established to:

- Assure the continuing existence and aid in recovery of federally-listed endangered and threatened Ozark cave species (Ozark big-eared bat, gray bat, Indiana bat, and Ozark cavefish),
- Reduce the need for future listing of species of concern in the Ozarks, and
- Protect large continuous stands of Ozark forest essential to interior forest nesting migratory birds.

This will be accomplished through an ecosystem approach that protects a number of Ozark fish and wildlife resources. When the refuge was established in 1985, a more specific goal was also cited to "protect ...cave units used as maternity and hibernacula by endangered Ozark big-eared and gray bats. Additionally, the adjacent forested riparian areas, which are used by the endangered bats for feeding and cover purposes would be protected."

**National Wildlife Refuge System Mission:** 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.

**Description of Use:** Wildlife Observation

This use is either the ultimate public use goal of visitors or it is incidental to some other use or activity. Observers can be either on the surface or inside cave sites. Entering caves can be as easy as walking in or as difficult as technical rock climbing, depending on the specific cave.

**Availability of Resources:** Most of the refuge's caves are in remote, rugged, rural, woodland, hilly areas. At this time most parking facilities are limited to a few automobiles on dirt trails. The Refuge currently has a manager who borrows staff from the Sequoyah National Wildlife Refuge Complex in Vian, Oklahoma for biological, clerical, law enforcement, and maintenance support. The Refuge owns a limited amount of specialized safety equipment for cave visitors. Staff oversight is required for implementing and monitoring wildlife observation activities. Opportunities for wildlife observation on the surface will be much more available than in caves and will have minimized refuge control compared to cave use.

**Anticipated Impacts of the Use:** Since human disturbance is the primary threat to the endangered bat species and other cave species survival, any proposed public uses inside the caves must be carefully considered and evaluated. If there is any question that a public use may harm Service trust species, the refuge manager should always decide for wildlife protection over public use. The cave geological formations can also be damaged by human disturbance. Also, because of the unstable and difficult terrain in a number of the refuge caves, the safety of the public will be a major consideration. The refuge manager has the authority to approve which caves, what times of the year, and visitor group sizes for any proposed uses within the caves. Wildlife observation occurring only on surface habitats may have only temporary or negligible effects on Service trust resources.

**Public Review and Comment:** This compatibility determination will be circulated for public review and comment with the Draft Conceptual Management Plan, the Environmental Assessment, and Land Protection Plan for the proposed refuge expansion for 60 days in 2002. The National Wildlife Refuge System Improvement Act of 1997 ensures wildlife observation, one of the six priority wildlife-dependent recreational uses, is considered for integration into refuge programs provided it is determined compatible with the purposes for which the refuge was established. The Act insures that lands added to the Refuge System with existing compatible wildlife-dependent recreational uses will continue, pending completion of a comprehensive conservation plan for the refuge. However, the Act insures that the public is given an opportunity to participate in the process that determines whether or not an activity is compatible.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible With Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

Public or legal access to tracts must be available.

Vehicle and/or all terrain vehicle use may be restricted to prevent damage to refuge resources.

The refuge manager must avoid disturbance to caves during maternity periods and limit disturbance during hibernation periods. The manager should try to direct visitation to caves that are of lesser importance to cave fauna or to tracts with gated caves or no caves.

The refuge manager must determine whether each proposed wildlife observation visit to the refuge involving entrance to a cave will not materially interfere with or detract from the purposes for which the refuge was established. The purpose of each proposed wildlife observation visit to a cave must have expected serious and sincere objectives for a resulting appreciation experience. Children must be of sufficient age for the experience to be meaningful.

Either a refuge staff person, or a person who is approved by the refuge manager, must accompany the party to and into any cave inhabited by trust species.

The refuge manager must determine an appropriate group number limit depending on factors, such as sensitivity of cave resources, age and cave experience of the proposed visitors, safety of the visitors, and specific cave characteristics such as degree of difficulty for entrance or exploration and the availability of staff to accompany or monitor the visit.

All visitors entering caves for wildlife observation purposes must wear appropriate clothing and safety devices, including mandatory hard hats, gloves, and lights.

Visitors who will not be entering caves and who will observe wildlife only on the surface on tracts with gated caves will require less, or no, supervision and minimal control.

**Justification:** The Service believes one of the key needs of our society is wildlife observation leading to an appreciation and advocacy of our natural resources. This is also a key goal for the Ozark Plateau NWR, as well, because ignorance of the unique bat and other wildlife species that use the refuge habitats has contributed to their endangerment and decline. One of the primary refuge system tenets is that appreciation of these resources will lead to support for resource protection and the purposes of the refuge.

**Signatures: Refuge Manager:** \_\_\_\_\_  
(Signature and Date)

**Concurrence: Regional Chief:** \_\_\_\_\_  
(Signature and Date)

**Mandatory 10- or 15-year Re-evaluation Date:** \_\_\_\_\_2012\_\_\_\_\_

## INTERIM COMPATIBILITY DETERMINATION

**Use:** Wildlife Photography

**Refuge Name:** Ozark Plateau National Wildlife Refuge

**Establishing and Acquisition Authorities:** Original refuge - The Endangered Species Act of 1973, as amended, the Migratory Bird Conservation Act of 1929, as amended, and the Consolidated Farm and Rural Development Act.

Expanded refuge - All of the authorities of the original refuge and the Fish and Wildlife Act of 1956, as amended.

**Refuge Purposes:** The purposes for the original refuge and the expanded refuge are:  
... to conserve (A) fish or wildlife which are listed as endangered species or threatened species .... or (B) plants ... 16 U.S.C. 1534 (Endangered Species Act of 1973)

... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. 715d (Migratory Bird Conservation Act)

... for conservation purposes 7 U.S.C. § 2002 (Consolidated Farm and Rural Development Act)  
The expanded refuge will also have the new purposes covered under the Fish and Wildlife Act of 1956 of "...for the development, advancement, management, conservation, and protection of fish and wildlife resources . . ." 16 U.S.C. 742(a)(4) and "... 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 . . ." 16 U.S.C. 742(b)(1) (Fish and Wildlife Act of 1956).

The refuge was established to:

- Assure the continuing existence and aid in recovery of federally-listed endangered and threatened Ozark cave species (Ozark big-eared bat, gray bat, Indiana bat, and Ozark cavefish),
- Reduce the need for future listing of species of concern in the Ozarks, and
- Protect large continuous stands of Ozark forest essential to interior forest nesting migratory birds.

This will be accomplished through an ecosystem approach that protects a number of Ozark fish and wildlife resources. When the refuge was established in 1985, a more specific goal was also cited to "protect ...cave units used as maternity and hibernacula by endangered Ozark big-eared and gray bats. Additionally, the adjacent forested-riparian areas, which are used by the endangered bats for feeding and cover purposes would be protected."

**National Wildlife Refuge System Mission:** 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.

**Description of Use:** Wildlife photography

This use is either the ultimate public use goal of visitors or it is incidental to some other use or activity, primarily wildlife observation. Because of the sensitive nature of the federally-listed cave species and other cave, spring, stream, and forest resources, public use and recreational opportunities are limited and will need to be monitored to assure protection of the resources. However, recreational objectives do provide opportunities for limited photography. Photographers can be either on the surface or in caves. Entering caves can be as easy as walking in or as difficult as technical rock climbing, depending on the specific cave. Photography in caves or at night during bat emergences may involve flash or technical lighting equipment.

**Availability of Resources:** Most of the refuge's units are in rugged remote rural, woodland, hilly areas. At this time most parking facilities are limited to a few automobiles on dirt trails. The refuge currently is managed as a satellite of the Sequoyah National Wildlife Refuge Complex in Vian, Oklahoma. Ozark Plateau National Wildlife Refuge's staff consists of a manager who is assisted by personnel from the Sequoyah National Wildlife Refuge for biological, clerical, law enforcement, and maintenance support. The refuge owns a limited amount of specialized safety equipment for cave visitors. Staff oversight is required for implementing and monitoring wildlife photography activities. Opportunities for wildlife photography on the surface will be much more available than in caves and will have minimized refuge control compared to cave use.

**Anticipated Impacts of the Use:** Since human disturbance is the primary threat to the endangered bat species and other cave species survival, any proposed public uses in or near the caves must be carefully considered and evaluated. Flash photography or technical lighting can be stressful to bats and other fauna whose vision is adapted to low light or darkness. If there is any question that a public use may harm Service trust species, the refuge manager should always decide for wildlife protection over public use. The geological formations can also be damaged by human disturbance. Also, because of the unstable and difficult terrain in a number of the refuge caves, the safety of the public will be a major consideration. The refuge manager has the authority to approve which caves, what times of the year, and visitor group sizes for any proposed uses within the caves. Wildlife photography practiced only on surface habitats may have only temporary or negligible effects on Service trust resources.

**Public Review and Comment:** This compatibility determination was circulated for public review and comment with the Draft Conceptual Management Plan, the Environmental Assessment, and Land Protection Plan for the proposed refuge expansion for 60 days in 2002. The National Wildlife Refuge System Improvement Act of 1997 ensures wildlife photography, one of the six priority wildlife-dependent recreational uses, is considered for integration into refuge programs provided it is determined compatible with the purposes for which the refuge was established. The Act insures that lands added to the refuge System with existing compatible wildlife-dependent recreational uses will continue, pending completion of a comprehensive conservation plan for the refuge. With appropriate management, future use for wildlife photography should not affect accomplishment of the refuge purposes. The Act insures that the public is given an opportunity to participate in the process that determines whether or not an activity is compatible.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible With Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

Public or legal access to tracts must be available.

Vehicle and/or all-terrain vehicle use may be restricted to prevent damage to refuge resources.

The refuge manager must avoid disturbance to caves during maternity periods and limit disturbance during hibernation periods. The manager should try to direct visitation to caves that are of lesser importance to cave fauna or to tracts with gated caves or no caves.

The refuge manager must determine whether each proposed wildlife photography visit to the refuge involving entrance to a cave will not materially interfere with or detract from the purposes for which the refuge was established. The purpose of each proposed wildlife photography visit to a cave must have expected serious and sincere objectives for a resulting appreciation experience or anticipated publication or photograph display that will have far reaching public information and appreciation benefits.

Either a refuge staff person, or a person who is approved by the refuge manager, must accompany the party to and into any cave inhabited by trust species.

The refuge manager must determine an appropriate group number limit depending on factors such as sensitivity of cave resources, age and cave experience of the proposed visitors, safety of the visitors, and specific cave characteristics such as degree of difficulty for entrance or exploration and the availability of staff to accompany the visitors.

All visitors entering caves for wildlife photography purposes must wear appropriate clothing and safety devices, including mandatory hard hats, gloves, and lights.

Visitors who will not be entering caves and who will observe wildlife only on the surface on tracts with gated caves will require less, or no, supervision and minimal control.

**Justification:** The Service believes one of the key needs of our society is wildlife photography leading to an appreciation and advocacy of our natural resources. This is also a key goal for the Ozark Plateau National Wildlife Refuge, as well, because ignorance of the unique bat and other wildlife species that use the refuge habitats has contributed to their endangerment and decline. One of the primary refuge system tenets is that understanding and appreciation of these resources will lead to support for resource protection and the purposes of the refuge.

**Signatures: Refuge Manager:** \_\_\_\_\_  
(Signature and Date)

**Concurrence: Regional Chief:** \_\_\_\_\_  
(Signature and Date)

**Mandatory 10- or 15-year Re-evaluation Date:** \_\_\_\_\_2012\_\_\_\_\_

## INTERIM COMPATIBILITY DETERMINATION

**Use:** Environmental Education

**Refuge Name:** Ozark Plateau National Wildlife Refuge

**Establishing and Acquisition Authorities:** Original refuge - The Endangered Species Act of 1973, as amended, the Migratory Bird Conservation Act of 1929, as amended, and the Consolidated Farm and Rural Development Act.

Expanded refuge - All of the authorities of the original refuge and the Fish and Wildlife Act of 1956, as amended.

**Refuge Purposes:** The purposes for the original refuge and the expanded refuge are:  
... to conserve (A) fish or wildlife which are listed as endangered species or threatened species .... or (B) plants ... 16 U.S.C. 1534 (Endangered Species Act of 1973)

... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. 715d (Migratory Bird Conservation Act)

... for conservation purposes 7 U.S.C. 2002 (Consolidated Farm and Rural Development Act)  
The expanded refuge will also have the new purposes covered under the Fish and Wildlife Act of 1956 of "...for the development, advancement, management, conservation, and protection of fish and wildlife resources . . ." 16 U.S.C. 742(a)(4) and "... 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 . . ." 16 U.S.C. 742(b)(1) (Fish and Wildlife Act of 1956).

The refuge was established to:

- Assure the continuing existence and aid in recovery of federally-listed endangered and threatened Ozark cave species (Ozark big-eared bat, gray bat, Indiana bat, and Ozark cavefish),
- Reduce the need for future listing of species of concern in the Ozarks, and
- Protect large continuous stands of Ozark forest essential to interior forest nesting migratory birds.

This will be accomplished through an ecosystem approach that protects a number of Ozark fish and wildlife resources. When the refuge was established in 1985, a more specific goal was also cited to "protect ...cave units used as maternity and hibernacula by endangered Ozark big-eared and gray bats. Additionally, the adjacent forested riparian areas, which are used by the endangered bats for feeding and cover purposes would be protected."

**National Wildlife Refuge System Mission:** 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.

**Description of Use:** Environmental Education

This use typically involves groups of students of varying ages observing on-site presentations by teachers or guides about the geological, biological, or ecological topics regarding the site. Entering caves can be as easy as walking in or as difficult as technical rock climbing depending on the specific cave. Environmental education activities can occur either on the surface or inside cave sites.

**Availability of Resources:** Most of the refuge's caves are in remote rugged, rural, woodland, hilly areas. At this time most parking facilities are limited to a few automobiles on dirt trails. The Refuge currently has a manager who borrows staff from the Sequoyah National Wildlife Refuge Complex in Vian, Oklahoma for biological, clerical, law enforcement, and maintenance support. The Refuge owns a limited amount of specialized safety equipment for visitors. Staff oversight is required for implementing and monitoring environmental education activities. Opportunities for environmental education on the surface will be much more available than in caves and will have minimized refuge control compared to cave use.

**Anticipated Impacts of the Use:** Since human disturbance is the primary threat to the endangered bat species and other cave species survival, any proposed public uses in the caves must be carefully considered and evaluated. If there is any question that a public use may harm Service trust species, the refuge manager should always decide for wildlife protection over public use. The geological formations can also be damaged by human disturbance. Also, because of the unstable and difficult terrain in a number of the refuge caves, the safety of the public will be a major consideration. The refuge manager has the authority to approve which caves, what times of the year, and visitor group sizes for any proposed uses within the caves. Environmental education activities occurring only on surface habitats may have only temporary or negligible effects on Service trust resources.

**Public Review and Comment:** This compatibility determination will be circulated for public review and comment with the Draft Conceptual Management Plan, the Environmental Assessment, and Land Protection Plan for the proposed refuge expansion for 60 days in 2002. The National Wildlife Refuge System Improvement Act of 1997 ensures environmental education, one of the six priority wildlife-dependent recreational uses, is considered for integration into refuge programs provided it is determined compatible with the purposes for which the refuge was established. The Act insures that lands added to the Refuge System with existing compatible wildlife-dependent recreational uses will continue, pending completion of a comprehensive conservation plan for the refuge. However, the Act insures that the public is given an opportunity to participate in the process that determines whether or not an activity is compatible.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible With Following Stipulations



**Stipulations Necessary to Ensure Compatibility:**

Public or legal access to tracts must be available.

Vehicle and/or all terrain vehicle use may be restricted to prevent damage to refuge resources.

The refuge manager must avoid disturbance to caves during maternity periods and limit disturbance during hibernation periods. The manager should try to direct visitation to caves that are of lesser importance to cave fauna or to tracts with gated caves or no caves.

The refuge manager must determine whether each proposed environmental education visit to the refuge involving entrance to a cave will not materially interfere with or detract from the purposes for which the refuge was established. The purpose of each proposed environmental education visit to a cave must have expected serious and sincere objectives for a resulting learning experience, not for just another fun field trip. Children must be of sufficient age for the experience to be meaningful.

Either a refuge staff person, or a person who is approved by the refuge manager, must accompany the party to and into any cave inhabited by trust species.

The refuge manager must determine an appropriate group number limit depending on factors, such as age and cave experience of the proposed visitors, and specific cave characteristics such as sensitivity of cave resources, degree of difficulty for entrance or exploration, safety of the visitors, and the availability of staff to accompany or monitor the visit.

All visitors entering caves for environmental education purposes must wear appropriate clothing and safety devices, including mandatory hard hats, gloves, and lights.

Visitors who will not be entering caves and who will conduct environmental education activities only on the surface on tracts with gated caves will require less, or no, supervision and minimal control.

**Justification:** The Service believes one of the key needs of our society is environmental education leading to an appreciation and advocacy of our natural resources. This is also a key goal for the Ozark Plateau NWR, as well, because ignorance of the unique bat and other wildlife species that use the Refuge habitats has contributed to their endangerment and decline. One of the primary refuge system tenets is that understanding of these resources will lead to support for resource protection and the purposes of the Refuge.

**Signatures: Refuge Manager:** \_\_\_\_\_  
(Signature and Date)

**Concurrence: Regional Chief:** \_\_\_\_\_  
(Signature and Date)

**Mandatory 10- or 15-year Re-evaluation Date:** \_\_\_\_\_2012\_\_\_\_\_

## INTERIM COMPATIBILITY DETERMINATION

**Use:** Interpretation

**Refuge Name:** Ozark Plateau National Wildlife Refuge

**Establishing and Acquisition Authorities:** Original refuge - The Endangered Species Act of 1973, as amended, the Migratory Bird Conservation Act of 1929, as amended, and the Consolidated Farm and Rural Development Act.

Expanded refuge - All of the authorities of the original refuge and the Fish and Wildlife Act of 1956, as amended.

**Refuge Purposes:** The purposes for the original refuge and the expanded refuge are:

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

... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. 715d (Migratory Bird Conservation Act)

... for conservation purposes 7 U.S.C.  $\alpha$  2002 (Consolidated Farm and Rural Development Act)

The expanded refuge will also have the new purposes covered under the Fish and Wildlife Act of 1956 of "...for the development, advancement, management, conservation, and protection of fish and wildlife resources . . ." 16 U.S.C. 742(a)(4) and "... 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 . . ." 16 U.S.C. 742(b)(1) (Fish and Wildlife Act of 1956).

The refuge was established to:

- Assure the continuing existence and aid in recovery of federally-listed endangered and threatened Ozark cave species (Ozark big-eared bat, gray bat, Indiana bat, and Ozark cavefish),
- Reduce the need for future listing of species of concern in the Ozarks, and
- Protect large continuous stands of Ozark forest essential to interior forest nesting migratory birds.

This will be accomplished through an ecosystem approach that protects a number of Ozark fish and wildlife resources. When the refuge was established in 1985, a more specific goal was also cited to "protect ...cave units used as maternity and hibernacula by endangered Ozark big-eared and gray bats. Additionally, the adjacent forested riparian areas, which are used by the endangered bats for feeding and cover purposes would be protected."

**National Wildlife Refuge System Mission:** 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.

**Description of Use:** Interpretation

This use typically involves persons or groups of varying ages observing on-site presentations by expert guides about the geological, biological, or ecological topics regarding the site. Entering caves can be as easy as walking in or as difficult as technical rock climbing depending on the specific cave.

**Availability of Resources:** Most of the refuge's caves are in remote, rugged, rural, woodland, hilly areas. At this time most parking facilities are limited to a few automobiles on dirt trails. The Refuge currently has a manager who borrows staff from the Sequoyah National Wildlife Refuge Complex in Vian, Oklahoma for biological, clerical, law enforcement, and maintenance support. The Refuge owns a limited amount of specialized safety equipment for visitors. Staff oversight is required for implementing and monitoring interpretation activities. Opportunities for interpretation activities on the surface will be much more available than in caves and will have minimized refuge control compared to cave use.

**Anticipated Impacts of the Use:** Since human disturbance is the primary threat to the endangered bat species and other cave species survival, any proposed public uses in the caves must be carefully considered and evaluated. If there is any question that a public use may harm Service trust species, the refuge manager should always decide for wildlife protection over public use. The geological formations can also be damaged by human disturbance. Also, because of the unstable and difficult terrain in a number of the refuge caves, the safety of the public will be a major consideration. The refuge manager has the authority to approve which caves, what times of the year, and visitor group sizes for any proposed uses within the caves. Interpretation activities practiced only on surface habitats may have only temporary or negligible effects on Service trust resources.

**Public Review and Comment:** This compatibility determination will be circulated for public review and comment with the Draft Conceptual Management Plan, the Environmental Assessment, and Land Protection Plan for the proposed refuge expansion for 60 days in 2002. The National Wildlife Refuge System Improvement Act of 1997 ensures interpretation, one of the six priority wildlife-dependent recreational uses, is considered for integration into refuge programs provided it is determined compatible with the purposes for which the refuge was established. The Act insures that lands added to the Refuge System with existing compatible wildlife-dependent recreational uses will continue, pending completion of a comprehensive conservation plan for the refuge. However, the Act insures that the public is given an opportunity to participate in the process that determines whether or not an activity is compatible.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible With Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

Public or legal access to tracts must be available.

Vehicle and/or all terrain vehicle use may be restricted to prevent damage to refuge resources.

The refuge manager must avoid disturbance to caves during maternity periods and limit disturbance during hibernation periods. The manager should try to direct visitation to caves that are of lesser importance to cave fauna or to tracts with gated caves or no caves.

The refuge manager must determine whether each proposed interpretation visit to the refuge involving entrance to a cave will not materially interfere with or detract from the purposes for which the refuge was established. The purpose of each proposed interpretation visit to a cave must have expected serious and sincere objectives for a resulting learning experience. Children must be of sufficient age for the experience to be meaningful.

Either a refuge staff person, or a person who is approved by the refuge manager, must accompany the party to and into any cave inhabited by trust species.

The refuge manager must determine an appropriate group number limit depending on factors, such as age and cave experience of the proposed visitors, and specific cave characteristics such as sensitivity of cave resources, degree of difficulty for entrance or exploration, safety of the visitors, and the availability of staff to accompany or monitor the visit.

All visitors entering caves for interpretation purposes must wear appropriate clothing and safety devices, including mandatory hard hats, gloves, and lights.

Visitors who will not be entering caves and who will be doing interpretation activities only on the surface on tracts with gated caves will require less, or no, supervision and minimal control.

**Justification:** The Service believes one of the key needs of our society is understanding of natural resources leading to an appreciation and advocacy of our natural resources. This is also a key goal for the Ozark Plateau NWR, as well, because ignorance of the unique bat and other wildlife species that use the refuge habitats has contributed to their endangerment and decline. One of the primary refuge tenets is that understanding of these resources will lead to support for resource protection and the purposes of the refuge.

**Signatures: Refuge Manager:** \_\_\_\_\_  
(Signature and Date)

**Concurrence: Regional Chief:** \_\_\_\_\_  
(Signature and Date)

**Mandatory 10- or 15-year Re-evaluation Date:** \_\_\_\_\_2012\_\_\_\_\_