

The Treasures of the Ozark Plateau

by Steve Hensley



Top: Ozark big-eared bat

Photo by Brenda Clark

Bottom: Ozark cave crayfish

Photo by Steve Hensley

Right: Bill Howard, Conservation Chairman for the Tulsa Regional Oklahoma Grotto (TROG), examines one of the refuge caves.

Photo by Steve Hensley

The Ozark Plateau ecosystem of eastern Oklahoma, western Arkansas, and southern Missouri boasts an exceptional assemblage of important hardwood forests, high quality rocky bottom clear streams, and unique springs and caves. It is also one of the fastest developing areas in the nation. In 1986, to conserve some of the region's richest biological resources, Congress established the Ozark Plateau National Wildlife Refuge.

The refuge is vital to ensuring the recovery of endangered and threatened Ozark cave species, reducing the need for future listing of additional species, and protecting large continuous stands of Ozark forest essential to interior forest nesting migratory birds. This refuge and additional areas are being protected through a partnership including private landowners, conservation and caving organizations, universities, tribes, and state and federal conservation agencies. With the help of these partners, management agreements have been developed with private landowners, and easements and lands have been purchased from willing sellers. The result is an ecosystem approach to protecting a variety of resources dependant on the Ozark's karst topography.

The Ozark Plateau NWR now consists of 10 tracts in Adair, Delaware, and Ottawa Counties, Oklahoma, totaling about 3,000 acres (1,215 hectares). Most are remote blocks of mature oak-hickory forest on the southwest edge of the Ozark Plateau bordering the Boston Mountains. They are underlain by Boone chert, a geological formation of alternating limestone and flint layers eroded to form steep hills, incised valleys, and prominent bluffs. Much of the drainage

is underground, feeding a number of springs and caves. The refuge encompasses much of the drainage from a number of high gradient, rocky bottom, spring-fed Ozark streams.

Federally listed threatened or endangered species and species of concern that benefit from the refuge are the endangered Ozark big-eared bat (*Corynorhinus townsendii ingens*), gray bat (*Myotis grisescens*), and Indiana bat (*Myotis sodalis*); the threatened Ozark cavefish (*Amblyopsis rosae*); and species of concern like the eastern small-footed bat (*Myotis leibii*), southeastern bat (*Myotis austroriparius*), southeastern big-eared bat (*Corynorhinus rafinesquii*), longnose darter (*Percina nasuta*), Ozark cave crayfish (*Cambarus aculabrum*), Bowman's cave amphipod (*Stygobromus bowmani*), Ozark cave amphipod (*Stygobromus ozarkensis*), bat cave isopod (*Caecidotea macropoda*), and Ozark chinquapin (*Castanea pumila* var. *ozarkensis*).



Since 1981, the Oklahoma gray bat maternity colony population has increased from 56,600 to almost 150,000. Five gray bat maternity caves have been gated to prevent disturbance. Three of the caves maintain populations of about 10,000 bats each during the summer, and two maintain populations of around 20,000 each. The Ozark big-eared bat population in eastern Oklahoma and western Arkansas appears to be stable at about 2,000, with a few new sites continuing to be found. The Ozark cavefish and Ozark cave crayfish seem to be stable, although actual population sizes are unknown.

Caves and the creatures that live in them are greatly misunderstood. To many people, caves are just dark and foreboding places, and even researchers can find caves relatively inaccessible and difficult to study. But caves, their recharge areas, and surrounding habitats are extremely important to certain species. The wildlife of these caves serves as an indicator of the Ozark's environmental quality because it suffers from a number of the same factors affecting the human environment. Ground water quality is vital to the health of most cave dwellers as well as to the region's people who rely on wells for water. Some cave species provide more direct benefits to humans. For example, a colony of 20,000 endangered gray bats will eat about 160 pounds (73 kilograms) of night flying insects per night. Over the course of a summer, that is nearly 10 tons of insects. Many of these are mosquitoes, flies, and moths that are disease vectors or agricultural pests.

In addition to cave-dwelling species, the refuge protects a number of other valuable Ozark resources. These include habitat for about 200 species of migratory birds, as well as geological, archeological, historical, and paleontological resources that provide rich scientific and educational opportunities. Because of the sensitive nature of the Ozark Plateau resources, public use, educational programs, and scientific research are limited to the least intrusive activities. In one refuge cave, a palaeontologist is



Ozark cavefish

Photo by Art Brown

excavating a Pleistocene tapir skeleton. Survey teams are searching for unknown caves, mapping known caves, and documenting baseline conditions for environmental contaminants, vegetation, aquatic cave invertebrates, amphibians and reptiles, birds, small mammals, and listed bats and cavefish. Surveyors in one refuge cave have mapped 8.5 miles (13.5 kilometers) of passage, making it the longest known cave in Oklahoma and Arkansas. In addition, research is being conducted on ground water quality, cave salamander distribution, and bat genetics.

To conserve these valuable Ozark resources for future generations, it will be necessary for the refuge to continue protecting large stands of Ozark forest (including caves, springs, streams, recharge areas, and neotropical migratory bird habitat), improving public understanding of these resources, controlling access to important caves, developing and maintaining public/private partnerships, continuing resource surveys, and evaluating the need to protect additional resources that are vulnerable to this region's rapid development.

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