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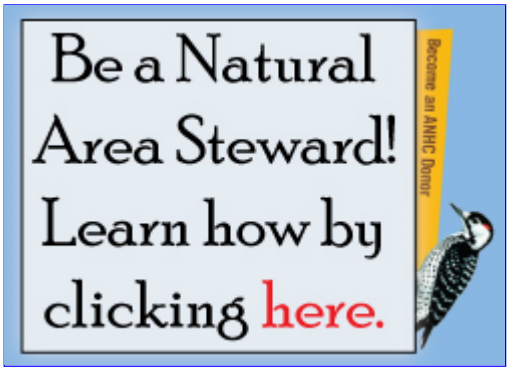
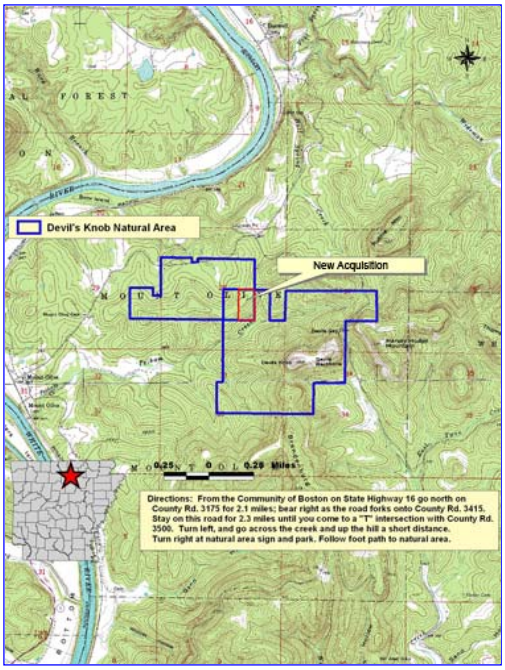
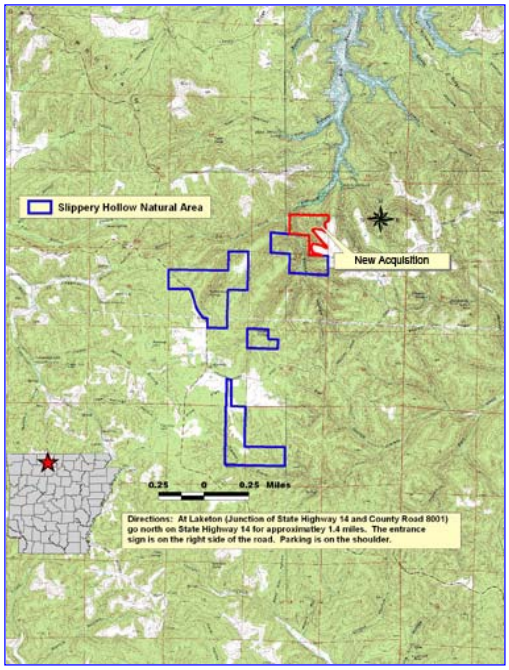


What's New

Land Additions to Two Natural Areas

Bryan Rupar, ANHC Chief of Land Acquisition & Stewardship





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ANHC increased Devils Knob-Devil's Backbone Natural Area, located in Izard County, by 20

acres in late August. This additional acquisition supports three natural communities of conservation concern: sandstone glade and outcrop, limestone glade and outcrop, and Ashe's juniper (*Juniperus ashei*) woodland. Habitat is influenced by the steep topography with high, rocky knolls capped by dolomite, or limestone. The knolls are joined by sandstone "saddles."

ANHC also added 89 acres to Slippery Hollow Natural Area. Located in Marion County, this natural area is part of the Ozark karst ecosystem. This unique ecosystem hosts 62 organisms adapted to cave and karst habitats found no where else in the world. By increasing the size of this natural area, ANHC is protecting additional habitat for the federally endangered Ozark big-eared bat (*Corynorhinus townsendii ingens*).

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Pine City Work Day

Patrick Solomon, ANHC Land Management Specialist

ANHC staff recently conducted a work day at Pine City Natural Area in eastern Arkansas. The focus of this work day was to continue restoring the open forest, or woodland, structure that is vital to many of the plants and animals native to the area. Prior to European settlement, this region was the only substantial area of the Mississippi Alluvial Plain where loblolly pine forests were found. These forests featured a sparse canopy dominated by loblolly pine, with a component of mixed hardwoods, as well as an open understory that included prairie grasses like little bluestem (*Schizachyrium scoparium*) and forbs such as prairie gayfeather (*Liatris pycnostachya*). Periodic fires, along with other forms of natural disturbance, played a major role in maintaining the open structure of this ecosystem. These disturbances reduced the number of shrubs and hardwood saplings, increased the availability of sunlight to native grasses and forbs, and left behind the more fire tolerant pine trees.

Row farming and logging practices utilized prior to ANHC ownership altered the natural ecosystem on certain tracts within the natural area. Species composition shifted, and the forest became too dense for many rare species, such as the federally endangered Red-cockaded Woodpecker (*Picoides borealis*). The lack of fire also added considerable stress to this system. When pine forests are fire suppressed for long periods they can become too thick and shady for the natural regeneration of pines and cannot support the rich herbaceous understory characteristic of more open stands. When this happens, both mechanical and chemical treatment methods can be successfully utilized for restoration.

Open pine-mixed hardwood woodlands at Pine City Natural Area.

Since first acquiring the natural area in 1988, ANHC has been working to return natural ecosystem processes to Pine City. Fire has been reintroduced, creating the conditions necessary for loblolly pines to regenerate and stimulating the growth of native understory plants. Local genotype pine seedlings have also been planted in deforested areas in order to rebuild the pine-dominated canopy. However, there are other management tools that must be utilized to ensure these efforts are successful.

Hardwood re-sprouts after treatment with chemical herbicide.

Over the last few years, ANHC has thinned more than 90 acres at Pine City Natural Area of overly dense forest using a machine called a forestry grinder, or timber mulcher. During our recent work day, ANHC staff followed up these previous thins by applying chemical herbicides directly to hardwood saplings that have re-sprouted since the completion of grinder work. This treatment, followed by routine prescribed fire, will control the hardwood re-sprouts and help revive native grasses and forbs. Over all, ANHC staff treated more than 20 acres using backpack sprayers and ATV-/UTV-pulled spray equipment.

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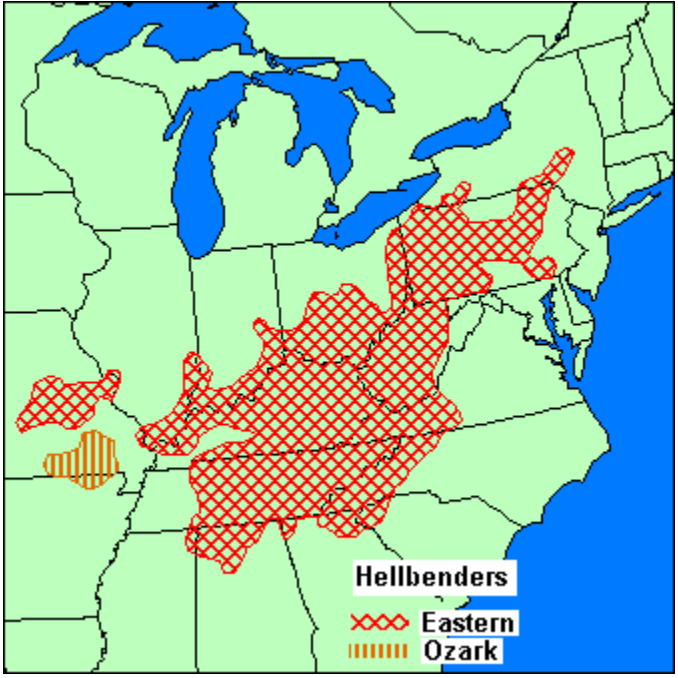
Listing Considered for Ozark Hellbender

Jane Jones-Schulz, ANHC Education & Information Coordinator

Citing threats that could lead to extinction of one of the world's largest salamanders, the U.S. Fish and Wildlife Service (USFWS) has proposed to protect the Ozark hellbender (*Cryptobranchus alleganiensis bishopi*) as endangered under the federal Endangered Species Act. Under the act, an endangered species is any species that is in danger of extinction throughout all or a significant portion of its range. Ozark hellbender populations have declined an estimated 75 percent since the 1980s, with only about 590 individuals remaining in the wild. Possible causes for the decline are complex and may include habitat loss resulting from impoundments, ore and gravel mining, sedimentation, nutrient runoff, collecting, and nest site disturbance due to recreational uses of the rivers (canoeing, swimming, fishing).

Heightening concern is the discovery of a fungal disease, chytridiomycosis (chytrid) in all remaining wild populations of the Ozark hellbender. Chytridiomycosis is an infectious disease of amphibians, caused by the chytrid fungus *Batrachochytrium dendrobatidis*. Chytridiomycosis has been linked to dramatic population declines or even extinctions of amphibian species in western North America, Central America, South America, eastern Australia, and Dominica and Montserrat in the Caribbean. The fungus is capable of causing sporadic deaths in some amphibian populations and 100 percent mortality in others. There is no effective measure for control of the disease in wild populations. The disease, first discovered in frogs in Queenslands, is contributing to a worldwide decline in amphibian populations, a decline that some scientists estimate has affected 30% of the amphibian species of the world.



Map from the New York Department of Environmental Conservation.

In addition, biologists are finding that the average age of Ozark hellbender populations is increasing and few young are being found, which indicates that there are problems with reproduction or juvenile survival. "The low number of Ozark hellbenders, along with the increasing threats posed by the chytrid fungus and habitat loss, are cause for concern for this species," said Tom Melius, the Midwest Regional Director, USFWS. "Through our proposal to list the Ozark hellbender as endangered, we will take a close look at its status and threats, and gather as much information from the public as we can to help us determine whether it should be protected by the Endangered Species Act."

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Natural Features

The Ozark Hellbender

Jane Jones-Schulz, ANHC Education & Information Coordinator


Ozark hellbenders require cool, clean streams. Image credit Jeff Briggler/Missouri Dept of Conservation.

The Ozark hellbender (*Cryptobranchus alleganiensis bishopi*) is one of two subspecies of the genius Cryptobranchus, the largest salamanders found in North America. The other subspecies is the eastern hellbender (*Crytobranchus alleganiensis alleganiensis*). While their name may sound scary and they might look strange, the Ozark hellbender is a unique and environmentally sensitive species found only in the clean, clear rivers of the Ozarks. Hellbenders are large, strictly aquatic salamanders that can reach lengths of one to nearly two feet. They have flattened bodies, which helps them slide under rocks for cover and remain stationary in fast moving water. Part of what makes them look so peculiar is the fleshy folds of skins along their sides. These skin folds actually provide surface area so they can breathe under water. Hellbenders like cold water with high oxygen levels, especially spring-fed rivers. They are primarily nocturnal animals, only coming out at night to feed chiefly on crayfish. Hellbenders have a long life span compared to most salamanders, sometimes up to 30 years, and they do not reach reproductive age until around seven years.

Image credit Brent McClane/National Park Service.

Known populations of the Ozark hellbender are found in only four watersheds in the hills of southern Missouri and northern Arkansas. Researchers who surveyed more than 70 miles (113 km) of rivers in the summer 2005 found only five hellbenders at four locations. For perspective on the drastic reduction of population density, in the 1970s researchers located 300 to 500 hellbenders per kilometer (0.6 mi) of streambed in the North Fork of the White River, a watershed adjacent to the Current River.

Hellbenders and the Illegal Pet Trade

The USFWS is also proposing to include the hellbender (including both the Ozark and eastern subspecies) under Appendix III of the Convention on International Trade in Endangered Species. Collection and trade of hellbenders within the United States and internationally is of growing concern, particularly as hellbenders become rarer and, consequently, more valuable. CITES is an international agreement between governments to ensure that international trade in wild animals and plants does not threaten their survival. CITES listing of the hellbender would aid in curbing unauthorized international trade of hellbenders.

Dr. Max A. Nickerson, Herpetology Curator of the Florida Museum of Natural History, who has studies the Ozark hellbender for 38 years, established baseline population data for an important population at a site on the North Fork of Missouri's White River. His research on a 14.6-kilometer stretch of the river determined that 558 total salamanders were removed between 1969 and 1989. Within that stretch is a smaller, 2.67-kilometer study site here the most dense known Ozark hellbender population once lived. Nickerson found that 271 hellbenders were collected illegally from here in the early 1980s. Of those 271 individuals, 156 were removed for the pet trade during a single weekend: Labor Day weekend in 1980.

What can you do to help?

In the past, hellbenders were often thought of as dangerous, poisonous, or even deadly, but in reality they are shy, harmless animals that are an important part of the Ozarks river systems. If

you see a hellbender, leave it alone and consider yourself very lucky for getting a glimpse of this rare species. For more information about these giant salamanders and the research work that is on-going, visit the website of Home of the Ozark Hellbender. Here you can help by report your hellbender sightings.

The proposal to list the Ozark hellbender is also available on the USFWS's Midwest Region website. The Service is accepting comments on the proposal through November 8, 2010. Send comments to the Federal eRulemaking Portal. Follow the instructions for submitting comments. Comments may also be mailed or hand-delivered to Public Comments Processing, Attn: RIN 1018- AV94; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

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New Population of Rare Plant

Brent Baker and Theo Witsell, ANHC Botanists

In mid-August, ANHC botanists Theo Witsell, Brent Baker and community ecologist Jennifer Akin joined Susan Hooks, Terry McKay and Laura Morris of the Ouachita National Forest in one of the most rugged areas of the state to hunt for new populations of the rare Arkansas endemic Cossatot leafcup (*Polymnia cossatotensis*). Cossatot leafcup, a member of the composite or sunflower family (Asteraceae), was completely unknown to science a mere 22 years ago when it was discovered in October 1988 by Bert Pittman, then an ANHC botanist, and Vernon Bates, a freelance botanist working for the Ouachita National Forest. While conducting plant inventory work in the Ouachita Mountains, Pittman and Bates happened upon the novel plant growing in an open area of novaculite talus (loose rock fields) on the lower east slope of Blaylock Mountain along the Little Missouri River in southwestern Montgomery County. With the assistance of Dr. Robert Kral of Vanderbilt University, the two botanists described and published the new species the following year, naming the plant for the local mountain range, the Cossatot Mountains, in which it was discovered (Pittman et al. 1989).

Cossatot leafcup at new site. Image by Jennifer Akin.

Cossatot leafcup is a pungently aromatic annual that can grow to six feet in height with heart-shaped, entire to infrequently shallowly pinnately lobed leaves. It produces sprays of yellow and white flower heads in late summer. Each of these heads, which might appear at first glance to be an individual flower, is actually a "composite" of small yellow disc flowers in the center of each head, and a few (generally one to three) white ray flowers arranged around the outside of this central disc. Cossatot leafcup is related to white leafcup (*Polymnia canadensis*), the only other member of the genus represented in Arkansas, and which is common in the Ozark Plateaus, Arkansas Valley ridges and mountains, and northern Ouachita Mountains. White leafcup differs in

its perennial habit, by having generally deeply pinnately lobed leaves, by averaging a greater number of ray flowers per head, and by having smaller and differently shaped achenes (dry, one-seeded indehiscent fruits). The yellow-flowered, large-leaved bear's-foot or yellow leafcup, which was once treated within the genus *Polymnia*, is now treated as *Smallanthus uvedalius*.

Cossatot leafcup grows in some of the most rugged terrain of the Ouachita Mountains, in talus, particularly of novaculite (a type of chert rock), in woodland openings on steep summits to toe slopes of mountains. Known sites range from xeric (dry) to submesic (with a fairly steady supply of moisture) and mostly occur on south and east slopes, though one population occurs on a north slope just below the summit of the mountain.

Since its discovery, and despite targeted field surveys, Cossatot leafcup had only been found at three additional sites: Gap Mountain and Pryor Mountain in southwestern Montgomery County and Brush Heap Mountain in southeastern Polk County, all within nine miles of the original Blaylock Mountain site. In a 2006 comprehensive assessment of the four known sites, researchers Hardcastle, McElderry and Gentry estimated the total species' population size at 33,765 individuals, with two of the sites having a mere 40 and 6 individuals, respectively (Hardcastle et al. 2006). [It is important to note, though, that given its annual habit and rather extreme habitat conditions, Cossatot leafcup populations may fluctuate in size significantly from one year to the next.]

Cossatot leafcup growing on a rugged Ouachita Mountain slope (left). ANHC botanists during surveys on this rugged terrain (right). Images by Jennifer Akin.

On August 18th of this year, after more than a day of coming up empty-handed in strenuous yet seemingly perfect habitat in extremely hot and humid weather conditions, the joint ANHC and Forest Service team struck gold, in the botanical sense, while surveying a chert and novaculite talus woodland on the eastern toe slope of a small unnamed "knob" between Bald and Gap mountains in Montgomery County. This new site yielded over 400 plants and is the fifth known site in the world for the species! Surveys for additional populations are ongoing.

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Hardcastle, E.L., R.M. McElderry and J.L. Gentry. 2007. Distribution, habitat, and current population size estimates for *Polymnia cossatotensis* (Cossatot leafcup) [Asteraceae], a rare Arkansas endemic. Castanea 72:194-204.

Pittman, A.B., V. Bates and R. Kral. 1989. A new species of *Polymnia* (Compositae: Heliantheae) from the Ouachita Mountain region of Arkansas. Sida 13:481-486.

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Elk in Arkansas

Jonelle Doughty, ANHC Public Information Specialist

A cow feeds her calf in a Boxley Valley field. Images by Jonelle Doughty.

Historically, free-ranging elk (*Cervus elaphus*) were common in the United States, including Arkansas. Some scientists recognize six subspecies of elk in North America; others recognize only two. The eastern subspecies most likely native to Arkansas, *Cervus elaphus canadensis*, was extirpated by the 1840's, seemingly due to shrinking habitat and overhunting, In 1933, the U.S. Forest Service (USFS) released 11 Rocky Mountain elk (*C. elaphus nelsoni*) onto the Black Mountain Refuge in Franklin County. The herd increased to approximately 200 but vanished in the mid-1950's.

The Arkansas Game and Fish Commission (AGFC) became involved in restoring Arkansas's elk population in 1981 when they partnered with private citizens to release 112 elk from Colorado and Nebraska in Newton County near the Buffalo National River. Today, AGFC, who monitors the herd in cooperation with the National Park Service (NPS), estimate Arkansas now supports approximately 500 of these majestic animals.

Cows and calves (left) grazing separately from bulls (right) in early September. Click for larger.

Fall is the best time of year for elk watching in Arkansas. Herds are more active due to the approach of breeding season, which reaches its peak during the first half of October. According to AGFC staff at the Ponca Elk Education Center, a seven mile stretch along Arkansas Highways 43 and 21 in Boxley Valley is the prime viewing location. Best viewing times are just after dawn and right before dusk. Travelers may park on the side of the highway to watch elk as they graze. Plan a trip before breeding season ends and you may hear bull elk bugling. Be sure to take your binoculars, and plan to spend a few hours on your trek. Drive slowly, and if you see one elk, stop and wait. There are likely more nearby. During my trip in early September, I was fortunate to see a herd of approximately thirty cows and calves in one location and twelve bulls in another location. For more information on Arkansas's largest mammal and the AGFC Ponca Elk Education Center, visit their website here.

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Calendar of Events

National Public Lands Day

9/25/2010

National Public Lands Day 2010 celebrates service and recreation on public lands while educating volunteers about the effects of climate change on our parks. NPLD engages a diverse audience of adult and youth volunteers to get to outdoors and improve their lands, whether at the grandest national park or at an urban park in their neighborhood. Find an event in your neighborhood here!

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AAS Adult Natural History Workshops

10/2/2010
Ferncliff Conference Center, Ferndale, AR

Each fall the Arkansas Audubon Society offers adult natural history workshops designed to enhance understanding and appreciation of Arkansas' rich and fascinating plant and animal communities. Classes are taught by knowledgeable, enthusiastic educators. Workshops this year are Arkansas Butterflies, A Walk on the Wild Side: Edible Trees & Plants, Birding Basics, and Native Tree Identification. View workshop specifics here. Get registration information here. Learn more about the Arkansas Audubon Society by visiting their website.

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Ozark Summit 2010

10/19/2010
Northeastern State University, Tahlequah, OK

Hosted by the U.S. Fish and Wildlife Service and the U.S. Geological Survey, this year's meeting focuses on "Living on Karst: Sustainable Management of Ozark Ecosystems." The goals are to address issues and provide lasting solutions that will be pertinent on a landscape scale across state and regional boundaries. Find more information here.

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37th Annual Natural Areas Conference

10/26-29/2010
Tan-Tar-A Resort, Osage Beach, MO

The Natural Areas Association connects today's natural area managers with academics, students, and young natural resource professionals with seasoned professionals from a variety of natural resource disciplines. Learn the latest in research, stewardship and training, and make new connections. Get more information here.

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ANHC Commission Meeting

11/9/2010
Location and Time TBA.

The Arkansas Natural Heritage Commission will hold its final meeting of 2010. Details TBA.

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2010 AWAG Conference

11/18-20/2010
Ozark Folk Center, Mountain View, AR

Registration is now open! “Arkansas Watersheds - The Future is in Your Hands” offers workshops, presentations, a watershed tour, panel discussion and a poster session for its participants. Over a three day period environmental experts, watershed group leaders, science education instructors, and natural resource specialists will provide information to equip citizens with the skills to become leaders in guiding their community toward making informed decisions about their water resources. Chad Pregracke, founder of "Living Lands and Waters," will be the keynote speaker. Get more information here.

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