

KSNPC Latest News Items:

- ◆ Monarch butterfly proposed for federal listing under Endangered Species Act: <http://www.fws.gov/midwest/news/764.html>
- ◆ There's a smoother driving surface awaiting visitors to Blackacre SNP. Nature Preserves and Natural Areas Branch Manager Joyce Bender secured funding through the Energy and Environment Cabinet's maintenance pool to fund what she calls, "a solution to a problem that has plagued us for most of my 29-year career." Joyce worked with the Transportation Cabinet's district staff to improve the road surface with "millings," which are recycled asphalt materials. Long-time visitors will appreciate that the teeth-rattling drive along the preserve's access road has come to an end.
- ◆ [2014 was earth's warmest year](#) recorded since records began in 1880.
- ◆ KSNPC's Aquatic Zoologist Mike Compton takes us on a successful journey to find mussel species in the Green River, Hart County. Ready to go snorkeling? Mike's encouraging story is found on Page 7.
- ◆ Joyce Bender received the Lifetime Achievement Award from the Environmental Quality Commission. Her much deserved recognition is on Page 12.

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Red Fox ~ Photo courtesy Thomas G. Barnes



Kentucky's Threatened and Endangered Fishes —

The Relict Darter

By Michael A. Floyd, Ph.D
Kentucky Ecological Services Field Office
United States Fish and Wildlife Service



In this issue of *Naturally Kentucky*, I present the second of six articles on Kentucky's federally listed fishes. The featured species is the relict darter (*Etheostoma chienense*), which is endemic to the Bayou du Chien drainage in the Jackson Purchase region of western Kentucky. This small darter was first discovered in the Bayou du Chien system in 1975 but was not formally recognized as a distinct species until 1992. The species was federally listed as endangered in December 1993.

The relict darter is a member of the darter family (Percidae) and reaches a maximum length of about 3 inches. It is distinguished from similar darters by having small, white "lollypop-like" knobs on the second dorsal fin of nuptial males. The body color of females and nonbreeding males is light tan with brown mottling, occasionally producing nine to 13 small blotches or vertical streaks along the sides.

The relict darter is known only from the Bayou du Chien drainage in Fulton, Graves, and Hickman counties in far western Kentucky. Much of the Bayou du Chien mainstem and some of its tributaries have been channelized, so most of these reaches are comprised of long, straight channels with relatively uniform depth, velocity, and substrates. Some of the darter's best remaining habitats are located in Jackson Creek, a tributary of Bayou du Chien and probably the least modified stream in the watershed. Relict darters tend to occupy gently flowing pools, usually over gravel and sand substrates, and are typically observed near some type of cover, such as fallen tree branches, undercut banks, or overhanging vegetation.



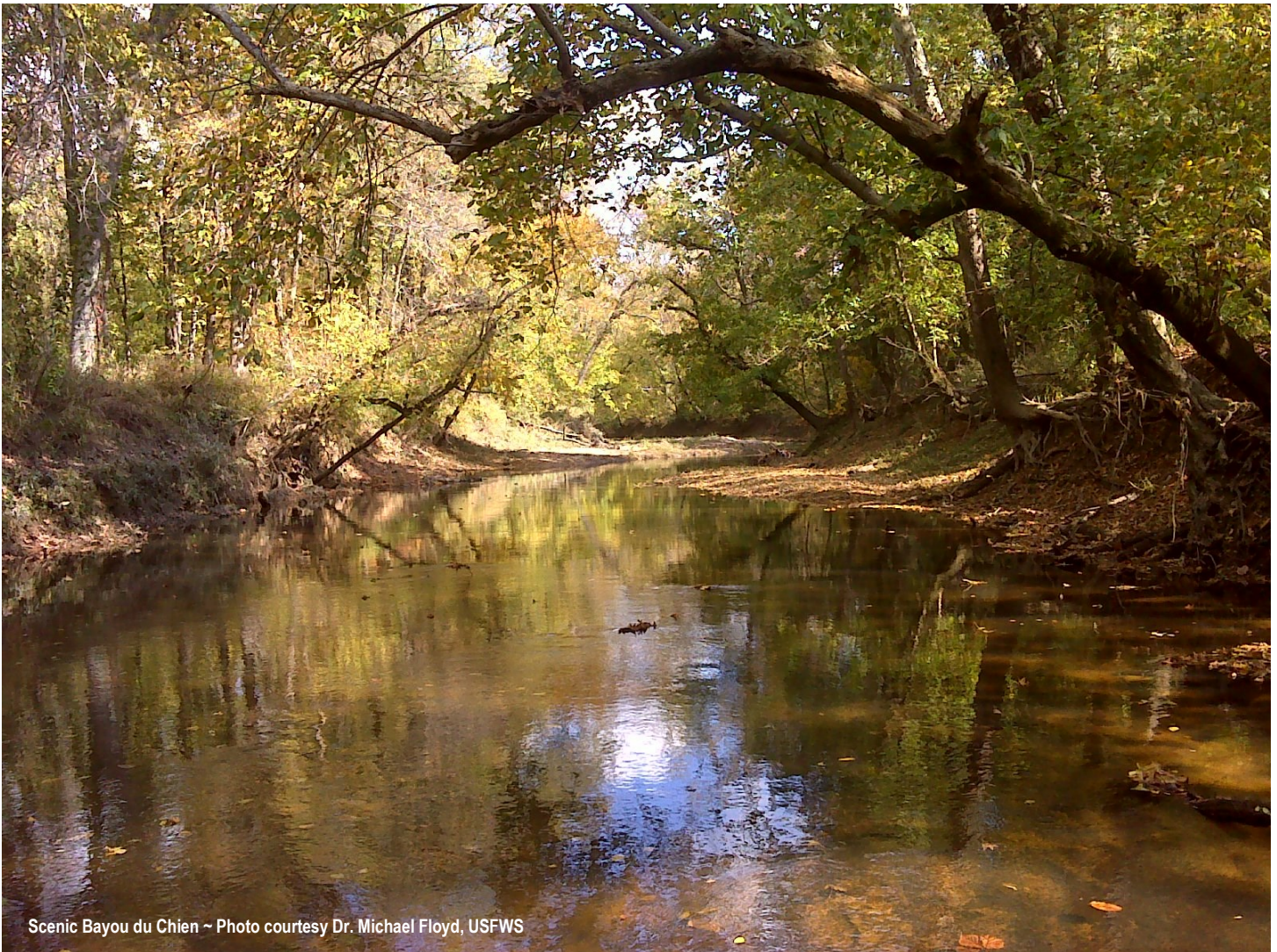
The relict darter's food habits are unknown, but it is assumed to prey upon aquatic insects and small crustaceans. Spawning occurs from mid-March to early June, during which time males establish nests under sticks, logs, or any other available firm structure in the stream channel (even objects like discarded tires!). Females attach a single layer of eggs to the undersides of these structures, which are then guarded by the male until the eggs hatch. Relict darters can live up to three years.



The primary threats to the species are: (1) channelization of the Bayou du Chien mainstem and its tributaries, (2) removal and lack of shade-producing riparian vegetation, (3) increased siltation associated with poor land use practices, (4) deforestation and drainage of riparian wetlands, and (5) pollutants originating from municipal wastewater plants or agricultural livestock operations. All of these threats cause chemical and physical degradation of habitats used by the species for feeding, sheltering, spawning, and resting. The species' limited range also makes it vulnerable to stochastic events, such as chemical spills and droughts, which could lead to extirpations in portions of the watershed.

The threats identified above continue to impact the relict darter, but the species is considered stable within the Bayou du Chien system. Based on recent surveys (2010-2012) conducted by the Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, and the U.S. Fish and Wildlife Service (Kentucky Ecological Services Field Office), the species continues to be present at all historical sites and its current population levels are similar to previous estimates made in the 1990s. Recent estimates of mean population size were 1,526 individuals in Jackson Creek and 13,108 individuals in the Bayou du Chien mainstem. The U.S. Fish and Wildlife Service continues to implement stream and riparian habitat protection and restoration projects for the species throughout the upper Bayou du Chien system.

Common Name	Species	Listing Date
Blackside dace	<i>Chrosomus cumberlandensis</i>	1987
Relict darter	<i>Etheostoma chienense</i>	1994
Duskytail darter	<i>Etheostoma percnum</i>	1993
Cumberland darter	<i>Etheostoma susanae</i>	2011
Palezone shiner	<i>Notropis albizonatus</i>	1993
Pallid sturgeon	<i>Scaphirhynchus albus</i>	1990



Scenic Bayou du Chien ~ Photo courtesy Dr. Michael Floyd, USFWS



Loran Gibson Receives 2014 Biological Diversity Protection Award

By Ellis Lauder milk, Invertebrate Zoologist

Loran D. Gibson of Florence, KY. is the recipient of the commission's 2014 Biological Diversity Protection Award. The award is given annually to an individual or organization that has made a significant contribution to the knowledge and protection of Kentucky's biodiversity. After receiving the award from KSNPC, The House of Representatives of the Commonwealth of Kentucky issued a Citation honoring and applauding Loran.



Loran began his studies of Lepidoptera (butterflies and moths) in the 1960s as a serious avocation. Most of his research has been conducted on his own time and expense with few exceptions. He has worked closely with Dr. Charles Covell, Jr. (now retired from the University of Louisville) to formally catalogue the butterflies and moths of Kentucky. In 1999, Covell published a state checklist of the group and they have since coauthored three updates to the list. Loran is a Charter Member of The Society of Kentucky Lepidopterists and The Ohio Lepidopterists, and he has helped the latter compile their state list as well. He has found so many state records that we've lost count.

Other significant contributions include coauthoring journal articles and books about moths. In 2008, Loran coauthored a book entitled, *Olethreutine Moths of the Midwestern United States: an identification guide*, which covered 306 species. After the book's release, Loran and other entomologists used information from the guide to re-discover species that hadn't been seen in decades. They even found some species new to science. These discoveries eventually led to publications in 2009 and 2014, respectively, coauthored by Loran: *Rediscovery and redescription of Hystrichophora loricana* (Grote) (Tortricidae: Olethreutinae) and *A new species of Grapholita Treitschke* (Lepidoptera: Tortricidae) from the Midwestern USA.



Loran receiving 2014 Biological Diversity Protection Award from KSNPC Chairman Carl Breeding
KSNPC Photo by Sara Hines

Loran has called KSNPC's attention to rare species and high-quality natural communities and helped our agency focus conservation efforts on important areas. Always ready to lend a hand in any way, Loran has been an extremely valuable, reliable, and a long-term contributor to our knowledge of biodiversity and conservation efforts throughout Kentucky. On behalf of KSNPC's staff we congratulate and thank Loran for his tremendous and unequalled contributions!



Kentucky's Least Wanted Plants

By Joyce Bender, Nature Preserves and Natural Areas Branch Manager

The Kentucky Exotic Pest Plant Council (KY-EPPC) released its 2015 Least Wanted Plant poster in January. Every year since 2000, a non-native invasive plant has been named “least wanted” to raise awareness of the threat it poses to native biodiversity. An educational poster is developed each year by Bernheim Arboretum and Research Forest and KY-EPPC each year. The poster provides information on the invasive plant and three native alternatives for planting by conscientious gardeners, landscape architects and nursery growers. Copies of the poster are available for download at: <http://www.se-eppc.org/ky/leastwant.htm> or by contacting the commission.



Photo courtesy David Taylor

This year's poster features mimosa or silk tree, (*Albizia julibrissin*). Introduced from Asia in 1745, the fuzzy-looking white and pink flowers and fern-like foliage have made this tree an attractive ornamental that has been widely planted across the United States. However, like many ornamentals that have gone awry, mimosa has escaped the yard and invaded natural areas. It has certainly worn out its welcome in Kentucky. Mimosa is listed by the KY-EPPC as a significant threat to native species and natural communities. One tree can produce 10,000 seeds in a year. It is not surprising that it can form dense thickets, crowding out native vegetation. Mimosa can also sucker from the roots, which increases the difficulty of controlling this species.

Mimosa is found across Kentucky, but there is a gap in distribution information for the Bluegrass Region. If you can provide locations, please go to the Southeast Early Detection Network (SEEDN) website at <http://www.eddmaps.org/southeast/report/index.cfm> and follow the instructions.

Your help in tracking the extent of this invasive tree and other invasive plants provides a clearer understanding of their range and impact in Kentucky. The information you share will also be used to revise the KY-EPPC's list of invasive plants that are most harmful to Kentucky's native biodiversity.

Kentucky's Native Alternatives



David Smith—Delaware Wildflowers.org

Alternate-Leaf Dogwood
(*Cornus alternifolia*)



Chris M. Morris

Red Buckeye
(*Aesculus pavia*)



Ralph Bergmann, Bernheim

American Witch-Hazel
(*Hamamelis virginiana*)



Natural Area Registry Spotlight

By Brent Frazier, Land Acquisition Specialist

In this edition, we feature Rocky Run Glade Registered Natural Area. Located in Bullitt County, Rocky Run Glade contains approximately 25 acres and is a unique prairie/glade complex formed on flat-bedded silurian dolomitic limestone. It is dominated by a wide variety of prairie grasses and forbs and supports a large population of Kentucky glade cress (*Leavenworthia exigua* var. *laciniata*), a federally threatened plant only known from a limited area of Bullitt and Jefferson counties. Several additional rare plants occur at the site including Eggleston's violet (*Viola egglestonii*), Crawe's sedge (*Carex crawei*), and great plains ladies tresses (*Spiranthes magnicamporum*).

The registry program is a voluntary, non-regulatory program designed to provide recognition for sound stewardship and awareness of the ecological significance of a landowner's property. To be eligible for registration, a property must contain habitat for plants or animals that are rare or have declining populations in Kentucky or that contain an outstanding example of a Kentucky ecological community, such as an old growth forest, wetland, glade or prairie.



Great Plains Ladies' Tresses ~ KSNPC Staff Photo

2014 Volunteer Steward Award Presented to Bob and Ruth Matheny

By Joyce Bender, Nature Preserves and Natural Areas Branch Manager

Bob and Ruth Matheny were recognized for their volunteerism as the 2014 recipients of the commission's Volunteer Steward Award. They were the first, long-term, full-service volunteers to work with the commission's stewardship staff. They were contributing time and effort over a decade before our Volunteer Steward Award was created.



Left to right: KSNPC Director Donald S. Dott, Jr., Bob and Ruth Matheny, Carl W. Breeding Chair

The Mathenys started out as volunteers at Boone County Cliffs in 1990, but also assisted with Dinsmore Woods and other preserves in northern Kentucky. The Mathenys focused on Boone County Cliffs as it was close to home and the beauty of the preserve appealed to them. "If you are going to do volunteer work, why not spend the time at a beautiful spot?" was their philosophy. Bob and Ruth planned and led workdays to maintain the trail and combat relentless invasive weeds such as garlic mustard and bush honeysuckle. They assisted with boundary work, fostered good neighbor relations, built and installed beautiful wooden trail signs and cleared dangerous windfalls blocking trails. They helped enforce the rules: they kept climbers off the erodible cliffs, watched for ginseng poachers and hunters, reported trespassers and cleaned up litter and dumps. Beyond their physical labor, they transcribed species lists and maintained computerized records for plants and birds, compiled information on the history of the preserve and led hikes for public visitors. We could not have asked more of Ruth and Bob.

The Mathenys were cheerful, thoughtful and generous with their time and resources. They saved the commission untold funds we would have spent on materials, staff time and travel costs if not for them. Because their reliable management of Boone County Cliffs provided a constant presence, our small staff was able to attend to the needs of other preserves. We were fortunate to have their assistance for so long and it is hoped that others who share the same passion and wonder for our natural world will take up where they left off.



What lies beneath...a search for freshwater mussels at the

Western Kentucky University Green River Preserve

By Michael Compton, Aquatic Zoologist

Kentucky has an incredibly diverse freshwater mussel fauna, with more than 100 species known from the state. However, approximately 20 percent of the mussel fauna has been lost due to a variety of human activities, such as urbanization, mining and agricultural practices, and impoundments, which have altered water quality and habitats where these invertebrates live. Of the remaining species, approximately half are imperiled and require protection and close monitoring.

Monitoring of mussels requires investigating streams and rivers where populations exist and habitats where they potentially could occur. Qualitative survey techniques can be as simple as walking the stream banks and within the streambed looking for shell material for expired individuals and live individuals that are embedded among the channel substrates. However, quantified sampling techniques can be much more labor intensive and time consuming; typically a random subsample of a known mussel bed is sampled by excavating the river bottom in search of adult and juvenile mussels. Often individuals are completely buried under the substrate, and potentially as far down as six to eight inches below the streambed surface. Therefore, a large field team is needed to sift through the stream material in search of the smallest mussels.

Last summer, KSNPC aquatic zoologist staff and numerous volunteer biologists from Eastern Kentucky University, Morehead State University, Western Kentucky University (WKU), Kentucky Division of Water, Mammoth Cave National Park, and the U.S. Fish and Wildlife Service conducted qualitative and quantitative mussel surveys in a segment of the Green River associated with the WKU Green River Preserve in Hart, Co., KY. The Green River is one of the most diverse river systems, not only in Kentucky, but also within the United States. The Green River harbors nearly two-thirds of the state's remaining mussel fauna, with numerous federally endangered and threatened species. It was our hope to encounter as many species as possible during our work and to document the population structure.

The river conditions were ideal during July/August and after multiple days of snorkeling and diving live individuals of 30 species were encountered, including the federally listed species spectaclecase (*Cumberlandia monodonta*), fanshell (*Cyprogenia stegaria*), sheepsnose (*Plethobasus cyphus*), and rabbitsfoot (*Quadrula c. cylindrica*). In addition, a fresh-dead shell of ring pink (*Obovaria retusa*), and relic material of clubshell (*Pleurobema clava*) were found. It was unfortunate no evidence of live Clubshell mussels were discovered, and what was found is literally an artifact of a population that once existed in that section of the river. However, it is extremely encouraging to find a fresh-dead specimen of ring pink. The specimen was approximately 18 to 20 years old but evidence of its recent existence is positive for a species that is on the brink of extinction. More work is surely needed to find live individuals and hopefully the presence of juveniles.

One of the most rewarding discoveries during the expedition was the occurrence of spectaclecase. This species was once a widespread species in the Mississippi River Basin, but now occurs in only a few river systems in the Midwest and Southeast. Fortunately, the Green River is one of the last remaining rivers that harbor the species. Historically, the species occurred in the Green River and Cumberland River in Kentucky, but its range has now been constricted to a small segment within the Green River.



Fanshell



Ring Pink



Adult spectaclecase



Juvenile spectaclecase



Adult spectaclecase



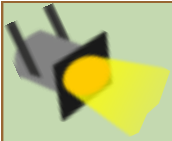
The actual discovery of the species occurred in a long slow-flowing pool with the left descending bank strewn with large boulder substrate. KSNPC used a direct air supply line to dive into the river and search among the rocks. The maximum depth of the channel in the pool was about 10 feet and clarity was excellent. As the staff prepared to enter the water a team member found a live specimen of spectaclecase within a few feet of our canoe. This was an excellent sign that we were potentially in the right habitat. As the staff went below the surface curious fishes such as longear sunfish and largemouth bass cautiously swam nearby and stared at the divers. Once the divers reached the channel bottom they began searching among the large slab boulders, occasionally lifting the more manageable-sized rocks to spy underneath. Not every rock revealed a mussel treasure, sometimes flathead catfish were encountered or the Green River endemic, bottlebrush crayfish. However, a few rock slabs did yield individuals of the endangered species. One particular slab had eight spectaclecase underneath it, where the mussels were lined up tight to each other like parked cars at the county fair. As the day progressed, over 15 specimens were encountered with one specimen less than 10 years old. Spectaclecase is one of the longest-living freshwater mussels and can reach nearly 100 years in age. Most individuals encountered were estimated to be 25 to 40 years old.

Many good discoveries were made last summer but much more work is needed for the conservation of freshwater mussels across the state. However, it is optimistic that places like the Green River still maintain pockets of good habitat and water quality, so that a diverse assemblage of aquatic organisms can be supported. Many thanks goes out to the WKU Green River Preserve staff for their hospitality and assistance on this project, and to all of the volunteers; their presence made the work more manageable and extremely enjoyable.



From left to right: KSNPC Aquatic Zoologist Mike Compton, KSNPC Interim Evelyn Brett, and Dr. David J. Eisenhour, Dept. of Biology and Chemistry, Morehead State University
All photos courtesy Ouida Meyer, Western Kentucky University





In the Spotlight:

Cypress (tupelo) Swamp

By Brian Yahn, Vegetation Ecologist

The Cypress (tupelo) swamp is a rare type of wetland that only occurs in the western part of Kentucky. This community has an extended hydroperiod meaning it is usually flooded for most of the year. Due to these periods of prolonged ponding, the community is dominated by water-loving bald cypress and/or water tupelo. Bald cypress and water tupelo swamps are commonly in the southern reaches of the Coastal Plain, near the Atlantic and Gulf Coastline. In Kentucky, however, such wetlands are very rare as the Coastal Plain is limited to areas west of Land Between the Lakes; a few cypress swamps also occur farther east, along the lower Ohio River corridor to near Owensboro and then south into the lower watershed of the Green River and its tributaries, near Central City. The abundance of this community prior to Euro-American settlement was always limited in Kentucky but big, poorly-drained bottomlands of the Mississippi, lower Ohio and lower Green Rivers (and their tributaries) likely supported expansive but patchy acres across this area.

Since settlement, the attempt by humans to channelize and drain the bigger but slower-moving rivers (and their tributaries) of western Kentucky has reduced this community's footprint on the landscape. Typically, only those swamps most difficult to drain and/or tied directly to large rivers that flood and support sloughs, remain today. With so many changes in the natural landscape, Kentucky's Cypress (tupelo) swamp communities are now extremely rare. The removal and degradation of these swamps has reduced a once vibrant part of Kentucky's native flora and fauna, causing many species supported by this community to become rare. KSNPC lists Cypress (tupelo) swamp as **state endangered (=S1)**. Very few intact examples are known in the entire state, with only seven high-quality occurrences documented in the KSNPC Heritage database (2015).

Outside of Kentucky, swamps dominated by cypress and/or water tupelo extend across the southeastern U.S. but vary in species

composition, soil types, etc. Some are globally rare while others are more common. The type occurring in Kentucky is not currently considered globally rare; NatureServe, the national authority on the status of rare species and natural communities, lists its status as **apparently secure (=G4)**.

A description of the natural condition of this community is based on the remaining examples in Kentucky. Although these sites are considered high-quality they're still affected by past and current disturbances and landscape changes (ditching, draining, flooding, nearby logging, erosion, siltation, etc.). Soils are wet (hydric) with dark, fertile layers referred to as "muck" and are permanently or



Cypress (tupelo) swamp at Murphy's Pond, Hickman County ~ KSNPC Staff photo

semi-permanently flooded. The best examples, as one would expect, are dominated by bald cypress and water tupelo trees, and due to prolonged ponding the trees are often widely scattered. The vegetation strata below the canopy are also developed, including wetland understory trees, shrubs, grasses, sedges and forbs. Healthy populations of conservative native species (sensitive to unnatural soil disturbances) are scattered throughout. A common sub-canopy tree is red maple, but some areas may include pumpkin ash, water-elm and

waterlocust (a rare species in Kentucky). Buttonbush is a common wetland shrub in this swamp; swamp loosestrife, swamp rose and Virginia willow may also be abundant. Many native sedges are usually associated with Cypress (tupelo) swamps including several main genera: beaksedges, bulrushes, carex sedges, rushes and spikerushes. High-quality remnants are diverse with wetland wildflowers (i.e. forbs) and include an array of colorful blooming species. Characteristic herbs include arrowleaf tearthumb, climbing hempvine, greater marsh St. John's wort, swamp smartweed, Virginia dayflower and white turtlehead, with floating aquatics such as common duckweed (KSNPC 2015). In Kentucky, Cypress (tupelo) swamps provide essential habitat for rare plant and animal species, several of which are found nowhere else outside of this community.



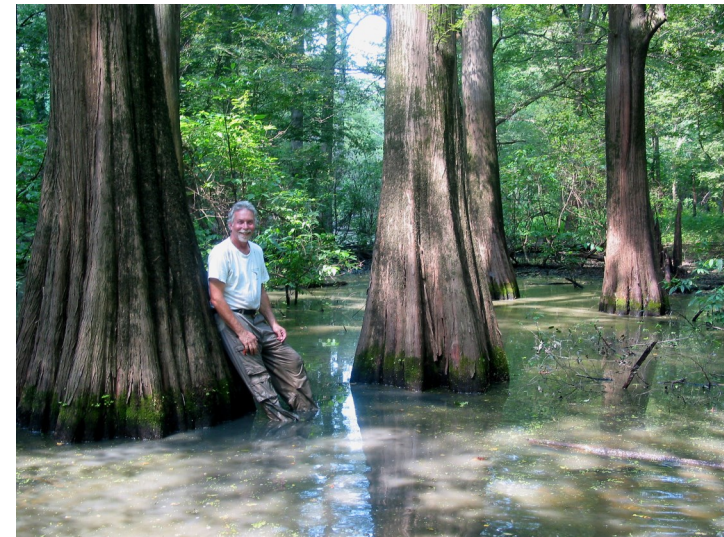
At least 14 KSNPC-listed plants have been documented on, or in close association with Cypress (tupelo) swamps (KSNPC 2015). These associated rare species (not highlighted below or listed above) include American frog's-bit, blue-flower coyote-thistle, blue jasmine leather-flower, Carolina fanwort, cypressknee sedge, five-lobed cucumber, giant sedge, lakecress, red buckeye, spinulose wood fern, upright burhead (closely associated), zigzag iris and several others (KSNPC 2015). Unique reptiles and amphibians (herps) associated with these swamps include bird-voiced treefrog, eastern ribbon snake, green treefrog, green water snake, southern painted turtle, three-toed amphiuma and western mud snake. Several bird species are known to nest and associate with areas of wet bottomlands, including areas with cypress and tupelo; these include fish crow, great blue heron, great egret and Mississippi kite. Also, several rare fish species are found in deeper waters of Cypress (tupelo) swamps; these include the cypress minnow, tailight shiner, golden topminnow, and swamp darter to name a few.

Since the time of Euro-American settlement, wetlands have been disappearing from Kentucky at an alarming rate. Estimated at 1.5 million acres at the time of settlement, today wetlands have been reduced to less than 300,000 acres in Kentucky (Abernathy et al. 2010). Draining and channelization, unnatural flooding, logging, plowing, trampling/grazing, construction of ponds and reservoirs, development of roads and buildings, suppression of fire, erosion and siltation, all these activities continue to degrade and often eradicate natural wetlands. Better understanding and protection is needed to keep these wetlands healthy and on the landscape. For more information on wetland communities in Kentucky contact commission ecologists Brian Yahn (brian.yahn@ky.gov) or Martina Hines (martina.hines@ky.gov).

Cottonmouths are venomous snakes found only in the western part of Kentucky, usually in or close to water. Cypress (tupelo) swamps provide great habitat for these heavy-bodied snakes; in fact, a good population occurs at Obion Creek State Nature Preserve within the big cypress swamp known as Murphy's Pond (access to the Pond is by written permission only; contact Murray State University).



Photo courtesy Utah's Hogle Zoo <http://www.hoglezoo.org>



"Cypress trees can grow to be one of the largest trees in the eastern United States and can live for over 1,000 years. They are unique in that they are deciduous conifers, like pine trees, but lose their needles (leaves). They also have large, swollen bases and produce "knees" that rise several feet. The knees are thought to provide structural support and aid in gas exchange," said Marc Evans, former KSNPC ecologist

Cypress (tupelo) swamp and Marc Evans.
Photo by KSNPC staff



"knees"

References:

[KSNPC] Kentucky State Nature Preserves Commission. 2009. Natural communities of Kentucky. Working draft. Frankfort, KY.

[KSNPC] Kentucky State Nature Preserves Commission. 2015. Kentucky Natural Heritage Database. Kentucky State Nature Preserves Commission, Frankfort, KY.

NatureServe. 2014. NatureServe Explorer Worldwide Web database. <http://www.natureserve.org/explorer>. Accessed in August 2014.



Species associated with the Cypress (tupelo) swamp:

Cypress Sphinx

Isoparce cupressi

KSNPC Status: None

USFWS Status: None

General Description: Forewing gray with two broken black dashes, larger one accented with orangish brown above thickest part. Hindwing uniform dark gray.

Habitat: Cypress swamps with good populations of the caterpillar's host, bald cypress (*Taxodium distichum*).

Range: Coastal states from Maryland to Texas, but extending north into the Coastal Plain of Kentucky and southern Indiana.

Flight Season: Two broods have been reported (March–May and July–September).



KSNPC photo by Jim Vargo

Rose Turtlehead

Chelone obliqua var. *speciosa*

KSNPC Status: Special concern

USFWS Status: None

General Description: This species of turtlehead is distinguished from the common species in having purple pink flowers. There are two varieties associated with this species and var *speciosa* has upper bracts obtuse rather than narrow and/or acuminate (long-pointed). The sepals are strongly ciliolate whereas the other variety has fewer cilia on the sepals. The two varieties are geographically separated and variety *speciosa* occurs in western Kentucky.

Habitat: Floodplain and alluvial forests, swamps and sloughs.

Range: Current range includes northeastern and southeastern Missouri, southern Illinois and Indiana, and western Kentucky, plus a disjunct site(s) in Michigan. Historical occurrences in Minnesota, Iowa, and Arkansas.



Photo courtesy James Kiser

Dollar Sunfish

Lepomis marginatus

KSNPC Status: Endangered

USFWS Status: None

Range: The species is generally uncommon along the Atlantic Slope drainages as far north as North Carolina and south to all of Florida, and as far north as Kentucky and west as Texas of the Coastal Plain Region of the Gulf of Mexico.

Habitat: Usually associated with sand, silt, and organic debris in spring-fed streams and wetlands, and vegetated backwaters of rivers, swamps, and sloughs.

General Description: This slab-sided species is distinct with a mixture of olivaceous and blue along the back and side, breast and belly yellowish to orange, and a black opercular lobe (ear flap) that is outlined with a white/silver margin, which often has silver/white blotches within the black portion. These blotches are the distinguishing character which separates it from the Longear Sunfish (*Lepomis megalotis*).

Reasons: The species has a very limited in range in Kentucky and the necessary high-quality spring-fed stream and wetland habitats have declined tremendously over the past century.



Photo courtesy Dr. Matt Thomas, USFWS



Land Protection Report

By Brent Frazier, Land Acquisition Specialist



Northern cricket frog ~ KSNPC staff photo

Since our last report, we were able to establish our 63rd state nature preserve. Lone Oak Barrens State Nature Preserve (SNP) was dedicated at the September 2014 commission meeting. This 34-acre SNP, located in Grayson County, contains a unique limestone slope glade community that also has rare barrens/prairie community remnants marginal to the glade. Future plans include clearing pines and cedars from the glades' edges and conducting prescribed burns in the grassland and glades.

The commission was also able to acquire a 386-acre addition at Blanton Forest SNP, which was dedicated at the March 2015 commission meeting. This increases the acreage at Blanton Forest SNP to 3,510 acres of old-growth and second-growth forests.

The commission is in the process of adding a significant tract to Bad Branch SNP, which will bring the total acreage to 2,639 acres. This preserve protects the scenic beauty of the gorge and one of the largest concentrations of rare and uncommon species known in the state. The preserve also protects Kentucky's only known nesting pair of common ravens (*Corvus corax*). At Hi Lewis SNP we are hoping to purchase an additional 120 acres. Named for the stream that drains the area, this preserve on Pine Mountain supports an extremely rare Pine Barrens community, as well as a number of rare plants that are found in association with it.

Joyce Bender Receives Lifetime Achievement Award from the Environmental Quality Commission

By Donald S. Dott, Jr., Director, and Leslie Isaman, Administrative Specialist III

Joyce's career with KSNPC began in 1986 when the state nature preserves system held only 16 preserves and encompassed 5,703 acres. Under her tenure, the number of preserves has expanded to 63, encompassing 27,663 acres statewide. For Joyce, her work is her passion, and she has developed a system of preserves that provides refuge for some of Kentucky's rarest plants and animals, while at the same time providing opportunities for the public to enjoy and learn about our state's treasures. It is a demanding task preventing recurring problems such as illegal dumping, off-road vehicles, timber theft, the encroachment of invasive species, diseases that can decimate both plant and animal populations, and many other threats. Since that day in 1986, the Stewardship Branch has been reduced from six full-time employees to two.

Most of the preserves require regular maintenance work to support habitat for rare species and high-quality natural communities. Prairies, barrens and glade systems need prescribed fire to replicate the historic natural fire regimes that made these systems viable. With fire removed by human suppression, taller, woody vegetation encroaches and shades out lower growing plants. Invasive exotic species require constant vigilance. Even when such species as kudzu can be fully eliminated, they will re-invade from surrounding

lands if they are not controlled. Then there is routine upkeep of parking areas, trails and signage for public access. Ice storms or tornadoes break canopies and create opportunities for invasive species that require action over 63 sites spanning the entire state. **With only two stewardship staff, it's clearly an impossible task!** Joyce has done so much with so little, and

has reverted to early tools of trying to recruit volunteers, even to the point of asking help from individuals who have called to complain about trails being blocked by fallen trees, or damage caused by vandals. Still, she perseveres.

"I have heard Joyce referred to as a pillar of the conservation community," said KSNPC Director Donald Dott "and I couldn't agree more. Her award was earned through a career of dedicated service."

The Kentucky EQC presented its annual Earth Day awards to individuals and groups who have made significant contributions to environmental protection. This year's event took place at the Berry Hill Mansion in Frankfort.

"It's an honor to recognize Kentuckians for their tireless efforts and unwavering advocacy to environmental protection," said Arnita Gadson, executive director of the EQC. "This year's recipients are diverse and their efforts will have positive lasting effects in our state."



Left to right: EEC Secretary Len Peters, Joyce Bender, Center for Intergovernmental Relation, Halida Hatic and EQC Chairman Stephen A. Coleman



The Director's Notes

By Don Dott, Executive Director

Sunrise over Pine Mountain ~ KSNPC staff photo

The worrisome trend in pollinator decline has led the commission to expand its work with pollinators. KSNPC's Invertebrate Biologist Ellis Lauder milk has worked with Lepidoptera (butterflies and moths) for quite a few years. This past August he added a group more commonly recognized as pollinators. We believe Ellis is the first person in Kentucky to attend the leading course on native bee identification offered by the American Museum of Natural History. The Kentucky Department of Agriculture has a program focused on honey bees, led by State Apiarist Tammy Horn. Honey bees are introduced from Europe and the most widely recognized bee. Yet, there are over 4,000 species of bees native to North America, which were providing pollination prior to the arrival of honey bees. Some bumble bee species are also declining, and by learning the native species, Ellis will be able to assess the condition of our native pollinators that are critical to growing many foods – especially vegetables and fruits.

A second “silent spring”? A strongly suspected cause in pollinator decline is a group of systemic pesticides called neonicotinoids, which affect the central nervous system of insects that feed or nectar on treated plants. It's a suspect in honey bee Colony Collapse Disorder and may be affecting pollinators on a broader scale. Monarchs, the first butterfly many children learn to identify (also a pollinator) has seen drastic declines since the mid-1990s. The U.S. Fish and Wildlife Service is conducting a status review of the monarch in response to petitions to list it as a threatened species. **Monarchs are suffering from habitat loss, more specifically a decline in the only food source for its caterpillars, milkweed. Increased, widespread use of herbicides in corn and soybean plantings are effectively killing off the native milkweeds. The use of neonicotinoids on plants at which they nectar may also be a factor.**

The commission provides a report every two years to the Governor and the General Assembly on the state of the nature preserve system and related issues. The most immediate problem identified in the report is the loss of stewardship staff due to repeated budget cuts since 2006. As announced in the report, it is an **IMPOSSIBLE** task for two staff to manage and oversee 63 state nature preserves - over 27,000 acres! With needs as diverse as their locations from the Mississippi River to Pine Mountain on the Virginia border, the preserves are declining. Invasive species are rebounding from efforts to control them, prairies and barrens in need of prescribed fire are invaded by woody vegetation and trails cannot be maintained as often as needed. We are on the verge of closing some preserves without more stewardship staff. If you feel a pull to help steward your state nature preserve system, please contact the commission about volunteer opportunities. It's a great way to get outdoors on some of Kentucky's best natural lands and get the good feelings from doing something to help at the same time. You can also help with a donation of either money or time to the Friends of

Kentucky State Nature Preserves Commission, a nonprofit group. (<http://www.friendsofkynaturepreserves.org/>).

The [2015 Biennial Report](#) highlights achievements and events of the last two years.

- ◆ Kentucky clover (*Trifolium kentuckiense*) was confirmed as a new species, and a third endemic plant for Kentucky.
- ◆ Two new state nature preserves were dedicated: Archer Benge on Pine Mountain in Whitley County and Lone Oak Barrens in Grayson County.
- ◆ Five new rare species populations were found; two species not seen in 20 years were “rediscovered” and two species not previously known from Kentucky were discovered.
- ◆ The commission received a generous private grant to reprint our book *Kentucky's Natural Heritage, An Illustrated Guide to Biodiversity*, and to provide a copy to every middle school, high school and college library in the state.

I invite you to read the [full report](#) or the shorter [Executive Summary](#) version for more details on the commission's work.

Kentucky's Pollinators on the Decline



Kentucky State Nature Preserves Commission

Biennial Report
2015

Kentucky State Nature Preserves
Commission



Upcoming Hikes and Events

June 10-14, 2015: "In the Footsteps of Lucy Braun," Pine Mountain Settlement School (PMSS), Pine Mountain. This year's program will be led by former PMSS Director Ben Begley. Register for the five-day event [here](#).

July 10-31, 2015: KSNPC's metal art display, "Kentucky's Natural Heritage," will be on exhibit at the John G. Irvin Art Gallery at [Central Bank](#), 300 W. Vine St., Lexington. An opening reception with refreshments will be held in the Executive Offices on July 10, located on the 5th floor, from 4:30-6 p.m. Parking during the reception is located in the bank's customer/visitor lot off of High Street. Parking tickets will be validated. Central Bank will also post the event on their [Facebook page](#) as the date draws nearer.

July 17-19, 2015: [Forecastle Festival](#), Louisville. Promoting local artists and focusing on environmental activism and outdoor recreation.

****More events may be planned, please check our [online calendar](#) for an up-to-date list.**

Join the Friends of Kentucky Nature Preserves Today!

friendsofkynaturepreserves.org



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CHECKOFF BOX TO DONATE TO THE NATURE AND
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**Kentucky State Nature Preserves Commission
Quarterly Public Meeting**

**June 11, 2015
10:00 a.m. KSNPC Office**

801 Teton Trail, Frankfort

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801 Teton Trail, Frankfort, KY 40601-1403
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Check us out on Facebook: www.facebook.com/ksnpc

It is the mission of the Kentucky State Nature Preserves Commission to protect Kentucky's natural heritage by: (1) identifying, acquiring, and managing natural areas that represent the best known occurrences of rare native species, natural communities, and significant natural features in a statewide nature preserve system; (2) working with others to protect biological diversity; and (3) educating Kentuckians as to the value and purpose of nature preserves and biodiversity.

The Energy and Environment Cabinet does not discriminate on the basis of race, color, national origin, sex, age, religion or disability and provides, upon request, reasonable accommodations including auxiliary aids and services necessary to afford an individual with a disability an equal opportunity to participate in all services, programs and activities. To request materials in an alternative format, contact the Kentucky State Nature Preserves Commission at 801 Teton Trail, Frankfort, KY 40601-1403 or call 502-573-2886. Hearing-impaired and speech-impaired persons may contact the agency by using the Kentucky Relay Service, a toll-free telecommunication device for the deaf (TDD). For voice to TDD, call 800-648-6057. For TDD to voice, call 800-648-6065.

