Naturally Kentucky
Summer/Fall 2014 Number 72

KSNPC Latest News — Lots of the Latest "Finds":

- A new population of the state threatened Virginia screw-stem (*Bartonia virginica*) was found on Pine Mountain on the E. Lucy Braun Memorial SNP by Ben Begley.
- Rediscovery of the federally endangered Cumberland darter (*Etheostoma susanae*) from Laurel Fork within the Archer Benge SNP by KSNPC aquatic zoologist and USFWS biologists. The species had not been seen from that stream in over 20 years!
- A new population of the state endangered Allegheny stonecrop (*Hylotelphium telephioides*) was discovered on an Ohio River bluff in Big Rivers Wildlife Management Area (WMA), Crittenden County by KSNPC botanists.
- The state endangered baby lip fern (*Cheilanthes feei*) was rediscovered in Bullitt County by KSNPC botanists. It had not been seen in Kentucky for over 20 years!
- A new population of the state threatened wild sarsaparilla (*Aralia nuducaulis*) was discovered on the Archer Benge SNP by KSNPC botanists.
- Kentucky has a new federally listed plant, the globe bladderpod (*Physaria globosa*). Pictured below, the bladderpod had been a candidate for federal listing for over 20 years! It occurs on rocky woodland slopes in the Bluegrass.
- Discovery of several live specimens representing multiple age classes of the federally endangered mussel, spectaclecase (*Cumberlandia monodonta*), from the Western Kentucky University, Green River Bioreserve in Hart County was made by KSNPC aquatic zoologists and USFWS biologist.

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Globe bladderpod -
KSNPC Photo by Brian Yahn

Kentucky's Threatened and Endangered Fishes —

The Blackside Dace

By Michael A. Floyd, PhD
Kentucky Ecological
Services Field Office
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Wildlife Service

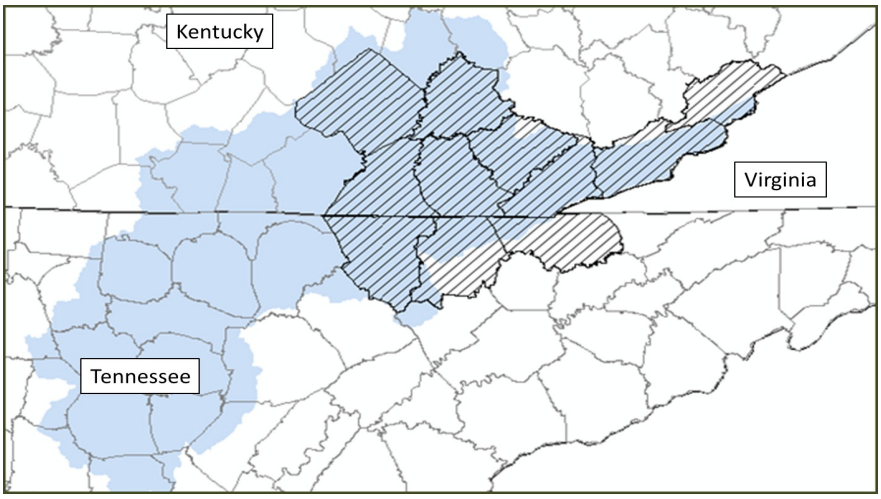
Kentucky's diverse fish fauna contains nearly 250 native species, including nine species that occur nowhere else in the world! Unfortunately, poor land use practices and pollution over the past 200 years have degraded most of our waterways, negatively affecting the fauna and contributing to the loss of nine species. Of Kentucky's remaining fishes, about 25 percent are now considered imperiled, and six are so jeopardized that the U. S. Fish and Wildlife Service (Service) has added them to the Federal List of Threatened and Endangered Wildlife. Once on the list, these species are afforded special protections under the Endangered Species Act (ESA) and are made the focus of conservation programs that seek to remove threats and improve each species' status.

Kentucky's Federally Threatened and Endangered Fishes

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

In this issue of *Naturally Kentucky*, I present the first of six articles on Kentucky's federally listed fishes. In each case, I plan to provide basic information such as general appearance, biology, and distribution, but I will also explain why these species are imperiled and describe how the Service and its partners are trying to conserve them.

Our first featured species is the blackside dace, *Chrosomus cumberlandensis*, a minnow that is endemic to the upper Cumberland River drainage in southeastern Kentucky and northeastern Tennessee**.** It was not formally recognized as a distinct species until 1978 but was immediately recognized by its descriptor, Dr. Wayne Starnes (then a graduate student at the University of Tennessee), as a species in trouble. Based upon subsequent status surveys and threat assessments by Dr. Starnes and others, the species was federally listed as a threatened in 1987.



The blackside dace is a small member of the minnow family, reaching a maximum length of about 3 inches. It is distinguished from other fishes by its pointed snout, a wide, black lateral stripe on its side (sometimes two stripes that converge at the tail), an olive-colored to gold-colored back, and some scarlet and yellow coloration on the head and belly**.** During the breeding season, males will exhibit an intensely black stripe; bright scarlet coloration on the belly, head, and mouth; and bright yellow fins with metallic spots. The southern redbelly dace (*Chrosomus erythrogaster*) can sometimes occur in the same habitats, but it can be differentiated by its two, parallel lateral stripes.

Photo courtesy Matt Thomas, KDFWR

Blackside dace typically inhabit pools of small, cool, upland streams with moderate flows, minimal silt, and good water quality. Their habitats generally have good canopy cover, and a variety of instream cover such as submerged roots wads, undercut banks, woody debris piles, and large rocks. Spawning occurs between April and June over clean gravel in nests typically constructed by other species such a creek chub and central stoneroller. For most of the year, dace eat algae that are attached to submerged surfaces (wood, rocks) but they supplement their diet with aquatic insects during the winter.

Members of the minnow family tend to be good swimmers, and blackside dace are no exception. Recent research on the Daniel Boone National Forest has shown that dace can travel up to 2.5 miles within a given year! They can even leave their headwater reaches and travel downstream through deep, unsuitable habitats (e.g., larger streams, lakes) to reach other tributaries. The species often forms schools, and some of these groups can contain as many as 100 individuals.

Blackside dace stream—Cumberland Gap National Historical Park (Photo courtesy USFWS)

When the species was described in 1978, it was known from only 12 streams. We now have current records of the species from 119 streams in three states – Kentucky, Tennessee, and Virginia. The majority of these streams are located within the upper Cumberland River drainage (the species' historical range); however, several new populations have been discovered over the last 20 years in the Big South Fork Cumberland River drainage, the upper Kentucky River drainage, and the Clinch and Powell River drainages in Virginia. So far, it appears that most of these new populations are the result of accidental bait bucket introductions; however, preliminary genetic analyses suggest that at least some of the Big South Fork occurrences could represent native populations.

The small size and isolated nature of many dace populations makes them less secure and more vulnerable to local extirpations. Even though blackside dace currently occupy over 100 streams, recent research has demonstrated that most dace populations are small (only a few individuals observed during field surveys) and, presumably, remnant in nature. These small, isolated populations run the risk of reduced fitness due to inbreeding and loss of genetic variation, and if extirpations do occur, the isolated nature of these populations means that recolonization is unlikely.

To protect and promote recovery of the species, the Service and its many partners (e.g., KSNPC and KDFWR) work together to implement recovery actions outlined in the 1988 blackside dace recovery plan. Some of these actions include (1) utilization of existing legislation and regulations to protect the species and its habitats (e.g., Endangered Species Act, Clean Water Act, and state laws/ regulations); (2) completion of monitoring surveys and searches for new populations; (3) acquisition of important dace habitats to provide long-term protection for the species (e.g., Blanton Forest State Nature Preserve, Harlan County); (4) completion of research on the species' distribution, ecology, threats, and conservation; (5) restoration of dace habitats; and (6) development of educational materials that describe the species' biology and inform the public about proper land use practices.

Blackside dace spawning over creek chub nest

Photo courtesy Dr. Tyler Black - TN Tech

Kentucky's Invasive Plants

By Joyce Bender, Nature Preserves and Natural Areas Branch Manager

Have you noticed the prickly-stemmed plant topped with a brown, egg-shaped spike that is growing in clumps along the roadsides right now? This is common teasel (*Dipsacus fullonum*), an aggressive non-native invader of mostly disturbed areas. Unfortunately, this pest plant can move into natural communities such as glades and grasslands along disturbance corridors. It is considered a significant threat by the Kentucky Exotic Pest Plant Council.

Many people take one look at the bristly flower spike and prickly-looking stem and leaves and think they are looking at a thistle. A closer look at the flowers and leaves are ways to differentiate these two plants. The tubular lavender flowers on teasel protrude from the spike in bands. The flowers of thistles are surrounded by a set of bracts like a cup. Teasel has opposite leaves that can form a cup where they attach to the stem. Leaves of thistles are alternate.

One teasel plant can produce roughly 2,000 seeds. The seeds have a fairly high germination rate and are viable for several years. Teasel can quickly cover an area, crowding out native species. Look for basal rosettes in the spring and treat at this stage of growth for best results. Teasel can be dug in small numbers; be sure to dig up the entire tap root to avoid re-sprouting. In larger clumps, spray rosettes with herbicide according to the label rates prior to stem elongation.

The dried spikes are sometimes used for craft projects and in dried flower arrangements. Seeds may be transported when the flower heads are collected and used in this way, so please refrain from using them. The best place to display these dried spikes is in the trash can.

For additional information:

http://dnr.wi.gov/topic/Invasives/fact/CommonTeasel.html

http://learningstore.uwex.edu/Assets/pdfs/A3924-14.pdf

Photo courtesy Steve Dewey
Utah State University, Bugwood.org

Photo courtesy Steve Dewey
Utah State University, Bugwood.org

Natural Area Registry Spotlight

By Brent Frazier, Land Acquisition Specialist

Owners of the Tierney Tygart Natural Area — John and Lelana Tierney

Located in Carter County, the Tierney Tygart Natural Area contains 10.5 acres and includes cliffs and forest along Tygart's Creek. The registry is not only part of this ecologically important river system but is also home to several endangered and threatened plants. Mountain lover (*Paxistima canbyi*), Walter's violet, (V*iola walteri*), downy arrowwood (*Viburnum rafinesquianum*), cutleaf meadow parsnip (*Thaspium pinnatifidum*) and Canada yew (*Taxus canadensis*) all occur at this site, giving it one of the highest concentrations of rare plants on a registered natural area in Kentucky. Tygart's Creek itself, which flows along the base of this site, supports several rare mussel populations. The beauty of the high, dry forests and open, rocky outcrops on the site are some of the more impressive features of this river system.

Mountain lover (*Paxistima canbyi*)
Photo courtesy Thomas G. Barnes

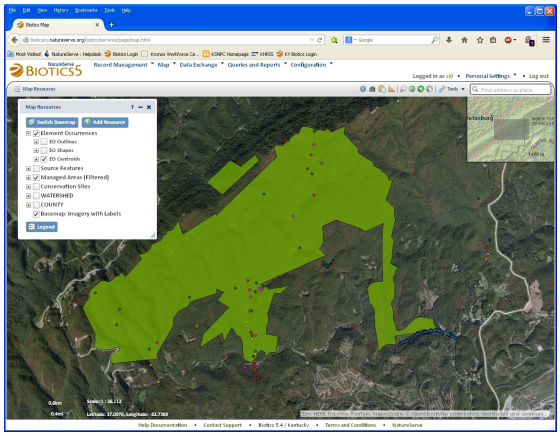
The Natural Area Registry program is a voluntary, non-regulatory program designed to provide recognition for sound stewardship and to increase awareness of the ecological significance of a landowner's property. To be eligible for registration, a property must contain habitat for plants or animals that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

Kentucky Natural Heritage Database Upgrades to Biotics 5

By Sara Hines, Data Manager

While the mission of the Kentucky Natural Heritage Program (KYNHP) has not changed a great deal in our 38-year history, technology has. We still focus on collecting and maintaining the most reliable and accurate data possible on the locations and conditions of rare species and high-quality natural communities using a consistent methodology, but we long ago abandoned hand markings and sticky dots on hardcopy topographic maps. With advances in technology and the availability of a wealth of digital geospatial data for Kentucky, we can make meaningful maps and conduct very powerful analyses with our information. Because an integrated data management system like Biotics relies on many components, keeping our technology updated and useable with current software is an important consideration.

Recently, KYNHP underwent a substantial upgrade to its Biotics data management system, which uses the current software versions of ArcGIS and Oracle. Biotics 5 is a system based on web services architecture that was designed and created specifically to house the data of the natural heritage programs throughout the NatureServe network. Unlike previous, static versions of the software that each program had to maintain, Biotics 5 is a dynamic system with NatureServe providing the software support. This takes away most of the local workload of installing, upgrading and supporting the software for each user, giving us a cost-effective system with less maintenance.



Biotics 5 provides a common data management platform for the NatureServe network, near real-time data synchronization and consistent application of our shared data standards and methodology. With this upgrade comes better access to global data and streamlined data exchanges. Through NatureServe's common Biotics 5 platform, the goal is for all programs to be able to include data in regional and national studies and to have access to better range-wide species information to facilitate state-level status assessments. Over the next year, the Biotics 5 system will continue to be implemented throughout the NatureServe network in the U.S. and Canada.

Staff Reflects on the Retirement of Deborah White

Donald S. Dott, Jr., Director:
"I believe the thing about Deb that sticks most in my mind, is whenever she came to talk to me about something, she always had one foot out the door! I never thought to ask her if it was my deodorant, or my generally grouchy demeanor, but it was always a challenge to keep her presence in the doorway for more than a few fleeting seconds. It was almost as if an invisible rope were tied to her ankle. But, I really have to admire that in Deb – usually the opposite is true in state government. Too many meetings, taking too much time. It may have been the secret to how she got so much accomplished. So I wish her the best, and hope her new board at Woods and Waters Land Trust has a *lot* to keep her happy!"

Joyce Bender, Nature Preserves and Natural Areas Branch Manager:
"Deb joined us in our cramped little office building at 407 Broadway back in 1991. I remember that she had the only other office with a window besides the Director's. She had to share her narrow space, so that really lowered the value of the window to the rest of us. Deb's contribution to the commission grew with the decades she spent here. As the staff botanist, she ably administered the funds we received from the USFWS for rare plant conservation and added many plant records to the agency's database. Over the years, she trained young botanists who assisted her in plant inventories. Many have gone on to careers in botany for other state and federal agencies. She assisted the public when they came in with dried up, bedraggled stems of some plant asking for identification. As a branch manager, she oversaw operations for the entire Heritage Program -- keeping up with zoologists, ecologists and data management staff, otherwise known as herding cats. Like many of us here, she worked diligently on long term efforts that we were never sure would come to fruition. Her work on Kentucky's Rare Plant Act and seeing Kentucky Glade Cress listed as a federal threatened species is testimony to her dedication and determination. She brings that same focus to Woods and Waters Land Trust and they will be a better organization with her leadership."

Tara Littlefield, Botanist:
"Deb has been a driving force at nature preserves for over 20 years. She has built one of the most important conservation programs in the state - the rare plant program - in addition to managing the natural heritage staff. She was able to get more done at her position at KSNPC than most people could in several lifetimes. I spent a lot of time in the field with Deb, and learned so much from her about plants and life. I never was quite able to catch up with her and probably never will. I am glad she is not far away at her new position and that she will still be able to work on plant conservation issues in the state."

Brian Yahn, Vegetation Ecologist:
"As the heritage branch manager, Deb treated her staff as professionals and expected proficient work, while emphasizing efficiency. She showed us that even though tasked with supervising up to seven employees, she could somehow juggle the loaded responsibility of being the senior field botanist. For me, she was supportive of my projects and ideas, and was always there to give her opinion and advice. I so admire her hard-work ethic, her dedication to KSNPC and her commitment to the conservation and preservation of Kentucky's rare plants. She will be deeply missed at KSNPC, as a colleague and as a friend."

Judy Cunningham, Internal Policy Analyst II:
"My favorite memory of Deb would be the field visits that involved roaming through Red River Gorge trying my best to keep up the pace counting white haired goldenrod."

Martina Hines, Ecologist:
"I don't have any memories of Deb ever goofing off in the field or in the office. Instead, she set a great example as an employee by being the opposite of what many people perceive as the typical state worker. I have never known anybody more responsible and conscientious about her job and her performance. Deb lives what she preaches, not only on, but off the job, by minimizing her carbon footprint, volunteering, recycling, and always looking for opportunities to make a difference."

Michael Compton, Aquatic Zoologist:
"The greatest joy of working and the biggest element that will be missed with Deb's departure is her passion, dedication, and love for Kentucky's beautiful flora. Deb was smart, fun, and a good soul to have in the office (and field). She was tireless in her efforts to preserve, educate others, and protect the plants she had come to know so well. Although she may be 'retired', she will always be a botanist and a conservationist, and Kentucky is lucky to have her. Happy trails, Deb."

Ellis Laudermilk, Invertebrate Zoologist:

"Biologists often get lost in their own little world studying the organisms in their respective disciplines. As an invertebrate zoologist there are few opportunities to participate in fieldwork with botanists or plant ecologists. However, it really is true that species are interconnected and often depend on another species to complete their life cycle. Nearly all butterfly and moth caterpillars eat plants… many rely on a single plant species. The problem is I can identify only a small number of the over 2,000 native plants in Kentucky. Deb, on the other hand, can identify most plants so I learned to tap her knowledge to locate populations of specific plants required by rare butterflies and moths. Deb was always willing to help and often told me that she had seen a population of Hercules-club, columbine, French-grass, cutleaf, coneflower or a number of other plant species that I had previously asked her about. Her tips on where to look for plants made my job easier and were really appreciated. I regret that we did not have more opportunities to interact in the field. The few times we did it was a real treat to be able to ask, "What is this plant?" and get an answer I could count on. I'll miss Deb's expertise, passion for conservation, and dedication here at KSNPC, but wish her well as she continues her life's work in other conservation activities."

Running buffalo clover

Brent Frazier, Land Acquisition Specialist:

"Deb was always very pleasant, helpful, super smart and really fast. There is no one more dedicated to her field than Deb."

Shauna Dunham, Geoprocessing Specialist III:

"I don't get the chance to go out into the field very often but Deb was kind enough to take me out a few times. Whether we were out at Red River Gorge counting goldenrods or closer to home pulling garlic mustard, Deb seemed to have a boundless supply of energy. She could walk up and down slopes and through thickets at warp speed but she was always patient with my snail's pace. Her energy, enthusiasm, and her awesome, dry sense of humor will undoubtedly serve her well in her new job. I wish her all the best!"

Kentucky lady's-slipper
Photo courtesy Thomas G. Barnes

Leslie Isaman, Administrative Specialist III:

"Since I'm in the administrative office, I don't have field stories to share. The things I recall about Deb are more endearing and humorous; those funky, personal little quirks, like the way she crumpled up her reading glasses, the stacks of plant presses ***all over her office*** and spilling out into the hallway, the way she'd tuck her hair behind her ears as if it were an unruly child, the time she took to help me pronounce scientific names, never once laughing at my deplorable Latin. The "Nebulous Thai Slaw" for pot lucks – which she always downplayed, but was actually fabulous! And then there is her great big heart. Whether the subject is botany, animals, travel, tea or her son, Deb's passion for life is unmistakable."

Kyle Napier, Southeastern Regional Preserves Manager:

"Deb will surely be missed at the commission. I looked forward to seeing her when I was at the Frankfort office. She always had this twinkle in her eyes when discussing plants and sharing outdoor experiences together. After talking with Deb and walking away I would always feel good inside. I only recently got the opportunity to work with her and staff on biological inventories and I must say it has been a delight."

Barrens Silky Aster
Photo courtesy Thomas G. Barnes

Felisha Hubbard, Administrative Specialist I:

"I can't single out a "favorite" moment about working with Deb because there are just too many that make me want to smile. If you know Deb, you know that she is a whirlwind of energy. She's kind, funny, insightful, generous, practical and a bit quirky (in a good way). We miss her."

In the Spotlight: Dolomite Glade and Barrens

By Brian Yahn, Vegetation Ecologist

One of Kentucky's rarest natural communities (KSNPC-listed as state endangered) is the Dolomite glade (KSNPC 2009). Glades are open, exposed bedrock areas dominated by drought-adapted herbs and grasses in an otherwise woodland or forest setting (Nelson 2005). They are mostly found on very dry hillsides that often face to the south and/or west. Dolomite is a type of limestone (sedimentary rock) that is rich in magnesium carbonate, creating soil characteristics that support species compositions distinct from that of non-dolomitic limestone. Dolomite glades occur only within a small area of Kentucky, essentially southeastern Bullitt County (just south of Louisville). Degraded dolomite glade and barren remnants extend just into southern Jefferson and northern Nelson counties. Outside of Kentucky, grassland communities similar to our Dolomite glades are found in surrounding states; nearly all are rare communities (NatureServe, the international authority on the status of rare species and natural communities, 2014).

Helicopter photo of Pine Creek Barrens Nature Preserve showing small glades and larger barrens ~ KSNPC staff photo

Kentucky's Dolomite glades are distinctive and part of a unique system of glades and barrens (open woodlands) unlike anywhere else in Kentucky and beyond. Only a small number of Dolomite glades have been documented in Kentucky, limited to areas where dolomite occurs and requiring specific conditions to develop. The rocky or thin soil glades are very small (usually < 5 acres) and the surrounding prairie and woodlands not much larger (remaining sites < 75 acres). Of the sites that remain, several have been damaged by human disturbances (e.g. grazing, erosion). Due to these factors, NatureServe lists this community as globally critically imperiled (=G1Q). How this community relates to similar dolomite glades in surrounding regions is still being determined; currently it is thought to be endemic to Kentucky.

As mentioned above, Dolomite glades usually occur on gradual slopes with an aspect south and west, but development also occurs along east-facing slopes. Soils are shallow, very well drained and often gravelly with little organic content. The dolomitic bedrock is near or at the surface and bedrock ledges, slabs and rock fragments are usually present. The glades have a sparse grass cover with a good diversity of herbaceous species, including many annuals. Many prairie and barren species can occur too, but are usually found on the margins or in pockets where soil is deeper. The glades can vary in shape but often extend along the contour of the slope (i.e. long length, thin width). Fire and winter frost heave, two types of natural disturbance, play an important role in helping to maintain glades. Without this disturbance, glades can be invaded by woody vegetation, which shades open areas and leads to a build-up of soil, eliminating habitat for glade associated species. Pre-settlement, large herbivores grazed in openings and helped maintain glades as well, but information on their cycles and specific impact was not well documented. The prairie and barrens (open woodland) communities that usually surround the glades, have deeper soil and a dense herbaceous layer of perennial grassland species. Regular fires maintain open conditions and promote an abundance of grassland species.

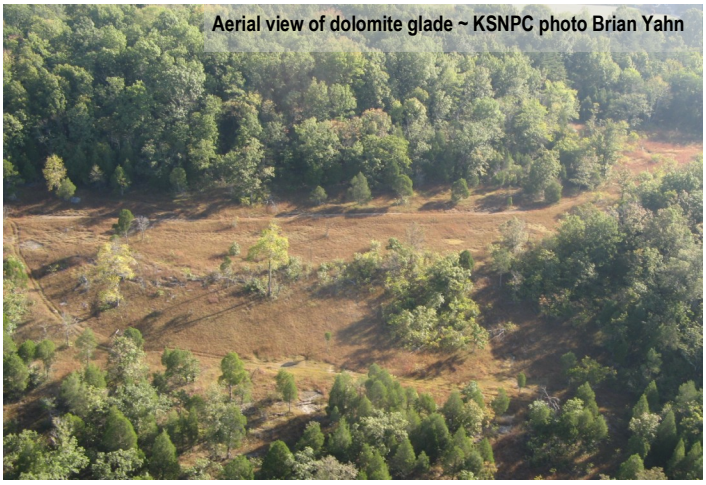
Woody plants are often absent or restricted in growth due to droughty, poor conditions, but are more abundant in the surrounding woodlands/barrens. The few trees and shrubs that can withstand such conditions are often gnarled and stunted. These hardy species include blackjack oak, Carolina buckthorn, chinquapin oak, eastern redbud, eastern red-cedar, persimmon and post oak. The herb layer, often sparse, is dominated by drought-tolerant plants. Annual dropseed is the dominant grass in gravelly or bedrock areas, and little bluestem dominates in areas of slightly deeper soil. Characteristic wildflowers include bastard toadflax, elliptical rushfoil, false aloe, flatstem spikerush, gaura, hoary puccoon, Leonard's skullcap, obedient plant, pale purple coneflower, prairie tea, roundfruit St. Johnswort, scaly gay-feather, slender heliotrope and tall gay-feather. Common (but not necessarily abundant) species in the surrounding deeper-soiled prairie and woodlands include big bluestem, yellow Indian-grass, little bluestem, prairie rosinweed, tall gay-feather, tall tickseed and others.

Dolomite glades provide habitat for many unusual plants found nowhere else in Kentucky. Nine KSNPC-listed plant species have been documented on or in close association with Dolomite glades and barrens/woodlands (KSNPC 2014). These include the barrens silky aster, Eggleston's violet, Great Plains ladies'-tresses, hairy fimbristylis, prairie dropseed and purple prairie-clover (see more highlighted below). A unique feature of many Dolomite glades (i.e. those with well-developed flat to gently sloping slabs of bedrock) is the development of seasonal wet areas that provide habitat for an additional suite of rare plants. These include Crawe's sedge, ringseed rush and the endemic Kentucky gladecress. These tough plants thrive under the wet-saturated conditions of early spring, but also have the ability to survive harsh, dry conditions throughout the rest of the growing season. A blue-green algae called nostoc or star-jelly is found here too, swelling into a jelly-like mass that is characteristic during wet periods.

Dolomitic glades also provide habitat for many animal species, including fence lizards, indigo buntings, prairie warblers, scorpions and numerous species of butterflies and moths.

Although more stable (disturbance tolerant) than other natural communities (due to solid bedrock coverage and dominance by drought-hardy vegetation), dolomitic glades are still vulnerable to human disturbance. The thin soils can easily be eroded by livestock activity or vehicle traffic. This type of disturbance provides ideal conditions for non-native species invasion (such as spotted knapweed, white and yellow sweetclover and Japanese honeysuckle). The exposed bedrock also makes the glade community attractive to quarrying (i.e. mining rock). In these operations, the glades are usually destroyed. Of the few dolomitic glades that remain in Kentucky, several have been damaged or degraded. KSNPC and The Nature Conservancy recognize the importance of protecting these few remaining sites in the Commonwealth. Two sites have been protected, Apple Valley Glade State Nature Preserve and Pine Creek Barrens, both in Bullitt County. Further support from landowners can help conserve the few areas that remain in private ownership. (For more information see also newsletter 66: Summer 2011 on limestone glades)

Dolomite glade in Bullitt County ~ KSNPC staff photo


Aerial view of dolomite glade ~ KSNPC photo Brian Yahn

References:
Jones, R. L. 2005. Plant life in Kentucky. University of Kentucky Press, Lexington, KY.

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

[KSNPC] Kentucky State Nature Preserves Commission. 2014. 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 of 2014.

Nelson, P. W. 2005. The terrestrial natural communities of Missouri. Missouri Natural Areas Committee, Jefferson City, MO.

Species associated with Dolomite Glade and Barrens:

Dusted Skipper *Atrytonopsis hianna*

KSNPC photo by Ellis Laudermilk

KSNPC Status: None

Flight Season: In Kentucky, adults are active during May

USFWS Status: None

General Description: Wings above are brown with a few white spots on forewing. Underside of hindwing is brown with white dusting on rear one-third and usually at least one white dot at the wing base. Face has a "bandit mask" appearance. Wing span is approximately 1.25 – 1.7 inches.

Habitat: Open grassy areas, especially glades, prairies, and barrens that support good populations of the caterpillar's host plants, little bluestem (*Schizachyrium scoparium*) and big bluestem (*Andropogon gerardii*).

Range: North America, including southern Canada, but absent west of Wyoming and Colorado. In Kentucky this species is usually found locally in small colonies and often associated with high quality habitat.

Chuck-will's-widow *Antrostomus carolinensis*

KSNPC Status: None **USFWS Status**: None

Photo courtesy Dick Daniels (CreativeCommons)

General Description: The Chuck-will's-widow is a relatively large bird ranging in length from 11 to 12.6 inches with a wingspan of 22.8 to 24 inches. Individuals have warm brown tones with intricately patterned feathers making them extremely well-camouflaged. The wings are entirely brown; the outer tail feathers have white inner webs. The Chuck-will's-widow's most apparent behavior is its incessant calling at night. They do most of their foraging at dusk and dawn but extend their activity during full moons. They are buoyant and maneuverable in flight, catching flying insects with a short dive or chase followed by a snap of the bill.

Habitat: Chuck-will's-widows are most common in dry woodlands in the southeast, from pine barrens to oak -hickory and mixed deciduous woodlands. Adults typically breed in the same habitats from the Southeast to the Mid-Atlantic states. They tend to live in more open areas, which is why glade and prairie-barren communities - relatively small openings surrounded by woods - provide great habitat.

Range: Populations are found throughout the Southeast, and in parts of the Mid-Atlantic and the southeastern Mid-West states. Kentucky populations are most abundant in the southern and western part of the state, becoming rare in the Cumberland Plateau and the northern and eastern Bluegrass. In winter Chuck-will's-widows migrate south of Kentucky, preferring brush, woodlands, hedgerows, thickets, and fields as far south as Colombia, Venezuela, and the Caribbean. **Note: the majority of this information comes directly from the Cornell Lab of Ornithology website; accessed August of 2014.

Kentucky Glade Cress *Leavenworthia exigua var. laciniata*

KSNPC Status: Endangered

Flowering Period: Early March to late April

USFWS Status: Threatened

Photo courtesy Thomas G. Barnes

Range: Kentucky: Bullitt and Jefferson counties

Habitat: In full sun on flat-bedded outcrops of Silurian limestone or dolomite in shallow soils of glades, rock outcrops, pastures and lawns.

General Description: Kentucky Glade Cress is a small plant in the mustard family. It has small white to lavender flowers (less than 10 mm in length) with petals that have a notch. The fruits are flattened. The terminal leaf lobe is notably larger than the lateral lobes

Reasons: Kentucky Glade Cress is endemic to Kentucky, meaning it occurs in Bullitt and Jefferson counties in Kentucky and no where else in the world. It has a tremendously small range for a plant. Unfortunately, its habitat is experiencing a tremendous amount of development pressure, being in and near the largest city in Kentucky -- Louisville. The majority of Kentucky Glade Cress populations have been converted to subdivisions, with some plants still clinging on to edges of residential lawns. There are a few protected populations in high quality glade communities, and these glade communities need to be managed for invasive species and also need periodic fire and cedar removal to keep the glades open.

Land Protection Report

By Brent Frazier, Land Acquisition Specialist

Northern cricket frog ~ KSNPC staff photo

The commission is excited to add our 62nd preserve to our inventory; Lone Oak Barrens State Nature Preserve was dedicated at the September commission meeting. This Grayson County tract, discovered by KSNPC's Vegetative Ecologist Brian Yahn, contains a unique limestone slope glade, as well as barrens and prairie remnants. There are only a few remaining slope glades of high quality in private ownership and KSNPC ecologists consider any of them a high priority for protection. The best population of a globally rare and sensitive invertebrate species has been documented on the property. Protection and enhancement of this species' habitat is necessary to its continued survival at this site.

We were also able to purchase a new conservation easement thanks to the enthusiastic cooperation of landowner Dana Baxley. This conservation easement establishes the Swallowfield Arabis site. This site in Franklin County, located north of Frankfort, consists of wooded slopes along the Kentucky River. It supports high quality occurrences of one of the Commonwealth's rarest plants – federally listed Braun's rockcress *(Arabis perstellata)*.

The commission has two new projects that were approved at the May meeting of the Kentucky Heritage Land Conservation Fund Board. One of these tracts is at Blanton Forest State Nature Preserve SNP and the other is at Bad Branch SNP.

The first new project is approximately 100 acres adjacent to Blanton Forest SNP. This tract includes mature forest. If successfully purchased, it will be one of the few tracts the commission has protected on the north face of Pine Mountain. We are also in the final stages of purchasing the pending tracts at Blanton Forest SNP that total 386 acres. These two tracts are being purchased from Kentucky Natural Lands Trust. We are thankful our partner organization was able to purchase this property from the private owner and hold it until KSNPC had funding available. Blanton Forest SNP protects more than 3,000 acres of old-growth and second-growth forests. As one of the largest old-growth tracts remaining in the eastern United States, it is a diverse ecological treasure, containing several forest communities, including rare mountaintop wetlands known as acid seeps and Appalachian mixed-mesophytic forest, one of the most diverse temperate forests in the world.

The second new project is approximately 250 acres at Bad Branch SNP that includes the scenic High Rock. We are also in the final stages of completing the purchase of the Wagner tract at Bad Branch. With over 2,600 acres this preserve protects the timeless beauty of the gorge and one of the largest concentrations of rare and uncommon species in the state including Kentucky's only known nesting pair of common ravens (*Corvus corax)*.

We are still working on the title issues on the Carmical tract at Hi Lewis State Nature Preserve. 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.

KSNPC Photo Contest

By Felisha Hubbard, Administrative Specialist I

The deadline for KSNPC's first photography contest has been extended to **Nov. 17, 2014**! There are five contest categories: plants, animals, insects, landscapes, and people/ miscellaneous.

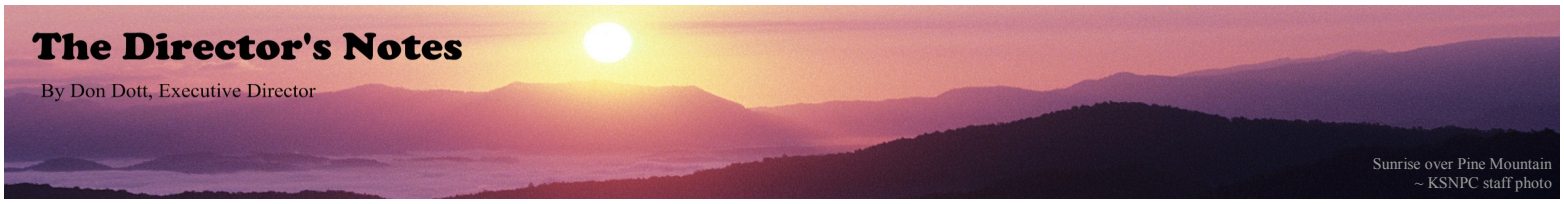
Simply take a photo while visiting a Kentucky state nature preserve and upload it to the agency's Flickr page at https://www.flickr.com/groups/ksnpc/.

The overall winner will receive a copy of *Kentucky's Natural Heritage: An Illustrated Guide to Biodiversity*, autographed by the KSNPC staff as well as recognition in KSNPC's newsletter and social media pages.

To learn more please visit: http://naturepreserves.ky.gov or contact the commission at 502-573-2886.

Kentucky state nature preserves protect the best remaining natural areas in the state. These preserves can be considered living museums, presenting a window to the landscapes of Kentucky's past.

Anglin Falls (John B. Stephenson Memorial Forest SNP)
Photo courtesy Thomas G. Barnes



The Director's Notes

By Don Dott, Executive Director

Sunrise over Pine Mountain
~ KSNPC staff photo

It was a true pleasure to follow "In the Footsteps of E. Lucy Braun." This is the name of a program offered twice a year by Pine Mountain Settlement School (PMSS). It's an educational tour of the beautiful and diverse mixed mesophytic forests of eastern Kentucky. The guide for this 4 ½ day outing has been Ben Begley, the environmental education director for the PMSS. Ben and his wife Pat have been conducting environmental education (and related classes such as medicinal plants, making native dyes and heirloom weaving) at the school on Pine Mountain for over 27 years. But unfortunately, Ben and his wife are leaving for a much deserved retirement and moving to New Mexico. But Ben and Pat may return to guide a few more Lucy Braun outings – and if they do - don't miss them.

E. Lucy Braun was a well-known botanist and plant ecologist, who authored the classic text on the eastern forests, *Deciduous Forests of Eastern North America*. She was a passionate advocate for conservation until she passed away in 1971. The Footsteps program commemorates her travels and research in eastern Kentucky and highlights several state nature preserves on Pine Mountain. Ben begins with an overview of the geology of Pine Mountain, explaining that it has no mineable coal deposits due to the way its rock layers were thrust upward by geologic forces. The next morning's footsteps on the mountain begin with a visit to Bad Branch State Nature Preserve in Letcher County. Under threatening skies, but with temperatures cool for July, we hiked to High Rock for a sack lunch and a stunning view that equals the view from the dining room of Pine Mountain State Resort Park. The fresh air and mountain top "ambience" erased any thoughts of hot meals and servers. Hiking back down the mountain we found multiple red "efts," the juvenile stage of the red-spotted newt, which were coaxed out of hiding by the recent rains and the moist forest floor. Ben led us to a mountain bog that was full of lush sphagnum moss, several varieties of ferns and a rare plant known only from Pine Mountain. Arriving back at the vehicles, a group discussion over a trek to the waterfall was quickly ended when the skies made good on their threat, opened up and the rain came - certainly an event more to the liking of the red efts.

Ben led us on the next day's outing to Lilley Cornet Woods, the second largest old-growth forest in the state. It is managed by Eastern Kentucky University's Division of Natural Areas, as a research station. While the ancient trees have never been cored, they are unquestionably among the oldest in the state. Because of relatively thin, dry soils the trees do not obtain massive size, yet are impressive nonetheless in both size and structure. Ben identified and explained the numerous understory plants we were seeing, including doll's eyes, cohosh and ginseng. He pointed out the different tree and plant communities found on different parts of the mountain, as they change from moist, cool hemlock shaded coves to dry, rocky ridges with chestnut oaks and hickories. An unusual prevalence of moist soil which supported water loving trees like hemlocks and beeches near a ridge top indicated either a high, spring fed water table or an underlayer of clay which would trap surface water.

The third and fourth days included equally interesting trekking in Blanton Forest State Nature Preserve, which is the state's largest old-growth forest, and a drive to the top of Black Mountain, Kentucky's highest elevation. At Blanton we passed through jumbled boulders and rocks in the Maze, passed through the enormous Sand Cave rock shelter, and ate a sack lunch on an equally scenic promontory, Knobby Rock. Two copperheads put cautious fascination into the group as we left Knobby Rock and headed into a more spectacular area of the old growth at Blanton. The visit to Black Mountain had its own treasures despite the contrasting development there of roads and a federal communications tower. Beautiful orange and yellow spotted Turk's cap lilies, found only on Black Mountain, were in full bloom. Ben pointed out other plants including yellow jewelweed, striped maple and cohosh.

If you are unacquainted with the forests of eastern Kentucky, or would simply like to visit them, the "Footsteps of E. Lucy Braun" is the way to do it. Ben and Pat have created and led an outstanding program for many years, and expectations are good that the program will remain strong and vibrant. Watch the website of the Pine Mountain Settlement School next year for scheduled dates. www.pinemountainsettlementschool.com

Lastly, I must bemoan another retirement, and this one closer to home. Deborah White, KSNPC's chief botanist and Natural Heritage branch manager retired in May. Deb is indisputably one of the best botanists in the state, and a truly tireless worker. She coordinated and facilitated more projects than I could keep track of, and was a ready resource for the state botanical community. And I don't recall ever having heard her complain in my tenure with KSNPC – a feat of great note! Deb has retired, but she has not slowed down. She moved on to engage a great opportunity as the executive director of Woods and Waters Land Trust. We wish her great success in her new endeavors, and look forward to many opportunities to work together with Deb - for conservation!

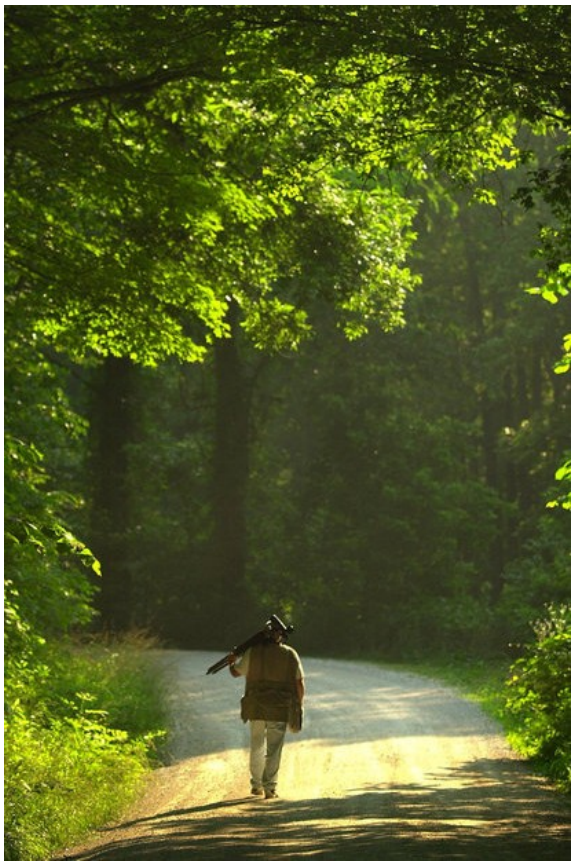
Turk's cap lily with pipevine swallowtail
Photo courtesy Thomas G. Barnes

KSNPC Marks the Passing of Dr. Thomas G. Barnes

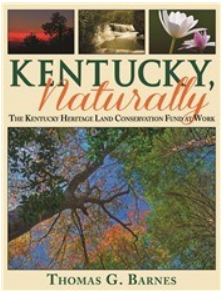
The staff of KSNPC was profoundly saddened to learn of the passing of Dr. Tom Barnes. Dr. Barnes, a professor and state extension wildlife specialist with the University of Kentucky, was a passionate advocate for the environment and an avid, self-taught photographer. He has authored many works on the natural history of Kentucky, including more than 50 scientific research articles, 60 cooperative extension publications, 100 magazine articles, and five books.

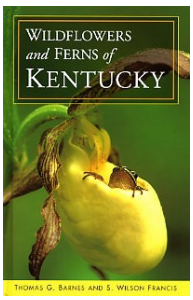
Dr. Barnes grew up in Conde, S.D. He earned a bachelor's degree from Huron College in South Dakota, a master's from South Dakota State University and a doctorate from Texas A&M.

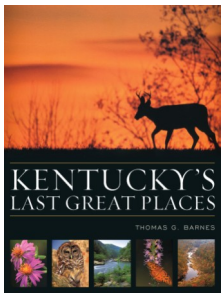
As an extension professor, he conducted research on using herbicides to restore native grasslands, developed wildlife programs for the extension service and gave frequent educational talks. As a colleague and ardent KSNPC supporter, he provided the commission with many beautiful photographs of state nature preserve landscapes, plants and animals for use in our education and outreach programs. He served on the inaugural board of the Friends of Kentucky Nature Preserves, guided several students to conduct their graduate research on state nature preserves and promoted our mission through his publications; perhaps none so superbly as his book entitled *Kentucky's Last Great Places*. We will miss Tom and his wholehearted advocacy but will always remember the genuine joy for nature reflected in his life's work.

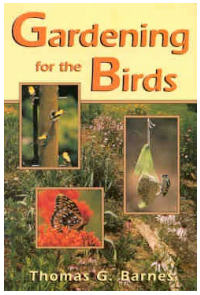


More information can be found here.









KSNPC photo contest deadline has been extended to Nov. 17, 2014

**More events are planned so please check our online calendar for an up-to-date list.

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Kentucky State Nature Preserves Commission Quarterly Public Meeting

Dec. 11, 2014
Franklin County Cooperative Extension Office

Frankfort, KY

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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.

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