



Biennial Report: 2015-2016

KENTUCKY STATE NATURE PRESERVES COMMISSION

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The biennial report is submitted to the Governor and the General Assembly as directed by KRS 146.410 et seq., the Kentucky State Nature Preserves Act, which established the KSNPC in 1976.



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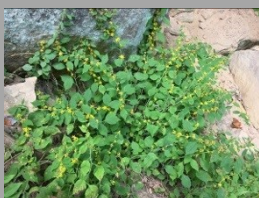
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A Message from KSNPC Director Zeb Weese

In 1976, Kentucky's state legislature created the *Kentucky State Nature Preserves Commission (KSNPC)*. Its vision has proven to be a worthwhile investment in conserving Kentucky's rich natural heritage. This report reflects the accomplishments of the last biennium and considers the future of KSNPC's role as the central source for information about Kentucky's natural habitats and its role as the lead agency in conservation of the Commonwealth's unique natural areas - from the Jackson Purchase to



Pine Mountain. In the coming years, conserving areas for recreation will become even more of a priority, as the *Energy and Environment Cabinet* continues its efforts to improve the quality of life for Kentuckians and provide opportunities for tourists to enjoy the natural beauty of the Commonwealth.

Part of the KSNPC mission has always been *"to promote understanding and appreciation of the aesthetic, cultural, scientific and spiritual values of our unpolluted and unspoiled environment."* To increase organizational efficiency, the KSNPC recently assumed responsibility for two of the Cabinet's other conservation programs. These programs are the *Kentucky Wild Rivers Program (KWRP)*, whose mission is *"to afford the citizens of the Commonwealth an opportunity to enjoy natural streams, to attract out-of-state visitors, to assure the well-being of our tourist industry, to preserve for future generations the beauty of certain areas untrammelled by man,"* and the *Kentucky Heritage Land Conservation Fund (KHLCHF)*, whose mission is to benefit the citizens of Kentucky [through] *"the acquisition and maintenance of certain lands for use as state parks, recreation areas, state forests, nature preserves, wildlife management areas, and wetlands."*



While we will continue to manage our state nature preserves to improve native species habitat and provide areas for hiking and birdwatching, the watershed conservation areas managed under the KWRP will allow KSNPC to offer fishing, paddling, and hunting opportunities and the KHLCHF's conservation easements will offer a wide range of outdoor recreation and educational opportunities in nature parks throughout the state.

Kentucky's State Nature Preserves

The primary purpose of the state nature preserves system, according to KRS 146.410, is to "secure for the people of present and future generations the benefits of an enduring resource of natural areas."

The KSNPC's 63 preserves total 28,022 acres and protect the best natural lands across the state, from Hickman County to Harlan County.

KSNPC preserves are:

- habitats for native plant and animal species;
- laboratories for scientific research and education;
- living museums, presenting a window to the landscapes of Kentucky's past;
- places of scenic beauty and reminders of the vital human dependence upon fresh air, clean water, and unspoiled natural areas.



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- Three photographs of native species: a butterfly, a bird, and orchids. The first photo shows a butterfly with black wings and orange and white spots. The second photo shows a small brown and white speckled bird perched on a hand. The third photo shows a cluster of yellow and brown orchids.

KSNPC State Nature Preserves by County

COUNTY	STATE NATURE PRESERVE	FEATURES	ACRES
Allen	Carpenter Cave CE*	Federally listed bat site	14
	Goodrum Cave SNP	Federally listed bat site	51
Ballard	Axe Lake Swamp SNP	Wetland	458
Barren	Brigadoon SNP	Mature forest	184
	Mutters Cave SNP	Federally listed bat site	108
Bell	Pine Mountain SPNP	Forest	868
Boone	Boone County Cliffs SNP	Glacial feature	75
	Dinsmore Woods SNP	Mature forest	107
Bullitt	Apple Valley Glades SNP	Federal candidate	60
		plant	
Calloway	Blood River Seeps SNP	Unique wetland	193
Carter	Bat Cave SNP	Federally listed bat site	128
	Cascade Caverns SNP	Rare plants	18
Christian	Bob Overton Cave CE	Federally listed bat site	55
Clark	Lower Howard's Creek SNP	Federally listed plant	228
Fayette	Floracliff SNP	Geologic feature	287
Fleming	Short's Goldenrod SNP	Federally listed plant	210
Franklin	Baxley CE	Federally listed plant	64
	Feindel CE	Federally listed plant	15
	Julian Savanna SNP	Unique woodland	42
	River Cliffs SNP	Federally listed plant	210
	Rockcress Hills SNP	Federally listed plant	65
Garrard	Tom Dorman SNP	KY River Palisades	764
Graves	Terrapin Creek SNP	Unique wetland	268
Grayson	Lone Oak Barrens SNP	Glade/barrens	33.5
Greenup	Jesse Stuart SNP	Forest	714
Hardin	Eastview Barrens SNP	Rare plant site	119
	Jim Scudder SNP	Rare plant site	231
	Springhouse Barrens SNP	Rare plant site	54
	Vernon-Douglas SNP	Mature forest	730
Harlan	Blanton Forest SNP	Old growth forest	3124
	Hi Lewis SNP	Pine woodland	427
	James E. Bickford SNP	Forest	348
	Martin's Fork SNA	Wild River corridor	1601
	Pine Mountain Trail SPNP	Rare plant site	609
	Stone Mountain SNA	Rare plant site	1025
Harrison	Quiet Trails SNP	Forest	165
Henderson	John James Audubon SPNP	Forest	339
Hickman	Obion Creek SNP	Wetland	1601
	Three Ponds SNP	Wetland	528
Jefferson	Beargrass Creek SNP	Education site	41
	Blackacre SNP	Education site	175
	Six Mile Island SNP	Riverine island	81

COUNTY	STATE NATURE PRESERVE	FEATURES	ACRES
Jessamine	Tom Dorman SNP	KY River Palisades	143
Larue	Thompson Creek Glades SNP	Rare plant site	169
Letcher	Bad Branch SNP	Rare plant/animal site	2785
	Kingdom Come SPNP	Federally listed bat site	225
Lewis	Crooked Creek SNP	Rare plant site	694
Lincoln	Bouteloua Barrens SNP	Large grassland	261
Livingston	Bissell Bluff SNA	Forest	563
	Newman's Bluff SNA	Federally listed plant	169
Logan	Logan County Glade SNP	Rare plant site	42
	Raymond Athey Barrens SNP	Rare plant site	156
McCracken	Metropolis Lake SNP	Wetland	123
McCreary	Cumberland Falls SNP	Waterfalls and forest	1294
Muhlenberg	Cypress Creek SNP	Wetland	98
Powell	Natural Bridge SPNP	Forest, rock arches	1188
	Pilot Knob SNP	Geologic feature	742
Pulaski	Francis Johnson Palk SNP	Wetland/seep	233
Robertson	Blue Licks SPNP	Federally listed plant	53
Rockcastle	John B. Stephenson SNP	Forest and waterfall	123
Simpson	Flat Rock Glade SNP	Rare plant site	99
Warren	Chaney Lake SNP	Transient lake	169
	Woodburn Glade SNP	Rare plant site	20
Whitley	Archer-Benge SNP	Forest	1864
TOTAL NUMBER OF COUNTIES			40
TOTAL NUMBER OF PRESERVES			63
TOTAL NUMBER OF ACRES			28,022

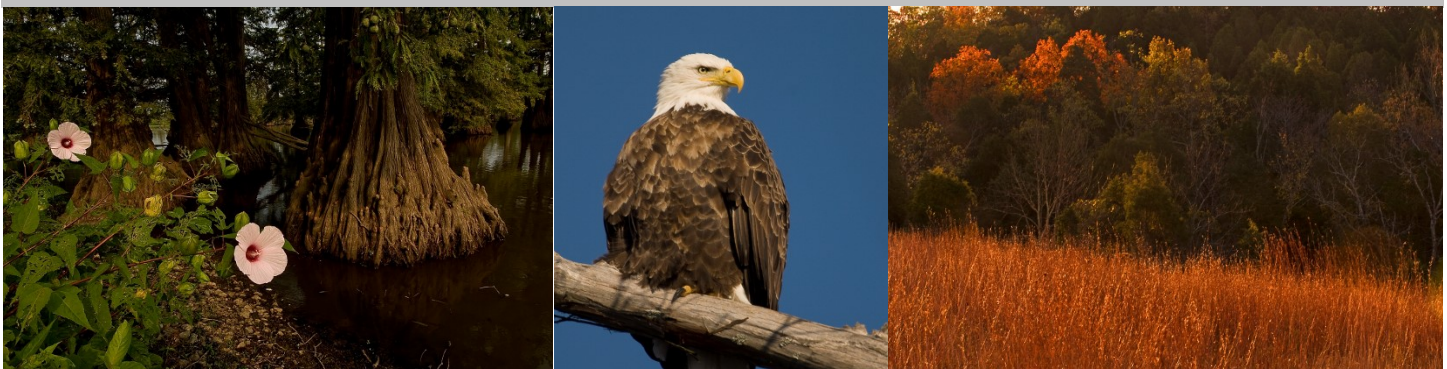
*CE indicates private land conserved by a KSNPC/KHLCF conservation easement.

The KSNPC owns and manages most of these sites, but some are owned by other organizations, including the Kentucky Department of Parks, Floracliff Nature Sanctuary, and fiscal courts.

A wealth of information on your state nature preserves is available at

<http://naturepreserves.ky.gov>

including a directory, trail maps, and directions.





Most KSNPC areas are rugged and the hiking experiences are like no others in the state. Blanton Forest State Nature Preserve in Harlan County offers hiking in the state's only old-growth forest with public hiking trails. During the biennium the [Explore Kentucky Initiative](#) and [the Kentucky Natural Lands Trust](#) began co-hosting guided hikes of the nature preserve.



The High Rocks Overlook at Bad Branch State Nature Preserve in Letcher County is a highlight of the Pine Mountain State Scenic Trail, a cooperative project between KSNPC, Kentucky State Parks, the Kentucky Natural Lands Trust, the Kentucky Heritage Land Conservation Fund, and other conservation organizations.

Once completed, the 120-mile hiking trail will span the crest of Pine Mountain from Breaks Interstate Park in Pike County to Cumberland Gap in Bell County, and one day link with the Great Eastern Trail. During the biennium the KSNPC added 146 acres at Bad Branch SNP adjacent to both the trail and to the Jefferson National Forest



The 63 state nature preserves are scattered across the Commonwealth from the banks of the Mississippi River to the Virginia border. The KSNPC strives to increase its efficiency, prioritization, and partnership building toward fulfilling its mission of responsible land stewardship for the Commonwealth of Kentucky.

Partnerships with scout troops, master gardeners, school groups, members of organizations such as the Kentucky Natural Lands Trust, the Kentucky Native Plant Society, and other civic groups are needed to improve trail conditions and safety as staffing levels have decreased.

KSNPC has developed management agreements with willing partners as a strategy to help meet the demands of preserve management. Custodial care of two preserves has been assigned to partner conservation organizations. Agreements with five other public agencies and private conservation organizations to assume partial responsibility for the costs of preserve maintenance are in effect.

Habitat management contracts are being pursued to hire technicians needed to rotate among the preserves, conducting prescribed burns, controlling invasive plants, building trails, maintaining trails and bridges, posting boundaries, restoring habitat and more.

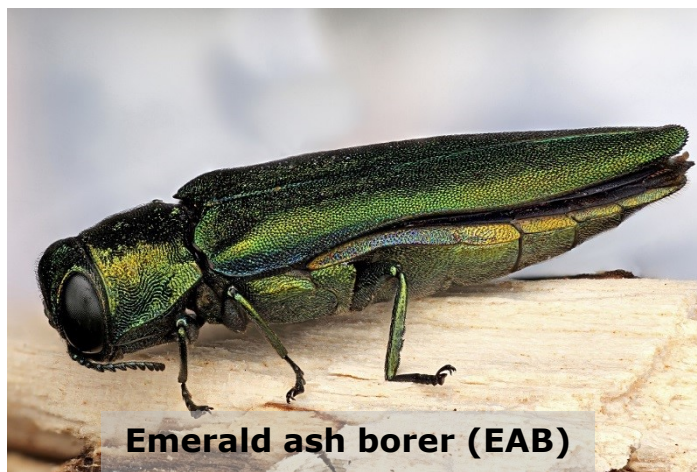
An estimated 30,000 tourists visit natural areas owned or managed by the KSNPC. And that doesn't include the millions that visit our nature preserves that are managed cooperatively with other agencies, including state parks like Natural Bridge and Cumberland Falls .



The majority of state nature preserves are relatively undeveloped natural areas; you may think they are best left to the care of “Mother Nature.” Unfortunately, there are too many threats to natural areas for a completely hands-off approach. Trespass, vandalism, timber theft, ice storms, off highway vehicles (OHVs) and arson sometimes threaten these lands. And even more relentless is the proliferation and invasion by non-native species. Without constant vigilance, invasive insects such as the emerald ash borer (EAB), animals and diseases will overwhelm the habitats and the rare native species the commission protects.



Unauthorized use of OHVs



Emerald ash borer (EAB)

Stewardship of the nature preserve system requires specialized expertise in ecosystem restoration techniques such as prescribed burning and invasive plant control. Activities range from research on the viability of a rare species population, to creating educational materials for the public, to building and maintaining hiking trails.

Our goal is to provide a safe and enjoyable hiking experience. Unfortunately, in the biennium two people suffered severe injuries at Bad Branch SNP after straying from the clearly marked trail, and one intoxicated person fell from Pilot Knob SNP after nightfall. We urge visitors to be careful and prepared, and take responsibility for their actions. These are some of the last rugged wilderness areas in Kentucky, enjoy them safely!



KSNPC staff has assisted dedicated private citizens in the development of a 501(c)3 non-profit organization, the “Friends of Kentucky Nature Preserves”, to assist with the management needs of the Commonwealth’s natural areas.

To get involved with this effort, please go to:

<http://www.friendsofkynaturepreserves.org/>

KSNPC Registered Natural Areas

The Kentucky Natural Areas Registry enrolls high quality natural areas owned by private individuals or other organizations to encourage them to provide stewardship of significant natural sites. The voluntary registry recognizes landowners who partner with KSNPC to conserve ecologically significant property. Since 93 percent of Kentucky is in private ownership, private sector involvement in conservation is crucial. The registry is educational for many landowners, who may not be aware of special qualities of their land. As such, the use of registries can help prevent the inadvertent destruction of important sites.

A total of 59 landowners are enrolled in the registry program, encompassing 8,211.5 acres. They provide voluntary conservation for 46 state-listed species and 21 of our natural community types. Three private landowners entered their sites into the Natural Areas Registry program in the biennium.

NAME	COUNTY	ACRES	OWNERSHIP	SIGNIFICANCE
Rosson-Mayne Woods	Adair	230	Private	Mature Woods
Axe Lake	Ballard	385	Private	Wetland Community
Dinsmore Foundation	Boone	2	Private	Rare Species
Central Kentucky Wildlife Refuge	Boyle	500	Private	Southern Knobs Forest
Harberson's Station Cave	Boyle	2	City of Perryville	Rare Species
Rocky Run Glade	Bullitt	25	Private	Rare Species
Jefferson County Sportsmen Club	Bullitt	12	Private	Rare Species
Panther Creek Swamp	Calloway	128	TVA	Wetland, Rare Species
Back Slough/Laketon	Carlisle	43	Private	Wetland Community
Bradley Lewis Weddle	Casey	73	Private	Rare Species
Tierney Tygart	Carter	10.5	Private	Rare Species
Pennyrile SF- Clifty Creek	Christian	75	KDOF	Rare Species
Seventy-six Falls	Clinton	1	USACE	Rare Species

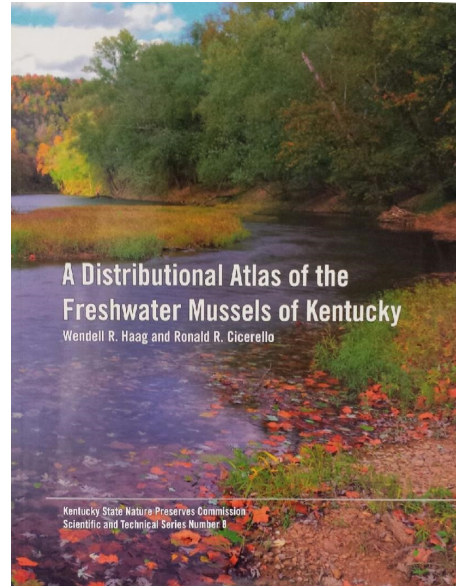
NAME	COUNTY	ACRES	OWNERSHIP	SIGNIFICANCE
Goodman/Clouser Sandstone Glade	Crittenden	15	Private	Glades
White's Cave	Edmonson	5	NPS	Rare Species
Camp Burnamwood	Estill	472	Church	Upland Native Forest
Raven Run	Fayette	274	Municipal	Kentucky River Palisades
Boone Creek	Fayette	260	Private	Rare Species
Ashland	Fayette	15	Private	Rare Species
Camp Pleasant Woods	Franklin	131	Private	Rare Species
Strohmeiers Hill	Franklin	53	Private	Rare Species
Tucker Creek	Franklin	30	Private	Rare Species
Far Side Farm	Franklin	27	Private	Rare Species
Leeland Valley	Franklin	26	Private	Rare Species
Rockcress Woods (Greene/Adams)	Franklin	15	Private	Rare Species
Rockcress Woods (Bryan)	Franklin	10	Private	Rare Species
Reynolds Prairie	Garrard	38	Private	Native Grassland
Big Clifty Prairie	Grayson	2	KTC	Prairie Remnant
Knights Barrens	Hardin	400	Private	Barrens Community
Dowell	Hardin	20	Private	Rare Species
Hardin Cedar Glade	Hardin	20	Private	Rare Species
Big Woods	Hart	307	NPS	Old-growth Woods
Riders Mill Cave	Hart	260	Private	Rare Species

NAME	COUNTY	ACRES	OWNERSHIP	SIGNIFICANCE
Jefferson Memorial Forest	Jefferson	2472	Louisville Metro Parks	Maturing Quality Forest
Surrey Hills Woods	Jefferson	35	Private	Mature Forest
Shippingport Island Rookery	Jefferson	10	USACE	Heron Rookery
R. J. Corman Natural Area	Jessamine	65	Private	Jessamine Creek Gorge Tributary
Crady Creek Hill Prairies (Ewing)	Larue	32	Private	Grassland Remnant
Crady Creek Hill Prairies (Clayton)	Larue	16	Private	Grassland Remnant
Bad Branch (Crawford)	Letcher	245	Private	Rare Species
Bad Branch (Gatton)	Letcher	215	Private	Rare Species
Poor Fork Wetland	Letcher	36	USFS	Rare Species
Corley Farm	Livingston	100	Private	Rare Species
Log House Prairie	Logan	10	Private	Prairie Remnant
Katie White Barrens (Lockett)	Logan	15	Private	Glades/Barrens Communities
Katie White Barrens (Webb)	Logan	15	Private	Glades/Barrens Communities
Cannon Springs Woods	Lyon	220	USACE	Recovering Woods
Jean's Glade	Madison	6	Private	Rare Species
Tatum Cave	Marion	2	Private	Rare Species
Bear Creek Rookery	Marshall	10	TVA	Heron Rookery
Bayou Creek Ridge	McCracken	150	TVA/KDFWR	Old-growth Woods

NAME	COUNTY	ACRES	OWNERSHIP	SIGNIFICANCE
Metropolis Lake	McCracken	2	TVA	Natural Lake
Floyd Woods	McLean	25	Private	Old-growth Woods
Sulphur Creek Cave	Metcalf	16.5	Private	Rare Species
Cornett Woods	Muhlenburg	245	Private	Wetland Communities
Kingsolver Goldenrod	Nicholas	5	Private	Rare Species
Blue Licks Highway	Nicholas, Robertson, Fleming	2	KTC	Rare Species
Abnee Goldenrod	Nicholas	1	Private	Rare Species
Morris Kentucky Ladyslipper	Owsley	5	Private	Rare Species
Stillhouse Branch	Perry	105	USACE	Mature Forest
Blowing Cave	Pulaski	5	Private	Rare Species
Lake Cumberland (7 discrete sites)	Russell, Pulaski, Wayne	188	USACE	Rare Species
Sundew Meadow	Russell	12	Private	Rare Species
Blue Knob	Taylor	30	Private	Glades, Barrens
Lake Barkley Rookery	Trigg	10	USACE	Heron Rookery
North Elk Fork Woods	Todd	41	Private	Old-growth Woods
South Elk Fork Woods	Todd	37	Private	Old-growth Woods
Shanty Hollow Cave	Warren	1	Private	Rare Species
Greenhill Woods	Warren	.5	Private	Rare Species
Grove Powerline	Whitley	8	Utility	Pine Barren Remnant
TOTAL ACREAGE		8259.5		

Education and Outreach

The KSNPC continues to educate the public about Kentucky's rich biological heritage in many different ways. In 2016, the commission released the 8th publication in our scientific and technical series, *A Distributional Atlas of the Freshwater Mussels of Kentucky*. Published by the US Fish and Wildlife Service and written by Wendell R. Haag and retired KSNPC biologist Ronald R. Cicerello, it summarizes all available information about the distribution of each mussel species in Kentucky, and it illustrates changes in their distribution over the last 100 years.



In 2016 KSNPC staff filmed a segment with KET's *Kentucky Life* program on two of the dedicated volunteers who contribute their time to help the KSNPC manage Powell County's Pilot Knob and Harrison County's Quiet Trails State Nature Preserves.

A 2016 segment featured Harlan County's Martin's Fork State Natural Area along with our partners at the Kentucky Heritage Land Conservation Fund and the Kentucky Wild Rivers Program.

The Martin's Fork segment may be viewed here: <https://www.youtube.com/watch?v=-q-uql9KGa0>.

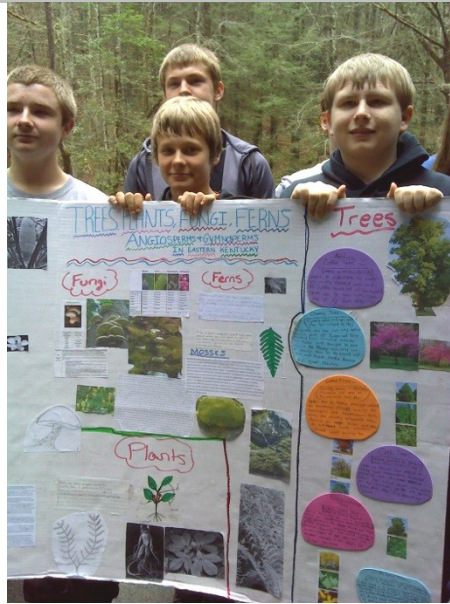
Also in 2016, KSNPC began working with Bowling Green's [WKYU-PBS](#) to film a 30 minute special on natural areas throughout the state conserved by the Kentucky Heritage Land Conservation Fund to air in 2017. Filming will include the Lucy Braun State Nature Preserve in Harlan County, the Floracliff State Nature Preserve in Fayette County, and several others.

Training the trainers

In both 2015 and 2016 KSNPC organized the annual Kentucky Botanical Symposium with the [Kentucky Native Plant Society](#). This event brings together close to 100 academics, biologists, land managers, and citizen scientists annually and has been instrumental in building the botanical and habitat management community within Kentucky.

KSNPC also held a two-day workshop on identification and management of native grassland remnants for natural resources professionals from eight federal and state agencies and private organizations. These programs are highly regarded by conservation professionals as valuable training for those managing for our natural habitats.

Kentucky's nature preserves offer a wealth of educational opportunities, from elementary school field trips to graduate student research.





Mushroom Workshop



Moth and Butterfly Workshop



Woodford County Extension Master Gardeners



Wildflower Workshop



Aquatics Workshop



Moss and Liverwort Workshop

During the biennium the KSNPC issued 52 research permits to professors and their graduate students, researchers from conservation organizations, and partner agencies. Research topics are as varied as the preserves themselves and included:

- Changes to water quality during stream restoration
- Population genetics for fish
- Using lichens to study air quality
- Looking at impacts of emerald ash borer control on beneficial insects
- Studying pollinator use of a rare goldenrod

The KSNPC Data Program

The KSNPC has two primary and interconnected functions:

1. To conserve the highest quality natural areas in the state for the benefit of Kentucky's citizens and future generations, and
2. To identify and catalogue Kentucky's rare species and sites in the most complete database for species information in the state.

To date, KSNPC's natural heritage database contains an impressive 12,271 records of 847 species and 62 ecological communities, 792 high quality site records, including caves, and 601 conservation lands records.

Private sector industries, the military, and conservation groups all trust KSNPC data to make important economic development, infrastructure investments, and land conservation decisions.

KSNPC's database is the most accurate database of information on rare species, natural habitats, and conservation lands available in Kentucky, and is updated regularly.



KSNPC biologists are recognized for their decades of field experience and commitment to complete and accurate data, and our client-focused analysts respond to hundreds of large-scale and site-specific information requests annually. We are committed to providing timely, creative, high-quality solutions to a wide variety of environmental and developmental planning needs. The KSNPC is a leader in the environmental field. Our data systems are linked with powerful mapping tools - now accessible online 24/7.

KSNPC is the state affiliate of *NatureServe*, an international network of natural heritage programs that gathers, organizes and distributes standardized, detailed information on biological diversity across all 50 U.S. states, Canada, Mexico, and parts of Latin America. By partnering with NatureServe, the KSNPC can track the status of a species or natural habitat type at both a global and state scale and assign objective and sound conservation ranks.

KSNPC data also provides the NatureServe Explorer website with accurate information on Kentucky species. This resource is used by educators and professionals all over the world, and can be accessed at explorer.natureserve.org

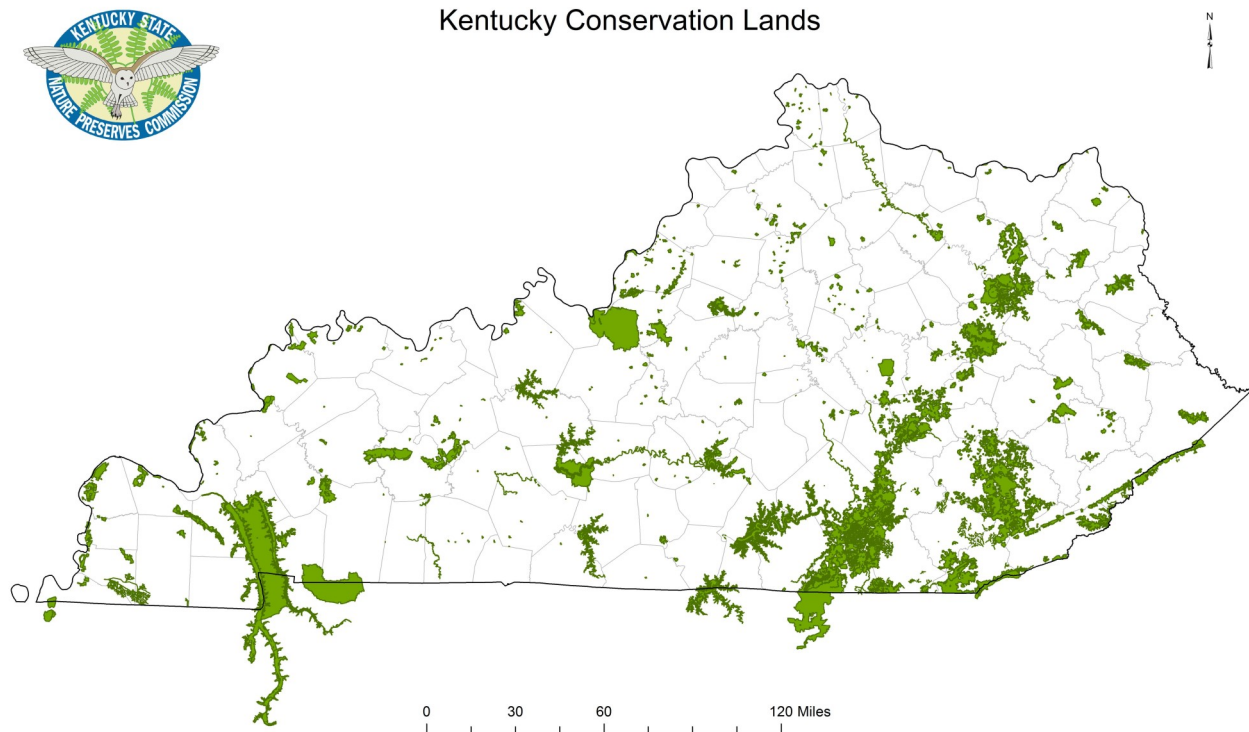


Users of KSNPC's Data

KSNPC's data enables land managers and developers, in both private and public sectors, to make decisions more efficiently to benefit society and the economy by avoiding impacts on sensitive areas. The KSNPC provides information that facilitates ecologically sound development and infrastructure projects, such as pipeline corridors, roads, communication towers, and municipal utility projects.

During the biennium our client-focused analysts responded to 234 large-scale and site-specific data requests.

The software applications created by the KSNPC streamlined the process for reviewing surface coal mining permits by the Department for Natural Resources and reclamation reviews for the Division of Abandoned Mine Lands. These agencies now have real-time access to the latest imagery and spatial data available. This saves time and money while facilitating projects for the coal mining industry by accelerating project reviews.



The KSNPC also used Graphic Information Systems (GIS) to generate the Conservation Lands Map – a map of federal, state and privately managed lands that retain natural qualities at various levels, not just KSNPC lands. This is a key tool to document the status of land conservation in Kentucky and help prevent conflicts with land development projects by identifying important areas before resources are committed. In the past two years, the KSNPC added approximately 100 managed areas to our database and now have this entire data set on the KY GEONET, the Geospatial Data Clearinghouse for the Commonwealth of Kentucky, which can be found at <http://kygeonet.ky.gov/>.

Delisting Kentucky's Endangered Plants

White-haired goldenrod was placed on the federal endangered species list in 1988. In 2016 it was removed from the federal endangered species list thanks to the extensive survey and monitoring work done by KSNPC biologists and our partners at the US Forest Service over the past two decades.

Although this plant is only native to the Red River Gorge area of Wolfe County, Kentucky, our efforts discovered more populations than were previously known and provided key statistical data that showed trends supporting its delisting.



KSNPC works hard to get Kentucky's rare species off the endangered species list!

While many erroneously believe that the only goal of the endangered species list is to avoid impacting rare species, the real goal is to manage populations in order to increase or stabilize their numbers and get those species delisted. KSNPC is working with the US Fish and Wildlife Service on projects designed to get Kentucky plant species off of the list.

Rare Plant List

The KSNPC is the clearinghouse for native plant information for Kentucky and has created the only plant conservation program in Kentucky state government. With approximately 2,500 species of plants in Kentucky, assessing their status is challenging. To fulfill our mandate under the Kentucky Rare Plant Act (KRS 146.600-146.619) we revise our rare plant list every 4 years. This list, along with photographs, distribution maps, and herbarium specimens, and other associated information is available online via our rare plant database.



Short's goldenrod at Blue Licks State Park Nature Preserve



White fringeless orchid



Cumberland rosemary

Section 6 Program of the Endangered Species Act

Since 1985, the commission has had a cooperative agreement with the United States Fish and Wildlife Service to serve as the official partner for monitoring and managing plants federally listed under Section 6 of the Endangered Species Act.



Globe bladderpod



Running buffalo clover



American chaffseed



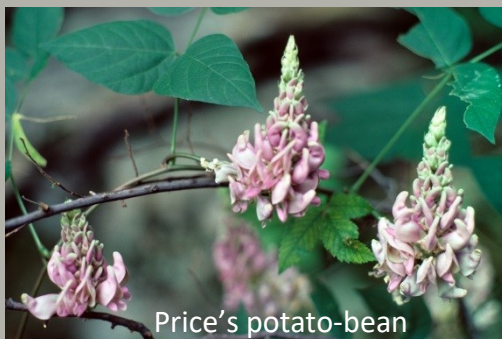
Braun's rockcress



Cumberland sandwort



Virginia spiraea



Price's potato-bean



Short's goldenrod



Kentucky glade cress

Kentucky's Aquatic Species



Endangered blackside dace



Kentucky has 102 endemic species of plants and animals, meaning they are found nowhere else in the world. Kentucky ranks fourth nationally in aquatic species with approximately 100 different kinds of freshwater mussels and 245 native fishes, and nearly 60 species of crayfish recorded.



The Green River, which flows through central Kentucky and Mammoth Cave National Park, has been ranked fourth nationally for its aquatic diversity. Recently, KSNPC biologists discovered a new localized population in the river with 16 of the federally endangered mussel clubshell (*Pleurobema clava*). The species was once widespread in numerous Kentucky rivers, but now exists only within this section of the Green River.

Working in collaboration with conservation partners, including other state and federal agencies, KSNPC biologists discovered the collapse of the mussel fauna in Horse Lick Creek in Jackson County, the Little South Fork of the Cumberland River in McCreary and Wayne counties, and most recently in nearby Marsh Creek. These results indicate a declining situation in the upper Cumberland River drainage and emphasize the importance of maintaining the viability of the Big South Fork of the Cumberland River and Rockcastle River mussel populations, for they are the last remaining remnants of the once diverse and unique mussel fauna of the upper Cumberland River drainage. Both the Little South Fork and Rockcastle rivers are part of the Kentucky Wild Rivers Program.



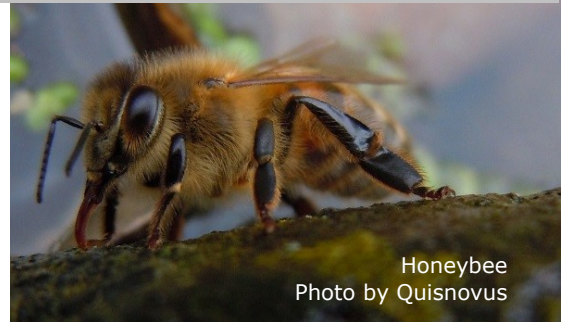
Extensive Study of Endangered Fish in Eastern Kentucky Streams Clarifies Guidelines

Resource managers want and expect objective guidelines to evaluate possible impacts on rare species in order to comply with regulations. Through a collaborative effort with USGS, USFWS, KDFWR, and other partners, KSNPC conducted a study that provides resources managers with meaningful and defensible water quality benchmarks for the federally threatened Kentucky arrow darter (*Etheostoma spilotum*) and blackside dace (*Chrosomus cumberlandensis*). Ultimately, this work should provide the basis for developing a policy to ensure environmental quality, species protection, and a guideline for the regulatory community to avoid, minimize, and/or mitigate adverse impacts on already imperiled species.

Conserving Kentucky's pollinators and agriculture

The USDA estimates that bees alone pollinate 75 percent of all nuts, fruits and vegetables grown in the U.S., a harvest worth about \$20 – \$30 billion annually.

Native bees as well as birds, butterflies, moths, wasps, bats and even beetles pollinate the plants and trees around us, although many of the honeybees around us are not native to North America.



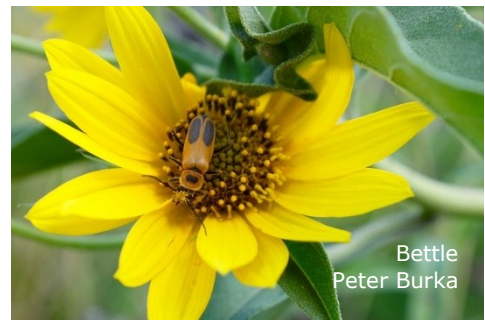
Honeybee
Photo by Quisnovus



Halictid Bee
Bob Peterson



Hummingbird
Jackie Elmore



Beetle
Peter Burka

Studies indicate that when there are multiple pollinator species besides honeybees in close proximity to crops, more and better pollination occurs resulting in an increase in yields and profits for farmers. The best way to encourage these pollinators is by having native flowers in nearby areas—including natural areas like State Nature Preserves. The decline of pollinators in recent years is troubling to Kentucky's meat and dairy farmers, as they depend upon crops such as alfalfa and red clover that are widely grown in Kentucky for hay and pasture.



KSNPC has the most complete dataset for imperiled pollinators in Kentucky and our invertebrate biologist is a leading authority for pollinators in the state. Through his expertise, KSNPC is at the forefront of insect conservation in the Kentucky.



The decline in pollinators includes the *monarch butterfly* (*Danaus plexippus*), one of the most recognized and beloved species in the world. Children and adults alike are drawn to this beautiful and iconic butterfly, primarily because it once was widespread, abundant, and easily observed in our own backyards.

In 2014, as a result of rapid and severe declines in monarch numbers, an Endangered Species Act Petition was filed to list the butterfly as a threatened species.

In 2016, KSNPC and the Kentucky Department of Fish and Wildlife Resources brought together representatives from approximately 40 state and federal agencies and NGOs across Kentucky to develop a Monarch Conservation Plan for the Commonwealth as part of a nationwide effort. Conservation measures from the Kentucky Monarch Summit are expected to benefit other pollinators, as well as imperiled native grassland habitats that these species rely upon.

What role is the KSNPC playing to help our native insect pollinators maintain the healthy populations necessary to add billions of dollars annually to the agricultural economy? We are managing natural areas, particularly native grasslands, throughout the state which act as reservoirs for native pollinator populations.

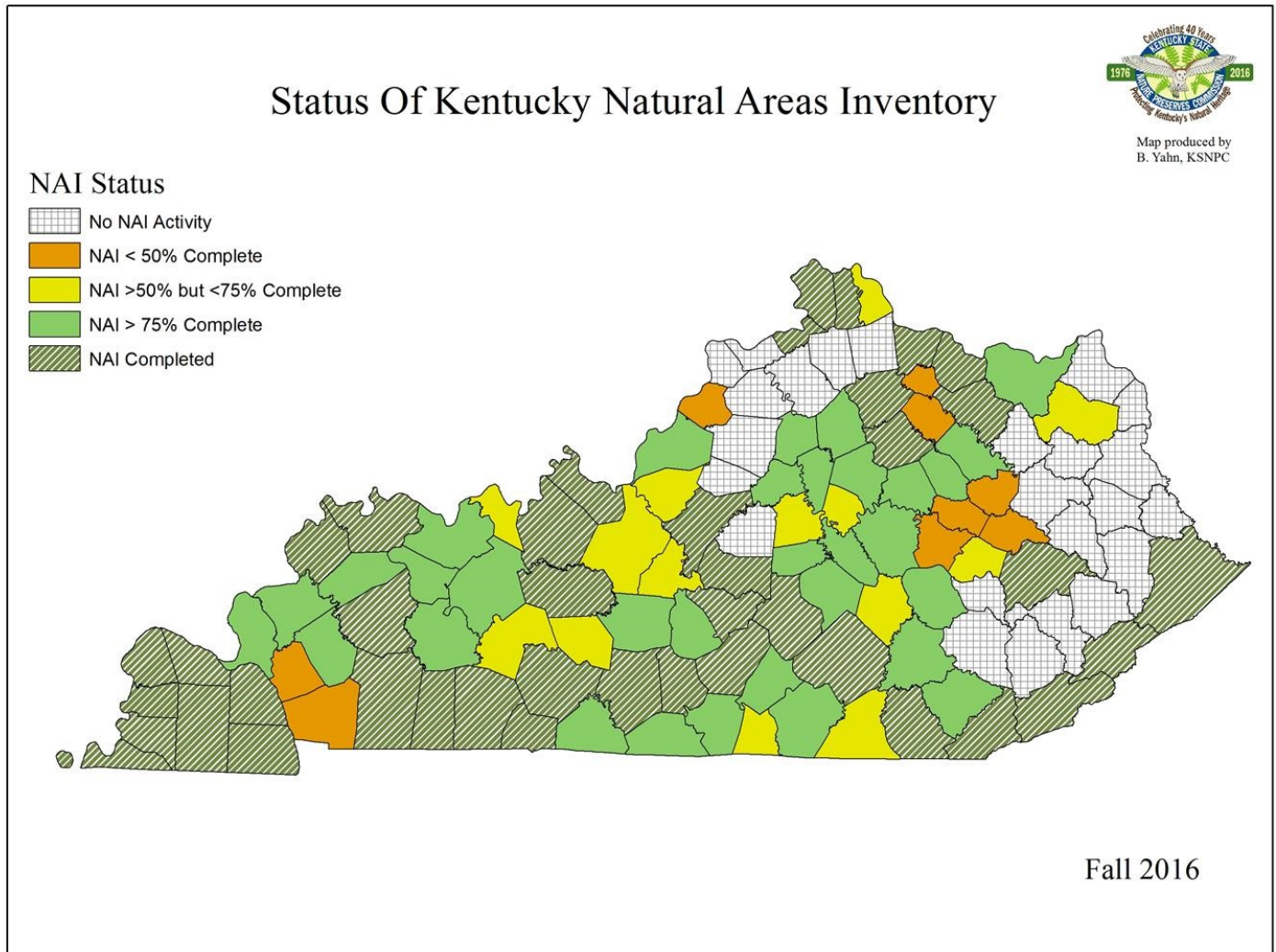


State nature preserves are high quality natural areas that provide habitat for pollinators that contribute to crop yields at nearby farms. Habitat conservation befitting bats and other natural insect predators help reduce the volume of pesticides needed for crop production. Pesticide-free zones are critically important to the survival of our native bees and other pollinators, and therefore promote higher agricultural yields.

Conserving Natural Lands and Funding the KSNPC Mission

Searching for the Most Unique Natural Areas in the Commonwealth

As part of our ongoing efforts to delist Kentucky's federal endangered species, KSNPC biologists survey county by county in search of previously unrecorded high quality natural habitats. We also survey existing Kentucky Heritage Land Conservation Fund properties and other conservation lands to look for new populations of species and habitats. As a result of these and other surveys, KSNPC biologists documented 358 new rare plant and animal populations, including a plant thought to be extirpated from the state. The biologists also discovered 37 high quality natural communities and documented 18 plants and insects not previously known to be from Kentucky.



When compared to the seven surrounding states, Kentucky has conserved the smallest percentage of its natural land and native habitats, with estimates ranging from 4% to 7.5%.

Land conservation programs contribute to a higher quality of life for citizens and benefit economic development through eco-tourism and passive recreation opportunities, such as wildlife-watching and hiking.

Funding Natural Areas in Kentucky

The only source of state funds to conserve land for nature preserves and natural areas is the Kentucky Heritage Land Conservation Fund (KHLCF). The KHLCF assists local governments, state agencies, and non-profit land trusts to conserve natural areas for passive nature recreation, environmental education, and habitat conservation. Funds are generated in part from the sale of "Nature's Finest" license plates.

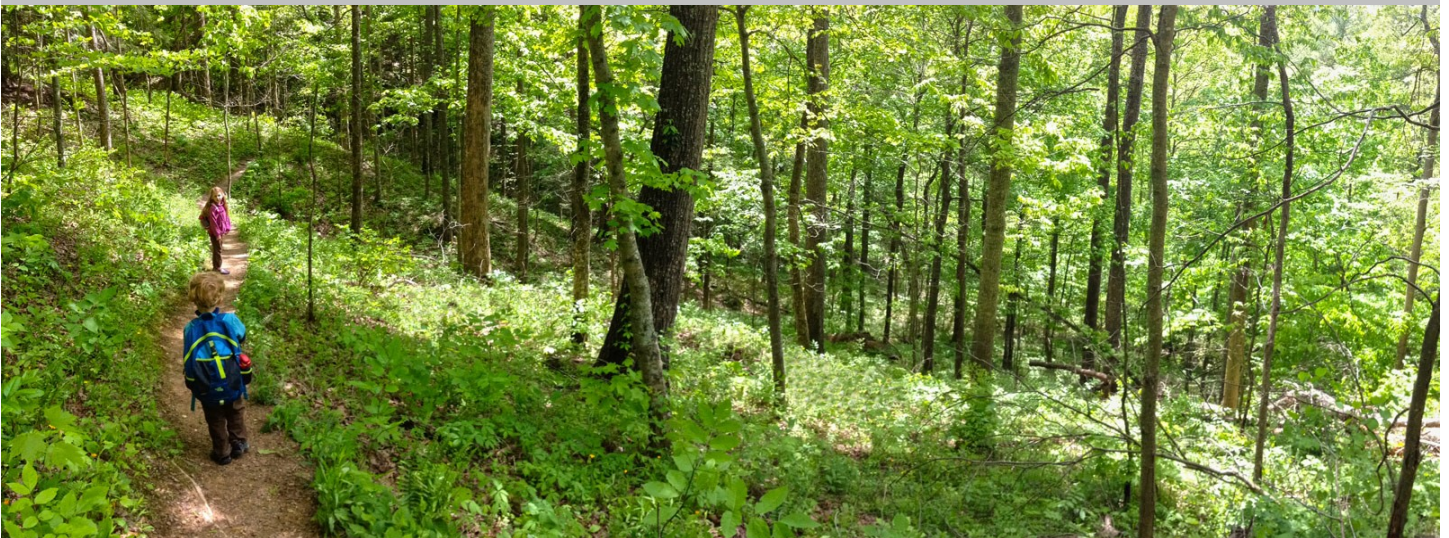
During the biennium, KHLCF funds expanded three state nature preserves:

- A 146-acre addition to Bad Branch State Nature Preserve in Letcher County was secured, enhancing conservation of one of Kentucky's most picturesque conservation areas as well as a designated Kentucky Wild River.
- An 83-acre tract was added to the Frances J. Palk State Nature Preserve in Pulaski County, conserving a unique habitat and associated rare plants.
- A 124-acre addition to the Hi Lewis State Nature Preserve in Harlan County can be seen from the Little Shepherd Trail, securing the areas scenic vista.

Just as significantly, the KHLCF also funds habitat management and biological surveys on properties it conserves; the KSNPC depends on KHLCF funding to manage its nature preserves. The KSNPC also conducts biological inventories on KHLCF natural areas owned by other agencies throughout the state, such as State Parks and Wildlife Management Areas, which provides vital information for their site management decision-making processes.



More information on the KHLCF may be found at <http://heritageland.ky.gov>.



The FY2015/2016 Biennial Budget transferred \$8 million from the Kentucky Heritage Land Conservation Fund to the General Fund. The FY2017/2018 Biennial Budget transferred \$5 million to the General Fund, or \$2.5 million per year, but it expressly forbade the transfer of money acquired through proceeds from the sale of "Nature's Finest" auto license plates. The perceived transfer of donated license plate funds in FY 2015/2016 has generated negative publicity for the program.

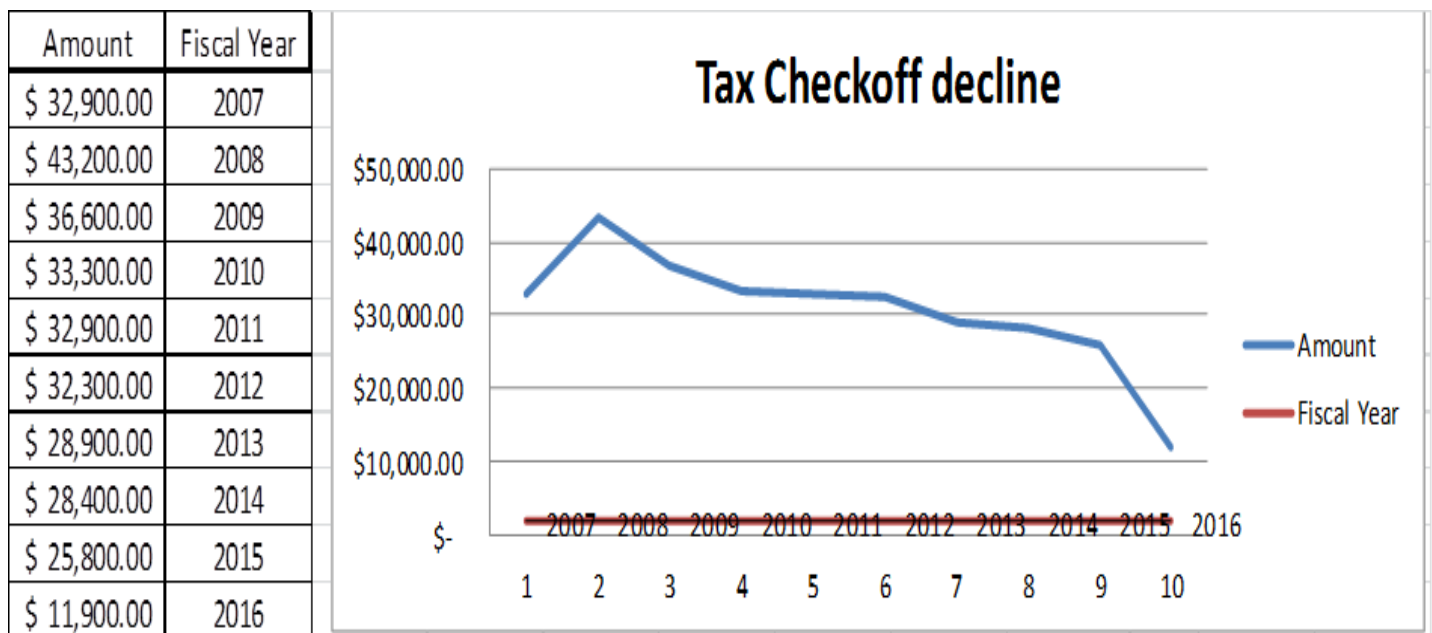
Funding the KSNPC mission

Like many state agencies, the KSNPC is dependent upon the state's General Fund to accomplish its mandate to conserve Kentucky's most beautiful and significant natural areas. However, we also receive funding from other sources as well, including donations and grants.

Expenditures by Fund Source	FY15 Actual	FY16 Actual	FY17 Operating Budget
General Fund	1,061,700	1,037,500	1,050,000
Restricted Fund	320,746	376,239	336,900
Federal Fund	263,780	33,656	39,000
Total Expenditures	1,646,226	1,477,395	1,425,900

Tax Checkoff donations:

Donations to the Kentucky Nature and Wildlife Fund income tax checkoff account amounted to \$11,900 for fiscal year 2016. Totals were down 54% from 2015 totals and down 72% from 2008 totals. This is a voluntary program that allows Kentucky income tax payers to donate evenly to KSNPC and the KDFWR non-game wildlife species program. Perhaps coincidentally, the decline coincides with the ascendancy of electronic tax filing.



KSNPC staff increasingly seeks outside grants and contract work to generate agency receipts to balance the KSNPC's budget, increase capacity, and complete quality work efficiently. This table lists major projects undertaken by the KSNPC for Fiscal years 2015 and 2016.

Project Name	FY2015	FY2016	Grand Total
Campbell County Conservation District- St. Anne's Wetlands - KHLCF inventory		11,300.00	11,300.00
US Fish and Wildlife - Upper Cumberland River- endangered fish inventory		11,783.61	11,783.61
US Fish and Wildlife - Green River- endangered mussel inventory	7,457.30	6,252.37	13,709.67
US Fish and Wildlife- endangered fish map- ping	3,400.00		3,400.00
US Fish and Wildlife – rare pollinator management	4,120.51		4,120.51
US Fish and Wildlife – rare plant and pollinator inventory	5,052.44	9,440.57	14,493.01
US Fish and Wildlife -South Fork KY River – endangered mussel inventory		17,940.00	17,940.00
US Fish and Wildlife - Upper Cumberland River- endangered mussel inventory	7,147.13		7,147.13
US Fish and Wildlife - Green River- endangered mussel inventory	4,924.71	8,453.52	13,378.23
Ky Division of Forestry-Big Rivers WMA - KHLCF inventory	22,674.78	56,325.22	79,000.00
Ky Division of Forestry- Kentenia SF - Howard tract- KHLCF inventory		4,344.96	4,344.96
KY Division of Water – Kinniconick Creek study	9,594.28	3,392.54	12,986.82
KY Division of Water - Kinniconick Creek study	95,116.52	78,379.49	173,496.01
US Fish and Wildlife – endangered fish map- ping		17,000.00	17,000.00
US Fish and Wildlife –rare insect study	4,945.51		4,945.51
NatureServe- database information	7,844.00		7,844.00
Kentucky State Parks –Natural Bridge- KHLCF inventory	5,000.00		5,000.00
Surface Mining-database information	70,128.17	59,871.83	130,000.00
USDA-NRCS-database information		16,000.00	16,000.00
Grand Total	247,405.35	300,484.11	547,889.46

KSNPC Field Staff

Generating high quality and reliable data and to manage Kentucky's most unique natural areas requires exceptional staff expertise. A biologist not only needs thorough knowledge of their particular species groups, but also needs intimate knowledge of the state. In addition, our biologists have to be well networked with other experts to compile and screen outside data sources and determine relevance, as well as to evaluate the best management practices for a variety of habitat improvement projects. Our staff are leading experts in their respective fields with years of experience, training, and education.



Mike Compton
Aquatic Zoologist
Specializes in fish, crayfish,
and freshwater mussels.



Ellis Lauder milk
Invertebrate Zoologist
Specializes in pollinators and other
invertebrate groups.



Tara Littlefield
Botanist
Specializes in rare and
native plants.



**Martina Hines, Branch Manager
and Brian Yahn**
Ecologists
Specializing in natural habitats; i.e.
forests, wetlands, and native grasslands.



Sara Hines and Ian Horn
Data Specialists
Manage the natural heritage database and provide
data services to industries, agencies, and
conservation organizations.



Joyce Bender
Branch Manager
Nature Preserves and Natural Areas



Kyle Napier
Field Biologist and
Nature Preserves Manager



Shaun Ziegler
Applied Ecologist and
Nature Preserves Manager

The Future of Conservation

A great deal has been accomplished by the KSNPC in the last biennium, and indeed over the last 40 years, but much remains to be done. As of 2016, over 28,000 acres have been conserved within the State Nature Preserve system for hiking, education, and scenic beauty—and with the addition of the Kentucky Wild Rivers Program in 2017, the KSNPC will begin offering expanded outdoor recreational opportunities on over 6,000 acres on Watershed Conservation Areas, from paddling to fishing and hunting.

But considering that Kentucky has more than 25 million acres, opportunity exists to expand the Commonwealth's conservation lands to meet the desire of citizens and tourists for nature experiences, and to protect at least one viable example of Kentucky's many unique natural habitat types for future generations to experience.

KRS 146.485(13) directs the KSNPC to report to the Governor and General Assembly on matters which may significantly affect the natural ecology or the human environment, and to recommend actions to prevent significant adverse effects which would harm our quality of life. To this end, the KSNPC recommends as its highest priority:

Support for efforts to conserve and manage natural land in Kentucky.

Conservation lands are key to protecting habitat and providing eco-services (i.e. clean drinking water and crop pollination) that improve the quality of life of our citizenry. Supporting the Kentucky Heritage Land Conservation Fund is an effective and popular way to assist conservation, and not just because it purchases property for conservation. The KHLCF also funds land management on conservation lands – not only KSNPC nature preserves, but KDFWR Wildlife Management Areas, Kentucky State Parks, and many other conservation lands. The KSNPC depends on grant funding from the KHLCF to complete trail improvement projects and habitat management initiatives.

Since they are entirely state generated, KHLCF funds are used by many agencies as "non-federal match" for grant applications; one dollar of KHLCF funds can be used to leverage several dollars in outside funding.

Supporting both the KSNPC and the KHLCF in turn supports efforts by a wide range of local communities and organizations dedicated to handing down some of Kentucky's natural heritage to their children, their grandchildren, and future generations .

Children visiting the oldest documented woodland tree in Kentucky (c 1611) at the Floracliff SNP in Fayette County.



Photo credits

All photos courtesy of KSNPC with the following exceptions:

Photos courtesy of Thomas G. Barnes from the book:

Kentucky, Naturally: the Kentucky Heritage Land Conservation Fund at Work (see cover below)

Page 1, Newman's Bluff State Nature Preserves in Livingston County

Page 3, Baltimore checkerspot and Kentucky lady-slippers

Page 5, Axe Lake State Nature Preserve in Ballard County, bald eagle,
Bouteloua Barrens State Nature Preserve in Lincoln County

Page 22, WKU Green River Biological Preserve in Hart County

Page 23, Cumberland River in McCreary County

Photo courtesy of Cheryl Beckley, WKYU-PBS

Page 31, Children at Floracliff State Nature Preserve in Fayette County

Photo courtesy of Zack Couch

Pages 1 and 14, Martin's Fork State Natural Area in Harlan County

Photos courtesy of the Explore Kentucky Initiative www.explorekentucky.us

Page 6, Blanton Forest State Nature Preserve in Harlan County by Matt Herp and
Gerry James

Page 7, Bad Branch State Nature Preserve in Letcher County by Gerry James

Photos courtesy of Beverly James and Josie Miller, Floracliff Nature Sanctuary

Page 19 and 20, Floracliff State Nature Preserve educational programs

Photo courtesy Macroscopic Solutions, LLC

Page 9, Emerald Ash borer

Photos courtesy of Sally Lambert-Warfield

Page 2, Lower Howard's Creek in Clark County

Page 24, Madison County Farm

Page 25, Clark County Farm

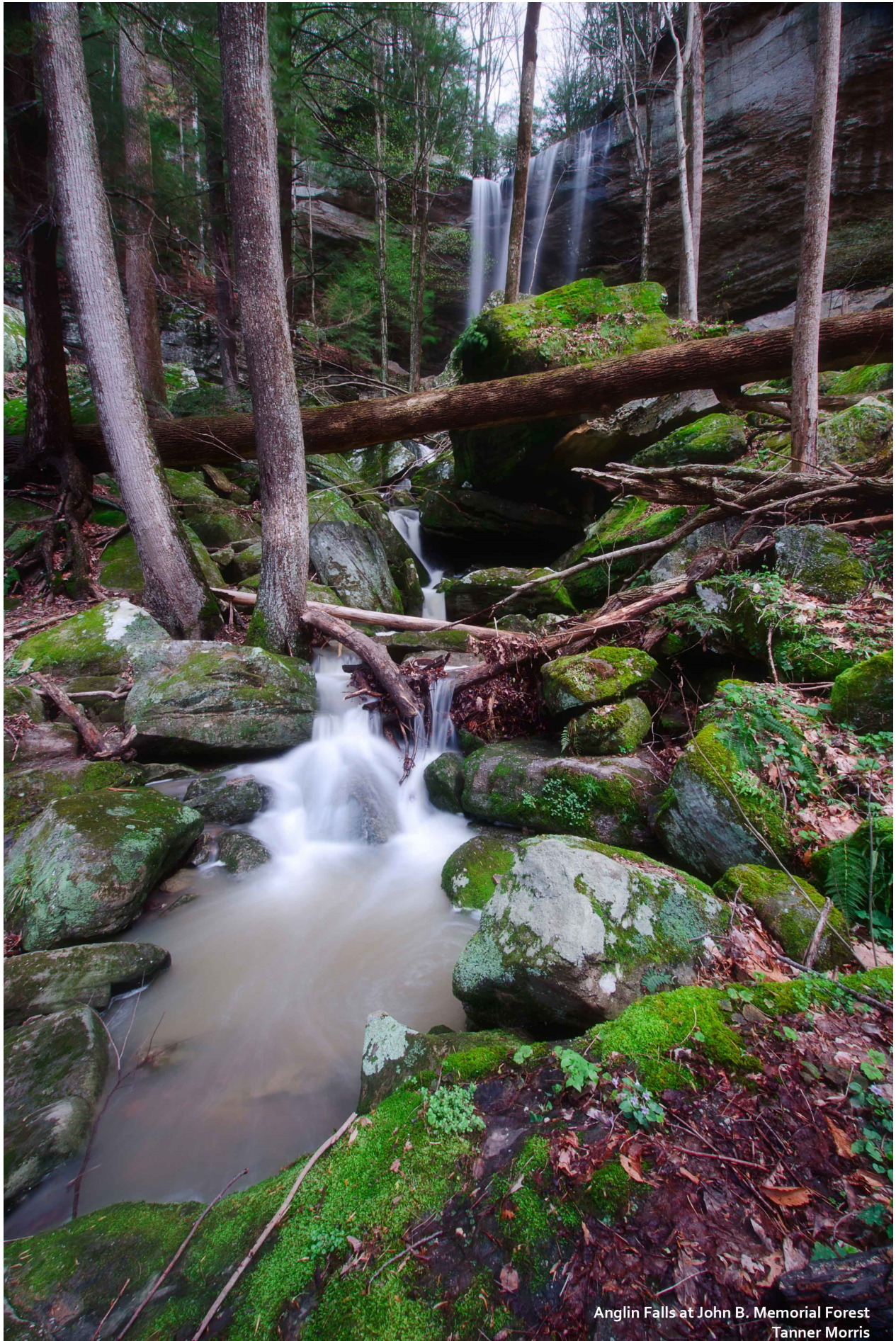
Photo courtesy of Boyd Shearer

Page 2, Pilot Knob State Nature Preserve in Powell County

Photo courtesy of Tanner Morris

Page 34, Anglin Falls at John B. Stephenson Memorial Forest

Layout by Felisha Hubbard



Anglin Falls at John B. Memorial Forest
Tanner Morris

