

# OFFICE OF KENTUCKY NATURE PRESERVES

Kentucky Heritage Land  
Conservation Fund

2023 Annual Report

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## The Kentucky Heritage Land Conservation Board

**Russell Meyer, Chairman**  
Representing the Department of Parks

**Hugh N. Archer, Vice Chairman**  
Representing environmental organizations

**Sunni L. Carr-Leach, Executive Director**  
Representing the Office of Kentucky Nature  
Preserves

**Derek Beard**  
Representing the Kentucky Department of Fish  
and Wildlife Resources

**Shannon Galbraith-Kent**  
Representing Kentucky Academy of Sciences

**Ted Jessup**  
Representing agricultural interests

**Jimmy Cantrell**  
Representing League of Kentucky Sportsmen

**Gordon Slone**  
Representing Kentucky Department of Natural  
Resources

**Charlotte Turner McCoy**  
Representing citizens of the Commonwealth  
with experience in land acquisition

*This report is submitted to the  
Governor and the General Assembly as  
directed by KRS 146 and 418 KAR  
relating to the Office of Kentucky  
Nature Preserves, the Kentucky  
Heritage Land Conservation Fund.*

## Executive Director's Message



**Sunni L. Carr-Leach**  
*Executive Director*  
*Office of Kentucky Nature Preserves*

Each year the Office of Kentucky Nature Preserves works tirelessly to search out Kentucky's rarest plants, animals and ecological communities. This year has been no different. As we have travelled throughout the state, new species records have been documented, key reference sites are doing well, and management strategies are paying off. For conservation efforts to be effective, we must approach our work as a community. The ecological community must be identified, the partnership community must come together to develop projects and the ecosystem restoration professionals must come together for effective management strategies.

The HLCF itself is made up of a community of resource minded individuals representing many facets of Kentucky's institutions and citizens that are devoted to ensuring our most vulnerable natural places are purchased and protected. This year, we are pleased to have approved and purchased new properties within

the Commonwealth. Please take a moment to read through the accomplishments and updates within this year's report.

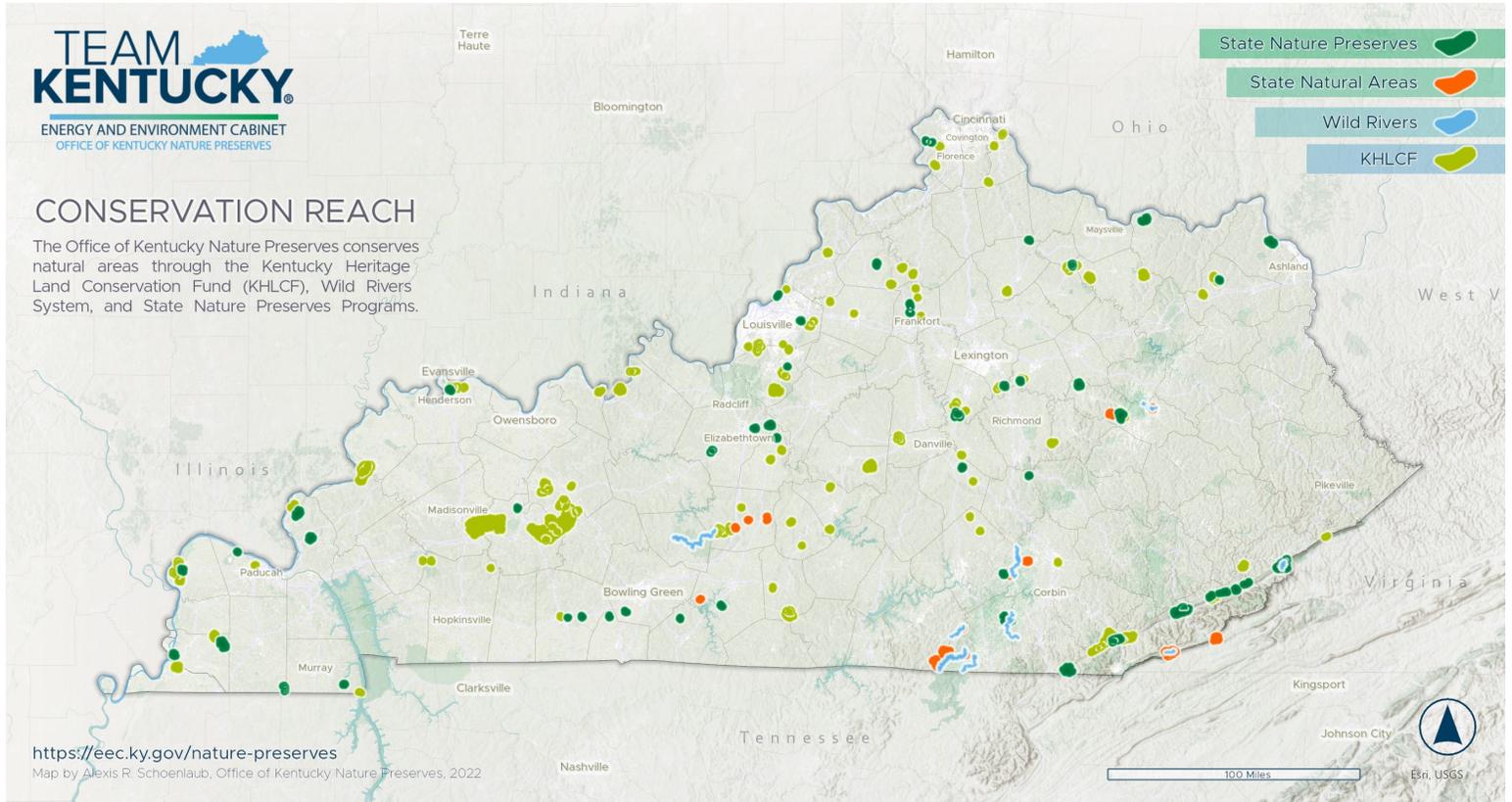
We hope that you take time to go out and enjoy those heritage lands held in trust for each of you and future generations. A walk in the woods and a stroll by the stream can take all of us to a place of remembrance, excitement and appreciation for the beauty and rich biodiversity that Kentucky has to offer.

In your service,

Sunni L. Carr-Leach



# Natural Areas Map



OKNP manages four distinct programs to conserve Kentucky’s natural areas. While these programs all share common goals—rare species habitat, environmental education opportunities, and conserving natural areas through a combination of land acquisition, conservation easements, and public-private partnerships— they have some differences. .

- **The Kentucky Heritage Land Conservation Fund**  
Assists with funding conservation at the local and state level.
- **The State Nature Preserve System**  
Prioritizes rare species habitat conservation and quiet enjoyment of natural areas.
- **The Natural Areas Registry**  
Recognizes private landowners and others who own land with outstanding ecological attributes.
- **The Wild Rivers Program**  
Focuses on riparian forest conservation and paddling opportunities on pristine rivers and streams.

**As of July 1, 2023, Office of Kentucky Nature Preserves programs include:**

- 19,883 acres owned by OKNP on 39 State Nature Preserves
- 8,090.91 acres owned by OKNP on 13 State Natural Areas
- 7138.12 acres dedicated by OKNP on 18 State Nature Preserves owned by partnering agencies
- 17,183.50 acres in 72 conservation easements at KHLCF natural areas owned by local concerns
- 71,831 acres of deed restrictions on 38 KHLCF natural areas owned by other state agencies
- 9,215.36 acres owned by private landowners and other agencies on 77 Registered Natural Areas
- 26,961.26 acres owned by private landowners and other agencies on 9 Wild Rivers Corridors

**While the grand total of 174,794.65 acres in these programs is an impressive number, it is less than 0.6% of Kentucky’s 25 million acres!**

# Kentucky Heritage Land Conservation Fund

## Historic Accomplishments

Since 1995, the Kentucky Heritage Land Conservation Fund (KHLCF) Board has played an integral part in protecting and conserving over 95,000 acres of Kentucky's natural areas and habitats on 174 tracts in 67 counties. KHLCF funds both the acquisition of property and management, including hiking trail development and habitat improvement.

### Summary of the Kentucky Heritage Conservation Fund Efforts as of 1995—June 2023

Applicant	Number of Projects	Acreage Conserved	Funding Amount
Kentucky Department of Fish and Wildlife Resources	8	40,701.18	\$7,915,255.59
Division of Forestry	6	3,662.77	\$6,213,849.35
Office of Kentucky Nature Preserves	49	11,788.03	\$10,155,385.42
Department of Parks	16	5,342.18	\$7,047,138.74
Wild Rivers Program	17	6,430.276	\$8,389,489.94
Multiple Agency Partners	6	14,781.09	\$11,673,455.86
County Governments	35	7,333.11	\$13,693,295.13
City Governments	10	542.55	\$1,709,119.25
Metro Governments	8	1,013.24	\$3,288,294.45
Colleges/Universities	8	2,078.70	\$4,952,276.55
Conservation Districts	8	1,484.44	\$4,624,699.85
Non-profits	4	764.477	\$1,557,385.50
<b>Totals:</b>	<b>174</b>	<b>95,922.046</b>	<b>\$81,219,645.63</b>

*Note: Includes both acquisition and management costs*



# Kentucky Heritage Land Conservation Fund Projects and Acquisitions

One Kentucky Heritage Land Conservation Fund property was acquired and two were awarded in FY2023.

FY2023 KHLCF Acquisitions			
Project	Agency	County	Acres
Wild Rivers – Red River Smith III Tract	OKNP	Wolfe	1.666
		<b>Total</b>	<b>1.666</b>

Funding awarded was for land purchase, associated pre-acquisition costs (appraisals, title, and survey work), or approved management activities. Due to complexities of the land acquisition process it often takes several years for the KHLCF to successfully complete projects. In some cases, projects are withdrawn by the seller and not completed. This fiscal year two projects were awarded, Meachum Woods State Natural Area and Kingdom Come Preserve.

Since 1995 to 2023 The Kentucky Heritage Land Program has protection on:

- 73 Competitive sites totaling 13,215.817 acres.
- 101 Non-competitive sites totaling 82,705.526 acres.



# Kentucky Heritage Land Conservation Fund Projects and Acquisitions

## Meacham Woods State Natural Area



Forest at Meacham Woods State Natural Area

The approximately 400 acre tract resides in Robertson County, KY . Overall site conditions indicate that cattle and agricultural practices have occurred for some time but level of disturbance and erosion is moderate to minimal most likely due to appropriate stocking practices. Approximately 75% of the tract is forested with a mix of early successional young forest and mature wooded ravines. Open lands account for approximately 25% of the available habitat and are dominated by cool season grasses typical of long term hay production fields in Kentucky.

Multiple species tracked by the Office of Kentucky Nature preserves have been documented within close proximity to the property. Species include the federally endangered tri-colored bat and Indiana bat. Indiana bat depends on intact forest habitat for foraging while the tri-colored bats tend to forage in edge habitat or above the canopy. Henslow sparrows documented in the area historically require larger grassland habitat for foraging and nest building which also benefits pollinators and monarchs. The property lies within the US Fish and Wildlife Service's known range for the federally endangered Short's Goldenrod and Fanshell mussel.

## Kingdom Come Preserve



Pine Mountain view from Kingdom Come Preserve

This property is approximately 166 acres and borders Kingdom Come State Park on Pine Mountain in Letcher County, KY. Due to the extent of its contiguous forest and the variety of natural communities found along Pine Mountain, it provides a diverse range of habitat types that aid in the protection of watersheds and provide an abundance of wildlife and plants. Because of its long, linear woodlands, the mountain provides excellent migrant routes for nomadic creatures like deer, elk, and black bear. The property contains the Line Fork Cave system. This cave has documented populations of the federally endangered Indiana bat (*Myotis sodalis*). Activities that impair the Black Mountain ecosystem and the natural functions it provides and performs including logging, mineral extraction, utilities, off road vehicle use and private development.

This property is part of the overall concept of the Pine Mountain State Scenic Trail. This parcel is a part of the agency application that was presented to the KHLCF Board in August 2002 known as the Pine Mountain Trail State Park – now called Pine Mountain State Scenic Trail (PMSST) – was executed in December 2002. Kentucky State Parks' main purpose in seeking to buy the Kingdom Come Preserve Tract is to continue to build the PMSST and to protect the natural scenery and curb encroachment issues upon the park boundary.

# Kentucky Heritage Land Conservation Fund

## Annual Revenue

Funding for the KHLCF is generated from the sale of nature license plates, the state portion of unmined mineral tax on coal, environmental fines, interest income, and donations. By statute, the Kentucky Environmental Education Council receives the first \$150,000 collected from environmental fines and the Office of Energy Policy receives the first \$400,000 of unmined minerals taxes. Due to totals falling below this threshold, KHLCF has not received any funding from unmined mineral tax since FY2019.

KHLCF Annual Revenue 2013-2023							
Fiscal Year	License Plates	Fines	Un-Mined Tax	Interest	Other	KEEC/OEP Deductions	Totals
2013	\$431,100	\$2,332,183	\$2,820,758	(\$14,433)		(\$550,000)	\$5,019,608
2014	\$412,370	\$1,709,373	\$2,676,912	\$71,526	\$71	(\$550,000)	\$4,320,251
2015	\$402,118	\$2,773,396	\$2,287,058	\$85,541	\$945	(\$550,000)	\$4,999,058
2016	\$288,182	\$2,070,527	\$1,637,571	\$126,302		(\$550,000)	\$3,572,581
2017	\$379,370	\$1,586,457	\$676,305	\$59,298	\$25	(\$550,000)	\$2,151,454
2018	\$365,590	\$2,262,555	\$636,307	\$100,261	\$385	(\$550,000)	\$2,815,097
2019	\$361,050	\$1,492,233	\$333,392	\$182,467		(\$483,392)	\$1,885,750
2020	\$361,460	\$1,909,592	\$166,097	\$60,986		(\$166,097)	\$2,182,037
2021	\$349,170	\$961,284	\$281,899	(\$52)		(\$281,899)	\$1,160,402
2022	\$365,120	\$667,373	\$6,559	(\$7,781)		(\$6,558.82)	\$881,271
2023	\$386,960	\$1,417,391	(\$934)	\$35,813		(\$550,000)	\$2,391,098



# Kentucky Heritage Land Conservation Fund

## Purchased Properties 1995-2023

KHLCF Purchased Properties 1995-2023			
County	Project	Acres	Agency
Allen	Carpenter Cave Conservation Area	216.34	Private Individual
Ballard	Axe Lake Swamp State Nature Preserve	458.45	Office of Kentucky Nature Preserves
Ballard	Boatwright Wildlife Management Area	8846.91	Kentucky Department of Fish and Wildlife Resources & U.S. Army Corps of Engineers
Barren	Brigadoon State Nature Preserve	187.46	Office of Kentucky Nature Preserves
Barren	Mutters Cave State Natural Area	108.28	Office of Kentucky Nature Preserves
Bath, Fleming, Nicholas	Clay Wildlife Management Area	8978.83	Kentucky Department of Fish and Wildlife Resources
Bell	Kentucky Ridge Forest Wildlife Management Area	3504.51	Kentucky Department of Fish and Wildlife Resources & Kentucky Division of Forestry
Bell	Kentucky Ridge State Forest	11794.25	Kentucky Division of Forestry
Bell, Harlan, Letcher	Pine Mountain State Scenic Trail	3276.03	Kentucky State Parks
Boone	Big Bone Lick State Historic Site	734.19	Kentucky State Parks
Boone	Boone County Cliffs State Nature Preserve	75.42	Boone County Fiscal Court
Boone	Dinsmore Woods State Nature Preserve	104.52	Boone County Fiscal Court
Boone	Gunpowder Creek Nature Park	247.96	Boone County Fiscal Court
Boyle	Perryville Battlefield State Historic Site	1184.39	Kentucky State Parks & Office of Kentucky Nature Preserves
Breckinridge	Breckinridge County Wildlife Education Area	25.19	Breckinridge County Fiscal Court
Breckinridge	Yellowbank Wildlife Management Area	6760.5	Breckinridge County Fiscal Court & Kentucky Department of Fish and Wildlife Resources
Bullitt	Apple Valley Glades State Nature Preserve	60.36	Office of Kentucky Nature Preserves
Bullitt	Knobs State Forest and Wildlife Management Area	2035.92	Kentucky Department of Fish and Wildlife Resources & Kentucky Division of Forestry
Bullitt, Jefferson	Jefferson Memorial Forest	6676.57	Louisville Metro Government
Bullitt, Jefferson, Oldham	The Parklands of Floyds Fork	5509.36	The Future Fund Land Trust & Louisville Metro Government & 21st Century Parks
Bullitt, Nelson	Bernheim Arboretum and Research Forest	16161.17	Bernheim Arboretum and Research Forest
Caldwell, Christian	Pennyrile State Forest	14378.97	Kentucky Division of Forestry
Calloway	Blood River Seeps State Nature Preserve	192.49	Office of Kentucky Nature Preserves
Calloway	Fort Donelson National Battlefield (Fort Heiman Unit)	446.72	U.S. National Park Service
Campbell	Hawthorne Crossing Conservation Area	137.88	Campbell County Conservation District

# Kentucky Heritage Land Conservation Fund

## Purchased Properties 1995-2023

### KHLCF Purchased Properties 1995-2023 (cont.)

County	Project	Acres	Agency
Campbell	St. Anne Woods and Wetlands Research and Education Center	146.49	Campbell County Conservation District
Campbell, Kenton	Morning View Natural Area	223.05	Kenton County Conservation District
Carlisle, Fulton, Hickman	Obion Creek Wildlife Management Area	4257.73	Kentucky Department of Fish and Wildlife Resources
Carter	Carter Caves State Resort Park	1819.99	Kentucky State Parks
Carter	Olive Hill Lake Conservation	299.16	City of Olive Hill
Carter	Tygarts State Forest	938.5	Kentucky Division of Forestry
Christian	Bob Overton Conservation Area	54.82	Private Individual
Clark	Civil War Fort at Boonesboro	25.38	Clark County Fiscal Court
Clark	Lower Howards Creek Heritage Park	168.66	Clark County Fiscal Court
Clark	Lower Howards Creek State Nature Preserve	227.99	Clark County Fiscal Court
Crittenden, Union	Big Rivers Wildlife Management Area and State Forest	7573.66	Kentucky Department of Fish and Wildlife Resources & Kentucky Division of Forestry
Crittenden, Union	Big Rivers Wildlife Management Area and State Forest	7573.66	Kentucky Department of Fish and Wildlife Resources & Kentucky Division of Forestry
Cumberland, Metcalfe	Marrowbone State Forest and Wildlife Management Area	1955.21	Kentucky Department of Fish and Wildlife Resources & Kentucky Division of Forestry
Daviess	Adkisson Greenbelt Park	26.34	City of Owensboro
Daviess	Yellow Creek Park	155.16	Daviess County Fiscal Court
Estill	Lily Mountain Nature Preserve	565.87	Estill County Conservation District
Fayette, Madison	Floracliff Nature Sanctuary	348.63	Floracliff Nature Sanctuary
Fayette, Madison	Raven Run Nature Sanctuary	749.07	Lexington-Fayette Urban County Government Parks and Recreation
Fleming	Park Lake Mountain Nature Preserve	821.11	Fleming County Fiscal Court
Fleming, Nicholas, Robertson	Blue Licks Battlefield State Resort Park	1071.92	Kentucky State Parks
Fleming, Robertson	Shorts Goldenrod State Nature Preserve	228	Office of Kentucky Nature Preserves
Franklin	Cove Spring Park	210.93	City of Frankfort
Franklin	Feindel Conservation Area	14.72	Private Individual
Franklin	Julian Savanna State Nature Preserve	42.43	Private Individual

# Kentucky Heritage Land Conservation Fund

## Purchased Properties 1995-2023

### KHLCF Purchased Properties 1995-2023 (cont.)

County	Project	Acres	Agency
Franklin	River Cliffs State Nature Preserve	210.2	Private Individual & Office of Kentucky Nature Preserves
Franklin	Rockcross Hills State Nature Preserve	84.16	Office of Kentucky Nature Preserves
Franklin	Swallowfield Conservation Area	72.2	Private Individual
Garrard, Jessamine	Tom Dorman State Nature Preserve	911.45	Office of Kentucky Nature Preserves
Garrard, Lincoln	Logan Hubble Park	505.81	Lincoln County Fiscal Court
Graves	Terrapin Creek State Nature Preserve	269.21	Office of Kentucky Nature Preserves
Grayson	Lone Oak Barrens State Nature Preserve	33.53	Office of Kentucky Nature Preserves
Green	Glenview Heritage Land	168.09	Green County Fiscal Court
Green	Wyatt Jefferies Woods Park	57.14	Green County Fiscal Court
Hancock	Jeffreys Cliff	232.78	Hancock County Fiscal Court
Hardin	Eastview Barrens State Nature Preserve	119.21	The Nature Conservancy & Office of Kentucky Nature Preserves
Hardin	Jim Scudder State Nature Preserve	231.13	Office of Kentucky Nature Preserves & Hardin County Fiscal Court
Hardin	Springhouse Barrens State Nature Preserve	54.08	Private Individual
Harlan	Blanton Forest State Nature Preserve	3503.81	Office of Kentucky Nature Preserves
Harlan	James E. Bickford State Nature Preserve	347.8	Pine Mountain Settlement School
Harlan	Kentenia State Forest	4082.69	Kentucky Division of Forestry
Harlan	Martin's Fork State Natural Area	1600.64	Office of Kentucky Nature Preserves
Harlan	Stone Mountain Wildlife Management Area and State Natural Area	1017.45	Kentucky Department of Fish and Wildlife Resources & Office of Kentucky Nature Preserves
Harlan, Letcher	Hi Lewis Pine Barrens State Nature Preserve	426.17	Kentucky Natural Lands Trust & Office of Kentucky Nature Preserves
Harrison	Griffith Woods Wildlife Management Area	745.53	Kentucky Department of Fish and Wildlife Resources
Hart	Frenchmans Knob Preserve	65.87	Hart County Fiscal Court
Hart	Green River State Natural Area (Boiling Springs)	121.37	Office of Kentucky Nature Preserves
Hart	Green River State Natural Area (Davis Bend)	165.52	Office of Kentucky Nature Preserves
Hart	Green River State Natural Area (Rush Island Bottoms)	139.25	Office of Kentucky Nature Preserves
Hart	Hidden River Cave	10.14	City of Horse Cave
Hart	Upper Green River Biological Preserve	1247.58	Western Kentucky University & Office of Kentucky Nature Preserves

# Kentucky Heritage Land Conservation Fund

## Purchased Properties 1995-2023

KHLCF Purchased Properties 1995-2023 (cont.)			
County	Project	Acres	Agency
Hart	Upper Green River Biological Preserve (Lawler Bend)	371.56	Western Kentucky University
Henderson	Green River State Forest	1091.81	Kentucky Division of Forestry
Henderson	John James Audubon State Park	1294.6	Kentucky State Parks
Henderson	John James Audubon State Park State Nature Preserve	338.31	Kentucky State Parks
Henry	Drennon Creek State Nature Preserve	328.96	Office of Kentucky Nature Preserves
Henry	Kentucky State University Environmental Education Center	294.68	Kentucky State University
Henry, Owen	Kentucky River Wildlife Management Area	3555.29	Kentucky Department of Fish and Wildlife Resources
Hickman	Obion Creek State Nature Preserve	1598.96	Office of Kentucky Nature Preserves & Murray State University
Hickman	Three Ponds State Nature Preserve	528.25	Office of Kentucky Nature Preserves
Hopkins, Muhlenberg, Ohio	Peabody Wildlife Management Area	41323.54	Kentucky Department of Fish and Wildlife Resources & Western Land Services & Patriot Coal Corporation
Jefferson	McNeely Lake Park	742.08	City of Louisville
Jefferson	Putney Pond and Woodlands	24.36	City of Prospect
Jefferson	Rolleigh Peterson Educational Forest	112.67	Louisville Metro Government & Kentucky Division of Forestry
Jessamine	Camp Nelson National Monument	385.53	U.S. National Park Service
Jessamine	Jessamine Creek Gorge Nature Preserve	267.49	Jessamine County Fiscal Court
Larue	Abraham Lincoln Birthplace National Historic Park - Boyhood Home Unit	227.98	U.S. National Park Service
Larue	Larue County Environmental Center	215.9	Larue County Fiscal Court
Larue	Thompson Creek Glades State Nature Preserve	169.08	Office of Kentucky Nature Preserves
Laurel	Sinking Creek State Natural Area	301	Office of Kentucky Nature Preserves
Laurel	Whitley Branch Wetland Restoration Project	75.57	City of London
Letcher	Bad Branch State Nature Preserve	2829.97	The Nature Conservancy & Office of Kentucky Nature Preserves
Letcher	Lilley Cornett Woods	543.03	Eastern Kentucky University
Lewis	Crooked Creek State Nature Preserve	728.53	Office of Kentucky Nature Preserves
Lincoln	Bouteloua Barrens State Nature Preserve	260.16	Office of Kentucky Nature Preserves

# Kentucky Heritage Land Conservation Fund

## Purchased Properties 1995-2023

### KHLCF Purchased Properties 1995-2023 (cont.)

County	Project	Acres	Agency
Lincoln	William Whitley House State Historic Site	89.49	Lincoln County Fiscal Court
Livingston	Livingston County Wildlife Management Area (Reynolds Tract)	873.13	Livingston County Fiscal Court
Livingston	Livingston County Wildlife Management Area and State Nature Preserve (Bissell Bluff SNP)	563.24	Livingston County Fiscal Court
Livingston	Livingston County Wildlife Management Area and State Nature Preserve (Newman's Bluff SNP)	993.81	Livingston County Fiscal Court
Logan	Baker Natural Area	66.16	Logan County Conservation District
Marion	Marion County Wildlife Management Area and State Forest	1340.67	Kentucky Department of Fish and Wildlife Resources & Kentucky Division of Forestry & Marion County Fiscal Court
McCracken	Perkins Creek Nature Preserve	80.56	City of Paducah
McCreary	Little South Fork State Natural Area (Tucker SNA)	23.05	Office of Kentucky Nature Preserves
McCreary	Rock Creek State Natural Area	89.92	Office of Kentucky Nature Preserves
McCreary, Wayne	Little South Fork State Natural Area (Burnett Branch SNA)	1067.79	Office of Kentucky Nature Preserves
McCreary, Wayne	Little South Fork State Natural Area (Steele Hollow SNA)	2231.4	Office of Kentucky Nature Preserves
McCreary, Whitley	Cumberland Falls State Resort Park	1974.24	Kentucky State Parks & Office of Kentucky Nature Preserves
Menifee	Broke Leg Falls	15.85	Menifee County Fiscal Court
Metcalfe	Dry Fork Gorge	79.97	Metcalfe County Fiscal Court
Monroe	Old Mulkey Meetinghouse State Historic Site	72.33	Kentucky State Parks
Nelson	Town Creek Greenway	13.22	Kentucky State Parks & City of Bardstown
Nicholas, Robertson	Blue Licks State Park State Nature Preserve	54.1	Kentucky State Parks & Office of Kentucky Nature Preserves
Ohio	Highview Hill	1012.58	Ohio County Fiscal Court
Ohio	Ohio County Park Nature Area	115.45	Ohio County Fiscal Court
Oldham	Morgan Conservation Park	227.59	Oldham County Fiscal Court
Powell	Natural Bridge State Park State Nature Preserve	1238.04	Kentucky State Parks
Powell	Pilot Knob State Nature Preserve	742.11	Office of Kentucky Nature Preserves & Powell County Fiscal Court
Powell	Powell County Conservation Tracts	82.83	Powell County Fiscal Court
Powell, Wolfe	Natural Bridge State Resort Park	2492.18	Kentucky State Parks
Powell, Wolfe	Red River State Natural Area	754.33	Office of Kentucky Nature Preserves
Pulaski	Buck Creek Nature Preserve	35.2	Pulaski County Fiscal Court

# Kentucky Heritage Land Conservation Fund

## Purchased Properties 1995-2023

### KHLCF Purchased Properties 1995-2023 (cont.)

County	Project	Acres	Agency
Pulaski	Dr. William H. Martin State Natural Area	459.2	Office of Kentucky Nature Preserves
Pulaski	Frances Johnson Palk State Nature Preserve	250.13	Office of Kentucky Nature Preserves
Pulaski	Hazeldell Meadow Preserve	44.03	Pulaski County Fiscal Court
Shelby	Clear Creek Park	190.46	Shelby County Fiscal Court
Shelby	Shelby Trails Park	75.79	Shelby County Fiscal Court
Simpson	Flat Rock Glade State Nature Preserve	98.58	Office of Kentucky Nature Preserves
Taylor	Clay Hill Memorial Forest	335.58	Campbellsville University
Taylor	Tebbs Bend Nature and Recreation Area	172.14	Taylor County Fiscal Court
Warren	Crumps Cave Research and Education Preserve	2.01	Western Kentucky University
Warren	Lost River Cave Valley	70.38	Warren County Fiscal Court
Whitley	Archer-Benge State Nature Preserve	2229.69	Office of Kentucky Nature Preserves



# Data and GIS Innovations

The Data and GIS Branch, operating under the Director’s Office, plays a vital role in managing geospatial data and information. At the heart of their operations is the Kentucky Natural Heritage Database, a database that adheres to Nature-Serve Data standards and utilizes the Biotics 5 framework. OKNP’s GIS specialists produce detailed cartographic representations of State Nature Preserves and develop innovative GIS solutions, workflows, and applications to support the Biological Assessment and Plant Conservation Branch and Natural Areas and Recovery Branch. The Natural Areas and Recovery Branch relies on tools such as the KHLCF Inspection Dashboard, Prescribed Fire Workflow, and the Trails Database. The Biological Assessment and Plant Conservation Branch utilizes Intensive Plant Surveys, Kentucky Roadside Pollinator Survey, and Citizen Science Projects using ESRI’s Survey123 and utilizes mobile maps to collect crucial data on the Commonwealth’s cherished natural areas and communities.

Collaboration is key, and the GIS support specialist partners with the Natural Resources Conservation Service (NRCS) to maintain and update the Endangered Species Act matrices. Additionally, the Data and GIS team supports multiple data agreements with various organizations, including Tennessee Valley Authority, Kentucky Department of Fish and Wildlife Resources, US Fish and Wildlife Service, Kentucky Department of Transportation, The Nature Conservancy, and many more, to further support the OKNP’s mission. Recognizing the importance of information sharing with geographically-led data in the conservation community. The team ensures a sustainable future for citizens while preserving Kentucky’s beautiful natural heritage.

## OKNP Natural Heritage Database houses Kentucky’s high quality species & community data

The OKNP Natural Heritage Database includes 25,106 high quality source features records and 20,091 element occurrence records of the 1,127 species and communities we track.

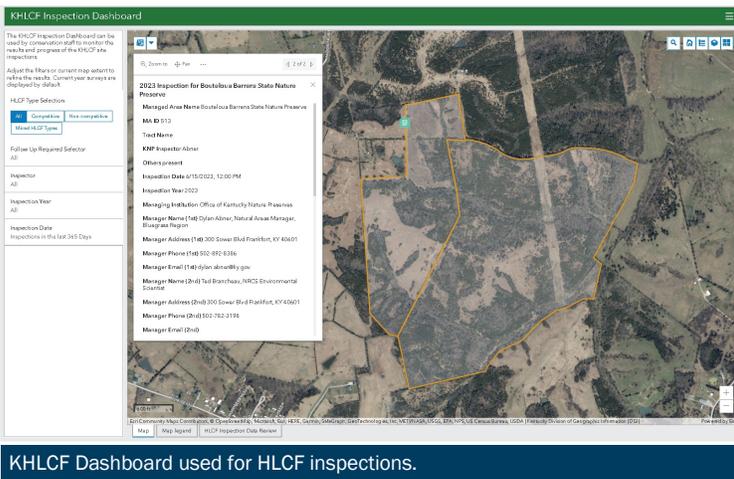
## OKNP responsibilities streamlined through creation of innovative workflows

In 2021, the Office of Kentucky Nature Preserves’ GIS Specialists collaborated with the KHLCF coordinator to streamline the annual KHLCF inspection process. Management contacts were compiled and are now easily accessible in a

digital map available anywhere, and a Survey 123 digital collection form allowed the inspection to be completed while in the field. This workflow is still in place and has been used with every KHLCF inspection. The KHLCF dashboard now offers continuously updated data to provide KHLCF Inspectors all details from the past inspections. OKNP has plans to expand this inspection process this year with automatically created reports, and continued improvements to the workflow. In 2023, the GIS Specialists are looking forward to beginning development on a Land Management workflow to compliment the KHLCF inspection process. This new workflow should serve as a way to track and measure management activities completed by our staff.

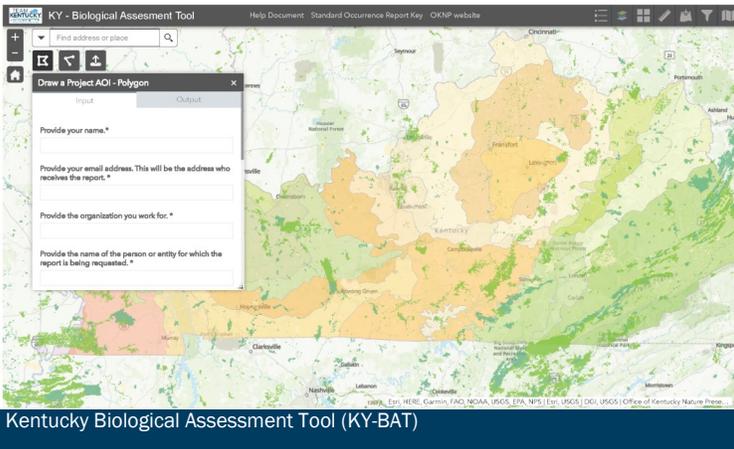
## The Kentucky Biological Assessment Tool (KY-BAT) continues to serve conservation interests of the public

The Office of Kentucky Nature Preserves also developed the newest version of the Kentucky Biological Assessment Tool (KY-BAT), an environmental review tool still accessible at <https://kynaturepreserves.org/>. The newly developed version of KY-BAT continues to serve the interest of the public by allowing clients to submit projects and receive reports with information on rare species and communities, conservation lands, and other natural resources within the project area within minutes. In 2018, KY-BAT was created as a part of our commitment to providing timely,



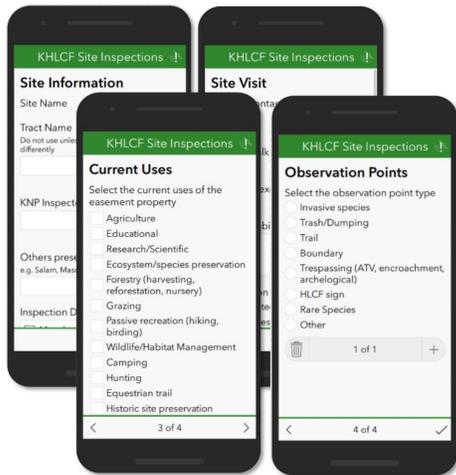
KHLCF Dashboard used for HLCF inspections.

# Data and GIS Innovations



Kentucky Biological Assessment Tool (KY-BAT)

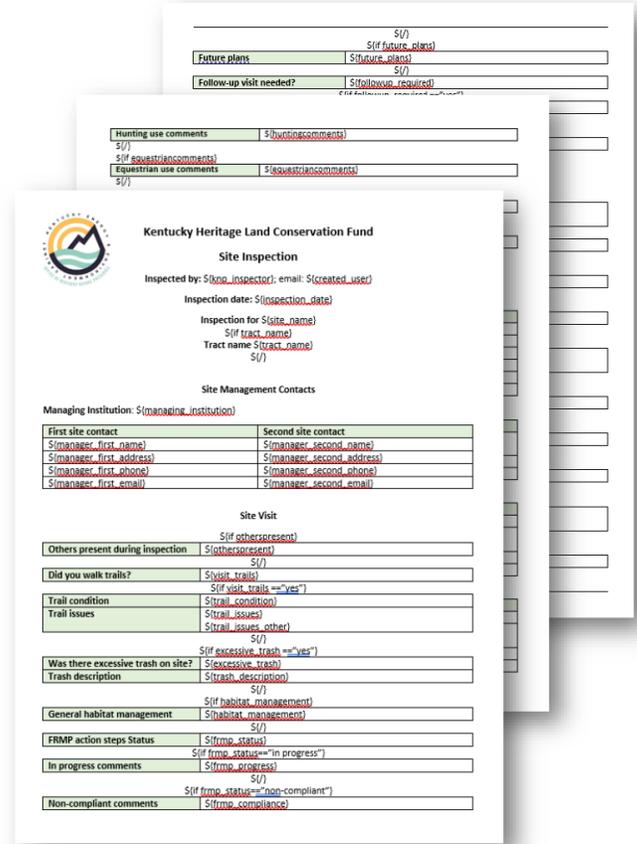
creative, high-quality solutions to a wide variety of environmental and developmental planning needs. Until now, KY-BAT reported only on endangered, threatened, or special concern plants, animals, features or exemplary natural communities monitored by the Office of Kentucky Nature Preserves in the Kentucky Natural Heritage Database. In the newest version, The Office of Kentucky Nature Preserves, in collaboration with conservation partners, have added support to offer references and recommendations in the received report from best management practices that intersect a users project area. This functionality allows us to inform the public on not only important ecological resources present or on KHLCF properties, but also make informed decisions backed by reputable data and resources, therefore playing a role in preventing impact to those properties.



KHLCF inspections are carried out on a mobile device via Survey123

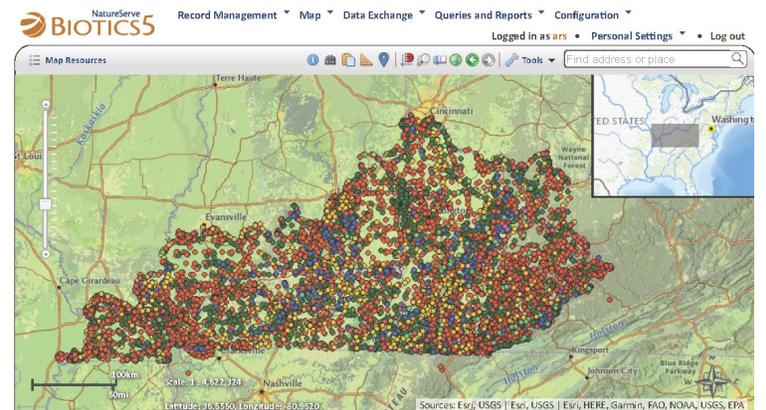
development, conservation efforts, and research. KY-BAT is the most accurate database of rare species, natural habi-

OKNP is a leader in the biological and environmental data field. OKNP biologists are recognized for their field experience and commitment to complete, accurate data. Data analysts respond to numerous large-scale and site-specific information requests which guide land-use planning,



HLCF Report generated by OKNP

tats, and conservation lands available in Kentucky and is updated regularly. It is the result of 40 years of research and on-the-ground inventories by KNP biologists, plus a compilation of herbarium records, museum records, and data from other agency and organizations. OKNP is committed to providing timely, creative, high-quality solutions to a wide variety of environmental and developmental planning needs. Data systems are linked with powerful mapping tools - now accessible on line 24/7 through the KY-BAT.



NatureServe Biotics5 Database.

# Hiking Opportunities

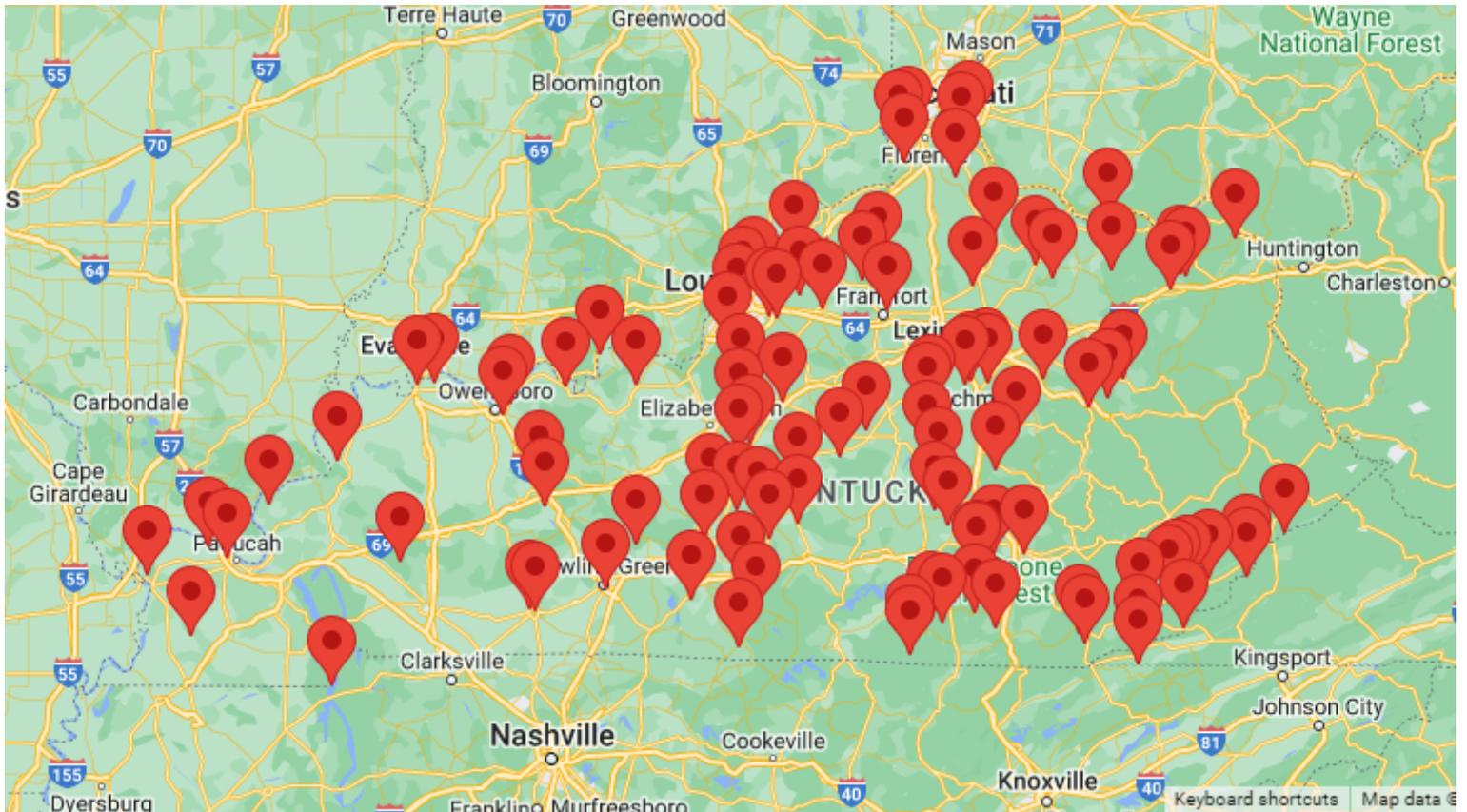
## OKNP trails traverse many of Kentucky's highest quality natural communities

In addition to conserving habitat for rare species, OKNP strives to provide passive outdoor recreation opportunities to the citizens of Kentucky and tourists alike. OKNP State Nature Preserves, KHLCF sites, and natural areas provide an opportunity for individuals, families, and groups to see, hear, explore, and connect with nature in its purest state possible and to experience what Kentucky may have looked like centuries ago. For the hiker, nature photographer, bird watcher, and those seeking solitude in pockets of wild Kentucky, State Nature Preserves, Wild Rivers, and Heritage Lands truly are some of the most cherished places in the state.

Another notable update is our website, which includes an online tool making it easier to find information on our public sites. Our trails manager makes regular visits to each site we manage and has made numerous updates to bridges, boardwalks, and steps that assist visitors in traversing our trails. We have updated signage and are now using a new trail blaze to help guide visitors on their trek.

**Find your new favorite hiking spot now at**

<https://eec.ky.gov/Nature-Preserves/Locations/>



# Hiking Improvements

## Keith MacAdam Trail Endowment

The Keith MacAdam Trail Endowment for Kentucky Nature Preserves was established in 2018 to assist with improvements on the OKNP trail system. Through the financial support the endowment offers, and an increased focus on organizing volunteers, we have been able to make short and long term plans to maintain and improve the existing trail systems as well as develop new trails. OKNP has been able to make several notable improvements for hikers over the last few years. There are approximately 35 miles of trails at eleven nature preserves currently managed by OKNP. OKNP staff also assisted Kentucky Heritage Land Conservation Fund partners with trail maintenance using Keith McAdam Trail Funds.

## Bad Branch State Nature Preserve



New sign-in box installed at Bad Branch SNP

Bad Branch State Nature Preserve, located in Letcher County, is the crown jewel of the State Nature Preserve system. This preserve has over seven miles of hiking trails that traverse a forested gorge to a glorious 60-ft waterfall tumbling over sandstone cliffs and spectacular Appalachian views from the large outcrop called High Rock. These trails are two of the most heavily hiked trails in the SNP

trails system and are utilized year-round for hiking, nature photography and bird watching. This 2,829 acre preserve protects the scenic beauty of the Bad Branch gorge and is one of the largest concentrations of rare and uncommon species known in the state.

The flood that hit eastern Kentucky on July 27, 2022 devastated the area and did significant damage to the trails at Bad Branch SNP. One foot-bridge was washed down river, while another foot-bridge was knocked off of its foundation. The SNP had to be closed to the public following this event. Trail repairs took a month to complete and extensive help from partners- The Nature Conservancy, Kentucky Natural Lands Trust, and the Kentucky



Bad Branch Falls is over 60 feet tall and attracts many nature lovers all year round.

State Parks Trail Crew, along with a few dedicated volunteers. Once trails were repaired, the preserve was reopened to the public in March 2023. Trail improvements and repairs included two trail reroutes, new signage, updated trail blazes, installation of various infrastructure to stabilize, prevent trail erosion, decrease risk of injury and increase accessibility.

## Blanton Forest State Nature Preserve



Mountain views from Knobby Rock Loop Trail. Photo: Jenny Rodriguez

Blanton Forest SNP, located in Harlan County, has three hiking trails totaling over four miles. As one of 13 large old-growth tracts remaining in the eastern United States, Blanton Forest is a diverse ecological treasure. Many of the trees are 3 feet to 4 feet in diameter, towering 100 feet above the forest floor. Several trees have been dated to the late 1600s.

Hikers can view stunning vistas of the surrounding Appalachian forest by hiking along the Knobby Rock Loop Trail to



New footbridge installed at Blanton SNP

# Hiking Improvements

the large sandstone outcrop Knobby Rock. The Sand Cave Loop Trail continues up the mountain around rock cliffs, through a rock maze, and into a rock shelter, which is a great place for breaking before heading back down the mountain. Along the way you will pass huge trees and cross streams where the water is clear and cold year-round. Watts Creek Trail offers a scenic but less strenuous alternative route to enjoy the preserve, a short half mile walk to the old growth forest. Trail work was completed at Blanton Forest SNP in 2023 with the help of KNLT and a local youth group. Improvements included replacing a foot bridge and steps, installation of a new kiosk with an updated map, and clearing of down trees.



New kiosk installed at Crooked Creek SNP

plant communities and control invasive species at the site. Hiking improvements included clearing deadfall trees and brush, trimming herbaceous growth around trails, and installed an updated kiosk panel with new maps and information.

## Brigadoon State Nature Preserve



New kiosk installed at Brigadoon SNP

Brigadoon SNP, located in Barren County, features a mature beech, maple and tulip poplar forest that was inducted into the Old Growth Forest Network in 2016. A one-mile trail crosses through this forest along ridgetops and crosses a creek where wildflowers cover the forest floor.

Hikers may enjoy views of the Barren River Lake and utilize this great location for birding. In the last few years, hiker visitation has steadily increased at this site. Hiking improvements included multiple instances of clearing deadfall trees, trimming back herbaceous undergrowth, clearing the parking lot of overgrowth and installation of an updated kiosk panel.

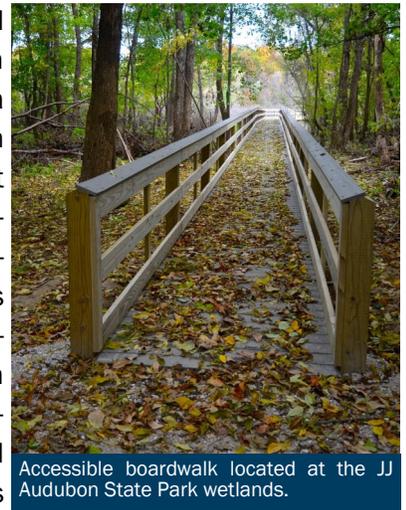
## Crooked Creek State Nature Preserve

Located in the northeast region of Kentucky in Lewis County, Crooked Creek SNP offers an easy 1.35 mile trail for hikers through open fields, oak barrens, and oak hickory forests. Hikers may enjoy viewing the abundance of wildlife at this preserve, such as turkey and deer, and it is also an excellent birding destination. Hikers can also witness the effects of prescribed fire on grasslands and forests along the trails, as this is a tool OKNP has utilized to maintain native

## John James Audubon State Park

John James Audubon State Park is the home of the famed naturalist, ornithologist, and painter and the park museum features the largest collection of original Audubon art in the world in addition to personal artifacts about his life. The surrounding forest along the bluffs of the Ohio River is mature, almost old growth in nature with some trees more than 200 years old. Approximately half of the property has been dedicated as a State Nature Preserve.

The 650-acre Audubon Wetlands was added to the park by the Kentucky Heritage Land Conservation fund in 2016. The highlight is a bald eagle nest and heron rookery, as well as habitat for waterfowl and amphibians. The Friends of Audubon, a local nonprofit, has installed a wheelchair accessible boardwalk through the wetlands. OKNP assisted KHLCF partners to install more than 100 new steps along the Glen Eagle Trail.

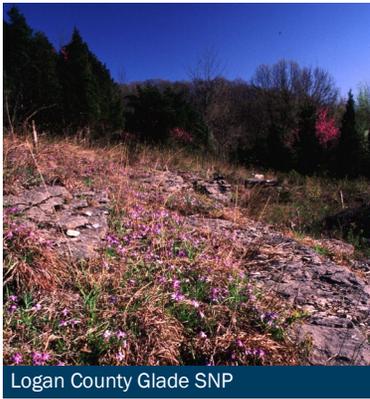


Accessible boardwalk located at the JJ Audubon State Park wetlands.

## Logan County Glade State Nature Preserve

Logan County Glade SNP is in the heart of Russellville, KY and has a 0.5-mile hiking trail. Hikers can view a rare natural community, a limestone slope glade, and views of the

# Hiking Improvements



Logan County Glade SNP

small town from the trail. The glade openings occupy the southwest-facing mid-slope of an 810-foot high knob. Hiking improvements included relocating the trailhead, updated trail blazes, removal of dead-fall and brush on several occasions, and the installation of a new updated kiosk.

the top of the knob. Due to elevation gain it is considered very strenuous. The trail provide scenery of oak hickory forests and vistas of the Bluegrass and Cumberland Plateau Regions of Kentucky. The Millstone Quarry trail is one mile round trip from the parking area, and allows you to take a step back in time to when early settlers would mine rocks out for milling purposed to grind corn and grain. These trails are visited by hikers year-round. Hiking improvements included monthly parking lot and trail maintenance, placing gravel at the beginning of the trail, updating trail blazes, and install new updated kiosk.

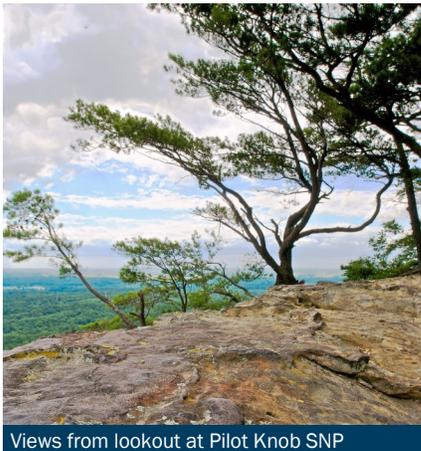
## Pennyrile Forest State Resort Park



Pennyrile Forest State Resort Park

Pennyrile State Forest is one of nine State Forests and is located in Christian County. The forest includes Pennyrile State Resort Park and borders Lake Beshear. This, like all the other state forests, are working forests and are managed following ecosystem management approach to demonstrate sustainable use while maintaining biological diversity and water quality. OKNP assisted KHLCF partners to install new handrails on the Lake Trail.

## Pilot Knob State Nature Preserve



Views from lookout at Pilot Knob SNP

Pilot Knob SNP, located in Powell County, is said to be where Daniel Boone first laid eyes on the Bluegrass Region of Kentucky, with a sandstone outcrop at the southeast end of the 730-foot-high knob known as "Boone's Overlook." The Pilot Knob Trail is approximately 1.25 miles one-way to

## Pine Mountain Settlement School



Salamander at Pine Mountain Settlement School

Located in Harlan county, the Pine Mountain Settlement School is an 800+ acre campus with a mission to enrich people and enhance lives through Appalachian place-based education for all ages . Approximately 350 acres of this campus is preserved as James E Bickford State Nature Preserve. The preserve protects a high-quality mixed mesophytic forest, the typical natural community found on the north face of Pine Mountain. The preserve also protects Sawmill Hollow Cave, a small cave that developed in the limestone layer that is exposed on the north face of Pine Mountain. Additionally, the preserve supports a diverse and conservative invertebrate fauna. OKNP assisted KHLCF partners to install new steps to the Summit Trail.

## Pine Mountain State Resort Park

Located in Bell County, this area contains an old-growth forest which is 200-300 years old, as well as a significant archaeological site -- a large sandstone shelter known as the Rock Hotel that was inhabited by prehistoric Native Americans. The preserve is part of the Pine Mountain fault block, one of the most prominent geological structures in



New foot bridge installed at Pine Mountain SRP

# Hiking Improvements

the eastern United States. Pine Mountain SRP is a refuge of rare plants, animals and communities in the Appalachian mountains of Kentucky. OKNP assisted KHLCF partners to construct a new foot bridge, install new concrete steps along the trail and construct a new trail.

## Tom Dorman State Nature Preserve



Palisade views from Tom Dorman State Nature Preserve

Tom Dorman SNP, also known as Kentucky River Palisades SNP, is located in Garrard County about 20 minutes south of Lexington and has been a great place for people to get out and enjoy nature in their backyard. The preserve has four miles of trails that feature views from the top of 200 foot limestone cliffs overlooking the Kentucky River along the Upper Palisades Loop Trail, while the Knights Ferry Trail offers hiking along the banks of the river. This trail system is well defined, blazed, and maintained to make it user friendly for all age groups. It is heavily used by hikers and visitation has continued to grow annually. Hiking improvements included replacing blacktop with gravel, expanding the parking lot, installation of a stone wall, painting parking spots, installation of a new kiosk, installation of a new boot brush, several instances of clearing downed trees, trimming herbaceous growth, installation of new steps on the Lower Palisade Loop Trail, removing non-native invasive species, and maintenance of the parking lot.



New border wall installed along the parking lot of Tom Dorman SNP

## Future Hiking Improvements



Hikers enjoying Appalachian Mountain views from a SNP

OKNP has plans to continue to improve our trails and lands for the enjoyment of future generations of Kentuckians. The team is dedicated to providing the best passive recreation experience on Kentucky's highest quality natural areas.

### Future Trail Improvements Planned Include:

- Update trail blazes at all sites starting fall 2023
- Provide assistance to Natural Bridge State Resort Park staff to rebuild steps burned out by the April 2023 wild-fire
- Install new kiosk panel and preform trail improvements at E. Lucy Braun SNP
- Continue to offer trail workshops twice a year to help other agencies and partners improve trails in the state
- Update trail signs on all trail systems in state nature preserves managed by OKNP
- Order and install new directional road signs to guide people to the state nature preserves with hiking trails
- Continue monthly maintenance on all preserve trails to keep them safe and enjoyable to all users
- Purchase and install trail counters at trailheads of SNPs with trails to count users
- Install additional steps to Knobby Rock Loop Trail and install bridge extension on Watt's Creek Trail at Blanton SNP
- Opening an additional mile of public trails on Jesse Stuart SNP
- Lay down gravel and define trail head, construct new bridge, and re-open Sage Point Trail to the public, and a trail re-route at Pilot Knob SNP
- Two trail re-routes on Knight's Ferry Trail at Tom Dorman SNP

# Biological Assessment and Plant Conservation: Ex Situ Conservation

## Rare plant propagation, seed banking, and reintroductions

OKNP works closely with several conservation partners on ex situ conservation strategies that provide further insurance to protect declining rare plants. Collaborative activities include seed banking, genetic research, rare plant propagation, translocation, and reintroduction of rare plant populations. We are working on the propagation of over 30 species with various partners, including Missouri Botanical Garden, Cincinnati Zoo, Atlanta Botanical Garden, Dropseed Nursery, Ironweed Nursery, University of Kentucky, and the Kentucky Plant Conservation Alliance.

### Wood Lily (*Lilium philadelphicum*) Conservation in the Cumberland Plateau

OKNP and partners have been working on a project to protect, connect, and restore populations of the wood lily (*Lilium philadelphicum*), and associated pine barrens and woodland habitat over the past decade in Kentucky. The



Wood Lily, *Lilium philadelphicum*  
State Endangered

wood lily, while globally secure and wide ranging, is state endangered in Kentucky, despite once being more common. This charismatic plant of Cumberland plateau grassland and woodlands (barrens) has declined by over 90% in the past 40 years due to habitat loss, lack of fire, mowing, and her-

bivory. The wood lily, along with numerous other plants it grows with, make up critical pollinator habitat for species such as the monarch butterfly and native bees. We are working with partners to bring this plant and its habitat back from the brink of extinction by coordinating and implementing monitoring, management and restoration efforts. We are excited to announce that the wood lily has finally come full circle as a Kentucky Plant Conservation Alliance project! This project has included monitoring, collaboration,

seed collection, site preparation and management, to now translocation back in managed pine barrens habitat in the Cumberland plateau, including a KHLCF site! 5 years after we began the pro-



OKNP worked with partners to propagate wood lily seedlings for introductions to restored habitat.

ject to protect the remaining populations and to propagate them for future introductions, the first transplantations finally began! A team from OKNP and the Kentucky Plant Conservation Alliance volunteers transplanted wood lily bulbs into new several sites in Powell, Pulaski and Rockcastle counties that are being managed and restored to the pine barrens woodland community.

### Recovering the globally rare Kentucky Clover (*Trifolium kentuckiense*) in the Inner Bluegrass Region



Clover Power! OKNP staff work collaboratively to transplant KY Clovers into our natural areas

Big news for native clover conservation in the Bluegrass State! Several years of conservation collaboration has resulted in the first transplants of the globally rare Kentucky clover (*Trifolium kentuckiense*) back into the Bluegrass Woodlands. This endangered clover was discovered (2010) and described (2013) recently and was known from only two privately owned limestone woodlands in the Inner bluegrass of Kentucky. Since its discovery, the Kentucky clover had disappeared from both sites despite annual monitoring and management efforts conducted by Office of Kentucky Nature Preserves botanist Tara Littlefield and KDFWR biologist Joe Lacefield. Luckily, seed collection and propagation efforts were successful due to our collaborative efforts with Valerie Pence, Kristine Lindsey, and Mairead Kennedy from the Cincinnati Zoo CREWs plant program, among many

# Biological Assessment and Plant Conservation: Ex Situ Conservation

other OKNP partners, and the first batch of Kentucky clover plants was transferred to OKNP in order to transplant onto high quality, managed limestone woodlands that occur on KHLCF lands.

After several years of managing transplant sites for removal of invasive species such as bush honeysuckle (*Lonicera maackii*), OKNP staff and partners transplanted 75 Kentucky clover plants back into the original Franklin county site as well as transplanted new populations into 3 additional protected



Mairead Kennedy and Valerie Pence present propagated Kentucky Clover at the Cincinnati zoo CREWs plant program

high-quality natural areas in Franklin county. OKNP botanists and partners will be monitoring the success of these transplants over the next several years and conducting quantitative studies on how best to manage for this rare clover and its unique limestone woodland habitat. The power of partnership is key to conserving rare plants and the collaborative approach of the Kentucky Plant Conservation Alliance has made these recovery efforts possible.



OKNP staff transplanted Kentucky Clover to suitable habitats in the Bluegrass.

## KHLCF sites to play a role in the conservation plan of state endangered Small White Lady's-Slipper (*Cypripedium candidum*)

As a collaboration for The Kentucky Plant Conservation Alliance, The Nature Conservancy and OKNP collected fruits of the small white lady's slipper (*Cypripedium candidum*) to begin conservation, research and propagation efforts. Seeds and leaf tissue samples of the state endangered or-

chid were sent to the Atlanta Botanical Garden for storage and genetic study. Longwood Gardens received collected fruits and are currently working to propagate this species. In the near future, multiple KHLCF sites will be utilized as reintroduction sites for the resulting propagated orchids, playing a vital role in the conservation of this state rare species.



Small White Lady's Slipper, *Cypripedium candidum*. State Endangered

## Successful Reintroduction of Mountain Lover (*Paxistima canbyi*) at KHLCF site in the Palisades

Recent efforts by OKNP, Kentucky Plant Conservation Alliance, UK Arboretum and the Atlanta Botanical Garden, along with partners at the Daniel Boone National Forest, Berea College forest and several private landowners, have resulted in successful propagation and reintroduction of the globally rare mountain lover (*Paxistima canbyi*). Many plants of this species were placed at a KHLCF site in the Palisades region that provided high-quality suitable habitat. Monitoring of these planted populations have yielded successful results, with many plants thriving in the new habitat.



OKNP botanist and UK Arboretum Curator Jess Slade transplant Mountain Lover to suitable habitats in the Palisades.

# Biological Assessment and Plant Conservation: Endangered Species Act

## OKNP official USFWS partner for monitoring and managing Kentucky's federally listed plants for almost four decades

One important action towards OKNP's goal to prevent species extinctions is recovering globally rare species populations. We accomplish this through targeted surveys, population monitoring, species and community level management, land acquisition, education, research, seed banking, propagation and restoration. Rare plant recovery is an integral part of our plant conservation programs.

Since 1985, OKNP has had a cooperative agreement with the United States Fish and Wildlife Service (USFWS) to serve as the official partner for monitoring and managing federally listed and at risk plants in Kentucky under Section 6 of the Endangered Species Act. Currently, we work on over 30 federally listed, at risk plants and globally rare plants through this agreement. We work closely with USFWS and partners to meet recovery goals and implement conservation action that truly protects those species as well as assess possible additions to the federal list. Often times targeted conservation work on globally rare plants that are not yet federally listed can prevent the need for additional federal listings. Through this program, we annually focus on monitoring, management and restoration throughout the state and work with numerous partner agencies, organizations, universities and private landowners on the conservation of federally listed and globally rare plants. Many federally listed and globally rare plants occur on KHLCF sites, making them vital in the protection and conservation of the Commonwealth's most endangered flora.

## Multi-agency monitoring yields effective solutions in habitat management for Price's Potato Bean (*Apios priceana*)



Price's Potato Bean habitat in western Kentucky

The single population of the federally threatened Price's Potato Bean (*Apios priceana*) protected on state land occurs on a KHLCF site in Livingston County. OKNP botanists conducted annual monitoring of the population alongside biologists with US Forest Service at from Land Between the Lakes. This monitoring measures effects of habitat improvements from mid-story removal on the plant, along with effects from threats like drought and herbivory. Over a decade of field research on conservation of Price's potato bean has yielded important lessons for effective management to restore population health. Mid-story removal at this site increased flowering output for the population followed by more successful germination

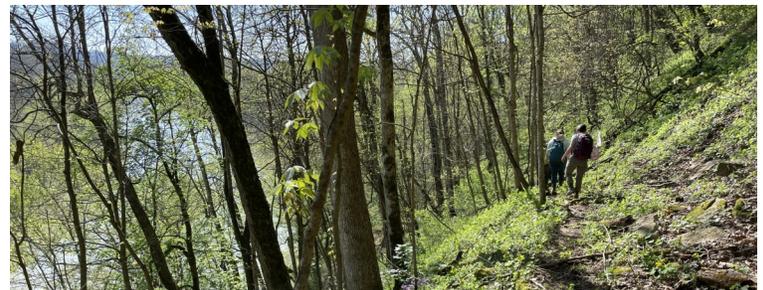


Price's Potato Bean, *Apios priceana*; Federally Threatened

of seeds. Efforts are also underway to collect seeds for both ex-situ propagation and in-situ seed augmentation at known populations into adjacent habitats. Ongoing monitoring of existing populations remains a priority, but OKNP is prioritizing conservation actions that may lead to successful recovery of this rare plant in Kentucky.

Braun's Rockcress (*Borodinia perstellata*) populations respond positively to annual invasive species removal

## Braun's Rockcress (*Borodinia perstellata*) populations respond positively to annual invasive species removal



Braun's Rockcress habitat in the Bluegrass region of Kentucky.

OKNP staff led a multi-faceted strategy to monitor and manage populations of the federally threatened Braun's rockcress (*Borodinia perstellata*). Efforts in the past few years have sought to accomplish several primary goals, such as revisiting all known populations, continuing intensive monitoring and invasive species removal at four protected sites on State Nature Preserves and KHLCF sites, conducting intensive site assessments at all populations, and standardizing data collection protocols.

Braun's rockcress is limited to the rocky hills of the lower

# Biological Assessment and Plant Conservation: Endangered Species Act



Braun's Rockcress (*Borodinia perstellata*): Federally Threatened

Kentucky River Valley, where it occurs on five KHLCF sites. These sites were targeted for invasive species removal during annual monitoring to maintain high quality habitat for the rockcress and scores of other native flora. Annual treatment at these protected sites has had noticeable success in maintaining rockcress populations and overall native plant diversity, while decreasing the abundance of

invasive plants. For perhaps the first time ever, preliminary bee surveys were also conducted at rockcress populations as part of increased efforts to document bees in Kentucky.

## Three years of preparation results in first Kentucky Glade Cress (*Leavenworthia exigua* var. *laciniata*) introductions on KHLCF property



Kentucky Glade Cress habitat in north central Kentucky

Kentucky Glade Cress (*Leavenworthia exigua* var. *laciniata*) is a small federally threatened winter annual that is only found in 2 counties in the world- Bullitt and Jefferson in Kentucky. Yearly monitoring of the Kentucky Glade Cress primarily focuses on the largest known populations and populations that have not been visited in 20 or more years. In spring 2023, 5 of these older records were visited and found to be extant, with increased population numbers. Annual flowering counts are conducted at McNeely Lake Park



Kentucky Glade Cress (*Leavenworthia exigua* var. *laciniata*); Federally Threatened

with Louisville Metro Park employees to ensure the Glade cress is responding positively to management techniques and that the population is stable. One of the first introductions of Kentucky Glade Cress was carried out in late spring at an KHLCF property. The USFWS has been working to prep the site for introduction over the last 3 years. Seeds were collected from nearby sites with large populations. Approximately 300 seeds were collected and then scattered along the restored glades at the KHLCF site. Follow-up surveys will occur to assess the success of the introduction in Spring 2024.

## Hundreds of Globe Bladderpod (*Physaria globosa*) plants thriving after introduction at KHLCF site in the Bluegrass region



Globe Bladderpod (*Physaria globosa*): Federally Threatened

The federally threatened globe bladderpod (*Physaria globosa*) occurs on two KHLCF sites in Franklin county. Of the three populations on those two sites, two are wild populations currently undergoing management like invasive species removal and mid-story thinning and one population is introduced. The introduced population is

thriving under similar management, serving as an example

# Biological Assessment and Plant Conservation: Endangered Species Act

for restoration of sites with neglected invasive species issues. Since the planting of a few seeds in 2014, the population now consists of almost 300 plants! Additional seed translocation projects are being planned for the upcoming years.



Bellworts at Globe Bladderpod (*Physaria globosa*) site in the Bluegrass region

## Fourteen years of monitoring at KHCLF site designates property as model for White Fringeless Orchid (*Platanthera integrilabia*) conservation



White Fringeless Orchid (*Platanthera integrilabia*): Federally Threatened

Monitoring, management and research on the federally threatened white fringeless orchid (*Platanthera integrilabia*), its associated seep habitat, and adjacent upland barrens continued at OKNP's State Nature Preserve and KHLCF site in Pulaski County in 2023. This year represented the 14th year this population has been monitored, and OKNP staff have been observing the positive effects of management on these unique

wetlands for close to a decade. The white fringeless orchid population, as well as all of the other rare species that occur within the seeps, increased dramatically after creating debris dams and reducing the canopy of the two seeps. The seeps also seem to benefit from the upland management of canopy reduction and prescribed fire, and staff are working with researchers on the links between upland barrens man-

agement and wetland seep restoration in these pine oak ecosystems. OKNP staff also work congruently and collaboratively with Daniel Boone National Forest and the National Parks Service on the remaining white fringeless orchid populations in Kentucky. The long-term conservation work at OKNP's SNP/KHLCF site continues to serve as a model for orchid monitoring, research and wetland and barrens restoration.



Results of 10 years of seep management focusing on removing woody trees and opening the canopy



OKNP's White Fringeless Orchid seep monitoring crew

## Multi-faceted management strategy yields success in Short's Goldenrod (*Solidago shortii*) conservation

Short's goldenrod, *Solidago shortii*, is a globally rare and federally endangered species only found in four counties in Kentucky and Indiana. This species historically occurred along the buffalo trace that spanned across the Bluegrass

## Biological Assessment and Plant Conservation: Endangered Species Act



Short's Goldenrod (*Solidago shortii*): Federally Endangered

region, but now is only found in the Blue Licks State Park area. KHLCF sites play a significant role in the protection of Kentucky's Short's goldenrod, with approximately half of our known populations occurring on KHLCF lands. The Office of Kentucky Nature Preserves conducts yearly surveys on long term monitoring plots to ensure that the populations are healthy and responding positively to management strategies, which include prescribed fire and invasive species eradication. Data collected over the past four years has shown an increase in the *Solidago shortii* and other associated rare species. The surveys have also shown that targeted invasive species management has been successful- the tall fescue (*Lolium arundinaceum*) has been reduced from an average cover of 50-75% in one plot in 2019 to 1-2% cover throughout the same plot in 2022. The 2022 surveys were joined by the Jess Slade, native plant curator, and other staff from the Arboretum State Botanical Garden of Kentucky. Together, we surveyed 16 plots across 3 populations, tagged monarch butterflies and reintroduced a native bush species (New Jersey tea, *Ceanothus americanus*) into one of the plot areas. Additionally, in spring 2023, OKNP worked to burn 38 acres of land in the Blue Licks area to further improve and manage Short's Goldenrod populations.

### Third year of post-delisting monitoring of Running Buffalo Clover (*Trifolium stoloniferum*) complete

OKNP has begun its 3rd year of post-delisting monitoring the previously federally endangered Running Buffalo Clover (RBC), *Trifolium stoloniferum*. Running Buffalo Clover was



Running Buffalo Clover (*Trifolium stoloniferum*), Federally de-listed

once much more common throughout the Bluegrass Region of Kentucky, though elimination of bison and land use change has heavily impacted the species. KHLCF sites throughout the Bluegrass Region provide protected suitable habitat for this interesting clover. There were 12 populations surveyed in 2023, most of which are stable to increasing. OKNP has continued to have discussions of management strategies with the various landowners to reduce invasive species and increase RBC populations. In late fall 2023, OKNP will be partnering with managers at a Wildlife Management Area to have a RBC management workshop, as many populations occur on WMAs.



Running Buffalo Clover (*Trifolium stoloniferum*) monitoring

# Biological Assessment and Plant Conservation: Botanical Inventories and Monitoring

## Long-term vegetation monitoring plots established on State Nature Preserves and Natural Areas



OKNP and partners work on annual monitoring plots for Short's Goldenrod (*Solidago shortii*)

In order to more effectively manage the rare plants and communities on state our lands, OKNP botanists, ecologists, and land managers have been installing long-term vegetation monitoring plots at our state nature preserves and natural areas. Currently, there are over 200 of these plots that occur on KHCLF lands. This allows us to track how rare plants and communities respond to different management techniques, such as seasonality of prescribed fire, canopy and midstory removal techniques, as well as changes in annual or seasonal temperature and precipitation. This unique partnership among botanists, ecologists and land managers allows our management to be adaptive as we work toward the goal of restoring rare plants and natural communities throughout the state. The focus over the past several years has been on setting up monitoring plots in grassland communities as well as resampling grassland plots in post-burn units.

## Updated botanical inventories conducted on State Nature Preserves

In an effort to update our rare plant and natural community records throughout the Kentucky State Nature Preserves (SNP) system, we have focused on inventories of preserves that have not been systematically updated for more than 20 years, many of which are KHLCF sites. OKNP inventoried several grassland preserves and pine mountain preserves

over the past several years, including Crooked Creek State Nature Preserve, Hi Lewis SNP, Bad Branch State SNP, Mt. Victory SNP, Eastview SNP, Obion Creek SNP, and Flat Rock Glade SNP. This information is updated in the



Scarlet Indian Paintbrush (*Castilleja coccinea*), State Endangered

heritage database and preserve management plans, and is critical for guiding our land management to ensure we are protecting our rare species and communities.

## Kentucky Forest Biodiversity Assessment Program continues to evaluate high quality forested habitat in the Commonwealth



American Ginseng (*Panax quinquefolius*), State Commercially Exploited

Since 2019, OKNP botanists and ecologists have been conducting surveys in forested natural communities across the state for the Kentucky Forest Biodiversity Assessment Program (KFBAP). This long term monitoring program assesses the biodiversity of

Kentucky's forested landscapes, surveying 20% of counties per year in order to have a complete state inventory within 5 years. Four years of the program have been completed, resulting in the documentation and mapping of high quality natural communities, discovery of new populations of several species of listed plants, and a better understanding of the effects of natural and human disturbance on Kentucky's forests. Over a hundred forest blocks have been surveyed across the Commonwealth, providing high quality habitat where botanists have identified over 60 occurrences of species of conservation concern. Approximately one third of these forest blocks are on KHLCF lands, making the KHLCF's role in this project vital to providing high quality forested habitat.

# Biological Assessment and Plant Conservation: Zoological Discoveries

## OKNP launches new Native Bee Inventory and Monitoring Program to document pollinators in the Commonwealth

OKNP's Native Bee Inventory and Monitoring program is working to document and monitor our native bee species across the state, including many KHLFCF properties. During a survey of Thompson Creek Glades SNP in May, two new state record bees were documented: the Bear-like Digger Bee (*Anthophora ursina*) and the Broad-faced Masked Bee (*Hylaeus sparsus*). These findings brought KY's state bee list to 188 species and counting!



The Broad-faced Masked Bee, *Hylaeus sparsus* (Photo credit: USGS Bee Inventory and Monitoring Lab)



The Bear-like Digger Bee, *Anthophora ursina* (Photo credit: USGS Bee Inventory and Monitoring Lab)

## Invasive Pest Monitoring established for problematic Spotted Lantern Fly

In partnership with the University of Kentucky, OKNP and several KHLFCF managers began monitoring for the Spotted Lanternfly (*Lycorma delicatula*, SLF) - an emerging invasive pest



Spotted Lanternfly (*Lycorma delicatula*) (Photo credit: Bugwood.org)

with the potential to have devastating impacts on our forests. SLF was first discovered in the United States in Pennsylvania in 2014, but has not yet been detected in KY. Circle traps designed to catch SLF have so far been deployed at 17 OKNP and KHLFCF sites near bordering infested states.

## Invertebrate biologists search for pollinators of federally threatened White Fringeless Orchid (*Platanthera integrilabia*)



Collection setup of malaise and black light bucket traps for documenting seep pollinators

In conjunction with the White Fringeless Orchid (*Platanthera integrilabia*, WFO) recovery and wetland restoration efforts, OKNP invertebrate biologists continued their work documenting pollinator assemblages in forested seep habitats in 2023. Pollinators were collected using malaise and blacklight traps, as well as visual surveys. Assemblage data is being gathered pre- and post-

management to assess how pollinators are responding to the restoration of these natural communities. OKNP is also working to document the invertebrates that pollinate or utilize WFO in their life cycle.

# OKNP Prescribed Fire Program

## OKNP continues to expand prescribed fire program to restore natural communities

Historically, fire played a crucial role in the distribution of natural communities, plants, animals, and insects across the Kentucky landscape. Due to a century of active fire suppression and fragmentation of the landscape, Kentucky’s fire-dependent natural communities, along with the plants and animals that inhabit them, are at risk of disappearing. Prairies, for instance, are quickly transformed from grasslands to shrublands and forests if fire or other forms of disturbance are eliminated from the landscape. Our natural communities have been put at further risk with the introduction of non-native invasive plant species that displace our native vegetation. Prescribed fire reduces woody cover, controls invasive species, and stimulates the growth of native forbs and grasses.

OKNP has a long history of maintaining rare natural communities protected on state nature preserves by “prescribing” fire under a very specific set of weather conditions, including temperature, relative humidity, and wind speed. The application of this tool must be done in an appropriate method to achieve the desired land management objectives, while also accounting for public safety and budgetary constraints. Many KHLCF sites that protect appropriate habitat are managed through prescribed fire. All OKNP prescribed fires are led by a Kentucky Certified Burn Boss with credentials from the Kentucky Prescribed Fire Council. In FY2023, OKNP’s prescribed fire crew conducted 15 prescribed burns in seven different counties for a total of 455 acres of land.

OKNP Prescribed Burns FY2023

Site Name	County	#Units	Acres Burned	Partners Present	Ownership	HLCF (Y/N)
Eastview Barrens State Nature Preserve	Hardin	3	57	TNC, KDF	OKNP	Y
Crooked Creek State Nature Preserve	Lewis	2	19		OKNP	Y
Perryville Battlefield State Historic Site	Boyle	4	106	EKU	OKNP/State Parks	Y
Embry Lay Glade State Nature Preserve	Hardin	1	13	Private landowner	OKNP/Private Landowner	N
Short's Goldenrod State Nature Preserve	Fleming	2	38		OKNP	Y
EKU's Taylor Fork Ecological Area	Madison	2	16	EKU	Eastern Kentucky University	N
Francis Palk State Nature Preserve	Pulaski	1	206	KDF	OKNP	Y



# OKNP Prescribed Fire Program

## Eastview Barrens State Nature Preserve: Using prescribed fire to restore habitat for a globally rare insect on an KHLCF site



Prescribed fire crew at Eastview Barrens State Nature Preserve prescribed fire

**OKNP Property size:** 174 acres

**County:** Hardin

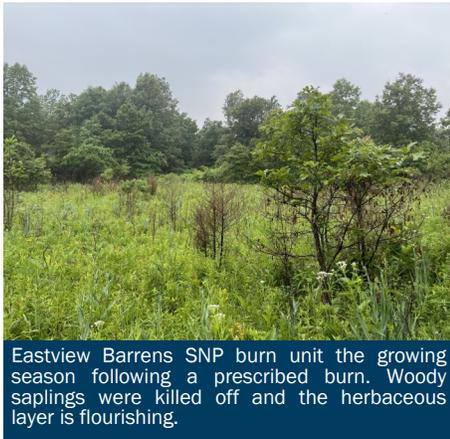
**Burn Unit Size:** 3 units, 57 acres total

**Objectives:** Maintain grassland habitat, reduce woody encroachment, stimulate native seed bank, and research for fire utilization in rare species management

Eastview Barrens State Nature Preserve contains high-quality sandstone and limestone prairie and barrens natural communities. This mosaic of open grassland and woodland is an outstanding remnant of the original Big Barrens vegetation, which now exists in small, fragmented patches due to land conversion for agriculture.

A focal grassland species at Eastview Barrens SNP is the rattlesnake master (*Eryngium yuccifolium*), which is the host plant for the rare rattlesnake master borer moth (*Papaipema eryngii*). This globally rare insect is known to occur from only two sites in Kentucky. The host plant and moth have a dependence on fire, which preserves the open unshaded habitat required for the plant to persist, however, the rare moth is susceptible to being burned out if careful planning and rotation of prescribed burns is not considered in management decisions.

The moth lay eggs in October on top of the



Eastview Barrens SNP burn unit the growing season following a prescribed burn. Woody saplings were killed off and the herbaceous layer is flourishing.

soil at the base of the rattlesnake master plant where they overwinter. In spring, the eggs hatch and larvae bore into the stalk of a mature plant where the larvae will feed and grow for the duration of the summer. In summer, the larvae move deep into the root collar or the soil and pupate, before emerging in October to mate and lay eggs. Little is known about the adult life cycle of the moth, but correspondence with managers and experts from other states have determined that a burn window exists when the species is pupating in the root collar or soil. Soil temperatures during fire events are greatly reduced just a few inches below the surface allowing for prescribed burns while avoiding negative impacts to pupating individuals.

Last September, OKNP conducted growing season burns at Eastview Barrens SNP to burn while the rattlesnake master borer moth was pupating underground with help from our partners The Nature Conservancy and Kentucky Division of



Eastview Barrens SNP burn unit immediately following the prescribed burn. Woody saplings that were encroaching this grassland are visibly burnt.

Forestry. OKNP utilized a growing season burn to achieve a composition shift from a shrubland to a grassland. The burn crew mobilized two days after a rain event as this site historically dries out quickly. The areas of

the property that contain sandstone-derived soils, coupled with full sun, burned well. The areas with a limestone-derived soil, coupled with an oak dominated woodland overstory or completely closed overstory, did not burn well. We suspect this was due to a combination of ground moisture, fuel moisture, and higher ambient humidity trapped under the canopy. Moving forward, these unsuccessfully burned areas will be rolled into future burn units for reattempts at getting fire into these areas.

In the areas that burned well, we are seeing a great herbaceous response with the woody encroachment knocked back or killed. Here at OKNP we pride ourselves in coupling land management with pre- and post-vegetative (and insect on this site) monitoring. This quantitative monitoring can help drive management decisions and make sure we are moving the needle in the right direction.

# OKNP Prescribed Fire Program

**Crooked Creek State Nature Preserve:**  
 Reducing woody encroachment and invasive species in high quality oak barrens and bluegrass cat prairie communities at KHLCF site



Prescribed fire at Crooked Creek State Nature Preserve

**Property size:** 728 acres

**County:** Lewis

**Burn Unit Size:** 2 units, 19 acres total

**Objectives:** Maintain open grassland habitat by reducing woody encroachment of red cedar, invasive species management, reduce fuel loading and stimulate native seed bank

This preserve protects high quality oak barrens and a rare regional limestone prairie known as the bluegrass cat prairie. Numerous rare plants species are documented from this preserve, most of which are dependent upon open habitat and prescribed fire to prevent woody succession by encroaching red cedars. Prescribed fire was also used to set-back invasive species in the unit and allowed for easier access for follow-up herbicide treatments of invasive species.



Ignitions of a grassland at Crooked Creek State Nature Preserve



Fire creeping through the oak barrens at Crooked Creek State Nature Preserve

**Perryville Battlefield State Historic Site: Restoring a Civil War historical site to native grassland habitats to benefit native wildlife**



Prescribed fire crew at Perryville Battlefield State Historic Site prescribed burn

**Property size:** 1,184 acres

**County:** Boyle

**Burn Unit size:** 4 units, 106 acres total

**Objectives:** Increase warm season grasses, control woody species, control invasive species, and benefit a variety of wildlife species including small mammals, migrant birds, and insects

Historically, Perryville Battlefield is one of the most unaltered Civil War sites in the nation and was the largest Civil War battle in Kentucky. It is one of the stops along Kentucky's Lincoln Heritage Trail. Ecologically, this battlefield contains hundreds of acres of native grassland habitat essential to pollinators, songbirds, small mammals, and other wildlife. Prior to acquisition of the land by OKNP and KSP, with assistance from KHLCF, the grasslands were utilized for agriculture. Since then, much effort has been put into the restoration of the native grasslands through invasive species removal, planting of native species, and prescribed fire. Most notably, this site is an important nectaring and resting stop for the eastern population of the monarch butterfly on their migration to Mexico. In 2021, the first tagged monarch from Kentucky was recovered at the Monarch Butterfly Biosphere Reserve in Michoacán, Mexico. This individual was tagged at Perryville by our partners at Kentucky Division of Fish and



Ignitions of a grassland at Perryville Battlefield

# OKNP Prescribed Fire Program

Wildlife Resources. OKNP, Kentucky State Parks, and other partners have worked to pair the preservation and conservation of the historical and natural features at this unique site. Since 2019, OKNP has partnered with KSP to create a prescribed fire regime for over 500 acres of Perryville Battlefield State Historic Site. Without this routine fire disturbance, succession would over time turn these historic vistas and native grassland habitats into forests through woody species encroachment. OKNP has also led many environmental educational programs to emphasize the importance of this habitat and work.

## Embry Lay Glade State Nature Preserve: Increasing limestone glade habitat for rare plant species through prescribed fire



Prescribed fire at Embry Lay Glade State Nature Preserve

**Property size:** 19 acres

**County:** Hardin

**Burn Unit size:** 13 acres

**Objectives:** Increase available habitat for rare species, reduce woody encroachment, reduce woody fuels

Embry Lay Glade SNP is a high-quality old-growth limestone slope glade with multiple rare plants and old-growth oaks and cedars present. The glades are characterized by shallow, rocky soils and numerous showy prairie plant species that can survive the harsh, dry conditions. Dominant species consists of chinkapin oak (*Quercus muhlenbergii*), red cedar (*Juniperus virginiana*), and little blue stem (*Schizachyrium scoparium*).



OKNP staff listening during the fire crew briefing prior to the prescribed burn.

This burn helped remove large woody debris from a recent red cedar thinning. OKNP partnered with an adjacent land owner to burn additional limestone slope glade habitat that was on

privately owned land adjacent to the state nature preserve. The methods used in this prescribed fire are used at appropriate KHLCF sites with similar habitat.

## Short's Goldenrod State Nature Preserve: Recreating historical disturbances through prescribed fire for conservation of federally endangered goldenrod at KHLCF site



Prescribed fire crew member at Short's Goldenrod State Nature Preserve prescribed burn

**Property size:** 246 acres

**County:** Robertson & Fleming

**Burn Unit size:** 2 units, 38 acres total

**Objectives:** Stimulate and release native fire-dependent plants by reducing mid-story and exotic species, create canopy gaps in order to increase sunlight to the forest floor, reduce slash from recent thinning around the historic bison trace where Short's goldenrod occurs, reduce fuel-loads throughout the unit, and enhance and expand habitat for Short's goldenrod and cream gentian.

Short's Goldenrod State Nature Preserve protects the federally endangered Short's goldenrod (*Solidago shortii*), which occurs along a remnant bison trail at this site. Aside from the two-square mile area surrounding Blue Licks Battlefield State Resort Park, this species has only been documented at one other location in Indiana. Cream gentian (*Gentiana alba*) is another rare plant that occurs nearby and is critically imperiled in the state of Kentucky. Both Short's goldenrod and cream gentian are threatened by habitat loss and woody plant encroachment, which reduces the sunlight they need to grow and reproduce. These species evolved with disturbance created by historic bison migrations and fire; therefore, OKNP attempts to reproduce these disturbances through prescribed fire.

# OKNP Prescribed Fire Program

**Taylor Fork Ecological Area: OKNP partners with university to provide hands on education for Kentucky's future Type II Wildland Firefighters**



Prescribed fire crew at Taylor Fork Ecological Area prescribed burn

**Property size:** 60 acres

**County:** Madison

**Burn Unit size:** 2 units, 16 acres total

**Objectives:** Maintain early successional habitat, to reduce the impact and number of invasive plant species present, and serve as an opportunity for EKU students to gain experience in organizing and conducting prescribed fire

Taylor Fork Ecological Area (TFEA) is owned and managed by Eastern Kentucky University's Division of Natural Areas and is located near EKU's main campus in Richmond. The habitat is primarily old pastureland with fencerow strips of trees and small patches of woods and canebrakes. TFEA serves as a research property and outdoor classroom for EKU. Students in EKU's Wildlife Management program are required to take the course Fire Ecology and Management,



A fire crew member wet lining along the firebreak at Taylor Fork Ecological Area

in which they are certified as Type II Wildland Firefighters. This burn provided an opportunity for students in the class to get firsthand experience with prescribed fire, as used on KHLCF lands, with professional state agency employees as mentors and aided the students in developing land management skills to

utilize later in their professional careers. An additional purpose of this burn is to demonstrate benefits of prescribed fire to the public. The burn units will be used for educational programming and outreach to EKU students, local farmers, and other community members through workshops and field trips.

**Francis Palk State Nature Preserve: Restoring rare shortleaf pine barrens community in the Cumberland Plateau using prescribed fire at KHLCF site**



Prescribed fire at Francis Palk State Nature Preserve

**Property size:** 250 acres

**County:** Pulaski

**Burn Unit size:** 206 acres

**Objectives:** Expose mineral soil necessary for shortleaf pine regeneration, shift understory species from closed canopy mesic species to more xeric, fire-tolerant and open canopy herbaceous species, create canopy gaps by causing over-story tree mortality, and reduce slash generated from mid-story treatments

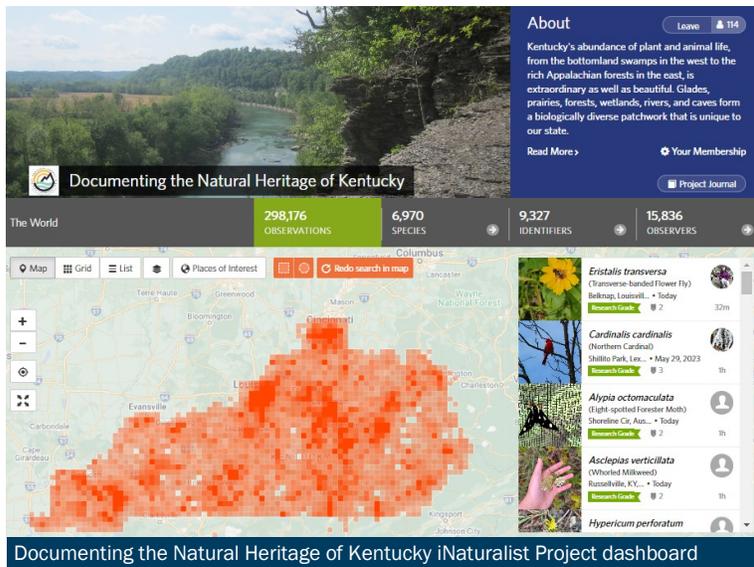
This site is located on the northern Cumberland Plateau in southeast Kentucky. OKNP is using prescribed fire and other forest treatments to restore short-leaf pine barrens, a rare open-canopied woodland of shortleaf pine, pitch pine, and oaks with a diverse herbaceous understory of grasses and forbs. Historically maintained by periodic fires, barrens are greatly reduced and altered in Kentucky. Managers have used girdling, mechanical mastication, herbicide, and prescribed burns to reduce undesired canopy species, understory cover, and invasive species. A primary restoration objective is to improve conditions and available habitat for rare or conservative species already present, including those in a sensitive acid seep surrounded by the barrens. OKNP has also begun transplanting bulbs of a state-endangered wood lily (*Lilium philadelphicum*) into this site. Natural areas managers work closely with the ecologists to track vegetation changes in the site and to understand the hydrological connections between the upland barrens and the acid seep so that future management actions can be based on needs and ecosystem responses rather than a predetermined plan.

# Outreach and Education on Heritage Land Conservation Sites

## iNaturalist Project lets citizen scientists document biodiversity across Kentucky

Since 2018, OKNP has utilized iNaturalist to gather information about flora and fauna in our state. iNaturalist is an online social network of people sharing biodiversity information to help each other learn about nature, featuring useful tools such as a crowdsourced species identification system and an organism occurrence recording tool.

This popular nature app that hosts naturalists, community scientists, biologists and people just interested in learning more about nature. Observations are submitted by taking photos on your phone that are uploaded to a global database that helps scientists study biodiversity across the world.



Since the launch of OKNP's "Documenting the Natural Heritage of Kentucky" iNaturalist Project, over 15,000 members of the public have participated and provided almost 300,000 research grade observations of almost 7,000 Kentucky species.

In FY2023, the project had over 5,000 participants submit observations across Kentucky, resulting in:

- **76,204** research grade observations, **10,681** of which occurred on KHLCF lands
- Observations were of **4,716** species, **1,810** of which occurred on KHLCF lands
- **28** state listed species observed on KHLCF lands

## Invasive Species Removal Workday at Julian Savanna State Nature Preserve

OKNP partnered with the Removing Invasives Partnership (RIP) of Franklin County to conduct a volunteer workday at Julian Savanna State Nature Preserve, KHLCF site, this past spring. The preserve is

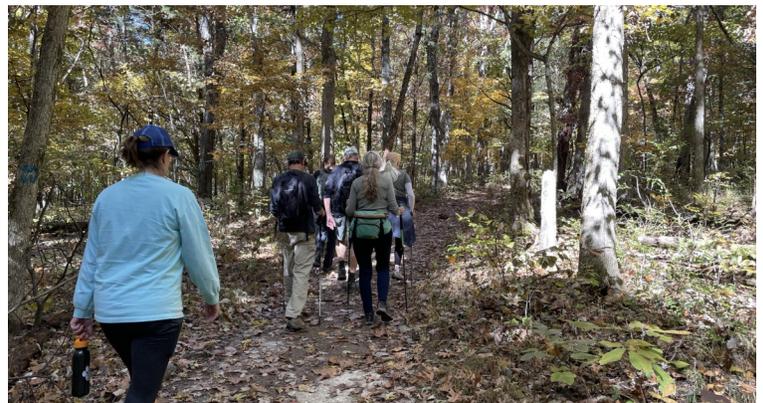


OKNP and Removing Invasives Partnership removing invasive species

home to a remnant of a Bluegrass-Savanna Woodland, a community unique to the Bluegrass Region of Kentucky that is characterized by rolling hills scattered with large, open grown trees such as bur oak, blue ash, and chinkapin oak. With the help of the many volunteers that RIP mobilized, multiple invasive species, such as Amur honeysuckle and Autumn Olive, were treated or removed from approximately an acre of the remnant Bluegrass-Savanna Woodland.

## Lexington Tree Week at Tom Doorman State Nature Preserve

OKNP participated in UK's Urban Forest Initiative's annual Tree Week. Tree Week promotes events that connect residents with nature for a week in October. Office of Kentucky Nature Preserves biologists lead a hike for the public to learn about the trees and natural plant communities at the Kentucky River Palisades at Tom Dorman State Nature Preserve. This State Nature Preserve and KHLCF site is one of the largest protected natural areas in the Kentucky River Palisades region.



Hikers attending OKNP's Tree Week event at Tom Dorman State Nature Preserve

# Outreach and Education on Heritage Land Conservation Sites

## Kentucky Native Plant Society hosts Wildflower Weekend and Wildflower Week 2023 Botany Blitz at iconic State Nature Preserve



Cumberland Falls at Cumberland Falls State Park and State Nature Preserve

The Kentucky Native Plant Society’s (KNPS) Wildflower Week Botany Blitz is a wildflower-focused bioblitz where participants try to document as many plant species as possible during the week before Wildflower Weekend. This year’s Blitz ran from April 8 through April 15. As in previous years, the Botany Blitz was hosted on the iNaturalist platform.

During the BotanyBlitz, observations were submitted across Kentucky, resulting in:

- **3,747** plant observations, **774** of which occurred on KHLCF lands
- **650** plant species, **289** of which occurred on KHLCF lands

On April 14th & 15th, over 150 KNPS members and guests attended the society’s 34th Annual Wildflower Weekend at Cumberland Falls State Resort Park, an iconic KHLCF site.

OKNP botanists and ecologists joined other renowned botanists and naturalists to lead 19 hikes about native plant species, and their associated fauna, geology and hydrology. During Wildflower Weekend, 436 plant observations were made at Cumberland Falls State Resort Park.



Hikers viewing native plants on a guided hike at Wildflower Weekend

## Monarch Butterfly Tagging at Lower Howards Creek State Nature Preserve



Monararch butterfly with a tag used for conservation research

Office of Kentucky Nature Preserves partnered with Bluegrass Greensource to host an educational monarch tagging event at our partner site Lower Howards Creek Nature Preserve, a KHLCF site. Volunteers learned about pollinator habitat management, common Kentucky butterfly species, and participated in on-going community science research through monarch tagging. This research helps us better understand monarch migration patterns for future conservation efforts.

## “Freshwater Mussels in Kentucky: the heavy lifters of the stream ecosystem” at Floracliff Nature Sanctuary

OKNP’s aquatic zoologist led a workshop at KHLCF site Floracliff nature Sanctuary, covering an introduction to the diversity and ecological importance of freshwater mussels in Kentucky. In addition to providing an overview of Kentucky mussels, the presentation highlighted current conservation efforts to preserve them.



Plain Pocketbook (*Lampsilis cardium*) is a native Kentucky mussel species.

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