

Kentucky's Pollinators on the Decline



Executive Summary
of the
2015 Biennial Report

Kentucky State Nature Preserves
Commission

Executive Summary



Highlights of the Biennium

Pollinator Conservation

It is widely known that both native bees and honey bees are **declining worldwide**. Yet Kentucky's native bee species are poorly known. The Commission has increased its ability to track pollinators by training a biologist at the native bee course of the American Museum of Natural History. **We believe he is the only biologist in the state to complete this training.**



This native metallic bee was collected on a tomato plant.
Photo courtesy of USGS.

Discovery Of A New Clover Species

Kentucky clover (*Trifolium kentuckiense*) is only the third plant species known to grow solely in Kentucky and nowhere else in the world. It was confirmed in 2013 as "**new to science**".

Two New State Nature Preserves

Archer-Benge SNP on Pine Mountain in Whitley County and Lone Oak Barrens in Grayson County expanded your state nature preserve system by 1,897 acres.

New Populations Discovered

Our biologists discovered five new rare species populations. Two other species which had not been seen in at least 20 years were "**rediscovered**". We also discovered two plant species not before known from Kentucky.

I. STATE NATURE PRESERVES AND STEWARDSHIP:

The Commission manages 64 preserves containing 27,663 acres:

- of 343 plant species listed as state endangered, threatened or special concern, 143 are protected in perpetuity on state nature preserves.
- of 334 animal species listed as endangered, threatened or special concern, 96 have been protected on state nature preserves.
- of Kentucky's 62 natural community types, 23 high quality examples have been protected on state nature preserves.

The preserves also provide opportunities for the public to enjoy our best natural lands, with an estimated **25,000 visitors** annually. **Three new preserve managers** are requested to divide the oversized eastern and western regions. **Two restored stewardship assistants** and **4 seasonal workers** are needed to rotate among the preserves, conducting prescribed burns, controlling exotics, building trails and bridges, restoring habitat and more.



Rose Pogonia- Thomas G. Barnes
Mountain Heartleaf - Ron Cicerello

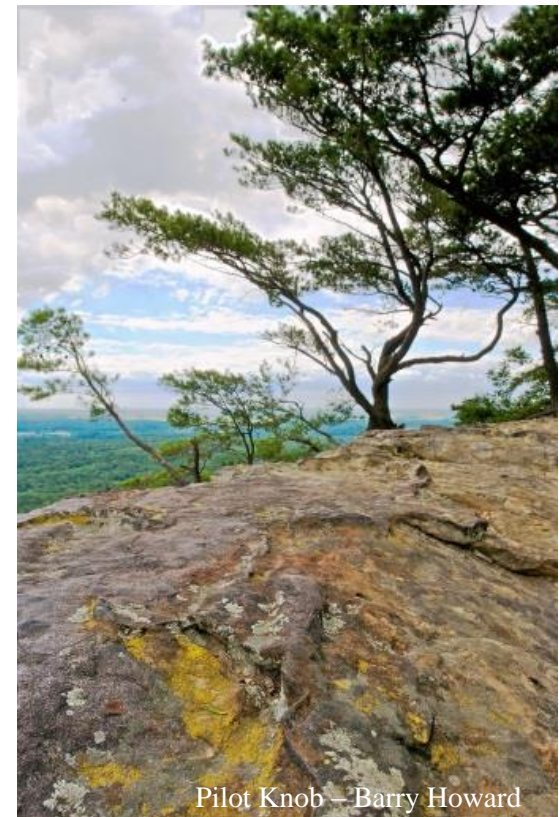


Black-crowned
Night Heron
USFWS

The Commission achieved significant accomplishments in the last biennium despite the fact that we have lost **nine** permanent staff since 2008. Attrition has been heaviest in the Nature Preserves Stewardship Branch, reducing it from six permanent full-time staff to **only two!** It is an **IMPOSSIBLE task for two people to manage 64 state nature preserves** encompassing **27,663 acres**. The preserves include some of Kentucky's best known landmarks - Cumberland Falls, Natural Bridge, Blanton Forest, Bad Branch Falls, Pine Mountain State Park, the Kentucky River palisades, Audubon State Park, Pilot Knob and Murphy's Pond among others.

Funds to Purchase Land

The Commission's only source of state funds to purchase land for nature preserves is the **Kentucky Heritage Land Conservation Fund** (HLCF). The 2015/2016 Biennial Budget transferred **\$8,000,000** from the Heritage Land Conservation Fund to the General Fund. These two reductions effectively set back the expansion of the state nature preserves system for two years. As HLCF is the **only state program funding the purchase of conservation land**, (shared by five state agencies and local governments), the General Fund transfers set the **entire** state land conservation program back two years.



Pilot Knob – Barry Howard

II. PROTECTING DIVERSITY: OUR BIOLOGICAL RESOURCES

Kentucky's biological communities, from Mississippi River sloughs to lush Appalachian forests in the east, are as extraordinary as they are beautiful. Kentucky is home to **102 endemic species** of plants and animals that are **found nowhere else in the world**. Kentucky is ranked **third** and **fourth** respectively after only Alabama and Tennessee for the number of freshwater fish and mussel species found in the U.S. The **Green River**, which flows through Mammoth Cave National Park, has been ranked **fourth nationally** for its aquatic diversity.



Key reasons to protect Kentucky's biodiversity:

Pollinators – The decline in pollinators is not only a threat to biodiversity and plant reproduction, but to **food crops** as well. The USDA estimates that bees pollinate 75 percent of all nuts, fruits and vegetables grown in the U.S., a harvest worth about \$20 – \$30 billion annually. The Commission is making pollinator conservation a priority.

Medicines – **40 percent** of all medical prescriptions dispensed in the United States are derived from plants, animals and microorganisms, or are synthesized versions.

Wildlife-related Recreation – Kentucky's natural beauty draws **millions of visitors** each year to our state parks, nature preserves and similar lands. The KY Department of Fish and Wildlife Resources reports an estimated **\$5.94 billion** total economic impact annually from hunting, fishing, wildlife watching and boating in Kentucky.

CAUSES OF BIODIVERSITY LOSS:

- **Land Conversion** - The single biggest impact on Kentucky's biodiversity (and nationally) is land development – i.e. habitat loss. When compared to the seven surrounding states, **Kentucky has protected the smallest percentage of its land**.

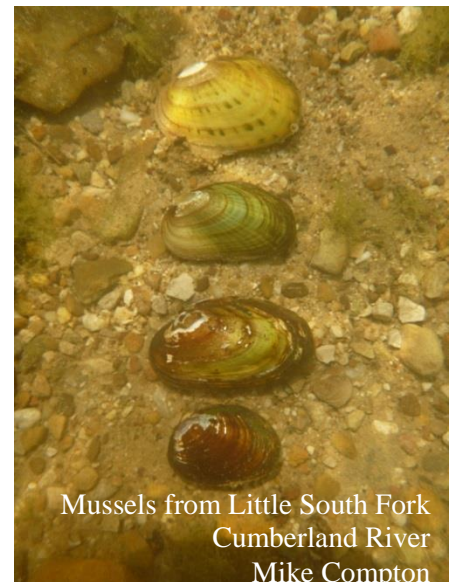


- **Invasive Species** - The second greatest threat to native species diversity is from the invasion of exotic (non-native) species. Invasive species like **kudzu (pictured below)**, Canada thistle, Johnson grass, bush honeysuckle and others multiply rapidly, choking out native species, often the rarest.



Kerry Britton, USDA Forest Service, Bugwood.org

- **Freshwater Mussel Decline** - The Commission, with other agencies, has documented significant losses in freshwater mussels in Kentucky. This has been observed in Marsh Creek (McCreary County), Horse Lick Creek (Jackson County), Little South Fork Cumberland River (Wayne County) and Buck Creek (Pulaski County). All four of these streams were considered major refuges for healthy populations of multiple species, several federally listed. The Little South Fork study documented a decline from **24 species to only five**.



Mussels from Little South Fork
Cumberland River
Mike Compton

- **Climate Change** -The National Oceanic and Atmospheric Administration (NOAA) reported that 2014 was the warmest year recorded since recordkeeping began in 1880; and that "Nineteen of the twenty warmest years on record have occurred in the past 20 years." Surprisingly, NOAA reports that statewide average temperatures for Kentucky, Jan.-Dec., 2014 were below average, along with much of the U.S. southeast and mid-west. Climate change induces much variability on a global scale. The USFWS has declared that climate change, "Is the single greatest conservation challenge of the 21st century..." Localized effects are very difficult to predict, especially with the extreme weather events, but one thing is clear – we will have to work on a landscape level. This means protecting larger areas and establishing corridors to connect areas of high biodiversity to facilitate the migration of animals and plants as they are thrust into an unprecedented period of rapid ecological change.

III. THE NATURAL HERITAGE PROGRAM:

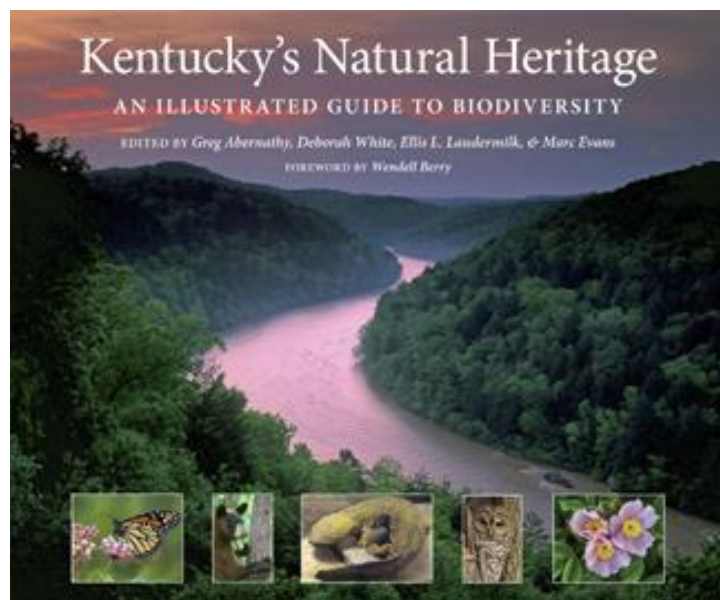
Science Based Conservation - The Commission has created the **most complete and accurate database** of information on rare species, natural communities and conservation lands in Kentucky. Built on 38 years of research and information collection by Commission biologists, it is integrated as part of an **international data network** extending from **Canada to Latin America**. The Commission's scientists are part of a network of over 80 independent organizations, with **nearly 1,000 dedicated scientists**. KSNPC has the **only botanical conservation program in state government**. We are the "official cooperator" with the U.S. Fish and Wildlife Service for the recovery of all federally listed plants in Kentucky. White-haired goldenrod, an endemic plant (found only in Kentucky's Red River Gorge and pictured right) will be **removed from the federal list** as a result of our surveys.



IV. ADDITIONAL COMMISSION PROJECTS:

Education/Outreach

The Commission's highly acclaimed book, *Kentucky's Natural Heritage, An Illustrated Guide to Biodiversity* expounds on Kentucky's rarest species of plants and animals, and was written to educate Kentuckians about the Commonwealth's biological wealth, and inspire support for conservation. A primary goal was for it to become a classroom **resource book for teachers**. That goal is being achieved in partnership with a generous private donor. A gift of over **\$23,000** is funding a reprint of *Kentucky's Natural Heritage*. 700 copies will be provided to **all Kentucky middle and high schools, colleges and universities**.



V. RECOMMENDATIONS:

KRS 146.485(13) directs the Commission to report on matters which may significantly affect the natural ecology or the human environment, and to recommend actions to prevent significant adverse effects. The Commission recommends:

1. Restore stewardship staff to protect and manage state nature preserves and increase public access.

The Commission has only two staff to manage 64 state nature preserves, containing 27,663 acres. It is an IMPOSSIBLE task! Years of invested time and resources are being bled away. We are unable to care for the state's nature preserves and are failing to meet this statutory duty. Stewardship positions must be restored.

2. Restore critical biologist positions.

The Commission has lacked a terrestrial zoologist to survey birds, mammals, reptiles and amphibians since 2008. This loss reduces our ability to conduct basic biological surveys and adversely impacts other agencies, which rely on the Commission for biological data. It also hurts our ability to generate agency receipts through biological inventory contracts. We need to restore this core biologist position.

3. Increase significantly the rate of land conservation in Kentucky.

Kentucky has fewer state-owned conservation lands than any of the seven surrounding states. Conservation lands are key to protecting biodiversity and providing eco-services, i.e. clean drinking water, pollinating crops, etc., which are necessary to the quality of life for our citizenry. Land is being developed at a rapid rate, and conservation opportunities are being lost, never to be regained in our lifetimes. Foremost, the next budget must not repeat a transfer of Heritage Land Conservation Funds to the General Fund in 2016.

4. Develop a climate change action plan.

A plan must be developed to respond to climate change and its impacts on the biota and habitats of Kentucky. A state-wide plan is needed to identify and conserve key areas of the landscape to interconnect migratory corridors and facilitate wildlife travel. A climate action plan in the hands of agencies involved with land development will enable better informed land use decisions, protecting key conservation lands and ensuring fundamental ecosystem services. The Commission has convened a steering committee and a plan is being developed.

A directory of the state nature preserves is available upon request, or at <http://naturepreserves.ky.gov>.



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Cover photo of a Monarch butterfly (*Danaus plexippus*) and all other photos are by Ellis L. Laudermilk unless otherwise noted.

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