

NATURALLY KENTUCKY

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The Kentucky Natural Areas Inventory

by Marc Evans

Since early settlement over 200 years ago, almost all of Kentucky's natural landscape has been greatly altered or severely impacted. Only a small portion of Kentucky looks today as it did when the first explorers saw it. Logging, clearing, grazing, farming, surface mining, channelization and damming of streams and rivers, drainage of wetlands, road construction and urban development have all but eradicated Kentucky's rich natural heritage. The few remaining natural areas that have escaped destruction are threatened. Based upon the acreage of known natural areas, it is estimated that less than one half of one percent of Kentucky remains in its original condition.

The Kentucky State Nature Preserves Commission is mandated to inventory Kentucky for the best remaining natural areas and establish a system of nature preserves to protect these remnants. A statewide inventory is extremely important because it allows for natural areas to be compared relative to each other so that we can select the natural areas that are most important to

the protection of endangered and threatened species, high quality natural communities and the biological diversity in the Commonwealth. In addition, the rapid destruction of remaining natural areas makes this type of comprehensive inven-

areas is a process called the Natural Areas Inventory, or NAI. The Kentucky Natural Areas Inventory uses a systematic methodology that examines the landscape at the county level. County-based inventories are utilized because it takes advantage of existing political divisions and available county-based information. To adequately inventory large areas such as counties, a systematic approach is required to assure that all portions of a given area are carefully examined. This methodology has been successfully used by several other states that have completed or are conducting county-based NAI's.

The NAI methodology utilizes a five stage approach. First, aerial photos of a county are examined along with topographic, geologic and soil maps. Any other existing data on the county is also compiled and reviewed. After review and analysis of photos, maps and other data, Potential Natural Areas, called PNA's, are selected and outlined on topographic maps. The second stage involves conducting aerial surveys to determine the accuracy of data interpretation and eliminate sites recently destroyed or degraded. The third stage is called ground truthing. This involves contacting landowners to get permission to visit sites for

What is a natural area?

A natural area is an area containing a terrestrial, wetland, aquatic or subterranean ecosystem that has essentially retained, or recovered, its presettlement conditions, or is a least disturbed example of a natural ecosystem. In Kentucky this includes many types of natural communities including several kinds of upland and bottomland forests, savannas, barrens, prairies, glades, swamps, marshes, rivers and streams, cliffs, caves and many others.

tory critical. Only through systematic and thorough surveys can we be relatively assured of finding most of the remaining natural areas before they are destroyed and lost forever.

The primary method of locating terrestrial and wetland natural

Heritage Land Conservation Fund Makes First Grants

by Robert McCance, Jr.

On October 11, 1995 the Heritage Land Conservation Fund Board (HLCFB) provided its first grants to governmental agencies for land acquisition under the new program that was funded by the General Assembly in 1994. KSNPC was successful at this meeting, with all seven of our proposals receiving full funding.

With money accumulating since July 1994, over \$4,325,000 was available. Five agencies automatically receive 10% of available funds, although each must submit applications to assure that the land and their proposed management is in conformity with the intent of the legislation. Only State Parks and KSNPC submitted agency funding requests, with Parks obtaining approval on additions to Carter Caves and Natural Bridge state parks. KSNPC received approval for the following projects: Blanton Forest in Harlan County, Dawson Springs Seep Swamp in Caldwell County, Eastview Barrens in Hardin County, Hymes Knob in Lewis County, and Strohmeier's Hill in Franklin County. Total funds requested were far in excess of the \$432,500 available to us now, but additional funds will come in

over the next year, and it is highly unlikely that all landowners will be willing to sell. We do expect to add new preserves with these funds over the next two years.

There was \$2,162,554 available for competitive proposals from any state or local governmental agency, or any state college or university. Eight proposals were submitted, with three being rejected, two partially funded and three receiving full funding. KSNPC submitted two proposals and both were fully funded. We proposed an addition to Bad Branch State Nature Preserve in Letcher County and a new Pine Barrens project in Harlan county. The combined award was \$432,700 for these projects. The time frame for this first round of applications was tight, and KSNPC was successful because of our previous experience with nature preserve design proposals and our desire to protect as many high quality natural areas as possible.



Land Trust

by Robert McCance, Jr.

KSNPC works to protect the very best natural land in our state, as I'm sure all of our readers know. We frequently meet with landowners who wish to see their property protected in perpetuity for reasons of their own. Unfortunately, many times their property does not qualify as acceptable for a state nature preserve. Our staff have met with many kind, honorable and concerned citizens who wish to set aside their property--to protect it from development or timbering or whatever--and know that it will be protected after they're gone. We have found that throughout most of Kentucky there is no organization capable of accepting a conservation easement on such property and guaranteeing that the land will be carefully monitored and protected from decisions of future owners. There are no guarantees for today's landowners to keep their wishes for legal restrictions on the future use of the property.

KSNPC intends to investigate the feasibility of creating a nonprofit conservation organization for this purpose, or of convincing an existing land trust to take on these statewide responsibilities. If any readers are interested in this subject and wish to take part in the meeting, please contact KSNPC and let us know of your interests and ideas. We expect to meet early in 1996.

The Kentucky Natural Areas Inventory

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on site evaluation and data collection. The fourth stage is the processing of data into the Commission's Natural Heritage Program database. The fifth and final stage is the development of protection strategies for significant natural areas.

The Commission initiated the Kentucky NAI in 1988 in Logan, Simpson and Warren counties and the process was successful from the start. A number of previously unknown high quality natural areas were discovered and several known areas were reevaluated. This resulted in the protection of at least seven natural areas in the three counties. In the ensuing seven years, the Commission, with the assistance of The Nature Conservancy, has completed

natural areas inventories in 23 counties and has finished 10% to 80% of the work in an additional 50 counties. This leaves 47 counties with no natural areas assessment. Because of the rapid changes taking place in Kentucky there is a great urgency to complete the NAI of the state. There have been many examples of natural areas being located on aerial photos only to find they were recently destroyed.

The results so far of the natural areas inventory have been both good and bad. The bad news is that we have found that only a small portion of Kentucky remains in a relatively undisturbed condition. It is estimated that less than one half of one percent of Kentucky has been spared serious impacts. The good news is that numerous natural areas that were previously unknown have been

documented and many have been protected. Protected areas include Flat Rock Glade State Nature Preserve in Simpson County, Logan County Glade State Nature Preserve, Pine Creek Barrens Nature Preserve in Bullitt County and most recently, Blanton Forest and Hi Lewis Pine Barrens in Harlan County as well as many others. For a complete list of nature preserves and natural areas open to the public contact the Commission.

At the current rate of two counties per year, it will take almost three decades to complete the NAI. The Biodiversity Task Force recommended that the state's inventory effort be increased. KSNPC is currently searching for ways to fund additional NAI work, and we have high hopes of discovering many new natural areas in the future.

Kentucky County Natural Areas Survey

Kentucky State Nature
Preserves Commission
January 1995 Status

State Nature Preserve Spotlight

Bat Cave (Roger W. Barbour) and Cascade Caverns State Nature Preserves

by Kristin Snyder

In issue No. 10 of *Naturally Kentucky*, Kingdom Come State Park Nature Preserve was the first of eight state park nature preserves to be spotlighted. Bat Cave and Cascade Caverns are two other state nature preserves (SNPs) which are located within a Kentucky State Park. Bat Cave SNP and Kingdom Come State Park Nature Preserve both protect caves with significant numbers of the federally endangered Indiana bat (*Myotis sodalis*). Bat Cave is the largest hibernaculum for this particular bat species in Kentucky and the second largest (of seven caves) within the species range. (See the article on Kingdom Come SPNP for more information on the life history of the Indiana bat and the article in issue No. 15 of *Naturally Kentucky* for information on other Kentucky bats).

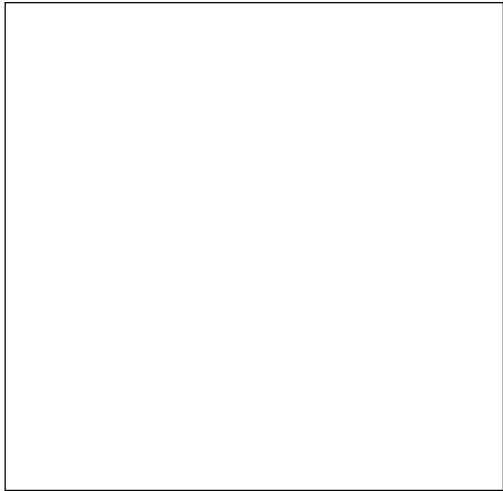
Bat Cave and Cascade Caverns SNPs are located within Carter Caves State Resort Park in north-central Carter County. This park was established in 1952 when citizens of Carter County and surrounding counties donated 945 acres to the Commonwealth of Kentucky. Subsequent purchases by the state increased the acreage of the park to approximately 1,600 acres. The Department of Parks recognized the significance of Bat Cave and nearby Cascade Caverns (also within the park) and agreed to seek the highest level of protection possible for the two areas. In December 1981, Bat

Cave and 128 surface acres surrounding it and 18 acres of land above Cascade Caverns were dedicated into the state nature preserve system, becoming Kentucky's 5th and 6th state nature preserves.

Bat Cave has two entrances; one lies at a higher elevation than the other and allows cold air to flow through the cave. This situation creates favorable conditions for the Indiana bat to hibernate at the lower end of the cave. As recently as 1960, 100,000 bats were counted during a bat census of the cave. Soon thereafter, a gate made of stones and steel bars was installed at the upper entrance. However, it was susceptible to vandalism, inhibited air flow and ultimately led to the decline of the bat population within the cave. During the weekend of August 26, 1983, the lower, more accessible entrance to the cave was gated with angle-iron (see photo). The following weekend, the stone gate was torn out of the upper entrance, and an angle-iron gate was constructed for that opening. These gates were designed by Roy Powers and the Cave Conservation Institute (now the American Cave Conservation Association) and built by Institute and park personnel. The unique design allows air and the bats to move freely over the angled surfaces of the gate; and it is virtually vandal-proof. Since the installation of these gates, the Indiana bat population has remained at approximately 40,000 individuals.

In March 1994, Bat Cave SNP

was renamed Roger W. Barbour SNP in recognition of Dr. Roger William Barbour's (1919-1993) contributions to bat research and education. He published 93



papers in refereed scientific journals, and he authored and co-authored many books about Kentucky's rich natural history. Some of his contributions include *Bats of America*, *Wildflowers and Ferns of Kentucky*, *Trees and Shrubs of Kentucky*, *Kentucky Birds*, *Mammals of Kentucky*, *Reptiles and Amphibians of Kentucky*, *North American Darters*, and *Turtles of North America*. In addition to his many educational endeavors, Dr. Barbour was active in many state scientific and conservation societies and was a prominent figure in the formation of the Kentucky Chapter of The Nature Conservancy.

Guided tours of Bat Cave are available to the public during the summer months (May 15 to September 15). Contact the park at (606) 286-4411 for more information. Visitors can also hike through a section of the preserve on approximately 0.5 miles of the Smoky Valley Backcountry trail. Call KSNPC at (502) 573-2886 for more information.

SHORT'S GOLDENROD: A plant with a past.

by Deborah White

Solidago shortii, Short's goldenrod, is one of few plants that are endemic to Kentucky and even more notable is its extreme rarity in the state. As far as we know, the only place on earth that Short's goldenrod grows is the Blue Licks area at the corner of Robertson, Nicholas and Fleming counties. Because of its status in Kentucky, it is listed as both federally and state endangered.

The original report for this species by C.W.Short (for whom the plant was later named) was on Rock Island near Louisville, which has since been submerged as a result of the construction of McAlpine Dam on the Ohio River. It has never been found since in this area. A report of Short's goldenrod in the 1940's by Lucy Braun, a prominent botanist, for the Blue Licks area indicates that it was more common just 50 years ago in overgrazed pastures. If this plant was common in these highly disturbed pastures, why then is it known today only from a few sites, mostly sites of open limestone rock with thin soils? Of course, most of the natural habitat for this plant has been cleared but why is it no longer found in pastures? One explanation is that during the post-Depression era, the land was much more intensively used and much more of the landscape was probably available for coloniza-

tion by this plant. Short's goldenrod seems to prefer eroded bare ground such as cedar glades and rock outcrops to become established. Also, since the Depression, the introduction of pasture grasses that form a nearly impenetrable mat on the ground, could have excluded this species from the pastures where Braun observed it.

But why was it so common in the Blue Licks area? The logical connection is bison. A large mineral springs near Blue Licks Battlefield State Park attracted huge herds of bison in recent history as well as mastodon and other large mammals during the Pleistocene. Accounts of Blue Licks from early settlers describe the area as completely denuded by bison trampling, which probably created habitat for Short's goldenrod. As botanists attempt to make sense of Short's goldenrod's present status, we speculate about the connection between this bison activity and the evolutionary role of Short's goldenrod in this landscape. In searching for more of this plant, we have focused to some extent on former bison trails which extended through the Bluegrass region to the Ohio River (the site of the other documented occurrence). Unfortunately, none of our searches have been successful.

Another aspect of Short's goldenrod's status that is difficult to explain is its inability to take advantage of other disturbed habitats that seem

potentially suitable for colonization. Studies of its life history done at the University of Kentucky by Carol and Jerry Baskin have so far not explained this species' inability to disperse into new sites or expand established populations.

With this information, we must assess the status of this curious species. What is the role of this species in the natural landscape? It's possible this plant has always grown in uncommon habitats like animal trails and natural openings in woodlands. Is there some missing link related to bison and other mammals that is now gone from this ecosystem? While pondering these questions we will continue to look for more Short's goldenrod and more importantly, determine what management strategies can be used to allow this interesting plant to exist in our changing landscape. If you'd like to visit Short's goldenrod, it is presently protected at the Blue Licks State Park Nature Preserve and is in full bloom by mid-September.

**"...whatever you can
do, or dream you can
do, begin it, boldness
has genius, power,
and magic in it."**

---Goethe

WHICH WAY DID THEY GO?

by Brainard Palmer-Ball

As fall slips slowly into early winter, a profound change occurs in Kentucky's fauna. The colder temperatures and lack of food force many of our summer animals to move southward and necessitates that some of our permanent residents shift to new strategies to survive the long, harsh winter. We all know about squirrels caching stores of nuts to get by, but what do some of the other members of Kentucky's fauna do to get by...?



Birds have wings, and most that do not switch over to berries and seeds for food during the winter migrate south to assure themselves a stable food supply. Many species that nest in solitary pairs during the summer gather into flocks at this time of year, moving about the countryside together in search of food. These include familiar species such as chickadees, robins,



bluebirds, cardinals and meadowlarks.

Many small mammals become inactive during the winter, spending the time in a partial state of hibernation, waking occasionally to eat and drink. Many have built a cozy underground nest well below the frost line, and--like the squirrel--most have a cache of food nearby. Others remain active, carrying on with normal activities beneath the ground or snow. Golden mice build nests in tangles of vines and other thick growth that are several feet above the ground. Here they spend the winter as cold winds howl around them, making brief nocturnal forays for food.

Most of our cold-blooded reptiles and amphibians also spend the winter beneath the ground, using burrows of other animals, cracks in rocks, and other similar pathways leading to below the frost line. Here they remain in an inanimate state until warmer temperatures spur their heart rates to enable



an increase in activity. Aquatic and semi-aquatic species typically burrow into the muddy bottoms of lakes and ponds. Here they are able to obtain enough oxygen to wait out the winter. Some, like the red-spotted newt may remain active all winter, moving about beneath the ice of small ponds and puddles.

Many insects overwinter in protected hideaways as well. Adult insects have often laid eggs in sheltered areas to provide for a new generation in the



spring, but larvae and pupae are the typical forms that ride out the cold winter in other species. Some even overwinter as adults, explaining the occasional butterfly, wasp, or fly that we see on a warm winter day. In whatever form, most can be found in leaf litter on the forest floor, or within several inches of the surface in the soil of lawns and gardens. The body fluids of most insects can withstand freezing, protecting them unless extremely cold weather hits; many depend on an insulating layer of snow to buffer them from sub-zero temperatures. Certain insects including several species of moths and mosquitoes spend the winter in caves.

NEW HORIZONS, BACKWARDS GLANCES

by Joyce Bender

On December 18th, the first of my three new employees began work at the Commission. Brad Nyholm, from Radford, Virginia joins us as an 11-month seasonal stewardship planning assistant. Brad will be gathering background information, drafting maps and helping to write management plans for Commission preserves and Heritage Land Conservation Fund proposals. Rick Remington and David Skinner begin their employment on January 2nd as the Western and Eastern Regional Preserve Managers, respectively. Rick is from Iola, Wisconsin and David is from

Zanesville, Ohio. You'll hear more from these three in future newsletters. The exciting news is that the Stewardship Program now has **three** full-time, permanent staff members to look after 33 (and counting) nature preserves. After nine years, I feel like we're beginning a new chapter, heading down a new road.

But when I look in my rearview mirror, there are two faces that crowd the view. For almost five years, Cindy Campbell and Kris Snyder have worked beside me to develop the Stewardship Program into the quality program it is today. Prior to 1991, I worked alone or with short-term staff to try to keep up with the needs of all the nature preserves. But in

1991, there was finally enough funding to support seasonal stewardship staff to help me with our growing nature preserve system. I took a chance on two young women who had absolutely no experience with managing natural areas, working with volunteers, using chainsaws or any of the myriad things they now do with skill and confidence. It has been very satisfying to see my plans for the preserves become reality with their assistance. My biggest reward has been all the jobs well done by both of them and the knowledge that with their help, the Commission has succeeded in making a difference. They have meant a lot to me and to the Commission and we wish Cindy and Kris well as they head down their own new roads.

...more staff changes

by Robert McCance, Jr.

Several staff changes have occurred in the past few months at KSNPC, with five seasonal employees and one permanent staff leaving, and four additional people starting. Tom Bloom, longtime Data Manager (and recently re-titled Information Systems Manager), is leaving KSNPC after eight years, to accept a position with the Scott County School System. Tom has been instrumental in this agency's conversion to a higher level of computer use, including computer network capability that has significantly improved our efficiency.

Tom has written many of our software programs that use The Nature Conservancy's Biological Conservation Database, and he will be very hard to replace. Tom also is an accomplished botanist, and has contributed significantly to our overall data collection efforts.

Seasonal employees Kris Snyder, Cindy Campbell, and Gary Libby are also leaving KSNPC. Kris and Cindy have worked in our preserve stewardship program since 1991, and have added immeasurably to the quality of care given to your state nature preserves. Gary Libby worked as a botanist on several federal endangered species

projects, the Kentucky River Locks and Dams study and other projects. Gary will begin work with Don Harker, KSNPC's first Director, writing a book on landscape restoration design.

Randy Mears, an environmental biologist left his seasonal position the end of October and relocated to Florida. Randy assisted Gary Libby and Deborah White in rare plant surveys. Amy Covert assisted in collecting aquatic specimens and towards the end of the field season compiled data. After her six months of employment, Amy is now working for the Louisville Zoo.

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...more staff changes
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New employees who will begin work in December and January include Rick Remington and David Skinner, Nature Preserve Regional Managers; Michelle Clendenin, community ecologist; and Bradley Nyholm, an 11-month seasonal employee who will assist with nature preserve management planning. Rick and David are the second and third permanent staff in the stewardship program, and will help care for the growing state nature preserves system that now totals 33 sites and 11,427 acres.

Michelle will improve our effort in county natural area inventory within the coal-bearing regions of the state. She will also help with the natural community classification work that Marc Evans started and with the GAP Analysis project that the Kentucky Department of Fish and Wildlife Resources and KSNPC hope to start in 1996.

We wish Tom, Cindy, Kris, Gary, Randy and Amy good fortune in their new endeavors and thank them for their many contributions to the protection of Kentucky's natural areas.

Remember . . . save something on your taxes!

The Nature and Wildlife Fund, Kentucky's oldest checkoff program, is now entering its 16th year. You can help save wetlands, natural areas, and endangered species habitat, bald eagles, ospreys, peregrine falcons, river otters and many other nongame animals. No amount is too small. Your contribution on the state's income tax form will increase the quantity and quality of the care given to the beauty and bounty of Kentucky's natural heritage.

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

Commonwealth of Kentucky

**Kentucky State
Nature Preserves
Commission**

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