Kentucky State Nature Preserves Commission

NATURALLY KENTUCKY

Number 28. October, November, December 1998

Special Cumberland Mountains Issue

Kentucky's Highlands – The Cumberland Mountains

By Marc Evans

Kentucky is truly a beautiful state with many scenic landscapes and unique ecological and biological wonders. I'm often asked what is my favorite part of the state and I am hard pressed to select a specific area. However, if I had to choose just one part of the state, I guess I'd have to pick the Cumberland Mountains. The rugged beauty of the landscape, large areas of forest, incredible diversity, wonderful people, and great foggy mornings all add up to one very unique place in the world.

The Cumberland Mountains, which occur in the extreme southeastern part of the state, fall mainly within Bell, Harlan and Letcher counties with small areas also within Pike and Whitley counties. These mountains are the only "true" mountains in Kentucky, having been upthrust as part of a huge fault block with more or less upturned edges. These upturned edges form the monoclinal border mountains; Pine Mountain which forms the northwest border and Cumberland/Stone Mountain forming the southeast border. The main interior mountains of this region include Black, Little Black and Log mountains. These mountains attain elevations of 3000 to over 4000 feet with the highest point in Kentucky being approximately 4,139 feet at the top of Black Mountain.

In 1992 I started a Natural Areas Inventory (NAI) of Bell, Harlan and Letcher counties. NAI is the process by which we examine a specific area (in this case counties) for remaining natural areas. Although many interesting places were already known in the mountains, much inventory remained to be done. Because of the ruggedness and extensive forest cover of the area, this NAI has been more difficult and time consuming than most county inventories and some sites still need to be visited or revisited. However, many previously unknown natural areas and rare species occurrences have been discovered as a result of this inventory. Probably the most significant of these finds are Blanton Forest and Hi Lewis Pine Barrens, both on Pine Mountain. These two important areas have been at least partially protected and will, hopefully, be fully protected in the not too distant future.

Photo by Marc Evans

Other important areas protected on Pine Mountain include Bad Branch State Nature Preserve, Kingdom Come State Park Nature Preserve, the new Boone Wildlife and Recreation Area, Kentucky Ridge State Forest, Kentenia State Forest, Pine Mountain Wildlife Management Area (WMA), Breaks Interstate Park and Pine Mountain State Park Nature Preserve. On Cumberland/Stone Mountain protected areas include Cumberland Gap National Historical Park, Shillalah Creek WMA, Cranks Creek WMA, Stone Mountain Recreation Area, and Martin's Fork Wild River.

Unfortunately, there are no protected lands on the Black and Little Black Mountain ranges. Much of these mountains have been disturbed from surface mining operations and almost all

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have been heavily logged in the past. However there is still extensive forest cover on parts of these mountains and many rare species occur, especially on Black Mountain.

The Cumberland Mountains contain some of the most biologically and ecologically diverse, landscapes in Kentucky. These mountains are home to the mixed mesophytic forest, one of the most diverse temperate forest types in the world, and the only place in Kentucky where northern hardwoods type forest occurs. Many rare and unusual plants and animals live in the Cumberlands. At least 128 species of plants and animals considered endangered, threatened or of special concern by the Commission occur in the mountains. This includes 76 plants, 23 invertebrates, 12 birds, 9 mammals, 4 reptiles and 4 fish. Many of these occur nowhere else in the state.

Although occupying only a small area of Kentucky (approximately 15 miles wide by 80 miles long) the ancient Cumberland Mountains of Kentucky have long held an attraction to biologists and others interested in nature and the outdoors in general. The Commission has had a long standing interest in protecting important areas there and has slowly but surely added to the protected acres. However, many more areas in the mountains deserve protection. It is the hope of the Commission that as more people and organizations recognize the importance and intrinsic values of this area that more effort and money will be made available to protect this beautiful and unique part of Kentucky.

KSNPC-listed species known only in Kentucky from Black Mountain

Angelica triquinata
Filmy angelica
Botrychium oneidense
Blunt-lobed grape-fern
Eupatorium maculatum
Spotted joe-pye weed
Heracleum maximum
Cow-parsnip
Platanthera psycodes
Small purple-fringed orchid
Streptopus roseus var. perspectus
Rosy twisted-stalk
Pilsbryna sp.
a snail
Triodopsis dentifera
Big-tooth whitelip
Vertigo bollesiana
Delicate vertigo
Pyrgus wyandot
Appalachian grizzled skipper
Dendroica fusca
Blackburnian warbler
Junco hyemalis
Dark-eyed junco

KSNPC-listed species with highest quality Kentucky populations known from Black Mountain

Agrimonia gryposepala
Tall hairy groovebur
Carex leptonervia
Finely-nerved sedge
Hydrophyllum virginianum
Eastern waterleaf
Lilium superbum
Turk's cap lily
Sambucus racemosa ssp. pubens
Red elderberry
Solidago caesia var. curtisii
Curtis' goldenrod
Solidago roanensis
Roan mountain goldenrod
Mesomphix rugeli
Wrinkled button
Vitrinizonites latissimus
Glassy grapeskin
Empidonax minimus
Least flycatcher
Pheucticus ludovicianus
Rose-breasted grosbeak
Vermivora chrysoptera
Golden-winged warbler
Wilsonia canadensis
Canada warbler
Clethrionomys gapperi maurus
Kentucky red-backed vole
Sorex cinereus
Masked shrew

Mining on Black Mountain

By Brainard Palmer-Ball

Over the past several months you may have heard something about mining on Black Mountain, Kentucky's highest peak, in Harlan County. The issue is a complex one, involving several different points of contention. The permit application that has come to the forefront is actually only a part of a substantial mining project that is already underway, having been approved in June 1992. An amendment to this permit was approved in May 1997, expanding its size to about 350 total acres. Mining began in August 1996 and as of July 1998, 70 acres have been disturbed.

A second permit was submitted in 1995 and approved in January 1996. This permit involves an area to the east of the other mine but still at about the same elevation. The current publicity has arisen from the submission of a second amendment to the orginal permit that in effect supercedes the second permit to include an additional 450 acres on the mountain east of the current operation.

Mountaintop removal has been mentioned in the media, but most of the permitted activities involve a strip of disturbance at elevations between 3,400 and 3,800 feet along the southern slopes of the mountain. Black Mountain actually reaches an altitude of 4,139 feet, and the core area of greatest biological significance is often considered to

include the 1,300 acres that lie above 3,800 feet, so the most important areas are not actually included in what is already being mined or proposed for mining. However, two side ridges that lie off the main crest and attain an altitude of about 3,800 feet have been proposed for coal extraction methods that would include removal of all material above the coal seams being mined. These two ridges, which consist of about 22 and 44 acres, would be restored to approximate natural contour, not left flat as in typical mountaintop removal work.

All of that having been said, however, the mining already underway and as proposed to continue clearly threaten the integrity of Black Mountain's biological diversity. In addition, no one seems to know for sure how much more mining could be planned in the future on the northern side of the mountain.

For this reason, some local groups are considering filing a petition to declare the top of the mountain "unsuitable for mining", a provision allowed for in the federal Surface Mining Control and Reclamation Act of 1977 and implemented through Kentucky's administrative regulations (405 KAR 24:303, Section 8b). This regulation states that a land can be deemed unsuitable for mining if the surface mining coal operation will:

"affect fragile or historic lands in which the surface coal mining and reclamation operations could result in significant damage to important historic, cultural, scientific, and aesthetic values and natural systems."

Everyone agrees that Black Mountain is a unique biological resource. Because of its high elevation, the mountain supports an important natural system of plants and animals unique in Kentucky. A Northern Hardwoods forest type that supports numerous rare species occurs at higher elevations and is known in Kentucky only in a few small patches elsewhere in the Cumberland Mountains. However, these patches do not harbor the full diversity of species present on Black Mountain.

Nearly 40 KSNPC-listed species have been documented on the upper portions of the mountain. One of these, the Indiana bat *Myotis sodalis*, is listed as Federally Endangered. At least 12 KSNPC-listed species found on upper parts of the mountain are known nowhere else in the Commonwealth, and the populations of another 15 KSNPC-listed species are the highest quality known in the state (see center column, page 2).

KSNPC monitors only a small subset of the biodiversity known in Kentucky, mostly due to a lack of knowledge of many groups. Members of these lesser-known groups are also well-represented on Black Mountain. For example, approximately 40 moths have been collected on the mountain and nowhere else in the state. Similarly, there are likely other species — mosses, fungi, spiders, and beetles, to name a few — that occur in Kentucky only on Black Mountain.

Black Mountain has been the focal point of a number of limited biological studies over the past century, most of which have focused on the upper elevations. However, while we know quite a bit about Black Mountain, we do not know nearly enough. For example, just this summer a biologist working on Black Mountain discovered two plants new to the state, Hobblebush *Viburnum alnifolium* and Roan sedge *Carex roanesis* , (both are high elevation Appalachian species). This highlights the need for additional inventory work there. In fact, the most critical step towards protecting the mountain's biodiversity is to complete a biological inventory. The goal of such an effort would be to specifically define the most critical portions so that they could be targeted for further protection efforts.

The Commission will be closely monitoring developments on Black Mountain. Our data services staff have handled a number of requests for information on the biological significance of the mountain, and we will continue to be involved as the situation unfolds.

KSNPC Quarterly Commission Meeting

DATE: December 8, 1998
PLACE: KSNPC
801 Schenkel Lane
Frankfort, KY
TIME: 10 a.m.

Putting a Face on a "Last Great Place"

By Bryce Fields

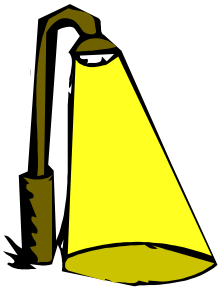
In keeping with the theme of this season's newsletter, I've decided to tell you a little about the Cumberland Mountains — not from the biologist's perspective, but from that of a native from the heart of the Cumberlands.

I was born in Harlan County, and grew up in the little town of Cumberland, wedged between Black and Pine Mountains. Life in Cumberland moves at a slower pace than most places. Some might even say it's downright boring, but I'd have to disagree with them. How could anyone be bored with the mountains as a playground?

I remember many weekends wandering up into the mountains, following a stream to its head, exploring the cliffs and rockhouses, or finding a place with an incredible view where I could sit for hours and watch the world go by. However, I never realized growing up how uniquely lucky I was to have nature literally at my front door.

Time passed, I grew up, and went off to Richmond to become "educated" (some would argue that that was a fruitless quest!). In graduate school, I learned of the biological significance of the Cumberlands. I learned, for instance, that these mountains are the center of diversity for Lucy Braun's Mixed Mesophytic forest type, that they are home to unique communities and species - unique not only for Kentucky, but in some instances, the only place in the world where they can be found.

I consider myself to be truly fortunate to work for an organization that is dedicated to the preservation of my childhood playgrounds. Hi Lewis, Kingdom Come State Park, Bad Branch, and Blanton Forest State Nature Preserves comprise an excellent first step toward preserving this special region, but there are many other areas in the Cumberlands that are worthy of protection. Hopefully, due to the efforts of the Commission and other like-minded organizations, I'll have more than mere pictures and memories of these places where I grew up to share with my children.



Preserve Spotlight:

Kingdom Come State Park Nature Preserve

By David Skinner

Nestled in the forest on Pine Mountain is Kingdom Come State Park. This is one of the lesser known state parks, but like any natural area on Pine Mountain, it is by no means an insignificant place. Kingdom Come State Park gets its name from the famous Civil War novel, The Little Shepherd of Kingdom Come written by John Fox, Jr. The park is full of natural and scenic beauty and some of the rock formations there are popular hiking areas. Log Rock is a natural sandstone bridge and Raven Rock is a 290 foot long monolith that protrudes out of the mountain.

In addition to the usual recreational amenities provided at a state park, Kingdom Come State Park also has a 225 acre dedicated state nature preserve. All of the land in the preserve is on the north facing slope of Pine Mountain. It is steep, forested, talus-covered and harbors Line Fork Cave. This area is home to several rare animals. The rocky slopes provide refuge for Kentucky red-backed voles (*Clethrionomys gapperi maurus*), masked shrews (*Sorex cinereus*) and long-tailed shrews (*Sorex dispar blitchi*). The first two species are considered special concern species and long-tailed shrews are endangered in Kentucky. Line Fork Cave is a significant hibernaculum for the federally endangered Indiana bat (*Myotis sodalis*). The cave is also the winter home for small numbers of small-footed bats (*Myotis liebii*) and occasionally for a Rafinesque big-eared bat (*Corynorhinus rafinesquii*). Small footed bats and Rafinesque big-eared bats are listed as state endangered and threatened, respectively.

In 1997, KSNPC terrestrial zoologist Brainard Palmer-Ball, counted 1,747 Indiana bats in Line Fork Cave during a midwinter hibernation survey. This number is very close to the 1995 survey (1,744 individuals). The number of Indiana bats has fluctuated between 2,661 and 4,808 bats in the early 1990's. Surveys in the early

1980's were over 8,000 bats but historical estimates indicate that Line Fork Cave had between 50,000 and 100,000 Indiana bats. This drastic decrease in the number of bats may, in part, be due to logging and other forest disturbances but the large historical decreases in bat numbers is believed to be primarily due to disturbing the bats in the cave during their hibernation. Indiana bats have enough fat reserves to carry them through their winter hibernation and, if they are fortunate, a little to spare. Even small disturbances can cause the bats to become active and use energy that may be vital to their ability to hibernate until they are able to catch insects again in the spring. Cave gates like the one on Line Fork Cave have saved thousands of bats from starving to death during the winter.

In addition to the rare bats that inhabit Line Fork Cave, the cave is a unique resource on its own. Along with having numerous formations, Line Fork is also one of the largest caves on Pine Mountain with just under 5 miles of mapped passages. The cave was mapped by the Pine Mountain Survey, an informal group of volunteer cavers. Most of these cavers are from the Detroit, Michigan area and the group's organizer is Dave Schang. Dave and his associates also assist with the biennial Indiana bat surveys and on May 30 they coordinated a clean-up of the cave. Volunteers who participated in the clean up were Dave and Karen Schang, Bob Dever and Jim Currens. Dave, Karen and Bob are with the Pine Mountain Survey Group and Jim is with the Bluegrass Grotto. For decades, before the cave was gated to protect the hibernating Indiana bats, Line Fork was a popular recreational site for cavers and much littering and vandalism occurred. Despite being gated, the cave is still open to the public from May through August when it is not occupied by the Indiana bats. People who are interested in visiting the cave can call the Kingdom Come State Park office to make arrangements to borrow the gate key. The cave entrance is remotely located and requires traversing very rough terrain, but most people agree that the effort required to explore the belly of Pine Mountain is well worth it.

The Cumberland Mountains have long been known for scenic and biological treasures, and Kingdom Come State Park Nature Preserve is one of the finest gems within these Mountains. A visit to Kingdom Come, like all state nature preserves, can provide you with much needed respite from an often hectic and chaotic world. If you would like to visit or learn more about this unique preserve call the KSNPC office.

"We have become masters of topography. We can rearrange the landscape to suit our fancy, and we can build whatever we please. But having learned to move mountains, we should not forget that mountains still have the power to move us."

Roger B. Swain from *Saving Graces: Sojourns of a Backyard Biologist*

Dave Skinner's New Plant Discovery

by Joyce Bender

On August 27, 1998, Eastern Regional Preserve Manager, Dave Skinner found a plant that has never been recorded for Kentucky.

While checking on the boundary survey for Hymes Knob, a current acquisition project in Lewis County, Dave spotted a pink flowered plant on the neighbor's property. The attractive plant had half-inch diameter pink bell-shaped flowers, purplish, lanceolate leaves with light spots, and was about two feet in height.

It looked familiar, but he couldn't name it. He brought a specimen to Frankfort and asked staff botanist Deborah White to help with the identification. Deborah identified it as *Agalinis auriculata*, the ear-leaf foxglove. Dave had seen this plant in Adams County, Ohio (right across the Ohio River from Lewis County) more than ten years before. Listed as endangered in Ohio, the ear-leaf foxglove will likely be listed as endangered in

Continued on Page Six

Kentucky when the rare plant list is revised.

Dave returned to the site with staff ecologist Aissa Feldmann and found a total of 135 ear-leaf foxgloves. The site is within the preserve design that was developed for Hymes Knob, and this discovery gives even more incentive to seeing the tract protected within the nature preserve.

When asked about his exciting find, Dave responded, "It is reassuring that new species can still be discovered considering how changes in land use have removed so much of the biodiversity from large areas of Kentucky." Keep up the good work Dave!

DID YOU KNOW...

...that **Naturally Kentucky** is available in digital format on the KSNPC website? Just point your internet browser to:

http://www.state.ky.us/agencies/nrepc/ksnpc

and click the "Newsletter" button.

Adobe Acrobat Reader (a free download available at our site) is required to view the newsletter.

Stewardship Staff Update

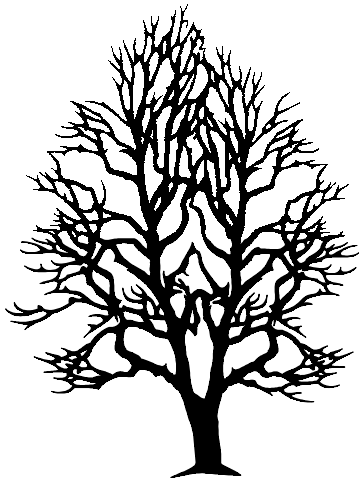
by Joyce Bender

The Stewardship Program has undergone a few staff changes since the last newsletter. Kyle Napier, long time seasonal employee at Bad Branch State Nature Preserve and more recently Stewardship Assistant for our five Pine Mountain preserves, became the Southeast Regional Preserve Manager on August first. The Commission is fortunate to have someone as dedicated and knowledgeable as Kyle taking care of the old growth forests, pine barrens, scenic gorges, waterfalls, and the rare plants and animals that have been entrusted to us.

Andrea Hughes left Kentucky in August for Las Cruces, New Mexico. Andrea is attending graduate school at New Mexico State University. Although she was here for only a year, she made some substantial contributions to the Stewardship Program. Among the things Andrea left behind: a more organized filing system, a new means of tracking our research permitting process, new interpretive information in the form of fact sheets, trail head signs and brochures, and some great new graphics for Commission slide presentations. We miss her cheerfulness and her "can do" attitude.

Paul Quinlan and Bree Enderle are our new Stewardship Assistants. Both started in November, picking up where Brad Nyholm and Andrea left off. Paul spent the last eight months with us as a Preserve Management Worker and is now writing nature preserve management plans. Bree will finish her Master's degree at Eastern Kentucky University this December. She is digging into the administrative assignments that have been piling up since August. Additional tasks for both will include participating on the burn crew and assisting with vegetation sampling on the preserves. Bree and Paul bring the total of permanent stewardship staff to six.

It was only twelve short years ago that I initiated the Commission's Stewardship Program. Ten years went by until the next two permanent staff positions were established. And then this summer, three more positions! Each staff addition has enabled us to accomplish more and has increased our effectiveness in an ever expanding nature preserve system. With six of us now, I look forward to the challenges of the coming year.



Notes From the Director

By Don Dott

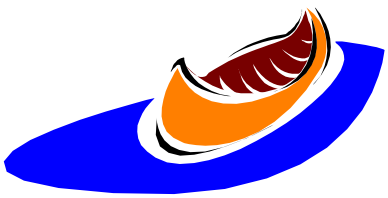
HELLO! I am thrilled to have been selected as the new Director of the KSNPC! Barry Howard did an excellent job in the interim as Acting Director and helping me to get started, for which he deserves a BIG THANKS.

There is a lot to do, and having come from the legal office of the Natural Resources and Environmental Protection Cabinet I have a lot of new terminology to learn. The staff is top notch – not only are they all masters of their trade, but they are a pleasure to work with and have been patient and helpful in answering my many neophyte questions. As soon as I get my feet on the ground, and maybe a little before that, I intend to move us ahead on our primary missions – locating and dedicating new nature preserves and inventorying the outstanding natural areas of Kentucky.

With only three weeks on the job I attended my first Commission meeting. The Commission met in Munfordville in Hart County on September 22, conducted normal business and heard a report on the mussels of the Green River in anticipation of a canoe trip scheduled for the following morning.

Wednesday morning broke clear and brisk, presaging a great day on the Green. I had the pleasure of Lee Jackson, spouse of Commissioner Ken Jackson, as pilot of my canoe – who ably kept us in the wake of Ron Cicerello and Ellis Laudermilk in search of mussels and other rare stream life.

They were successful in finding a muskrat "midden" – or the table scraps from a muskrat's dinner. Using these leftovers, Ron and Ellis displayed the shells of numerous species of mussels that had been fed upon by the



muskrat, whom Ron begrudgingly acknowledged to be a superior mussel hunter. Though the muskrats consume their catch, their natural ability to find mussels provides an excellent source of information to determine the species present in a streambed. However, the muskrats are not the only ones who could find mussels, as several of the more common varieties are easily picked up in the shallow runs of the stream.

The canoe trip also brought us past a beautiful and unique area known as the "300 Springs". There were three separate waterfalls, apparently perennial, even after the dry months of August and September , cascading over enormous "rocks" composed of tufa, a sedimentary deposit of minerals from the spring water. The entire area was covered with a lush green blanket of ferns and mosses. The canoe trip was not only a learning expedition, but a wonderful day in the outdoors for the Commission, its staff and guests. We would also like to thank Louis Sims who attended on behalf of his spouse, Representative Dottie Sims, who, to her misfortune, had previous commitments to attend.

Being an outdoor person at heart, this is a job I am going to love. I am grateful for the opportunity to be in the Director's office and wholeheartedly promise to do the very best that I can to work with the staff and Commissioners of KSNPC to protect the best natural areas of Kentucky. If I can be of any assistance or answer any questions, my office door is always open.

Attention Parents!!

KSNPC and the Lexington Children's Museum are teaming up for fun in December.

Saturday, December 19th
Animals, Nature, and More!
11:00 a.m. - 1:00 p.m.

Come visit the Lexington Children's Museum and learn about the plants, animals, and natural communities that share Kentucky with us. We'll even get to see some critters up close! Open to all ages. Free with Museum admission.

For directions, or for more information, please call the Lexington Children's Museum at (606) 258-3256 or KSNPC at (502) 573-2886.

Hope to see you there!

Natural Areas Association Conference Update

By Don Dott

Joyce Bender, Dave Skinner and I attended the Natural Areas Association Conference October 6-10, 1998 on Mackinac Island, Michigan. Attendees stayed at Mission Point Resort on the northeastern corner of the island, and enjoyed a beautiful setting with a panoramic view of Lake Huron. The leaves of the Lower Peninsula were at the height of their color, and provided a beautiful backdrop for the conference.

The conference itself was top-notch. Due to flight delays we missed the plenary session on Tuesday. However, Wednesday and Friday were filled with various concurrent sessions. There were approximately 6-8 presentations given simultaneously on twenty-minute intervals, presenting a large variety of topics ranging from "Autumn Olive *Eleagnus Umbellata* effects on Oak Ecosystems" to "The Vernal Pools of Eastern Washington". Perhaps the most unusual topic concerned white-tailed deer feeding on alewives (a small fish) that die off in large numbers on the shore of North Manitou Island.

Thursday was devoted to field trips, which ran in length from a few hours to a full day. I attended a trip to the Jordan River Valley designed to highlight issues arising in planning a state natural area preserve. The Jordan River is a picturesque stream, roughly 40 feet wide, 1-2 feet deep, fed by ground water from a huge wedge of glacial outwash, crisscrossed with fallen timbers and lined with Northern White Cedar. The trip was very informative from a management perspective, and exciting as we spotted salmon traveling up the Jordan and Sandhill cranes flying far overhead.

The conference proved itself invaluable for the opportunity to meet and talk with natural area professionals from across the continent. The Jordan River field trip included a woman from the USFWS in Alaska and a representative from British Columbia, Canada. I also met government and TNC officials from Michigan and several surrounding states. The NAA conference was well-organized and informative, and I would recommend it to anyone with a strong interest in natural area preservation. Tucson, Arizona, is the selected conference site for 1999.

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) educatingKentuckians as to the value and purpose of nature preserves and biodiversity.

Commonwealth of Kentucky
Kentucky State Nature Preserves Commission
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