Kentucky State Nature Preserves Commission

NATURALLY KENTUCKY

Number 22, April, May, June 1997

Conservation and protection of the biota of karst

by Ellis L. Laudermilk

Karst landscapes are areas of limestone sculpted by the dissolution and erosion of rock. During this process, unique habitats such as caves, springs, sinkholes and cedar glades are formed. In February, I attended a meeting in Nashville, Tennessee, focusing on the "Conservation and Protection of the Biota of Karst" sponsored by the Karst Waters Institute (KWI) in Charles Town, West Virginia. The conference was organized because the diverse organisms that live in karst landscapes are often specialized, and in many cases extremely rare. Furthermore, according to the KWI, greater than 25% of the world's population lives on or obtains water from karst aquifers. In the United States, 40% of the groundwater used for drinking is obtained from karst aquifers. Bringing together experts from around the world promotes the sharing of ideas and protection strategies between botanists, chemists, geologists, hydrologists, microbiologists, and cave zoologists. Providing a strong international flavor, presenters from Australia, Austria, Canada, France, Romania, and Slovenia were among the conference participants.

According to some estimates, over 50,000 species of animals are found only in subsurface karst habitats, especially caves. Most cave-adapted organisms exhibit degenerative characteristics such as the loss of eyes, pigment, flight ability (in winged insects), and the ability to control water loss. In contrast, several advantageous adaptations have evolved and include the development of: (1) specialized sense structures for touch, taste, and smell; (2) longer legs and/or antennae for energy efficient movement or sensory enhancement; and (3) behavior and reproductive modifications needed for nutrient-poor environments such as caves. These adaptations have been achieved independently by various groups (called convergence), and are the trademark of cave-limited species.

Animals that are found in caves can be placed in four ecological/evolutionary categories: (1) accidentals -- those species that have no regular association with caves (e.g., raccoons; one might also suggest that some tourists at Mammoth Cave National Park qualify); (2) trogloxenes -- use caves regularly for only a part of their life cycle. Bats, for example, are trogloxenes because they leave caves to feed; (3) troglophiles -- cave-loving organisms (e.g., some spiders; and all cave biologists!) that can complete their entire life cycle in caves, but also live in "cave-like" habitats

Flat Rock Glade State Nature Preserve **Photo by Marc Evans**

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such as rock piles or forest leaf-litter (or offices with no windows!); and (4) troglobites (refers to terrestrial species such as cave beetles) and stygobionts (refers to aquatic species such as Mammoth Cave shrimp, cave crayfishes and fishes, etc.) -- ecologically restricted to caves and subterranean groundwater.

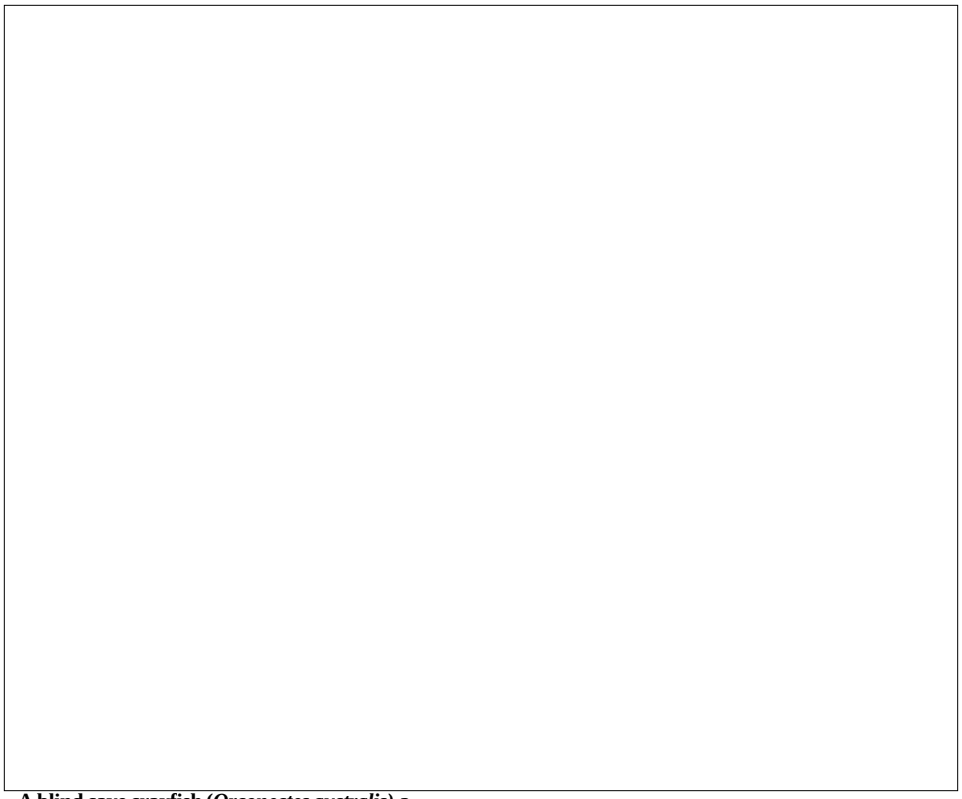
Much of Kentucky is rich in karst habitats, and the envy of troglophiles across the world. Consequently, we also have a number of species, many of which are rare and monitored by the KSNPC, that live in karst habitats. In fact, at least 11 plants, 2 snails, 7 crustaceans, 22 insects (cave beetles), 2 fishes, and 6 mammals monitored by KSNPC are associated with or dependent upon karst habitats (Table 1).

Several federal, state, and private organizations are involved in the protection of the biota of karst. For example, according to Christine Hall, The Nature Conservancy (TNC) has cave or karst landscape preserves in 24 states. West Virginia has identified over 3,500 caves, and at least 500 support rare invertebrates (animals without backbones) or provide winter homes for bats. Tennessee has identified over 5,000 caves, and has begun to prioritize protection efforts. A captive breeding program for the Tennessee cave salamander, which lives in northern Alabama and Georgia, and middle and eastern Tennessee, has been initiated. The Indiana Chapter of TNC has begun an inventory of the Blue River basin. The karst landscape surrounding the Blue River contains a wide variety of uncommon habitats, such as sinkhole swamps, which are connected to the river by a system of caves and springs, many of which contain troglobites found nowhere else. In Kentucky, approximately 3,800 caves have been identified. In 1985, the Bluegrass State had 45 caves on the World's Longest Cave List published by the International Speleological Union. At that time, Mammoth Cave, at nearly 500 km, was 300 km longer than the second longest cave.

While Mammoth Cave National Park is also a World Heritage Site, some of Kentucky's caves have been horribly abused. One of the most compelling examples of cave destruction is exemplified in Hidden River Cave, located in the community of Horse Cave, Kentucky. In 1916, Hidden River Cave was used as the drinking water supply for the town, and as a tourist attraction. However, sewage was being disposed of in septic tank systems or outhouses, and creamery wastes were being dumped into nearby sinkholes. As a result, by the 1930's the cave had become a conduit of sewage-laden water, and was closed to the public. Ultimately, the cave's organisms completely disappeared. In the 1980's, the Environmental Protection Agency, National Park Service, and local citizens began the monumental cleanup, and by 1993, at least some cave animals had returned. Today, the entrance to Hidden River Cave is once again open to the public, and the American Cave Museum, dedicated to conservation and education, is located next to its entrance. I encourage you to visit the museum, and take a tour

of Hidden River Cave's recovering ecosystem.

KSNPC has identified several karst lands in need of protection, and has already established four state nature preserves that contain caves (Bat Cave and Cascade Caverns in Carter County, Goodrum Cave in Allen County, and Kingdom Come in Letcher County), and five other preserves that have karst features and/or biota (Flat Rock Glade in Simpson County, Kentucky River Authority Palisades in Garrard and Jessamine counties, Logan County Glade, Raymond Athey Barrens in Logan County, and Woodburn Glade in Warren County). Additionally, Kentucky landowners have voluntarily protected at least five sites in the Commission's Natural Areas Registry that contain karst features and support rare plants, animals or natural communities. A cave in Woodford County that is high on our priority list for protection supports a population of an aquatic pillbug (isopod) found nowhere else in the world. It is named after Dr. Thomas Barr, Jr. (Professor Emeritus, University of Kentucky), an authority on cave invertebrates. In 1996, Dr. Barr completed status surveys for 22 cave invertebrates found only in Kentucky. Our task is to find ways to protect the habitats in which these organisms live. After all, if their Kentucky home is destroyed, they will be lost forever!



A blind cave crayfish (*Orconectes australis)*, a threatened species in Kentucky, exhibits the loss of eyes and pigment.

Photo by John MacGregor

I have only "scratched the subsurface" of the diverse and complex issues surrounding the conservation and protection of the biota of karst. Best management practices have been and should be implemented in our karst landscapes to ensure that their fragile and irreplaceable ecosystems are not permanently degraded or lost. You can help by learning more about these unique habitats, and by supporting karst-friendly agencies and private organizations (see sidebar). Protect sinkholes by leaving trees or other vegetation at least 100 feet around their perimeter, and dispose of solid waste in landfills designed to protect subsurface waters. Encourage your friends, neighbors, and local community leaders to do likewise. However, I should warn you -- learning more about these fascinating habitats can be dangerous. You may discover that you are really a troglophile!

For additional information about karst biota and features, contact the following:

American Cave Conservation Association, Inc.
American Cave and Karst Center
P.O. Box 409
Horse Cave, Kentucky 42749
(502) 786-1466

Bat Conservation International
P.O. Box 162603
Austin, Texas 78716
(512) 327-9721

Boone Karst Conservation Task Force
c/o Mark Braunwart and
William M. Andrews
818 Crocus Lane
Taylor Mill, KY 41015
(606) 581-3209

Cave Research Foundation
c/o Dr. Phillip DiBlasi
Department of Archaeology
University of Louisville
Louisville, KY 40292
(502) 588-6724

Daniel Boone National Forest
c/o Jorge Hersel, Cave Management Coordinator
1700 Bypass Road
Winchester, KY 40391
(606) 745-3100

Karst Waters Institute
P.O. Box 490
Charles Town, West Virginia 25414
(304) 725-1211

National Speleological Society
2813 Cave Avenue
Huntsville, AL 35810
(205) 852-1300

Update on the Natural Areas Registry

by Barry Howard

The Kentucky Natural Areas Registry is a cooperative arrangement between the Kentucky State Nature Preserves Commission (KSNPC), the Kentucky Chapter of the Nature Conservancy, and landowners (both public and private) who own and care for some of our state's very special and precious places. Even though they are completely voluntary and legally nonbinding, these registry agreements are valuable tools for protecting natural areas in Kentucky. Many times landowners are not aware of the special natural features on their property. By working with landowners and bringing them knowledge about these features, we are able to help ensure that important natural sites are not unknowingly damaged or destroyed.

Currently, 46 landowners with interests in 43 natural areas have enrolled in the Kentucky Natural Areas Registry . These agreements encompass approximately 4,706 acres in 30 counties. Almost half of our registry agreements have now been in effect for 10 years or more. Habitats protected in Registered Natural Areas include swamps, glades, forests, and caves. Rare plants, bat caves, and heron rookeries are examples of the types of natural features that are protected in these areas.

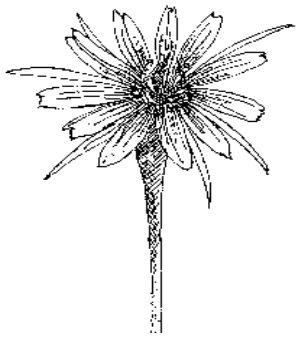
Although dedication as a nature preserve is the best protection possible for a natural area, there are many circumstances where this is not possible at the present time. In the case of federal agencies or electric utilities for example, it may not be legally possible to sell or dedicate land. Also, there are many instances where private landowners have no current interest in dedicating their property, but who nevertheless value the natural features on their land and want to protect this aspect of their property.

As with the targets we select for acquisition or dedication, the KSNPC is selective in choosing candidates for the Natural Areas Registry. To be included on the Registry, a natural area must exhibit characteristics that make it unique and special. This might include harboring a population of a rare plant or animal, or perhaps the area contains a representative of a biological community or habitat that is rare, declining, or perhaps not well represented in existing protected areas. Examples of such places include prairie (or barrens) remnants, glades, biologically diverse or pristine wetlands, maturing second-growth or old-growth woodlands, and biologically important caves.

An owner who agrees to register a natural area receives a plaque bearing his or her name and the name of the registered area. We can publicize this, but only if the owner desires. We are very careful to protect the privacy of landowners. For this reason, and in order to safeguard sensitive natural areas, we never publicize in any format specific locations or directions to registered natural areas.

We are indeed fortunate in that many of our finest natural areas are protected in nature preserves, parks, and other publicly managed areas. However, it is unlikely that our public capacity to set aside and manage natural areas will ever match the breadth and scope of Kentucky's natural bounty. Consequently, the role of private citizens in saving and protecting natural areas will always be a large and significant one. Over two thirds of the landowners on the Natural Areas Registry are private citizens.

If you are one of our existing registry landowners, we can't thank you enough for your assistance in agreeing to help us protect some of Kentucky's truly special places. We apologize for the fact that we have not kept in touch with many of you during the last year. However, sometime during this next year a representative from our agency will be contacting you to make sure that you and the natural area you protect are doing well. Meanwhile, if you have questions or concerns about your land, or existing or potential threats to the natural integrity of your property, please do not hesitate to get in touch with me.



Working to protect more land

by Barry Howard

During the past few months we have been actively pursuing acquisition and/or dedication projects at 17 sites throughout Kentucky. This includes projects to expand 7 existing nature preserves, plus 10 sites that, if successfully dedicated, would add 10 new preserves to the system. We will likely suspend work on two of these sites due to the fact that the Commonwealth of Kentucky has not been successful in reaching agreements with landowners concerning a purchase price for their property. The remaining projects are in varying stages and some may take several years to complete. However, if we are successful in acquiring and dedicating all of the tracts of land that we are working on now, this would double the amount of land in Kentucky that is dedicated into the state nature preserves system. (There are currently 10,810 acres of dedicated nature preserve land in Kentucky.)

Five of the projects we are now pursuing involve dedication of land that would be owned and managed by organizations or individuals other than the Kentucky State Nature Preserves Commission. One of these sites is an important bat cave, another is a 15 acre tract of land that extends protection for a very rare Kentucky plant, and the others are forested tracts encompassing thousands of acres of land. One of these sites is owned by a private citizen and would represent our first dedication of land in which an individual retained ownership. The other sites are owned by public agencies or private, non-profit foundations. We treasure our relationship with the people and organizations that own many of Kentucky's special natural areas, and we are very grateful that some of these entities are considering working with us to preserve these areas in their natural state forever.

We will not comment more specifically on projects unless a landowner has made a final decision to dedicate his or her land, or in the case of acquisition projects, until the landowner has agreed to sell us property and has reached agreement with the state on a purchase price for his or her land. It is not uncommon for this whole process to take one or two years. Fortunately, we do have four projects nearing completion and we anticipate in the coming months dedicating two new nature preserves and adding to the dedicated acreage at two other existing preserves.

Two sites that we will soon present to our Commissioners for dedication into our nature preserves system are Eastview Barrens in Hardin County and Hi Lewis Pine Barrens in Harlan County. Eastview Barrens is considered to be one of the largest, high quality prairie (or "barrens") areas known in Kentucky. This site contains a high diversity of plants. Hi Lewis Pine Barrens, located on the south face of Pine Mountain near Cumberland, Kentucky, contains the largest known

example of a pine barrens community in Kentucky. (This site was profiled in the October/November/December 1996 issue of *Naturally Kentucky*.)

The Kentucky Chapter of The Nature Conservancy (Kentucky TNC) is providing invaluable assistance in helping us protect these two important natural areas. Kentucky TNC already owns, and will soon sell to us, the largest tract that constitutes the site we call Hi Lewis Pine Barrens. At Eastview Barrens, Kentucky TNC will retain 50% ownership, and the Kentucky State Nature Preserves Commission will own 50%. This will be the first dedicated preserve that we have jointly owned with this important conservation agency. Kentucky TNC has for years worked diligently to protect important natural areas in Kentucky, and we look forward to their continued cooperation in helping us expand Kentucky's system of nature preserves.

We also anticipate adding additional acreage to two existing nature preserves. At Quiet Trails State Nature Preserve in Harrison

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Copperbelly water snake conservation agreement signed

by Brainard Palmer-Ball

The copperbelly water snake is recognized as a distinct race of the plainbelly water snake of the southeastern United States. It occurs from southern Michigan and northwestern Ohio, southward into southern Indiana, southeastern Illinois, and western Kentucky, and inhabits permanently and seasonally inundated swamps, marshes and bottomland forests . Over the past two centuries, conversion of these areas to farmland and settlement has resulted in a substantial loss of suitable habitat. Today, the remaining populations have become greatly fragmented, especially in the northern part of its range. It appears to remain most common in southern Indiana and western Kentucky, where several areas still harbor substantial populations.

In recognition of the dramatic loss of suitable habitat and the fragmented nature of the remaining populations, the copperbelly water snake was proposed for listing as federally threatened in August 1993. As soon as the proposal was announced, opposition to listing was voiced, most notably from coal industry representatives in western Kentucky. In response to these views, the U.S. Fish and Wildlife Service (USFWS) delayed listing in order to gain more information concerning the species' range and life history. Part of this research effort was an attempt to further document the status of the copperbelly in western Kentucky in the fall of 1994. The Commission concurred with the results of this survey, which concluded that the snake's status warranted listing; however, the survey's results were again questioned by the coal industry and some government officials, and the listing comment period was again extended.

In April 1995, Congress imposed a moratorium on the listing of plants and animals as threatened or endangered species. This halted the proposed listing of the copperbelly in mid-stride, but it allowed for the initiation of several studies (still ongoing) to further document the status and life history of the snake. In April 1996, the listing moratorium was lifted and the public comment period for listing the copperbelly was reopened to consider results of the more recent studies. However, with the coal industry still adamantly opposed to listing, the USFWS decided to offer a Conservation Agreement as an option to protecting the snake and its habitat. For several months in mid-1996, state and federal agency personnel met with representatives of local government and industry to hammer out the document. After several delays, the long-awaited Agreement was completed and signed on January 26, 1997.

The resulting Conservation Agreement and Strategy lacks several substantive elements that would have come inherent with federal listing, and funding for specific conservation efforts has not been identified. However, protection of copperbelly habitat is set as a high priority by the involved agencies using a variety of tools. The USFWS believes that the Conservation Agreement was a good alternative to listing. The Agreement will be reviewed annually to see if outlined measures are having a positive impact. If measures are deemed insufficient the document can be modified, or the snake can be reconsidered for listing. The Agreement's effectiveness for rare species protection will be closely monitored by the Commission and others in the coming years. It is the end result -- protected healthy populations of the snake -- that is most important, and if the Agreement works this method undoubtedly will be proposed more often in the future.

As soils are depleted, human health, vitality and intelligence go with them.

Louis Bromfield

Daniel Boone National Forest wild and scenic river candidates

by Ronald R. Cicerello

United States Forest Service personnel recently completed an evaluation of the suitability of six rivers in the Daniel Boone National Forest (DBNF) for inclusion in the National Wild and Scenic Rivers System. Their recommendations were forwarded for review to the Secretary of the Department of Agriculture in April 1996, completing efforts that began with eligibility and classification studies of the Rockcastle River in 1985. Although not final or available for public review, the recommendations probably mirror the statuses presented in the August 1994 "Draft Wild and Scenic Rivers Suitability and Environmental Impact Statement For Six Rivers On The DBNF" and public comments to that document, and "Re-evaluation of Eligibility and Classification of War Fork of Station Camp Creek":

Wild River Status

Marsh Creek - 7 miles from KY 679 to the Cumberland River.

Scenic River Status

Cumberland River - 14.9 miles from Cane Creek to above KY 90.
Rockcastle River - 13.3 miles from KY 80 to the lower Narrows.
War Fork - 8.2 miles from South Fork Station Camp Creek to Steer Fork.

Recreational Status

Rock Creek - 17.5 miles from White Oak Creek to the Tennessee border.
Marsh Creek - 8 miles from KY 478 to KY 679.

We believe these designations should lead to improvement in water quality and recreational opportunities, and help protect aquatic organisms without significantly affecting private land owners. We urge readers to contact your Congressional delegates and ask for their support of these national river designations. Also ask them to request that Secretary of Agriculture Glickman support the designations recommended by the Forest Service. Remember that designation of the Red River as a National Wild/Recreational River in 1993 took several years after its recommendation to Congress. Also, please remember that although Kentucky has many streams, we have so thoroughly altered the state that few (if any!) other rivers can qualify for addition to the National Wild and Scenic Rivers System. Contact Jorge Hersel of the DBNF (606/745-3100) for additional details about protection for these streams.

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County, a 56 acre addition is now being surveyed and hopefully will be dedicated in June. At Bad Branch State Nature Preserve in Letcher County, a survey of two additional tracts of land is in progress. These tracts will add between 800 and 1000 acres to our existing preserve, bringing the total dedicated acreage at Bad Branch to roughly 2000 acres. When these two tracts are added, Bad Branch will become the largest nature preserve in Kentucky.

In addition to the projects mentioned above, we are now examining new sites that contain outstanding natural features, and that exhibit characteristics that would qualify them for inclusion in the state nature preserves system. Preserve designs will be drafted for these sites and presented to our Commissioners for approval sometime later this year. This process will result in new acquisition and dedication targets, and will hopefully lead someday to the ultimate degree of protection for more of our state's finest natural areas.

Staff Update

Dorothy "Dot" Marek, the Commission's psychic secretary, left our agency in March. Since the move to our new office facility on Schenkel Lane a couple of years ago, Dot assisted with organizing our office, and keeping tabs on our staff. Dot's friendly voice and pleasant attitude will be missed by staff and our regular visitors. We wish Dot all the best.

Rick Remington, our Western Regional Nature Preserves Manager, has recently moved to Bowling Green to better serve and work on our far west preserves. As of right now he's working from his home and can be reached at 502/777-1982. We're diligently working on trying to find office/warehouse space in the Bowling Green area.

Two new permanent staff members have been recently hired. **Domingo Delgado** began as systems support technician principal the first of March and is in charge of our computer stations and overall computer operations. Domingo has an associates degree in Liberal Arts from Miami Dade Community College; a bachelors degree in Criminal Justice from Florida International University; and has been certified in industrial electronics from Dade County Public Schools. While in Florida, Domingo owned and operated his own computer consulting business. Domingo certainly has his hands full in trying to get our office up-to-speed with today's technology.

Sandy Vasenda began work in April as the Commission's data manager. Sandy's credentials include a bachelor's degree in Economics from John Caroll University; a bachelor's degree in Biology from Cleveland State University; and a master's degree in Wildlife Resources from West Virginia University. Her experience as a research associate and an information specialist in previous positions will greatly aide her journey down the path of the Natural Heritage Program that is so vital to our agency.

Our seasonal positions are getting ready to kick in again and the first of our seasonal employees is **Jason McClure**. Jason just finished a stint with our stewardship crew working on the eastern state nature preserves. After a couple of weeks off, he'll be back and ready to go again. Jason has previously attended the University of Kentucky studying plant biology. **Veronica Velez** will also be assisting in the management of the eastern nature preserves as a stewardship management worker. Veronica holds a bachelor's degree in Environmental Biology from Eastern Illinois University. **Franklin Voorhes** joined the stewardship program in April and will be assisting Rick Remington in the management of our western state nature preserves. Franklin has a bachelor's degree in Mechanical Engineering from Iowa State University.

A special thank you to volunteer **Kathy Carter** who assisted our staff after Dot's departure with answering the phone, making copies, and just making our lives a lot easier.

KSNPC Quarterly Commission Meeting

DATE: June 4, 1997
PLACE: Whitesburg City Hall
215 East Main Street
Whitesburg, Kentucky

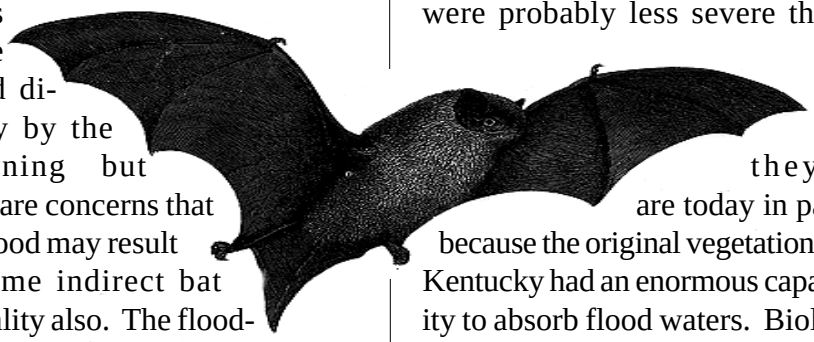
TIME: 1:00 p.m.

Flood of '97 drowns 3,000 victims

by David Skinner

The Flood of '97 devastated the homes of thousands of people in Kentucky and caused losses in the millions of dollars. Floods also can have devastating effects upon wildlife. Most of the animals that are destroyed by floods and other natural disasters go unnoted but a recent event caused by the flood was apparent to biologists who work with Kentucky's endangered species.

Bat Cave in Carter Caves State Resort Park was dedicated as a state nature preserve because it is one of the world's most significant hibernacula (winter hibernation sites) for the federally endangered Indiana bat. In an effort to monitor trends in the overall population, the Indiana bats in Bat Cave are regularly censused by state and federal agency biologists. However, because any disturbance can cause the bats to become active and use up precious fat reserves, the population is surveyed only once every two years. In late January 1997 about 28,000 Indiana bats were found hibernating in the cave. Up to that point the winter had been fairly normal, but the record rainfall of March 1-2 resulted in severe flooding within the cave. On March 7, biologists went to assess the effects of the flood on the bats. Since the bat population had already been subjected to the disturbances caused by the January census and the flood, the biologists chose not to do a complete post-flood census. However, from the biologists' cursory examination, it appears that the flood may have drowned about 3,000 Indiana bats. The water levels were estimated to be four and a half to five feet high in the cave. Obviously, bats were killed directly by the drowning but there are concerns that the flood may result in some indirect bat mortality also. The floodwater disturbance may have caused bats to move inside the cave one or more times to retreat from the flood and the changes in the cave temperature and humidity levels may have had a detrimental effect as well.



The flood also caused severe damage to one of Bat Cave's two gates. Cave gates have been installed at the entrances to many caves to protect bats and other unique fauna from human disturbance. The Bat Cave gates were the first installed on a cave to protect an endangered bat species. They were designed and constructed by Roy Powers, a professor at Mountain Empire Community College in Duffield, Virginia. Roy is the pioneer in the design and installation of gates that protect unique resources within caves while maintaining proper air flow, temperature, and humidity. He visited the site after the flood to assess the situation and will install an improved gate later this summer while the Indiana bats are on their summering grounds in the northern United States (one of the Indiana bats seen in Bat Cave in January had been banded in July 1996 near Jackson, Michigan).

While this is certainly not the first time hibernating bats have been killed by floods, modern floods may be responsible for killing many more bats than those that occurred hundreds and thousands of years ago. Presettlement floods were probably less severe than they are today in part because the original vegetation of Kentucky had an enormous capacity to absorb flood waters. Biologists understand that natural disasters are a part of the dynamic landscape but it is always difficult to be as accepting of their effects when endangered species are at risk. It is hoped that the bats will recover from this event, but the losses sustained from the flood likely will accelerate the population's downward spiral. The number of Indiana bats using Bat Cave as a hibernaculum was around 100,000 in the 1960's. In the mid 1980's there were about 38,000 and this year there were 28,000. Most of the important Indiana bat caves are now gated, yet the overall population continues to decline. It seems that Indiana bats are experiencing problems other than having secure hibernacula. Biologists assume that their breeding habitat (mature forest) has been changed in a way that the bats are unable to reproduce successfully enough to maintain their population. The only hope for the Indiana bats (and for many other species -- maybe even ourselves) is to assure that sufficient habitat is present to support all of their life history requirements. For the Indiana bat, this means preserving habitat both on wintering and summering grounds, as well as along their migratory routes.

KSNPC 1997 Field Trip Information

Terrapin Creek SNP
Graves County - June 28
9:00 a.m. - 12:00 noon (central)
Take a walk through one of Kentucky's most unique stream/spring/wetland ecosystems. This complex is home to unusual and uncommon Kentucky fishes and amphibians. Tour guides will be KSNPC aquatic biologists Ellis Laudermilk and Ronald Cicerello. Bring a pair of rubber boots! Limit: 20; moderate-difficult hike.

Raymond Athey Barrens SNP
Logan County - September 13
9:00 a.m. - 12 noon (central)
See barrens restoration and early fall wildflowers with KSNPC Western Regional Nature Preserves Manager, Rick Remington. Limit 15; moderate hike.

Jim Scudder SNP
Hardin County - October 11--9:00 a.m. - 12 noon (central) See dry, rocky glade openings that provide habitat for several rare plant species and the best remaining examples of a limestone glade in Kentucky. Tour guide is KSNPC Western Regional Nature Preserves Manager, Rick Remington. Limit 15; moderate hike.

Tours are limited and reservations will be taken on a first come, first-served basis. Contact Teresa Prather at 502/573-2886 for reservations.

Field Trip Ratings

easy . . . . . Hiking short distance on trails with little or no slope.
moderate . . . .Generally easy with a comfortable pace. Must be able to negotiate occasional steep slopes or rough trail.
difficult . . . . . More endurance required to negotiate longer stretches of steep slopes and rough trail.
strenuous . . . .Long hike, brisk pace, sometimes off-trail, steep slopes and/or steps involved.

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

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Kentucky State Nature Preserves Commission
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