Naturally Kentucky

Spring 2008 Number 58

KSNPC Latest News:

Short's goldenrod protected. Using a grant from the U.S. Fish and Wildlife Service the Commission acquired 571 acres in Fleming County that harbors a population of federal and state endangered Shorts' goldenrod (*Solidago shortii*). Eighty acres surrounding the population will be dedicated as an addition to the existing Short's Goldenrod SNP in September. The remaining land will become an addition to Blue Licks Battlefield State Resort Park, and available for future expansion of the goldenrod.

Kentucky Educational Television's Kentucky Life segment on Three Ponds SNP featuring Lane Linnenkohl, western regional preserve manager, and Byron W. Brooks, KSNPC environmental technologist, will air on KET1 on Saturday, April 19, 2008, at 8 p.m. EDT. It will repeat on Sunday, April 20, 2008, at 4:30 p.m. EDT on KET1.

Earth Day is Tuesday, April 22. As part of the celebration, KSNPC staff will be leading hikes in various locations. Page 10 includes a list of the upcoming events. Visit our Events Calendar Web page to learn more (www.naturepreserves.ky.gov/events).

In January three black bear cubs were born just outside Blanton Forest State Nature Preserve (Harlan County). See a picture of one of the cubs on Page 8.

In This Edition:

Bloodroot ~ Barry Howard

Biologists Answer Some of the *Mysteries* of Bat Life Histories

Hard work, persistence and a little luck help us learn more about these elusive mammals

By Brainard Palmer-Ball, Jr., Terrestrial Vertebrate Zoologist

For more than 20 years I have been involved in studying the life histories of Kentucky's 14 species of regularly occurring bats. Seven species (half of the total) are listed by the U.S. Fish and Wildlife Service and/or the Kentucky State Nature Preserves Commission as endangered, threatened or special concern. These designations signify that many different threats are present that make the existence of these species in the commonwealth tenuous.

For many years, biologists studying bats have attempted to answer a number of questions about their life history. These include: 1) where do they occur; 2) how does their abundance in Kentucky vary with the seasons; 3) in what habitats do they roost and forage; 4) what do they eat; 5) how are they affected by humans; and 6) how far and in what direction do they travel?

Indiana bat with transmitter ~ -Mark Gumbert

When I first began studying bats for the Commission in the late 1980s, one of the essential components of my field gear was a small container of "Wite-Out". A tiny dab was placed on the wing membrane of a bat captured during mist-netting surveys at night. If we recaptured the same bat later in the night and it had a spot of "Wite-Out" on its wing, we knew it was a bat we had already captured. That was about as sophisticated as our efforts were 'back in the day.'

In the early 1990s, banding of bats became a standard practice among Kentucky's bat biologists. Tiny "split-ring" plastic bands imprinted with a unique series of numbers were placed over the bat's "forearm." These were much more useful for identification in case the banded bat was later recaptured or found hibernating in a cave. Record-keeping was poor in the beginning, but starting in the late 1990s, Traci Hemberger with the Kentucky Department of Fish and Wildlife Resources revolutionized our system by acquiring light-weight aluminum bands with an improved design and a consistent numbering system. She assigned bands to biologists and began maintaining a database of all banding activities and recoveries, thus becoming a 'clearinghouse' for bat banding information around the entire region.

About the same time, a number of "radio telemetry" studies were initiated. Tiny battery-powered radio transmitters were used to track the movements of bats over short distances. The transmitters were glued to the backs of captured bats, allowing biologists to track their movements for up to three weeks by tuning a radio receiver to the specific frequency of the transmitter affixed to the bat. At the end of this period the battery would die and the tiny transmitter would fall off. Signal strength was an issue, and our receivers could only detect the signals from a couple of miles away—if we were lucky. Signals could be tracked by airplane using a special antenna, but this was used only a few times due to the high cost.

The most recent technological advance in the study of bats has been the development of a call recording and analysis system called ANABAT, which allows biologists to record the calls of foraging bats at night. Bat calls are inaudible to the human ear, but can be recorded with special microphones. The recordings are fed into a computer program and analyzed to identify the species of bat making the call. My preference is to actually see and handle the bats I'm looking for rather than just studying the recordings of calls indicating the presence of bats that were unseen in the field— so I have resisted this new technology. However, it is just the latest advance in the fast-paced evolution of bat research.

These advances in technology have resulted in a number of interesting findings concerning bat movements in Kentucky. A few of the more notable studies in which I have participated include the following:

* A multi-year study of Indiana bats coordinated by Mark Gumbert, John MacGregor and others in the Daniel Boone National Forest in Pulaski County during the late 1990s and early 2000s. Banding and radio telemetry yielded the following information: 1) some males linger in the vicinity of their hibernaculum (the cave in which they hibernate through the winter) throughout the summer rather than migrating north with females in the spring; 2) before entering the hibernaculum in late October and early November, both females and males roost and forage in the surrounding forest for several weeks, accumulating fat reserves that will sustain them through the winter; 3) most bats roost by themselves beneath the bark of dead or dying trees during the daytime; 4) most bats roost and forage within about 2.5 miles of the hibernaculum; and 5) individual bats sometimes used the same "home range" during successive fall seasons.

Indiana bat with band ~ Mark Gumbert

* A similar study was conducted in the fall of 2002 at a much larger hibernaculum (20,000+ bats as compared to about 100 in Pulaski County) at Bat Cave in Carter Caves State Resort Park. Like the Pulaski County study, bats were captured at the cave entrance during nighttime visits to "socialize" with other individuals. They were then tracked to their daytime roosts in the surrounding forests. We reasoned that the larger number of bats would have to be distributed across a much larger area of the landscape surrounding Bat Cave. We found these bats roosted up to 6.3 miles from the cave, meaning at least 125 square miles of habitat around the cave was important to the hibernating population!

* Ten Rafinesque's big-eared bats were mist-netted in July 2001, at two sites in the bottomlands of southern Ballard County in far western Kentucky, and four were affixed with radio transmitters. This project yielded the following information: 1) all four bats ended up at the same roost, inside a massive, hollow bald cypress tree standing along the margin of a swamp about 1/4 mile away; 2) a total of 46 bats were counted leaving this roost tree in the following days. Hollow trees in swamps were known to be used in Gulf Coast states, but never before in Kentucky. We will always wonder how we were lucky enough to capture 10 of 46 bats in a colony that probably foraged over hundreds of acres each night, with only a few hundred square feet of mist-nets placed across a couple of travel corridors in the forest!

* It has long been known from a banding project in the late 1950s and 1960s that Indiana bats which hibernate in Kentucky caves can migrate as far north as southern Michigan for the summer. Recent banding efforts by Dr. Allen Kurta and his staff at a southern Michigan maternity colony have resulted in recaptures of bats that hibernate in caves in Carter, Edmonson, Menifee and Rockcastle counties.

* Three female Indiana bats banded by Copperhead Consulting in the summer of 2007 at a maternity colony in Spencer County, southeast of Louisville, were found hibernating in different caves during the winter of 2007-2008. What is most interesting about these recoveries is that one of the females traveled about 55 miles southwest to hibernate in a Breckinridge County cave, while the other two traveled about 76 miles in nearly the opposite direction—to the southeast—to hibernate in a cave in Rockcastle County.

The results summarized above are only a small part of the body of knowledge that bat biologists have gained during the time I have been fortunate enough to assist in this work. As technological advances evolve and studies continue, the data generated from such research may help efforts to prevent the disappearance of these species from Kentucky. Threats to their existence will never cease, and we need to know everything we can to be successful.

Japanese Hops Emerges as an Aggressive Invasive Plant in Kentucky

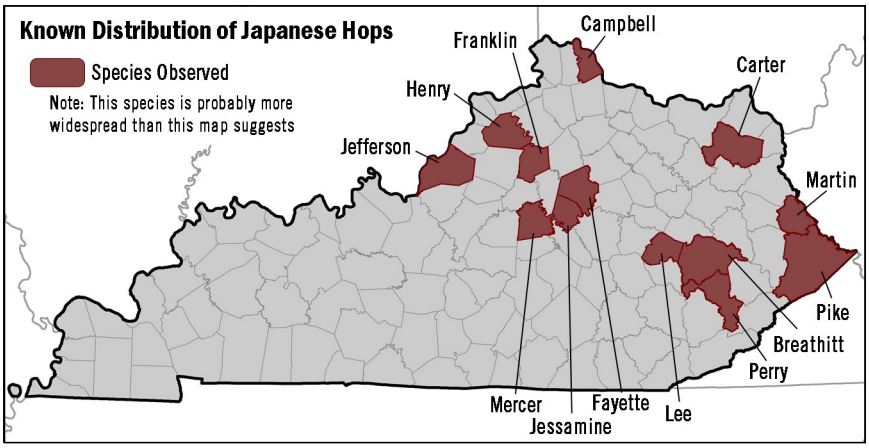
By Andrew Berry, Landowner Incentive Program Biologist

Japanese hops (*Humulus japonicus*) is a member of the Cannabaceae family native to eastern Asia. This species is a bine (which differs from a vine in using bristly hairs to climb; vines use tendrils) with simple, opposite leaves with five to nine distinct lobes. The leaves can be from 2 to 6 inches long. The stems and petioles contain spiny, irritating bristles that can cause dermatitis when touched. Emergence of the plant begins in May and spreads as a groundcover or climber until August through September when it begins to produce pollen with its staminate (male) flowers. The pistillate (female) flowers produce seed in early September and the plant succumbs to cold in October through November. The seeds are distributed by birds, waterways and gravity. Japanese hops are closely related to common hops (*Humulus lupulus L.*) which are cultivated widely as an ingredient used in brewing beer. Unfortunately, Japanese hops do not possess the same lupulin compounds used by brewers to enhance and preserve flavor.

Japanese hops shown with staminate flowers in late August ~ Andrew Berry, KNSNPC

Japanese hops was first introduced into North America as an ornamental and has been identified as an escapee from New England south to Georgia and in the west from North Dakota to Kansas. Because of its invasive nature it has been banned in Connecticut and Massachusetts. Japanese hops has been collected in Kentucky from Breathitt, Campbell, Carter, Fayette, Henry, Jessamine, Jefferson, Lee, Martin, Perry and Pike counties, and KSNPC observations have produced records for Franklin and Mercer counties. This species spreads rapidly on river banks and is much more widespread than collections indicate. While known to occur throughout the Kentucky River basin and on the Ohio River, this species has not received much attention as an aggressive invasive species until now.

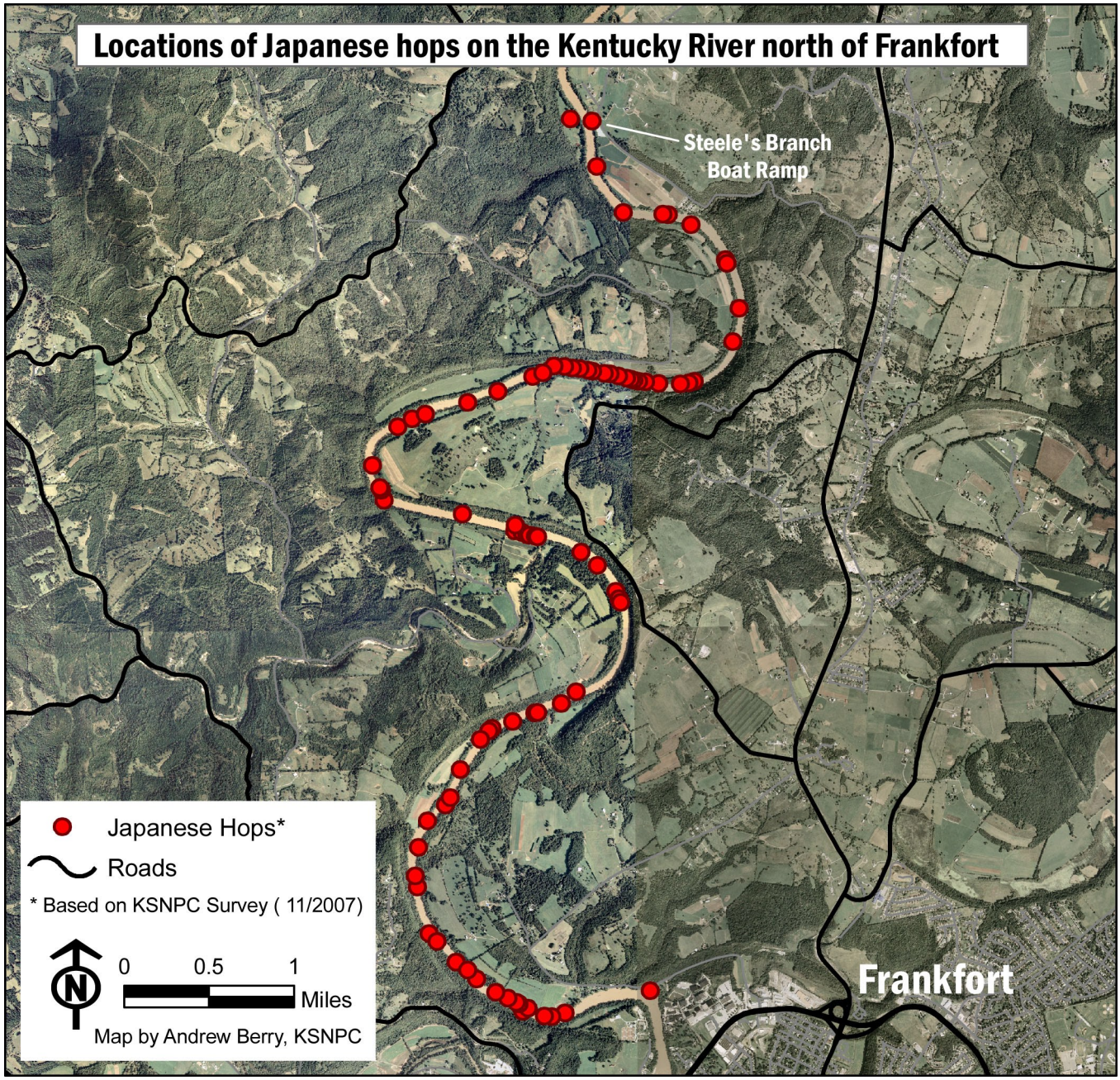
KSNPC was first alerted to Japanese hops' behavior as an aggressive invader from a landowner north of Frankfort on the Kentucky River. After several unsuccessful attempts to control its spread on this site, a second occurrence was discovered on a nature preserve located three miles upstream. We realized it was necessary to investigate the range and extent of this invasion if we were going to control its spread. On a cool November day, KSNPC eastern regional preserve manager Zeb Weese and I traveled down the Kentucky River from the Steele's Branch boat launch south to Lock 4 in Frankfort. We were surprised by the number of occurrences and the extent of the Japanese hops. On a trip of nearly 10 miles on the river we identified 83 populations ranging from single plants to wide patches covering as much as 100 feet of river bank. These populations were found on sloughing river banks where they were growing over existing trees and vegetation. The establishment of this species is of concern because stream banks become destabilized by the loss of roots



Map by Andrew Berry modified from Campbell 2007

when existing vegetation is eliminated by competition from the hops. The growth of the bine does little to hold soil and allows erosion to continue underneath its stems. A population of hops was later identified in Henry County near a boat ramp in Lockport, and a local fisherman confirmed that this species was widespread throughout this section of the Kentucky River. It appears that Japanese hops has become well established throughout the Kentucky River corridor, and it is likely that we will continue to see this species spread to other watersheds in the state.

Landowners and natural areas stewards should be aware that this plant is spreading rapidly on disturbed areas, particularly stream banks in the Kentucky River watershed. Once established it has the ability to spread into bottomlands, agricultural fields, and woodland edges. Foliar applications of glyphosate at 2 percent concentration are effective at killing the plant. When treating an infestation near water, be sure to use a product that is labeled for aquatic use. Resprouts and new seedlings are persistent and will require follow-up treatments. Infestations can be difficult to eradicate. Frequent monitoring and vigilant control are necessary to keep this plant from creating a monoculture on river banks throughout Kentucky. While it appears that the infestation is most severe in the Kentucky River watershed, it is highly likely that this plant is already invading other major rivers throughout the state. If encountered please contact Andrew Berry, LIP coordinator with KSNPC, at 502-573-2886 or at andrew.berry@ky.gov.



In the Spotlight: Kentucky's Rare Species and Communities

Villosa trabalis

Cumberland bean

KSNPC Status: Endangered

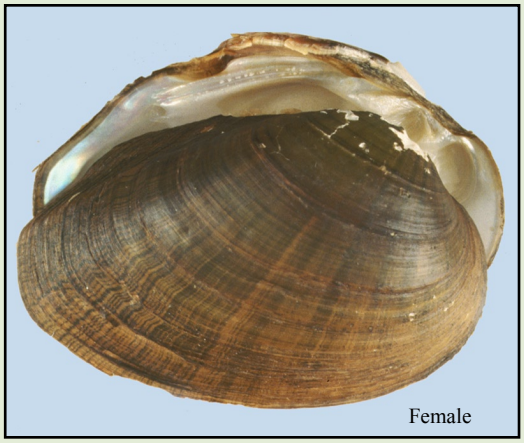
USFWS Status: Endangered

General Description: A 2 to 3 inch freshwater mussel, one of more than 100 species known from Kentucky.

Habitat: Small to medium sized streams and rivers in sand and gravel.

Range: In Kentucky, this species is known from a handful of streams in the upper Cumberland River system below Cumberland Falls.

Reason for Protection Status: Siltation of habitat from poor land management practices, degradation of water quality from mining activities and loss of habitat from dams.



Female

Photo by KSNPC Staff

Speyeria idalia

Regal fritillary

KSNPC Status: Historic

USFWS Status: Species of Management Concern

General Description: Large butterfly about the size of a monarch, mainly orange on upper and underside of forewings with dark brown or black and white spots. Hindwings are dark brown to black with white spots on the upperside, and brown with large white spots on the underside.

Habitat: Open grassy sites ranging from very dry tall-grass prairie to wet meadows.

Range: Historically ranged from Manitoba south to Arkansas and Oklahoma, east to Maine and west to Wyoming. It is now extremely rare east of the Mississippi River.

Larval Foodplant: Violets (*Viola spp.*).

Photo by Ellis Laudermilk, KSNPC

Flight Season: In Kentucky, late June – July.

Reason for Protection Status: Globally vulnerable species; populations have rapidly declined since the 1970s, probably due to habitat loss and fragmentation, pesticides and herbicides and overuse of fire. There are no confirmed records of regal fritillary in Kentucky since 1973.

Key to KSNPC Status Categories:

Endangered: A taxon in danger of extirpation and/or extinction throughout all or a significant part of its range in Kentucky.

Threatened: A taxon likely to become endangered within the foreseeable future throughout all or a significant part of its range in Kentucky.

Special Concern: A taxon that should be monitored because (1) it exists in a limited geographic area in Kentucky, (2) it may become threatened or endangered due to modification or destruction of habitat, (3) certain characteristics or requirements make it especially vulnerable to specific pressures, (4) experienced researchers have identified other factors that may jeopardize it, or (5) it is thought to be rare or declining in Kentucky but insufficient information exists for assignment to the threatened or endangered status categories.

Historic: A taxon documented from Kentucky but not observed reliably since 1980 but is not considered extinct or extirpated.

Hexastylis contracta
Southern heartleaf

KSNPC Status: Endangered

USFWS Status: None

General Description: Found on acidic soils in deciduous forests with great rhododendron and mountain laurel.

Habitat: Deciduous forests with acidic soil.

Flowering Period: Early May to late June.

Range: Endemic to the Cumberland Plateau of Tennessee and Kentucky, with a few disjunct populations in the Blue Ridge of North Carolina. It is most common in Tennessee, becoming rare in Kentucky and North Carolina.

Reason for Protection Status: : This species has an extremely small range with less than 80 total populations. The habitat is also threatened by land-use conversion, habitat fragmentation and forest management practices (most known sites are private).

Photo by Richard Cassell

Hemlock-mixed Forest

KSNPC Status: Secure

General description: The hemlock-mixed forest is a type of rich, acidic forest that usually occurs within mesic, rugged stream corridors, sheltered coves and occasionally along drier, upper slopes. The canopy is often dominated by eastern hemlock, which can form dense stands. A variety of mesophytic canopy species can also occur such as tulip tree, sweet birch, basswood, yellow buckeye and beech. Understory trees can include flowering dogwood, American holly and magnolias. The shrub layer can include dense thickets of great rhododendron and sometimes mountain laurel. Due to low-light levels and competition, herbaceous diversity is limited. Typical species include early yellow violet, partridgeberry and Christmas fern.

Range: Eastern hemlock forests are found from southeastern Canada to northern Alabama. In Kentucky, eastern hemlock communities occur mainly in the Appalachian Plateaus and Cumberland Mountains. Outliers also extend into the eastern Knobs and the Shawnee Hills of western Kentucky.

Photo by Brian Yahn, KSNPC

Reason for Protection Status: Although currently secure, hemlock forests in Kentucky are under serious attack from the hemlock woolly adelgid (HWA). Found just two years ago, HWA populations are spreading quickly in the commonwealth. Within just a few years, most hemlock trees will likely decline and die from the attack. Serious efforts are under way to minimize the effects (for more information on HWA, see: Naturally Kentucky Fall 2006).

Key to USFWS Status Categories ~ (US) Endangered Species Act of 1973:

Endangered: ". . . any species . . . in danger of extinction throughout all or a significant portion of its range . . ." (USFWS 1992).

Threatened: ". . . any species . . . likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (USFWS 1992).

Candidate: Taxa for which the USFWS has ". . . sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened" (USFWS 1999).

Species of Management Concern: Species the USFWS believes are in need of conservation management.

Additional Resources:
KSNPC Species and Community Information ~ www.naturepreserves.ky.gov/inforesources/SpeciesCommunityInfo.htm
NatureServe Explorer ~ www.natureserve.org/explorer/
USFWS Endangered Species Program ~ http://endangered.fws.gov

Black Bear Cub Born Just Outside Blanton Forest

One of three male black bear cubs born just outside Blanton Forest State Nature Preserve (Harlan County) in January 2008. University of Kentucky bear researcher Ben Augustine notes that these births signify the furthest west that reproduction has been documented on Pine Mountain. Ben and fellow graduate student Rebekah Jensen will have a full report on their black bear study in the summer issue of Naturally Kentucky. ~ Photo by Ben Augustine

Springtime in Kentucky

Trout lilies at Floracliff State Nature Preserve (Fayette County) ~ Photo by Beverly James

Director's Notes

By Don Dott, Executive Director

As I write this in late March the legislative session is in full swing. Many bills remain unresolved and foremost is House Bill 406, the state budget. Due to the very difficult financial situation, Governor Beshear had to propose a budget that included substantial cuts. Subsequently, the House, in part due to new revenues it identified, has restored funding cuts from the Commission's budget, for which I am very thankful. I hope when the budget is reviewed in the House/Senate conference committee as expected, that the restored funds will remain. Even with the cuts recovered, the Commission will have a challenging budget to live with for the next two years.

There are several bills addressing the use of all-terrain vehicles (ATVs) or off-road vehicles. Most of these seek to provide expanded, legal opportunities for the use of these vehicles to increase tourism expenditures. Almost everyone is aware of the damage these vehicles cause when used improperly, as well as the safety hazard they present, especially for youth. To reduce trespass issues and injuries, it seems some authorized areas for their use are necessary. One bill, House Joint Resolution 153, would direct the Kentucky Recreational Trails Authority to investigate and recommend ways to reduce and control the illegal use of ATVs, especially the trespass on private farmland. Any method to reduce trespass on private land should be equally beneficial for public lands. For example the registration of ATVs and the licensing of ATV operators would be a major step.

Bobwhite ~ Casey Sanders, Bugwood.org

What I consider to be the most important bill from the Commission's perspective, after the budget, is House Concurrent Resolution 93. Co-sponsored by Reps. Robin Webb, Charlie Hoffman and David Osborne, this resolution reauthorizes the Land Conservation and Stewardship Task Force for two years. It expands its directive to include recreation, and charges it with developing a plan and funding scheme to enhance the pace of land conservation in Kentucky. The bill directs the task force to present its final recommendations to the 2010 session of the General Assembly, when hopefully the state's financial outlook will be much improved. A final bill of note is House Bill 630, promoted by the Department of Agriculture for the enhanced control of the ginseng market. HB 630 tightens up some loop holes identified by federal authorities in the existing regulatory program, and is supported by licensed ginseng dealers and others well aware of the need to prevent over harvesting of this valued forest plant.

The Commission and other state, federal and nonprofit land managing agencies have recently engaged in developing a fundraising program to battle the hemlock woolly adelgid (HWA). This insect invaded Kentucky in 2006, if not earlier, and is spreading rapidly. In other states where HWA has been present longer, hemlock populations have suffered as high as 90 percent mortality. Widespread hemlock death will have a huge impact in our eastern forests and on smaller aquatic systems, in addition to the aesthetic impacts and safety hazard posed by the dead trees. We expect a lot of public upset and a willingness to help respond to this destructive pest. To meet that need we are working to create a fundraising organization to accept donations to treat select stands of hemlocks and specimen trees that will help reseed the hemlocks after the initial hemlock losses. It is hoped that after the initial wave of invasion, an adelgid-specific predator will be able to keep the pest's population at a level that will allow hemlock trees to survive. Watch this newsletter (and our Web site) for more information on how you can help this new project named *Save Kentucky's Hemlocks*!

The Kentucky Department of Fish and Wildlife Resources (KDFWR) is launching a critical initiative to restore the bobwhite quail. Its 10-year restoration plan, known as The Road to Recovery: *The Blueprint for Restoration of the Northern Bobwhite in Kentucky*, is described by KDFWR as "one of the greatest restoration challenges wildlife management has ever faced." The bobwhite has been identified by the Audubon Society as the number one common bird in decline. In the last 50 years Kentucky populations have plummeted by two-thirds. The Commission has signed on as a partner to this plan and is fully committed to aiding the recovery of the bobwhite. The plan will focus on habitat restoration as the key to reversing the bobwhite's decline. Restoration of grasslands in areas where they would have naturally occurred will be an important component. But perhaps more important because of the sheer scale, will be changing current farmland management practices to be more bobwhite compatible. I am sure you will be hearing more about this very soon from KDFWR, or visit their Web site at www.fw.ky.gov.

Upcoming Hikes and Events

Please note that most events require preregistration. View our complete events calendar at www.naturepreserves.ky.gov/events/.

April 12, 2008. Blue Wildflowers Galore at Lower Howard's Creek Heritage Park and SNP (Clark County).
April 12, 2008. Volunteer with the Landscape Restoration Team at Blackacre SNP (Jefferson County).
April 12, 2008. Guided Hike at Brigadoon SNP (Barren County).
April 13, 2008. Party for the Planet: Earth Day 2008 at the Louisville Zoo (Jefferson County).
April 13, 2008. Wildflower Folklore at Floracliff SNP (Fayette County).
April 13, 2008. Choice Natives for Home Landscaping at Blackacre SNP (Jefferson County).
April 16, 2008. Wildflower Hike at Lower Howard's Creek Heritage Park and SNP (Clark County).
April 17-20, 2008. Wildflower Weekend at Natural Bridge SPNP (Powell County).
April 18-20, 2008. Pine Mountain Wildflower Weekend at the Pine Mountain Settlement School (Harlan County).
April 19, 2008. Wildflower Hike at Lower Howard's Creek Heritage Park and SNP (Clark County).
April 19, 2008. Full Moon Hike at Blackacre SNP (Jefferson County).
April 19-20, 2008. KSNPC on KET. KET's Kentucky Life segment on Three Ponds SNP.
April 22, 2008. Earth Day.
April 25-27, 2008. Spring conference of the Kentucky Society of Natural History (KSNH) at Kingdom Come SPNP (Letcher County).
April 26, 2008. Last Wildflower Hike at Lower Howard's Creek Heritage Park and SNP (Clark County).
April 27, 2008. Spring Hike at Bad Branch SNP (Letcher County).
April 27, 2008. Tree ID Hike at Blackacre SNP (Jefferson County).
May 2-3, 2008. Herpetology Weekend at Natural Bridge SPNP (Powell County).
May 3, 2008. Garlic Mustard Pull at Floracliff SNP (Fayette County).
May 10, 2008. Birding with Ben Albritton at Floracliff SNP (Fayette County).
May 10, 2008. Volunteer with the Landscape Restoration Team at Blackacre SNP (Jefferson County).
May 11, 2008. Native Ornamental Grasses for Home Landscapes at Blackacre SNP (Jefferson County).
May 17, 2008. Herpetology with Zeb Weese at Floracliff SNP (Fayette County).

State Employment Update: *Register Process Changes for the Better*

Last fall, the Personnel Cabinet successfully launched its new online method of applying for employment, Career Opportunities System (COS), which makes applying for state jobs much easier. Starting on March 18, you must create a COS account and apply to any job postings through COS to be considered. You no longer have to come to the Personnel Cabinet's offices to complete this process, and from this point on you will always have your application at your fingertips.

For instant e-mail notification about vacancies of interest to you, you can take advantage of the new search agent feature. This allows you to identify jobs you would be interested in and COS will notify you when they are open.

For more information or to access COS, go to www.personnel.ky.gov and click on Career Opportunities System.

KSNPC Quarterly Public Meeting
June 11, 2008
Location and time to be announced

Kentucky State Nature Preserves Commission • 801 Schenkel Lane, Frankfort, KY 40601-1403
502-573-2886 • naturepreserves@ky.gov • www.naturepreserves.ky.gov

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.