KENTUCKY STATE NATURE PRESERVES COMMISSION

Naturally Kentucky

FALL 2000 Number 33

The State of Kentucky's Natural Communities

By Martina Hines

While Kentucky appears lush and diverse today, it has very little in common with the land that Europeans first encountered 250 years ago. Most forests have been harvested repeatedly, resulting in the loss of much of their original diversity. Indeed, much of Kentucky's present lushness is very un-American. Nearly all of the Bluegrass state has been heavily invaded by — and often purposefully converted to — exotic species as a result of land clearing and the subsequent expansion of agriculture and settlement. Natural communities, remnants of the pre-European settlement vegetation, now occupy only a tiny fraction of the landscape.

Natural communities can be defined as groups of native plant species that occur together as a result of broadly defined environmental factors. While plenty of disagreement exists in defining individual species, even more uncertainty and argument occur in defining and delineating natural plant communities. Across a landscape, natural plant communities most often form a continuous spectrum and they are always changing. Environmental factors or disturbance regimes, such as hydrology and rate of erosion, vary naturally, and plant composition and vegetation structure consequently change over time.

Unfortunately, high-quality examples of natural communities are rare. Systematic inventories of natural areas have resulted in the discovery of about 20,700 acres of intact or nearly intact natural communities equivalent to about 0.08 percent of the total area of Kentucky. Most natural communities are on land that is unsuitable for either agriculture or development, such as steep slopes, rock outcrops with poor soils and wetlands. About three-fourths of all nearly intact natural communities are forested.

While most forest types are still common, undisturbed or high-quality tracts with diverse flora and fauna are extremely rare. Old-growth forest has nearly disappeared from Kentucky. We have been able to identify only about 15,000 acres of older growth or unmanaged forest, equivalent to about 0.1 percent of Kentucky's 13 million forested acres. These highly diverse and complexly structured forests are ecological gems that provide a glimpse into what Kentucky might have looked like before the arrival of Europeans.

One of the most imperiled community types is bottomland hardwood forest. Of the remaining 1 percent, most have been heavily logged and impacted by agriculture, grazing and hydrological changes. The canopy is mostly composed of early successional species, such as maple (*Acer* sp.) and tulip poplar (*Liriodendron tulipifera*), and the understory is nearly always dominated by exotics, particularly bedstraw (*Galium aparine)*, Japanese grass *(Microstegium viminium)*, multiflora rose *(Rosa multiflora*) and common chickweed *(Stellaria media)*.

Another highly endangered community type is the Blue ash – oak savanna that is believed to have covered large sections of the Inner Bluegrass Region historically. Horse farms, agriculture and development have reduced the original savannas to nothing more than an occasional grove of ancient bur oak *(Quercus macrocarpus*) or chinquapin oak (*Q. muhlenbergii*), blue ash (*Fraxinus quadrangulata*) and shellbark hickory (*Carya laciniosa*). In fact, no intact examples of this community type remain. The best savanna remnant is an unprotected, heavily grazed 200-acre tract located in Harrison County that contains many 400+ year-old trees and an understory almost completely composed of exotic species.

Other imperiled natural communities include prairie and barrens systems. Only about 1,200 acres (or 0.05 percent) remain of the 2.5 to 3 million acres thought to be present at the time of European settlement.

While many communities were widespread historically, others were rare because of a limited availability of essential environmental factors. An example is seeps, havens for many wetland plants, including several orchids. Seeps are typically small areas where groundwater more or less permanently percolates through sandy or gravelly soil to the surface. Seeps are characterized as acidic or calcareous based on the pH of the water that moves

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More Land for Nature Preserves

By Barry Howard

Slowly but surely, the Kentucky State Nature Preserves Commission (KSNPC) continues to add land to its network of officially dedicated state nature preserves. These additions are made possible through funding provided by the Kentucky Heritage Land Conservation Fund. It would be difficult to overstate the importance of this fund and the vital role it plays in enabling us to pursue our mission of protecting the best remaining examples of Kentucky's rich natural heritage. Following are some recent and imminent additions to Kentucky's system of state nature preserves. (This does not include Blanton Forest, which you will hear much more about next year.)

In December 1999, KSNPC and the Kentucky Department of Parks jointly purchased 23 acres adjacent to Blue Licks State Resort Park that includes critical habitat for the federally endangered Short's goldenrod (*Solidago shortii*). This is one of the world's rarest plants. Currently, the only known occurrences of this species are within a two-mile radius of this park. In March 2000, this newly acquired land was officially dedicated as an addition to Blue Licks State Park State Nature Preserve, increasing the size of this preserve to 52 acres.

We just acquired an additional 291 acres at Crooked Creek Barrens in Lewis County, the site of our newest nature preserve. This site includes an impressive complex of limestone barrens. One of the new tracts will increase the protected acreage on Hymes Knob and includes the only known location of the ear-leaf false foxglove (*Agalinis auriculata*) in Kentucky.

The Nature Conservancy (TNC) has successfully acquired all the shares in a corporation that owns 312 acres at Axe Lake Swamp in Ballard County adjacent to our existing 146-acre Axe Lake Swamp State Nature Preserve. We anticipate that TNC will sell this land to us in the near future.

Also in western Kentucky, the owners of a tract at a unique site along the Mississippi River have agreed to sell their land to us. This site, known as Three Ponds, is located in Hickman County and contains a diverse assemblage of natural community types. In addition to the ponds (actually part of a community classified by KSNPC ecologists as a " bald cypress slough"), this area includes a loess bluff and bottomland hardwood forest. We anticipate that this will become our next nature preserve, and our first one located along the Mississippi River.

The opportunity to work on projects such as these with the staff and Commissioners of KSNPC has been a deeply enriching experience—one that I treasure immensely and will never forget. As a lifelong Kentuckian, I have always known that our state was special. Having been exposed to the great work going on here at KSNPC has done nothing but nurture and strengthen this feeling. Thus it is with some sadness that I announce that I have been smitten with the lure of "early retirement" and will leave state employment after a tenure of nearly four years here (and many more with our fine state park system). While no longer an employee, I look forward to joining the many committed individuals such as yourselves in supporting, as a private citizen, the continuing efforts of KSNPC to protect the last and best of what remains of Kentucky in its "natural condition." It's been a pleasure serving you. Hopefully we'll meet on a nature preserve some day!

Barry practicing his retirement!

Sherri Evans Memorial Fund Grant Proposals Sought

Funded primarily by a donation from East Kentucky Power Cooperative, the Commission has $2500 for research projects involving animals, plants or natural communities that are rare or declining in Kentucky. Strong preference will be given to research or inventory projects that will assist with nature preserve management goals. This grant will operate as part of our Small Grants Program. If you have any questions, please contact either Deborah White or Joyce Bender. The deadline to submit a proposal is December 31, 2000,and we will announce the recipient in the spring newsletter.

A donation to the Sherri Evans Memorial Fund would make a very thoughtful gift for an ecologically minded, but hard to buy for person this Christmas. If you choose to do so, we will provide a card to inform your friend of this unique gift.

Fish Consumption Advisory at Metropolis Lake State Nature Preserve

By Ronald R. Cicerello

We are sorry to report that recent analysis of largemouth bass and channel catfish collected from Metropolis Lake near Paducah revealed elevated levels of polychlorinated biphenyls (PCBs) and mercury in their tissue. The fish were collected in October 1999 with the assistance of Kentucky Department of Fish and Wildlife Resources (KDFWR) personnel, and tissue was analyzed for organic contaminants (PCBs and chlordane) and heavy metals (mercury, cadmium and lead) by the Kentucky Divisions of Water and Environmental Services. In July, the Kentucky Department for Public Health, Environmental Protection and Fish and Wildlife Resources issued a fish consumption notice for Metropolis Lake. They recommended to the public that no more than one meal (one-half pound) per month of fish from the lake should be eaten. Women of childbearing age, children and people who eat fish frequently are most susceptible to a build up of PCBs in their body. To reduce PCB buildup, eat only fillets from which the fat has been removed. Mercury is distributed throughout fish tissue, so the only way to reduce exposure is to eat fewer and smaller fish.

PCBs are manmade compounds used in various kinds of electrical equipment, paints, plastics and other commonly used products. Manufacture of PCBs was banned in the U.S. in 1979 but equipment containing PCBs is still in use. Some PCBs remain in the environment many years and have been found in plant and animal tissue worldwide. They are fat-soluble and accumulate in aquatic organisms. Humans are exposed to PCBs mainly through eating fish and seafood products. PCBs have been shown to cause cancer and other serious health effects in animals.

Mercury occurs in the environment through natural processes and human activities. It also accumulates in fish and human tissue. Consumption of contaminated food can affect the nervous system, cause developmental problems, and may cause cancer.

We will continue to study the contamination of Metropolis Lake fish and hope to identify the source(s). In the meantime, please limit your consumption of fish from Metropolis Lake. If you have questions about health effects of these contaminants, please call the Kentucky Department of Public Health (502/564-7181). Contact the Commission with questions about the preserve.

Drought Leaves Mussels High and Dry

By Ronald R. Cicerello

Most Kentuckians will long remember the drought of 1999. For many, this long, dry period was an inconvenience during which car washing and lawn watering were not permitted. But others suffered economically from business closures and crop failures. The drought also affected streams and the organisms living in them. Small streams, such as Stoner, Grassy, and Cruises creeks in the Licking River basin of northeast Kentucky, ceased to flow. Aquatic habitat was reduced to isolated, stagnant pools of warm water with algal blooms. Stream flow in larger rivers like the Kentucky, Licking, and Green was greatly reduced, exposing normally submerged shorelines and gravel bars. In streams with braided channels, some channels were left high and dry as water flowed only through the deepest channel.

Droughts affect aquatic organisms by exposing them to elevated temperatures, reduced oxygen levels, aquatic and terrestrial predators, disease and other challenges. Aquatic organisms respond in many ways. Some are stranded by receding water and perish. Motile animals move to deeper water, and others burrow into the bottom. Some animals are resistant to low dissolved oxygen levels, have resistant life stages (e.g., gelatinous coated eggs) or experience delayed growth.

In late August 1999, Don Dott, Ellis Laudermilk, and I observed the impact of the drought on freshwater mussels in the Licking River. We were shocked by the large number of dead and dying mussels that littered the shore at eight sites we visited from Visalia upstream to the North Fork. At most sites, it was difficult to avoid stepping on dead and dying mussels while walking the shoreline! Although we returned many living mussels to the river, many more were left to perish.

Of 43 species living in the Licking River basin, we found 34 alive or recently dead. Among them were four rare species: the fanshell (*Cyprogenia stegaria*), a U.S. Fish and Wildlife Service endangered species present in relatively large numbers; several elktoes (*Alasmidonta marginata*); a few longsolids (*Fusconaia subrotunda*); and even a few small, easily overlooked salamander mussels (*Simpsonaias ambigua*). The abundance of some species was surprising. For example, the tiny and often difficult to find fawnsfoot *(Truncilla donaciformis*) was more common than formerly thought.

How many mussels died along the segment of the Licking River we visited? This is difficult to determine, but we can make a rough, non-scientific estimate. Within one 581 sq. ft. area, we counted 238 recently dead mussels. We assume that (1) only half of the 52 river miles visited provided suitable (*continued on page 7*)

Director's Update

By Don Dott, Jr.

Black Mountain Deal Closes! You may have seen news reports that the owners of the mineral and timber rights atop Black Mountain have closed the deal to sell these rights to the Commonwealth. The Commonwealth has gained ownership of coal and timber rights on the mountain above 3,600 feet, and a limited conservation easement from 3,000 to 3,600 feet that prevents further mining. An existing mining operation near the crest of the mountain will continue. Although this does not transfer the actual surface rights to the state, the staffs of the Commission, the Division of Forestry, the Kentucky Department of Fish and Wildlife Resources and researchers from Kentucky universities will finally have access to the upper elevations of the mountain to perform biological inventory and research. This is an extremely important first step that will allow us to begin a much needed inventory. Distinguished as the highest point in Kentucky, Black Mountain's upper reaches support a cooler, wetter habitat found nowhere else in the state. Unfortunately, we cannot establish a dedicated nature preserve at the top of the mountain or provide public access without the surface rights, and our access rights are limited by an agreement that requires an annual access fee payment by the state of about $112,000 per year. Access rights were not obtained for this year, but can be obtained on a yearly basis. The transfer of rights will certainly increase our ability to perform our fundamental task, to document the biodiversity of Kentucky.

The Blanton Forest project is proceeding well. Since the last newsletter, Marc Evans and Kyle Napier have led several field trips to the old-growth forest for potential contributors and to generate publicity. We had excellent press coverage in the Lexington Herald-Leader and on WKYT's "AfterNoon" show on Channel 27. One of the show's hosts and former Harlan County resident Barbara Bailey generously agreed to be the Kentucky Natural Lands Trust (the fundraising entity) campaign chairperson for Lexington and eastern Kentucky. Greg Stotlemeier provided excellent exposure on Lexington's WTVQ (Channel 36) news program. We also have plans with the Kentucky Natural Lands Trust for promotion in Louisville, western and northern Kentucky, and hopefully the Knoxville,Tennessee area.

Birds and Knobs. One of my most interesting activities was helping Dave Skinner with his Monitoring Avian Production and Survivorship (MAPS) project at Pilot Knob State Nature Preserve. This is a bird capture and banding project designed to monitor the population and health of neo-tropical migratory songbirds in a nationwide effort. Populations of neo-tropical birds are declining primarily due to habitat degradation and loss, particularly of large unfragmented forested areas. The MAPS project will provide valuable data to help reveal the status of these wonderful songbirds that enrich our world.

Almost last, but certainly not least! KSNPC Chair Clara Wheatley and Commission Secretary Ken Jackson have been asked by Governor Patton to serve another term with the Commission. We are very happy they have been kept on board, as they bring a wealth of experience and knowledge regarding our agency. I am pleased to continue working with Clara and Ken for another two-year term!

Finally, a sad note. We have unfortunately lost the very capable services of Barry Howard to retirement. But I guess "sad" depends on your perspective. He was a great asset as our protection specialist and he often provided an extra "right arm" to me. Barry will be missed much and I wish him the best in his future exploits!

Marc Evans - Outstanding Employee!

Marc is being recognized for his exemplary work as one of the Natural Resources and Environmental Protection Cabinet Outstanding Employees for 1999. Secretary James E. Bickford of the NREPC will present Marc with an award in October at the 25th Annual Governor's Conference on the Environment. This recognition is not only for his longtime dedication to a natural areas inventory of Kentucky, but particularly for his persistent efforts over nearly five years to acquire the remaining privately owned old-growth forest adjacent to Blanton Forest State Nature Preserve. Marc has also been very instrumental in the fundraising efforts for this purchase. We are proud to see him receive this recognition.

Future Site Of The Sally Straw Natural Area!

By Don Dott, Jr.

Dick and Susan Richards were invited to the June Commission meeting and were surprised by the presentation of a plaque recognizing their very generous gift to the Commission. As reported previously, the Richards have bequeathed 400 acres of forest and former pastureland to KSNPC and an additional 120 acres of forested land with a homestead. This gift will ensure the preservation of this area in rapidly developing Scott and Harrison counties. Equally significant is their additional contribution of an endowment to generate funds to defray the costs of managing the area by KSNPC. The endowment is a critical factor that makes acceptance of such an offer feasible. It is not uncommon for agencies like the Commission to receive offers of farmland or natural areas as a gift. Landowners often do not realize that without funding for land management (e.g., vegetation restoration, public access and protection against vandals and encroachments) we can not responsibly accept such gifts. On behalf of the Commission and all Kentuckians, I would like to again express our sincerest thanks and appreciation to Dick and Susan Richards!

Chair Clara Wheatley presents plaque to the Richards.

Black Carp Invasion

Al Buchanan, President
Freshwater Mollusk Conservation Society

When we think of a natural disaster, we tend to think of some catastrophic, sudden event that causes immediate harm to people, their homes or workplaces or to other organisms. Some natural disasters impact human or other organisms over a longer period. Exotic (nonindigenous) species fit into this latter category.

Over 4,500 exotic species have been introduced into North America during the past 100 years, including over 2,000 species of plants, 2,000 insects and arachnids, 140 terrestrial vertebrates, 70 fish, 91 mollusks and 239 plant pathogens. They came here in ballast water, cargo bays, packing crates, attached to plants or other cargo, or tucked into the luggage of an international traveler. A few, such as the honey bee, have been primarily beneficial. Others, such as trout and salmon, resulted in a mixture of benefits and drawbacks. Most, including the gypsy moth, water hyacinth, common carp, and zebra mussels, have provided little benefit while causing various degrees of harm to our native species.

In spite of the mostly negative impacts of exotic species, the push continues to spread more exotic species across our continent. The most recent push is black carp, an Asian fish that feeds primarily on mollusks. Black carp were imported a decade ago to control snails in private fish production ponds. Snails serve as vectors for parasites that may impact growth and survival of hatchery-reared fish. Native species such as redear sunfish do just as good a job without the chance of losing an exotic species to the wild.

In November, the Mississippi Department of Agriculture and Commerce approved the stocking of diploid black carp in private ponds. Based on experiences with other exotic carp, it is likely that black carp will escape to the wild and impact native species, especially mollusks. Triploid black carp escaped from a hatchery in Missouri during flooding in 1993; had those fish been viable diploids, North American waters may already have established black carp populations. Asian carps already make up a significant portion of the fish biomass in big rivers such as the Mississippi and Missouri.

The black carp issue highlights the need for national policy and regulations controlling the import of nonindigenous species. Until such regulation occurs, our aquatic systems will continue to be adversely impacted when one or more states decide to import species that may ultimately harm aquatic systems nationwide.

Natural Communities

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through them. Many seeps have been destroyed by mining, drainage, conversion to agriculture and other human activities. Little more than a dozen, mostly unprotected, acid seeps are known in Kentucky, mostly from the Cumberland Plateau and the Cumberland Mountains. To date, biologists have discovered only one calcareous seep in the state. Their small size, dependence on specific hydrological conditions, and isolation from similar habitat make seeps one of our most fragile and endangered natural communities.

The flat rock glade, the rarest of plant communities, is characterized by level topography and areas of relatively flat rock exposure. Such sites are characterized by xero-hydric conditions, meaning they are very dry or very wet, depending on the time of year. Flat rock glades support several rare species. Most occurrences of this sensitive community type have been destroyed through grazing and other agricultural use. Fortunately, one high-quality example of this community in Simpson County, has been protected by the Commission.

Of all known high-quality natural communities, a total of only about 2,600 acres (or about 0.01 percent of Kentucky) are fairly well protected. An even smaller fraction is protected in perpetuity within our state nature preserves system. We try to dedicate at least one of the best remaining examples of each natural community type known in Kentucky, but so far our nature preserves system contains relatively high-quality examples of only about 70 percent of the state's approximately 60 natural community types.

Forty-six of Kentucky's counties have still not been inventoried systematically for natural communities, but recent results indicate that the chances of finding more high-quality sites are very slim. In the 10 most recently surveyed counties, we found no remnants of old growth forest and only a few small tracts of fairly mature forest. We did discover a handful of glade and barrens remnants, but few are large and diverse enough to justify protection with our limited resources.

At the same time, a number of high-quality irreplaceable tracts that we had been trying to protect have been destroyed. Among the victims are two highly mature and diverse forests on Pine Mountain and a near old-growth forest in Jackson County. Unfortunately, our resources do not allow us to keep pace with land development pressures on remnant natural areas. Timely negotiations with landowners are often not possible. Also, a recent rise in timber prices has prevented us from acquiring some of the most ecologically valuable land.

It is significantly easier to protect high-quality natural areas than it will ever be to restore or recreate them. In the future, we will have to rely more on restoration as a tool for natural area protection. Restoration is a hope-inspiring, action-packed buzz word. Hardly any word in the ecological dictionary is more misleading and misused. While management can control threats, wholesale community restoration is really beyond our ability. Individual exotic plant species can in some cases be locally controlled, but often not without impact to native species. It is also possible to restore certain individual native species, but restoring whole natural communities is extremely difficult. It will be a long time before we will be able to understand the complexity of natural systems and successfully tinker with them. Unfortunately, many of them will have disappeared.

There is only one good time to save our remaining natural areas - now! If you want to protect Kentucky's natural heritage, please support the Kentucky State Nature Preserves Commission. One way you can provide support is to purchase the "Naturally Kentucky" license plates. We use a portion of these funds to purchase natural areas. If you would like to help in more direct ways, we need volunteers, and direct contributions to the Commission are tax deductible. We are also in need of contributions to save Blanton Forest, Kentucky's largest remaining old-growth forest. For more information, call or visit the web site at www.blantonforest.org.

Karen Gossett Departs

It started with Barry Howard and now it has spread to Karen Gossett. Karen hasn't retired as Barry did, but she has found a better opportunity and has moved on to a new career. Karen was our office receptionist, librarian, typist and performed a myriad of other tasks to keep the office functioning. We will miss her positive personality and wish her the best in her new job!

Next Commission meeting is Tuesday, December 5. Please call (502) 573-2886 for meeting location and time.

We Will Miss You Barry!

By Ellis L. Laudermilk

I first learned of Barry's impending retirement a few days before his official announcement to the KSNPC staff. It was a Friday afternoon and Barry strolled into my office and calmly stated that he would be retiring at the end of July. My first instinct was to try to persuade him to stay a little longer, but I could quickly tell that, as usual, this was something he had given a great deal of thought to, and he was completely content with his decision. I saw the matter, however, as an all too brief period of working with someone that has become a very good friend.

As many of you know, Barry Howard began work with the Commission in October of 1996 as our Land Protection Specialist. His principal duties involve acting as the Commission's primary liaison with landowners whose land is worthy of protection because of high-quality natural communities and/or unique species assemblages. When he inherited the job much of the Commission's data on sites considered important for protection was contained only in manual files. With assistance from Charlie Lapham, Barry developed a sophisticated database that will allow Commission staff to maintain, update and utilize site data in a more efficient way. He also prepared topographic maps outlining property tracts within the boundaries being considered for protection at each nature preserve and potential preserve. Furthermore, he served as the Commission's Acting Director for approximately eight months, providing steady guidance during one of the agency's most tumultuous times.

Barry's work in state government began in May of 1978 when he took a position as a Seasonal Recreation Leader at Buckhorn Lake State Resort Park. He left to be the Park Naturalist at Pine Mountain State Resort Park and later became the manager of Kingdom Come State Park. Levi Jackson Wilderness Road State Park was the next and last stop for Barry in the park system. He became the park manager in May of 1988, and remained there until his arrival at the Commission. He now holds the distinct title of being the first Commission employee to retire.

During his tenure in state government, his love of Kentucky and its natural heritage was nurtured through his work, membership in the Kentucky Natural History Society, and hobbies. While some of his vacation time was spent traveling to national and state parks across the country, his love of Kentucky prevailed and he plans to remain in the state. Barry has now entered a part of his life he has coveted for some time…the period where he does exactly what he wants, whenever he wants. He recently pulled some of his photography equipment out of storage to renew one of his favorite hobbies…macrophotography. On a sunny day, you may encounter Barry photographing plants, spiders, grasshoppers, bees or dragonflies and damselflies. It will be readily apparent that you have met a very nice person that dedicated his entire career to the protection of Kentucky's natural areas. Thanks for all of your hard work and commitment to our common goal, Barry. On behalf of the Commission's extended family, enjoy your retirement to the fullest!!

Drought

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mussel habitat (mixed sand, gravel and cobble), (2) only one shoreline provided habitat (bedrock dominated the channel, and the other shoreline was comprised of boulders and cobble), and (3) mussels were stranded within a six-foot wide swath of shoreline. By multiplying 26 miles by 5280 feet, dividing the result by 97 feet (97 x 6 = 582 sq. ft.), and multiplying by 238, an estimated 336,831 mussels died in the lower Licking River just before our visit. This estimate probably is low because the assumptions are conservative and mussels died before and after our visit. Imagine the number of mussels that died as a result of the drought in all of our streams!

What is the prognosis for mussels following the drought? Droughts are natural phenomena that aquatic organisms have always endured. However, the impact of recent droughts may be more serious than those of the distant past. Recent droughts impact aquatic systems already stressed by pollution, habitat alteration and destruction, and other changes produced by modern society. These changes have brought mussels to the point where they are the most endangered group of organisms in the United States. Most mussel species will endure, but the drought presents rare species with one more challenge to their continued existence. Fortunately, the drought abated this year. We did not need another drought and neither did the mussels.

New Western Field Office

By Rick Remington

After several moves and years, I have finally settled into the new Western Field Office at Western Kentucky University in Bowling Green. A special thanks goes out to Dr. Michael Stokes of Western's Biology Department and Dr. Martin Houston, former Dean of Ogden College. Both were instrumental in helping to establish the office and providing access to office equipment. My office is located next to Western's Center for Biodiversity Studies in the Thompson Complex Central Wing. Being on campus has numerous advantages, such as the abundance of faculty expertise and the resources of the Biodiversity Center. The university will also benefit through collaborative research efforts and the availability of select preserves to use as outdoor classrooms. The main advantage, of course, is the proximity to our western preserves. Bowling Green is within one hour of eight nature preserves, and even the far western extremes of the Jackson Purchase are two hours closer than the long drive from Frankfort. This gives me more time on the ground and less time behind the wheel. Contact me at:

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

Commonwealth of Kentucky
Kentucky State Nature
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