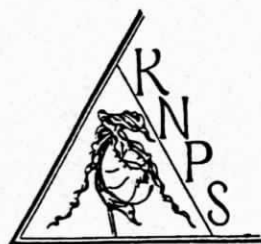


The Lady-Slipper



The Official Newsletter of the Kentucky Native Plant Society

Volume 12, Number 1

Winter 1997

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President's Message

David A. Eakin

Surprisingly, I find myself more anxious for Spring to arrive this year, in spite of the very mild winter we have experienced. Perhaps I have been taunted by a few of our unseasonable warm days. Whatever the reason, I am ready to get going! And I hope that each of you is anticipating a new season of educational trips and activities sponsored by the KNPS. Before you know it, we will be together at the Spring Wildflower weekend at Natural Bridge State Resort Park.

Your executive board has been very busy since last Fall. Starting with our Strategic Planning meeting at Maywoods in October, we have systematically looked at every aspect of the Kentucky Native Plant Society. We identified the main internal strengths of the Society, noting the educational programs and walks, a membership of 600 spread across the Commonwealth, the wealth of experience and expertise of our membership, the dedication of both the professional and amateur members, a very unique mix indeed, the KNPS as a resource for current knowledge about Kentucky's native flora and ecosystems, our well established infrastructure, the fellowship we enjoy and the longevity of interest shown by our membership. The membership of the Kentucky Native Plant Society is composed of well-meaning, active and informed naturalists who share a common desire to support the



Think Spring ! Three Natives for Naturalizing

Connie May

When I started planning the flower bed by my front door, I knew I had to have Celandine Poppies. I wanted to see those bright yellow smiles first thing in spring. The problem is that my front yard is south facing and celandine poppy will only tolerate partial sun. I solved the problem by using a helpful landscaping trick. I planted tall summer-blooming wildflowers and annuals where they would shade the poppies from the summer sun. The first year I worried about them because it was mid-June before they receive much shade, but although they looked a little stressed, they survived and even bloomed until early June.

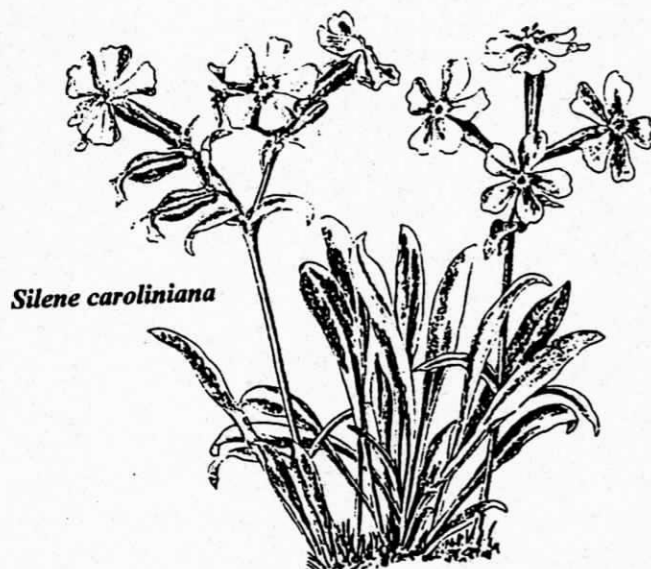
In the wild, celandine poppies (*Stylophorum diphyllum*) bloom from late March or early April through mid to late May depending on the weather. Along with

their bright yellow flowers, the 18 inch plants sport showy pale green leaves --mostly basal, pinnately lobed-- and lasting through most of summer. The leaves are a lovely backdrop for the unusual fruits which dangle like little bells covered with fine white hairs. These capsules split to reveal seeds with a bit of fleshy tissue (an aril) attached. Ants take the aril for a food source, carrying the seeds into their tunnels. Soon you'll have poppies popping up everywhere (pardon the pun!). Although they do spread and transplant readily, I'm sure you'll never consider them invasive--they're too pretty!

Like most woodland flowers, celandine poppies do best in rich soil with plenty of humus. That doesn't mean you can't have woodland wildflowers if you aren't blessed with good soil, it simply means you'll have to do a little (or in my case, a lot) more work to provide them with two or three inches of organic mulch to help retain moisture. Once my wildflowers are established I never water them--that's one of the reasons I love natives--low maintenance!

I've often walked along a woodland path in spring and been startled out of my reverie by a sudden splash of brilliant red. From May until early July, fire-pink is like a cardinal in the snow--it commands immediate attention. In the wild, fire-pink (*Silene caroliniana*) occurs on rocky slopes and open woods across Kentucky. However it isn't picky--it will thrive. Fire-pinks will grow in average well-drained garden soil in almost full shade, but will produce more blooms if they receive at least half day of sun. The one to two foot tall plants have tubular flowers which provide nectar just as the hummingbirds are returning from their winter vacations.

After the flowering period, sticky green capsules with hundreds of small brown seeds develop. These sticky capsules give the genus its other common name--*catchfly*. Although the stem leaves often fade after flowering ends, the basal rosette of narrow leaves remains throughout the summer and may persist thru mild winters. Fire-pink naturalizes beautifully and it's guaranteed to light up your garden.



Silene caroliniana

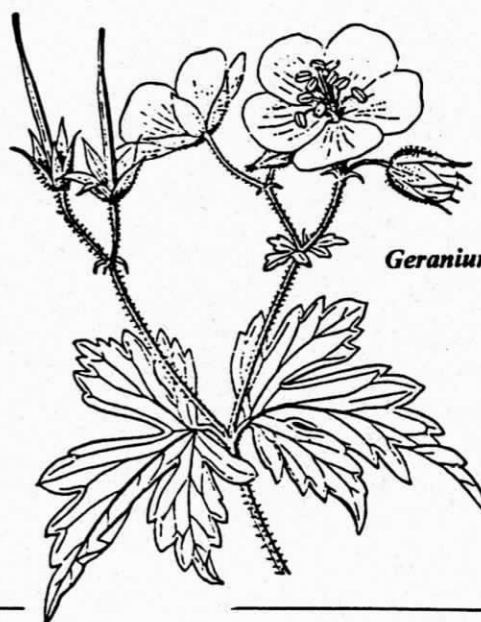
Wild geranium, while perhaps not as startlingly bright as celandine poppy or fire pink, is every bit as showy. Clusters of wild geraniums are spectacular--their multiple flowers provide a breathtaking combination of light pink to rose to almost purple. Each flower is about an inch across and the attractive deeply lobed leaves provide beautiful tall foliage long after blooming. Like celandine poppy, you will get best results if you plant wild geranium in a humus-rich soil. During summer droughts, if they are not watered regularly, wild geraniums may go dormant--but don't worry--they'll be back next spring with their distinctive foliage and lovely flowers to put on a show from April to June.

As much as I love the flower, my favorite part of wild geranium comes after the flowers are gone. Every year I look forward to seeing the unique "cranesbill" (another common name for *Geranium maculatum*) that forms as part of the fruiting structure (a schizocarp). The long thin styles of the pistil look like a bird's beak. They're lovely to look at and make seed collecting a real challenge.

As the seeds mature, the schizocarp splits from the base, forming five separate threads, each attached to one of five seeds at its base. These threads recoil backwards often ejecting the seeds away from the parent plant--and sometimes into the face of an unsuspecting seed collector. A bird's bill that shoots seeds--now you know why I couldn't resist including wild geranium as one of my highlighted species!

I sure have had fun describing three of my spring favorites. Next time think summer?

Connie May is greenhouse and office manager of Shooting Star Nursery in Frankfort, Ky. She may be reached at (502) 223-1679.



Geranium maculatum

 Book Announcements:***Wildflowers of Mammoth Cave National Park*****by Randy Seymour**

Mammoth Cave National Park is famous as the site of the world's longest cave system. More than two million people visit the park each year, but most leave without ever knowing that the surface above is home to hundreds of species of beautiful wildflowers. In *Wildflowers of Mammoth Cave National Park*, Randy Seymour provides an in-depth field guide to 400 wildflowers found along the trails and roads within the park.

The guide arranges the wildflowers by bloom-time and by color, each depicted by a brilliant full-color photograph and accompanied by a descriptive text identifying its characteristic colors, flower and leaf forms, flowering time, and native or introduced status, as well as the plant's folklore and history, its past herbal or medicinal use. For those enthusiasts eager to search for new discoveries, the appendixes provide tables showing the observed flowering period, a flower hunting planning guide, and an index of flowers by trail.

A lasting and memorable introduction to the flora of the park, *Wildflowers of Mammoth Cave National Park* will be an indispensable tool for the amateur enthusiast and the professional botanist alike.

Randy Seymour's book is available from the University Press of Kentucky in Lexington, or your local bookstore for \$17.95.

***Flora of North America, Volume 3:
Magnoliophyta/Magnoliopsida:
Magnoliidae and Hamamelidae*****by The Flora of North America Editorial Committee**

The latest volume in the Flora of North America series is now available at pre-publication pricing. This volume provides information on many familiar vascular herbs and trees. Included are treatments of the buttercup and poppy families. Most of the important broadleaf tree species are also included in this Volume including the oaks, elms, birches, walnuts, plane trees and magnolias. Many striking herbaceous families are also covered including the Dutchman's pipe family and aquatic water lily and lotus families. As with Volume 2, keys, summaries of habitats and ranges, pertinent synonymies, descriptions, chromosome numbers, flowering and fruiting time information and other significant biological observations for each species are included. For anyone interested in the definitive account of North American plants, this newest Volume in the series is indispensable.

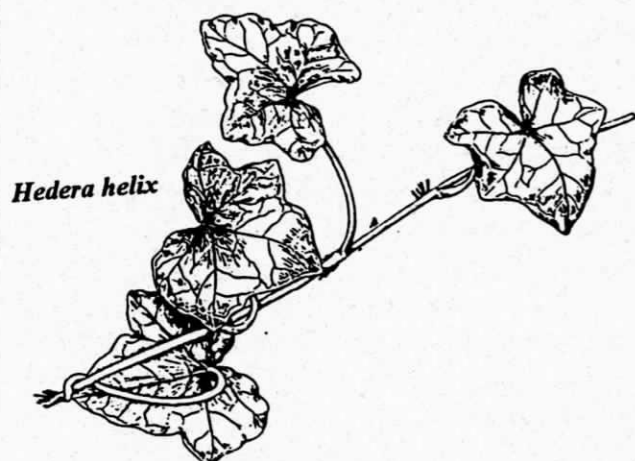
Available from Oxford University Press (919) 677-0977, or Patricia Ledlie Bookseller (207) 336-2778, at pre-publication price of \$68.00.

Atlas of Tennessee Vascular Plants
by E. W. Chester, B. E. Wofford & R. Kral
Volume 1 & Volume 2 now available

This two volume set documents the known distribution of all vascular plants for the state of Tennessee. Volume 1 includes the ferns, gymnosperms and monocots, with

the dicots covered in volume 2. These are useful, affordable priced references for anyone who botanizes in Tennessee.

Available from: Publications Manager, Center for Field Biology, Austin Peay State University, Clarksville, TN 37044. Approximate cost for both volumes is \$15.00.



Weeding out Exotics...

*The history and future of exotic plants at
Raven Run Nature Sanctuary*

Julie Byron

Raven Run is a 374 acre Nature Sanctuary in southeastern Fayette county. Within the boundaries of the sanctuary there are mixed hardwood forests, successional red cedar woods, old and mown fields. There are over 40 species of trees and 300 species of wildflowers at Raven Run. Unfortunately, a recent botanical survey found that one fifth of the approximately 515 vascular plant species were exotic. These types of plants target a suitable area and invade aggressively, thus eliminating native species that exist in that niche.

During the 1940's and 50's the flat upland areas of Raven Run were used for

various agricultural purposes. In 1966, the city of Lexington bought the land that is now Raven Run for a dry landfill. Illegal dumping and pressure from environmental groups caused the landfill to be closed in 1972. It was not until 1977, that Raven Run was designated a Nature Sanctuary and in 1984, a full-time naturalist was hired. Though the sanctuary status saved the land from further deterioration, much of the soil was disturbed.

It is soil disturbance that allows some exotic species to invade areas with no previous evidence of such plants. Currently, most of our exotic species occur in these areas of disturbance or in old field settings. Some of these invaders include Johnson grass (*Sorghum halepense*), Fescue (*Festuca arundinacea*), and several other grass and flower species.

Also in these areas of disturbance, there is some penetration of exotic plants into the mature forest. Species such as bush honeysuckle (*Lonicera maackii*), Japanese honeysuckle (*Lonicera japonica*), and winter creeper (*Euonymus fortunei*), have aggressively invaded many open areas and can now also be found on the edge of the forests. The bush honeysuckle in particular forms dense stands, prohibiting growth of the native under story species, while the Japanese honeysuckle and winter creeper occur as vines that climb other vegetation and shade them out.

Creeks, streams and other flowing bodies of water are good avenues for the transportation of exotic species. Seeds can flow downstream from a source upstream and settle anywhere along the banks. English ivy (*Hedera helix*) and garlic mustard (*Alliaria petiolata*) are the

predominant problem in these areas and both species will dominate the understory excluding all other herbaceous plants.

There are several methods for removal of exotic species. As a general rule, it is best to choose one that impacts only the target species. Hand pulling is effective for most of the exotic species during certain months of the year if the plant is young. The critical issue in hand pulling is to make sure all the root system is removed, since many species can propagate by rhizomes. Another method used on larger plants is to cut the plant at the base of the main stem and apply a small amount of herbicide to the stump. Refined application of an herbicide directly to the plant is also a recommended control method for some species. Whichever method is used, care should be taken to limit the disturbance of the surrounding area.

We have been successful in reducing certain populations of exotic species at Raven Run. In some areas exotic species have been removed, and there has been significant regrowth of native species such as wildflowers. However, it is a very slow process and may take years to observe the effects.

Kentucky Native Plant Society members are welcome in our monthly volunteer exotic plant eradication sessions. Enthusiastic volunteers are our most valuable tool in removing these invaders!

Julie Byron is acting Assistant Naturalist at Raven Run Nature Sanctuary. To volunteer for exotic species control call the Sanctuary at (606) 272-6105.

KNPS Certification Program in Native Plant Studies

Certification courses are offered by the KNPS as part of a curriculum developed to educate KNPS members in native plant studies. These courses are also open to anyone interested in learning about native plants in Kentucky. For more information on the KNPS Certification Program, please contact Dr. Ron Jones, Biology Department, Eastern Kentucky University, Richmond, KY 40475. (606) 622-6257.

Forest Trees, Spring Flowers and More: An Introduction to Native Plant Identification and Woodland Ecology.

Judith Weckman, Berea College & Tim Weckman, Eastern Kentucky University.

Would you like a guided interpretive tour through some of our local woodlands? With three walks and talks in April you can find out which trees and herbs bring spring to Central Kentucky. This course is designed for native plant enthusiasts, hikers, and bird watchers who would like an introduction to our native trees, mosses and flowering herbs. Beyond providing an introduction to plant identification, we will discuss the ecology, structure and dynamics of our local woodlands. This course will help answer basic questions about our plants and their habitats.

Class meets Saturdays April 12, 19, & 26, from 10:00 am to 2:00 p.m. Moore Building, Room 202, ECU Campus, Richmond, Ky.

Tuition: \$76.00. Register with ECU Special Programs at (606) 622-1228.

Additional 1997 Courses of Interest to KNPS Members

Wetland Wildflowers: Summer Elderhostle Course. Ronald Jones, Biological Sciences, Eastern Kentucky University.

This class introduces students to a variety of wildflowers that inhabit local wetlands. Plants of swamps, marshes, and meadows, as well as the aquatic plants of ponds, lakes, and streams will be covered. Typical woody plants of these areas will also be described. Basic terminology and keying techniques will be discussed, and the student will learn characteristics of these habitats. Possible uses of these plants in landscaping, such as the establishment of wetland or aquatic gardens, will be addressed. A good variety of aquatic and wetland plants will be in full flower during this mid-summer class, so bring your camera! We will be wading through some wet areas, so either bring a pair of old shoes or wear knee-high boots if you prefer to stay dry. A 10X hand lens will also be handy.

Course meeting dates: July 14-18, 1997.
For more information or to register contact Lynn Dee Garrett at ECU Special Programs (606) 622-1228.

Coastal Vegetation. Ronald Jones, Biological Sciences, Eastern Kentucky University. Taught at Gulf Coast Research Lab, Ocean Springs, Mississippi.

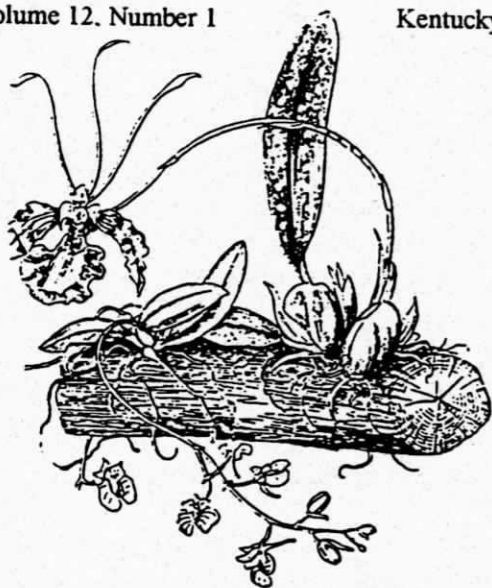
A broad study of general and specific aspects of coastal vegetation, with emphasis on local examples such as swamps, savannahs, woodlands, strand and island

(insular) vegetation, and certain unique areas. Vegetational composition, variation, succession, climax, and distribution including survey and descriptive methods. Aerial techniques, ground truth, plant identification, delineation of vegetational types, and mapping.

Course meeting dates: May 26 - June 27, 1997, in Ocean Springs, Mississippi.

For registration contact: Dr. Charles K. Eleuterius, Registrar/Academic Coordinator, Gulf Coast Research Laboratory, P.O. Box 7000, Ocean Springs, MS 39566-7000
phone : (601) 872-4201
e-mail: celeuter@seahorse.ims.usm.edu





ORCHIDS IN A NUTSHELL

Part I

Mark Evans

No one really knows how many species of orchids exist on the planet today. Although the number is no doubt dwindling everyday, estimates range from around 15,000 to 30,000 species most of which are found in the tropics. Kentucky is home to between 40 and 50 species and all have a somewhat precarious existence bordering on the miraculous. The notion that all life on earth is interdependent comes to a pinnacle in the life history of this family because each species of orchid depends on a relationship with a particular fungus for germination and a particular insect for pollination.

Orchids produce dustlike seeds which are amongst the smallest of all those produced by flowering plants. The seeds consist only of a tissue like seed coat (testa) that encloses the 100-200 cell embryo. Orchid seeds lack endosperm which forms the bulk of most other seeds. Because of this, the orchid seed has no food store to fuel

its germination and early growth. Orchid seeds literally cannot grow and prosper on their own. The Orchidaceae would have been a very short lived family if this potentially disastrous situation not been averted. Orchids have forged a symbiotic relationship with certain fungi, called mycorrhizae, present in some soils.

Assuming all conditions are right, mycorrhizal hyphae (hyphae are the thread like growths of fungi) invade the suspensor cell which attaches the embryo to its seed coat. As the growing hyphae enter the inner cells of the embryo, instead of killing it, they begin transporting nutrients to the embryonic cells. Eventually, the hyphae are actually digested by the developing embryo and the resulting nutrients provide the fuel for germination and growth.

As the embryo develops, it begins to grow into a small spindle-shaped or top-shaped body called a protocorm. The protocorm is just one of the structures that make orchids unique. Basically, the protocorm is a mass of undifferentiated tissue somewhat akin to callus growth in other vascular plants. When the protocorm of most orchid species approaches the size of a pin head, leaf and root primordia begin to develop and the plantlet begins to produce chlorophyll.

Most tropical species of orchids cease their relationship with mycorrhizal fungi at this point, but there is strong evidence that most temperate terrestrials remain symbionts through their entire life cycle. This is most likely the reason the majority of our native species DO NOT do well in general cultivation. I'm not saying that native terrestrial orchids can't be

cultivated, because they can and I grow quite a few. But, please, don't dig plants from the wild and expect them to thrive in your perennial border. Not only must a narrow range of growing conditions for the orchid be met, but those of the associated mycorrhiza as well. Experienced propagators will tell you, "Take care of the mycorrhiza and the orchid will take care of its self".

Let's assume that an orchid seed makes it through the hazards of landing in a spot suitable for germination, manages to be properly infected by a suitable species of fungus, receives enough light to begin photosynthesis and doesn't get eaten by the first slug it meets. It continues to grow for a few years, storing energy in its roots, and finally builds up enough energy to reproduce. Flowering occurs, and here we find the characteristics that makes the orchid family truly unique.

(Next time: Part 2- Orchid Flowers and Breeding Systems)

Mark Evans is a member of the Central Kentucky Orchid Society. He may be reached at (606) 622-1793.



Kentucky Botany and the World Wide Web

Charlie Lapham

As my capstone project in the KNPS Certification Program I have been working on a Microsoft Access database application called *Index Kentuckiensis*. We have about 240,000 collections in herbaria throughout the state but no effective way, without physically searching through the cabinets, to know what is where. One of the primary goals of this software is to capture and integrate into a database format, label data from all plant specimens in Kentucky herbaria. The project is being completed with the help of Dr. Ron Jones and Dr. Julian Campbell. My intent is to donate the use of *Index Kentuckiensis* in the Society's name for use by botanists in Kentucky. A paper about the software was presented at the Fall 1996 meeting of the Kentucky Academy of Science. The presentation was well received, and the Botany section endorsed the program for databasing Kentucky's floristic diversity.

I also demonstrated *Index Kentuckiensis* at a meeting of the Kentucky Biodiversity Task Force Council, in February of this year. Representatives from Federal and State government agencies, as well as state Universities were in attendance. Again, the software was well received, and later in that day, the Kentucky Biodiversity Task Force Council voted to financially support this effort. It was an historic moment as this is the first time Kentucky has supported the creation of natural history database. The State, and the Council in particular, are to be commended for their help.

This program may prove useful to curators of other kinds of natural history collections in Kentucky and elsewhere. It runs on Access database manager which comes installed on many new computers these days and will run well on what is rapidly becoming a rather ordinary office computer. *Index Kentuckiensis* is operational at Eastern Kentucky University in Richmond and at Western Kentucky University in Bowling Green. Installations are imminent at The Nature Conservancy offices in Lexington, the Kentucky State Nature Preserves Commission office in Frankfort, and Morehead State University in Morehead, Kentucky.

Eastern Kentucky University has agreed to provide a web site. The new version of Access, due in March of this year is designed to allow relatively easy use of Access database information on the World Wide Web.

This software places the Kentucky Native Plant Society in a lead position in getting Kentucky botany on the information superhighway!

Charlie Lapham is a Board member of the KNPS and a regular contributor to the newsletter. He may be reached at (502) 646-4060.



KNPS Funded Demonstration Garden Wins State Award

Providence Elementary School, first recipient of a KNPS grant for outdoor classrooms has received a Silver Certificate from the Ky. Dept. of Fish and Wildlife Resources. The garden was constructed and planted by the 90 students at the school. A field trip was taken to rescue native herbs, tree seedlings, and shrubs from an area about to be developed. KNPS grant money was used to purchase additional native plants to enhance diversity of the garden.

Teachers at Providence have started using the outdoor classroom on a regular basis. School principal Deborah Moberly says that the outdoor classroom has proven an invaluable tool for meeting the valued outcomes of KERA. Deborah Harwell, Project Chairwoman and former KNPS Board Member notes that the project has provided curriculum enhancement in environmental education.

The faculty and students of Providence Elementary School send their sincere thanks to all members of the KNPS who helped make the project possible. Principal Moberly and Project chair Harwell say, "We are proud of our project and for putting environmental concerns in our curriculum. We feel this attitude is one of the most important contributors to our success and to the success of the students we teach."

KNPS Field Trips & Regional Events of Interest for 1997

Clara Wieland -- KNPS Field Trip Coordinator

As I write this it's the birthday of my thirty-something child. It brings to focus how quickly time passes and how essential it is to do the important things as soon as possible. The ecosystems that we visit represent eons of time but we as a newcomer species certainly impact them and mostly in a negative way. The KNPS tries to educate and help us appreciate our own native plants and their homes. We've worked to restore areas on our work days and we've rescued native plants from road projects. Let us begin this year enjoying and being active participants in the preservation of our little corner of the world so that our children and their children will live with this great healthy biodiversity.

Due to Vice-President Haragan's resignation, I have filled in to schedule the walks for 1997. The calendar is about complete, but watch the newsletter for updates. ***Please remember to register for the trips by calling Clara Wieland at (606) 266-5548 and /or the other numbers as indicated.*** This year we have two trips outside Kentucky. Bill Bryant will take us north to see Cedar Bog in Ohio. Also, a trip to May Prairie in Tennessee is scheduled for July. We have not run out of Kentucky places, but we also know that ecosystems do not stop at the border.

Please remember to come prepared, dressed appropriately for the weather and the walk. Bring water and snacks. Die-hards like me also come with pencil, paper, trying to learn! Please try to be on time; we can't hold up a trip for just one person. Times are identified by time zone. Happy, healthy season to you all and the earth! Come join us in the fellowship of enjoying an learning about the natural world that sustains us. See you!

April 19, 1997. Saturday, 11:00 am Eastern Time. Kentucky's Newest Nature Preserve: Anglin Falls/ John B. Stephenson Memorial Forest.

Chris Fleming, a botany student working with Dr. Ralph Thompson at Berea College will lead us to this treasure of waterfalls, cliffs and a mix of limestone and sandstone woodland flowers. The Venables, former owners, graciously allowed students and others to visit. It is now owned and managed by Berea College. The trail is slightly up hill, but does so very gradually. Meet in the lobby of Boone Tavern Hotel in Berea at 10:45 am. Limit 18. Please register with Clara Wieland.

April 18-20, 1997. Friday-Sunday. Wildflower Weekend at Mammoth Cave National Park.

An event co-sponsored by Mammoth Cave National Park, the Friends of Mammoth Cave National Park and the KNPS. Get a jump on spring, see the early flora in west central Kentucky. Something for everyone with over 20 separate wildflower and bird walks scheduled, a juried art show, and other activities available regardless of the weather. Offered walks range from easy to strenuous and are led by botanists and ornithologists. Saturday walks will be repeated Sunday. Call the Park (502) 758-2251, for a schedule or visit their web site at: <http://www.nps.gov/macav>. Introduce yourself to the above ground wonders of Kentucky's only National Park!

Kentucky Native Plant Society 1997 Membership Form

Memberships are for calendar year (Jan-Dec). Dues are modest, please keep your membership current. Membership expiration is listed at the top of your mailing label.

Name _____ Address _____

City _____ State _____ Zip _____ KY County _____

Please mark membership category, enclose check (please do not send cash) payable to "KNPS", and remit to: KNPS Membership, c/o Biology Department, Eastern Kentucky University, Richmond, KY 40475

Membership Renewal _____ New Membership _____

Annual Individual Membership (\$7.00) _____ Annual Family Membership (\$10.00) _____

_____ Lifetime Individual (\$100.00) _____ Lifetime Family (\$140.00)

**The Kentucky
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Eastern Kentucky University
Richmond, KY 40475

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