The Lady-Slipper

Kentucky Native Plant Society | Number 18:2 | Summer 2003

A Message from the President:

I HOPE EVERYONE had a great spring. We had a great Wildflower Weekend at Natural Bridge State Resort Park. The weather and wildflowers were essentially cooperative, the trip leaders and nightly speakers were great, and the t-shirts were a hit, as usual. Everyone seemed to have a great time.

We are making an honest effort to correct some things alluded to in my last message. We plan to increase our visibility and build awareness of KNPS across the state. Initially, we plan to target the bigger towns by making ourselves available for various city and/or county functions or programs relating to gardening, conservation, or environmental awareness in general. While certainly not limited to, our targeted cities include:

Owensboro	**Paducah**	**Bowling Green**	**Boone/Kenton/Campbell counties**
Henderson	**Hopkinsville**	**Georgetown**	**Ashland**

Those who live in or near these cities and know of any city/county functions that would be appropriate or, by chance, know any local officials who could be contacted, please get in touch with me—

***Landon McKinney* – 3964 Woodchase Dr., Erlanger, KY 41018**
E-mail: LMcKinney@eqm.com / Ph.: 513-825-7500 (work); 859-283-5377 (home)

and let me know. My wife and I set up our KNPS display at a Boone County function in early May and while the weather was terrible, we still found it to be somewhat successful.

As to our newsletter woes, we are now identifying those people who will commit to writing one or more articles per year in a timely manner. This commitment will hopefully provide us with an adequate series of articles on informative topics when needed. The plan is to initiate this structured process with the third issue of the year. Subjects will include rare plants, plant family highlights, plant community highlights, gardening and landscaping with native plants, weedy and invasive plants, and, of course, the proverbial catch-all, miscellaneous. Please keep in mind, while we feel that a little more structure is necessary to maintain an informative and timely newsletter, it does not prevent anyone from submitting an article on any native plant-related subject at any time. We have always encouraged our membership to contribute to our newsletters and will continue to do so.

In our last newsletter, Clara Wieland provided an eloquent memorial and gift in reference to the passing of one of our most active and enthusiastic members, Rebecca Short (Sensenig) Waldridge. Becky, as she was called, was an absolute delight to have on field-trips. Her knowledge and interest were often unequaled. All of us that were, in some way, touched by her enthusiastic approach to our natural world, will sincerely miss her.

We are making progress in developing our next round of Native Plant Certification courses. This program was highly successful during the original course offerings through the Community Education Program at Eastern Kentucky University. This time we are working with the Community Education Program at Northern Kentucky University and our intent is to begin course offerings next Spring. More details will be forthcoming as our plans continue to materialize.

We'd like to extend our sincerest gratitude to Linda Taylor, our outgoing Treasurer. Her tireless efforts were always appreciated. Additionally, we extend a warm welcome to Kathleen Jones who has graciously agreed to come on board as our next Treasurer.

We are always looking for any member willing to take some additional responsibility by accepting a position as an officer or board member. If any of you are interested and willing, please contact me at your earliest convenience.

We are currently working out details for our Fall meeting which will be announced in our next newsletter. Until then, each of you have a safe and enjoyable summer.

In this Issue—

THE KNPS WELCOMES new Life Member,

Joy Tarter - Dunnville, KY

and thanks those who have recently made contributions beyond their membership fees:

Adrian Camacho
Don and Pat Dampier
Phyllis Fitzgerald
Sharon Ishikawa
Tina Johnson
Brad Kremer
Robert Paratley
Gin Petty
Michelle Sohner
Jeanne Van Arsdall
Martha Young

BACK ISSUES of
The Lady-Slipper
and more — online at
http://www.knps.org

The Lady-Slipper

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KNPS Membership, P.O. Box 1152, Berea, KY 40403

FOR ALL OTHER BUSINESS contact an appropriate Officer/Board Member below:

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Your Turn to Comment: Daniel Boone National Forest!

Submitted to KNPS by Kentucky Heartwood

Editor's note: Kentucky Heartwood is a non-profit volunteer group that seeks to protect and restore the integrity, stability, and beauty of Kentucky's native forests and biotic communities through research, education, advocacy, and non-violent intervention. The KNPS urges its members to review the U.S. Forest Service's "Proposed Revised Land and Resource Management Plan and Draft Environmental Impact Statement" posted at

http://www.southernregion.fs.fed.us/boone/planning/1ReadMe.htm

consider Kentucky Heartwood's comments, and then send your own comments to the Forest Service's *Content Analysis Team* before the *August 14, 2003 deadline*. Additional information can also be found at the Kentucky Heartwood website:

http://www.kyheartwood.com

AFTER NINE YEARS of preparation and delays, the Draft Forest Plan for the Daniel Boone National Forest is finally out for public comment!

Brief summaries of six alternative forest management plans are posted on the Daniel Boone National Forest's website at

http://www.southernregion.fs.fed.us/boone/planning/Final%20Alternatives.pdf

Here's a glimpse of how the U.S. Forest Service wants to manage the forest under Alternative C-1, its preferred alternative:

- Burn up to 50,000 acres/year on the 700,000-acre forest.
- Log 2,300 acres a year (55% of the forest is zoned suitable for logging; the remainder can be logged at the Forest Service's discretion).
- Log and burn additional acres to create grasslands and woodlands.
- Use pesticides and herbicides to "protect" forest health.
- Create 60 new miles of off-road vehicle trails.
- Build a 900-acre resort with an 18-hole golf course and marina on Cave Run Lake.
- Allow mining on virtually all areas of the forest, including along streams and cliff lines. Mining would also be allowed in rare communities, along wild and scenic river corridors, in developed recreation areas; and in the Red River Gorge.

Federal managers claim they can do all this and improve water, soil, and air quality. Kentuckians have never seen a mining or logging operation that improved the soil and water. The recently released Draft Forest Plan is a study in unreality as it seeks to sound environmentally friendly while maintaining high levels of commercial extraction.

In public opinion polls since 1994, a majority of Kentuckians have said they want this state's only national forest off-limits to profiteering by private companies.

The idea of using our tax money to damage a forest that contains the state's highest concentrations of rare species and affords world-class recreation opportunities is preposterous, especially when logging levels on private land are at all-time highs.

The Daniel Boone is a tiny forest, representing only 4.8% of the state's forestland. It is best managed for what is increasingly rare in the region: large tracts of unfragmented forestland, clean air and water, and solitude.

Instead, the Forest Service appears bent on chopping and burning the forest into a patchwork of habitats in the name of biodiversity. Not surprisingly, the Forest Service claims that this approach is best for the "health" of the forest. With prescribed burning increasing pollution in the area by 22% and mining, logging, and road building on the increase, the Forest Service's preferred Alternative C-1 plan appears to be a flimsy green version of the old Forest Plan in which extraction was king.

PLEASE SEND your Plan Comments to:

Daniel Boone National Forest
Content Analysis Team
PO Box 221150
Salt Lake City, UT 84122

Comments may also be faxed to:
801-517-1015

or e-mailed to:
danielboone@fs.fed.us

Comment Deadline is August 14th!

Kentucky Heartwood's comments:

- The Draft Plan/Environmental Impact Statement (EIS) fails to provide an adequate range of alternatives. None of the six alternatives combine what the public wants in one package. By law, the Forest Service can add new alternatives to the Final Plan. We demand that the Plan include the Kentucky Conservation Community's Alternative, which calls for:
  - No commercial logging
  - No mining of federally-owned coal, oil, or gas
  - More wilderness areas
  - Active management of recreation that protects the land and ensures use for future generations [Off-road vehicle (ORV) four-wheeling and resort development prohibited].
  - Interior forest restoration—actively managing the forest to restore large blocks of interior native forestland.
  - Protection and restoration of rare species habitat.
  - Elimination of pesticides, herbicides and other pollution, including genetically-modified organisms.
  - Suspension of land exchanges to focus on land acquisitions that protect watersheds, expand and connect habitats.
  - Prescribed burning—small scale, scientifically based, and only for the purpose of research.
  - Protection from sprawl, including new paved roads, new highways, and commercial development.
- The Draft Plan/EIS fails to adequately assess the impacts, including cumulative impacts, of burning, logging, road building, illegal and legal off-road vehicle use, herbicides, pesticides, and mining, including unreclaimed mine sites.
- A proposal to expand the Clifty Wilderness by over 3,000 acres (the Wolf Pen tract) is only included in Alternative B-1, which was not chosen by the Forest Service as their preferred alternative. The Clifty Wilderness expansion should be included in all alternatives, especially the Forest Service's preferred Alternative C-1.
- The Draft Plan/EIS arbitrarily creates new habitats in the forest without demonstrating the scientific basis for their historical presence and distribution in the Boone.
- The Draft Plan/EIS arbitrarily establishes a goal of burning 50,000 acres per year in the Boone without demonstrating the scientific rationale for such high levels of habitat manipulation.
- The Draft EIS fails to consider the effects of burning on reptiles, amphibians, birds, and smoke-sensitive rare species such as the Indiana Bat.
- Counties in the Daniel Boone National Forest area are already exceeding legal limits for air pollution. The Forest Service's burning program would increase air pollution in the region by up to 22%.
- The Forest Plan says it will protect sensitive cave and karst areas but only mandates a 200-foot buffer around cave openings. A cave proscription area that prohibits logging and roadbuilding in cave watersheds should be established.
- Alternative B-1, the only low-extraction alternative the Forest Service considered, ranks best with regard to water quality, air quality, soil quality, and scenic beauty. However, B-1 fails to include more wilderness areas and proactively manage recreation.
- The list of species to be monitored by the Forest Service to assess forest conditions (Management Indicator Species) is inadequate. The list includes 12 bird species, pitch pine, and white-tailed deer. Reptiles, amphibians, cave species, and aquatic macroinvertebrates should be included on the list.
- The Draft EIS fails to use population trends and field data when assessing the survivability/welfare ("viability") of each species.
- The Draft Plan/EIS completely fails to assess the economic benefits of the ecosystem services provided by intact forests (such as clean air, water filtration, pollination, flood control, climate control, pest control, food and medicinals).

Please speak up for forest protection! This plan will determine the fate of the Daniel Boone National Forest for the next 10–15 years. Write a letter today! The future of your forest is at stake!

Questions regarding the plan can be directed to the Daniel Boone National Forest Supervisor's office in Winchester, KY: 859-745-3100. Ask for a member of the Planning Team.

Clean Air Lawn Care: Different Tools, Different Plan, Native Plants

by Phyllis Fitzgerald,
Louisiville Metro Air Pollution Control District

ARE YOU INTERESTED in trying a different approach to lawn care that would mean less work and/or less pollution while providing more beauty and wildlife habitat in your yard? Join the Louisville Metro Air Pollution Control District's (APCD) *Lawn Care for Cleaner Air* program and see how you can make changes that benefit air quality and the quality of your life. The program recently received a "Clean Air Excellence" award from the Environmental Protection Agency.

Since one hour of mowing with a home-sized gasoline lawn mower produces as much air pollution as driving 200 miles in a late-model compact car, *Lawn Care for Cleaner Air* promotes various types of landscaping that visually enhance your yard with minimal use of gasoline-powered lawn mowers, string trimmers, and leaf blowers. Cordless electric mowers and trimmers or reel mowers are good alternatives, and through December, 2003, Louisville area residents can call APCD at 502-574-5322 to find out about sizeable rebates for trading in old gas mowers for electric or reel mowers.

Many property owners are also choosing to re-landscape, eliminating most mowing and raking of leaves. Instead of lawns they are trying wildflowers, ground covers, shrubs

(Continued on page 4)

Clean Air Lawn Care (continued)

and trees, native grasses, rock gardens, Japanese-style gardens, decks and patios, and outdoor furniture, mixed in with native plant landscapes. Native plants often need little water and maintenance to give your green space special appeal, whether it is a cool, restful shady sitting area, or a riot of color from your favorite wildflowers.

Too much trouble, you say? Start small, with a strip, an island, or a border, using low-maintenance native plants. Enlarge those areas as you have additional time and plants.

Too expensive and time consuming? Investing in native landscaping will save on seeding, fertilizing, mowing, raking, and chemicals. Less time and money spent on turf may make new landscaping inexpensive, by comparison.

Where do you get the plants? Local nurseries may have cultivars of native plants, but plants propagated from local ecotypes are preferable. An internet search may turn up native plant nurseries, seed, or tree sources in your area. Near Louisville, you'll find Munchkin Nursery & Gardens in Depauw, IN (www.munchkinnursery.com) and Shooting Star Nursery in Frankfort, KY (www.shootingstarnursery.com).

Call the Louisville Metro APCD, 502-574-5322, for more ideas about alternative landscaping or to learn about the "Lawn Care for Cleaner Air Award" for minimizing the use of gasoline-powered equipment in your yard. Help educate your neighbors so we will all breathe cleaner air and have a more beautiful world. And check out some award-winning properties using low-maintenance landscaping on the APCD lawn care web page

http://www.apcd.org/lawncare

Or contact: **Phyllis Fitzgerald**
Louisville Metro Air Pollution Control District
502-574-5322
phyllis.fitzgerald@loukymetro.com

Orchids in Your Lawn?

Text and photos by Charlie Lapham

WE HAVE JUST FOUND the fourth native orchid species in our lawn here in Barren County, KY. This was quite unexpected, but it may also be more common than one might think. These are all "get down on all fours to really see them" types of plants. We have mowed some of them for years before we found them. It helps to have your dog walk you around your place. Dogs are always looking for new and different places to do their doggie do.

Under the beech trees, we find the spring coral root, *Corallorhiza wisteriana*. It's about 4 inches high. This year we had a really hot day just as the blooms were about to open and the stems were black and shriveled the next day. It disappeared like a mushroom, but it is saprophytic and has consistently appeared for several years now, so we presume it will be back next year. At least its distinctive color helps in finding them. Many of you know this plant since it blooms early in May at Natural Bridge State Park.

In late July, with dog assistance, we found the cranefly orchid, *Tipularia discolor*, that blooms naked with no leaves, about 8 inches tall, with greenish brown flowers, in a greenish brown lawn. Presumably we have been mowing it for a decade. It is just about as hard to see when you are looking right at it as the tway blade orchid is and I have been on field trips where a lot of us of walked right by it. The accompanying picture is atypical. Once in a while one gets the light just right. It is almost never this visible. Of course nobody ever says this sort of thing in guidebooks.

In August, several dozen little ladies'-tresses, *Spiranthes tuberosa*, will appear. They bloom naked as well on 6–8 inch grass-like stems, but we can never find them until they bloom. We usually look for clusters of white bugs, smaller than ladybugs, on what looks like a single blade of grass. They look quite distinct against the sky in the photo, but the camera has to be on the ground for this angle.

Last year we found, again with dog help, that after the little ladies'-tresses bloomed we had one plant of another species. It bloomed naked as well suggesting it could be the rare *S. magnicamporum*, but it turned out to be *S. cernua*. One really needs a microscope to sort out Spiranthes species. Having Deb White and Ron Jones to discuss such matters with us also is a big help.

Cranefly orchid

Little ladies'-tresses orchid

The difficulty of finding these plants suggests there may be more of them in lawns than is generally realized. We don't fertilize or use herbicides figuring the world already has enough Poaceae monocultures. Two-thirds of the lawn gets mowed, more or less regularly, with the blade set as high off the ground as possible. The Corallorhiza is in the meadow that gets mowed only in the fall to control brush. There are other interesting volunteers there too.

Keep an eye out for orchids and other unusual things when mowing your lawn. And ask your dog to help. You might be surprised at what you find!

We also have some planted native orchids. For 100% lab-propagated plants, you should see the Durkees at Vermont Lady Slipper Co. (www.vtladyslipper.com) or Bill Steele at Spangle Creek Labs (www.uslink.net/~scl). Carson Whitlow at Cyp. Haven has both propagated and rescued plants (www.cyphaven.com/index.htm).

Native Plants from Your Local Garden Center?

by Charles Chandler

NOT ALL OF US live near a native plant nursery where responsibly propagated native plants can be easily found. Instead, we find ourselves at our local nurseries or garden centers looking at pot after pot of what seems like every species in the world *except* those that are native. Can this actually be true, though? — even after several decades of growing interest in gardening and landscaping with natives?

Well, fortunately, some native plants have always been welcomed into the horticultural trade, and in recent years the number of readily available plants with roots in our native flora has been slowly increasing. More and more, native species are taking their rightful place beside all the other nursery-propagated bedding and landscape plants, and with some preparation and knowledge you can often make surprising finds at your local garden center or nursery.

This still is not easy, because even if local suppliers are aware of the native homes of species they have for sale, they seldom make a point of advertising them as such. Worse still, the horticulture trade's advertised "wildflowers" are often exotic species that are sometimes able to take over the habitats of our true wildflowers. Being a knowledgeable, wary buyer will help you pass by these invasive, mis-labeled wildflowers, but there are also a few other botanical issues that you may want to consider when searching for natives at your local nursery.

The first thing you'll want to be aware of is the considerable variation that occurs within individual species of plants. This is easiest to see in the case of widely separated populations of a given species. For example, a cardinal flower whose ancestors have long been comfortable in the wetlands of northern Minnesota may have inherited subtle differences in its habits and preferences from a cardinal flower whose ancestors came from cypress swamps in South Carolina. And neither one of these plants may be particularly happy with life in Kentucky.

But even within regional and local populations of a given species, variation within the species is not unknown. Taxonomists delineate the characteristics of localized subspecies and varieties of species, but the phenomenon in general is poorly understood. How do such local variations occur? How and why do they sometimes become fixed within a regional population of a species? And how do these variant individuals become common enough to be noticed as a group while still being most easily recognized as members of their species? Since so many of these questions about variability are not readily answered, maybe it is not appropriate to think of plants as native to a state or to a region of the country by virtue of their species designations alone. Perhaps it would be more helpful to think of plants as native only to smaller eco-regions or to even more local areas.

WITH THIS VIEW OF NATIVE PLANTS, it's clear that local propagation of regional wild plants is a goal worth pursuing. This leads many native plant nurseries to specialize in propagating plants only from local or regional eco-types. In addition to being more likely to do well in local gardens and landscapes, if such plants should happen to cross-pollinate with their wild counterparts, they are less likely to disrupt the long-evolving genetics of the local populations.

Cross-pollination with the local wild flora can also be a concern when planting horticultural varieties of native species that you've found at the garden center. Such plants are called cultivars and they are often painstakingly selected or developed to enhance and stabilize some special characteristic of a variable species — an unusual flower color or size variant, or a longer blooming period, for examples.

Since cultivars are purposely designed to be predictable and successful in garden situations, they can be a good and practical choice. But they are often not quite the same as the wild plants you may have seen in your vicinity. We're all familiar with perfect-looking tomatoes that have

(Continued on page 6)

Botanical Answers on the Web: What Is It? Is It Native? Where Does It Grow?

by Charlie Lapham

Here is a list of web sites with taxonomic data. Be forewarned, they don't all agree with each other!

PLANTS – http://plants.usda.gov – This site lists what is where, what to call it, and whether it is a U.S. native. At least according to the USDA. It would take days to see all that's here. Most species are illustrated, many by the KNPS's scanned images from Britton & Brown's 1913 *Illustrated Flora of the Northern United States & Canada*.

Flora of North America – http://flora.huh.harvard.edu – The entire Flora of North America will sooner or later be here. They have 4 volumes so far, also the floras of China and Pakistan. You can find out what the FNA has published and buy the printed volumes here too. It doesn't hurt to have the FNA on your side these days.

IPNI – http://www.ipni.org – the International Plant Names Index is a joint venture of Harvard University, Kew Botanical Garden, and the Australian National Herbarium. The first choice to verify offshore taxonomy.

ITIS – http://www.itis.usda.gov – the federal Integrated Taxonomic Information System partnership. You can download taxonomic "Look-up table" data for over 322,000 taxa including critters! This group is responsible for assigning taxonomic serial numbers.

NatureServe – http://www.natureserve.org – the database of an international network of natural heritage programs and conservation data centers initiated by The Nature Conservancy in 1974. The last word in natural heritage data and rare and endangered plant status.

W3tropicos – http://mobot.mobot.org/W3T/Search/vast.html – the Missouri Botanical Garden: taxonomy & more.

WKU biological collections – http://biodiversity.wku.edu/search.htm – Western Ky. University's herbarium and ichthyology collections are there now. Herpetology, ornithology, mammals, and insects are still to come.

Native Denizens of Local Garden Centers

Compiled by Jannine Baker, Lexington Wild Ones

Here are some native plants to look for at local nurseries. Check both genus and species names on the label. Some may also have cultivar names. For example, a purple coneflower might be labelled *Echinacea purpurea* 'Magnus.' Cultivar names below are examples, not recommendations.

WILDFLOWERS & FERNS

Common Name	*Scientific Name*
Alumroot	*Heuchera americana* and *H. villosa*
Aromatic aster	*Aster oblongifolius* 'Raydon's favorite'
Bergamot	*Monarda fistulosa*
Blazing star (gayfeather)	*Liatris spicata*
Blue indigo	*Baptisia australis*
Blue star	*Amsonia tabernaemontana*
Boltonia	*Boltonia asteroides* 'Snowbank'
Butterfly milkweed	*Asclepias tuberosa*
Cardinal flower	*Lobelia cardinalis* 'Rose Beacon'
Christmas fern	*Polystichum acrostichoides*
Columbine	*Aquilegia canadensis*
Creeping phlox	*Phlox stolonifera*
Eared coreopsis	*Coreopsis auriculata* 'Nana'
False (ox-eye) sunflower	*Heliopsis helianthoides*
Goatsbeard	*Aruncus dioicus*
Great blue lobelia	*Lobelia siphilitica*
Green and gold	*Chrysogonum virginianum*
Joe-pye weed	*Eupatorium maculatum*
Leatherwood fern	*Dryopteris marginalis*
Maidenhair fern	*Adiantum pedatum*
Mistflower (wild ageratum)	*Eupatorium coelestinum*
New England aster	*Aster novae-angliae*
Obedient plant	*Physostegia virginiana*
Orange coneflower	*Rudbeckia fulgida* 'Goldsturm'
Pale purple coneflower	*Echinacea pallida*
White turtlehead	*Chelone glabra*
Purple coneflower	*Echinacea purpurea* 'White Swan'
Rattlesnake master	*Eryngium yuccifolium*
Red bee balm	*Monarda didyma* 'Jacob Cline'
Rose vervain	*Verbena canadensis* 'Homestead Purple'
Rough goldenrod	*Solidago rugosa* 'Fireworks'
Royal catchfly	*Silene regia*
Royal fern	*Osmunda regalis*
Shooting star	*Dodecatheon meadia*
Smooth beardtongue	*Penstemon digitalis* 'Husker Red'
Solomon's seal	*Polygonatum biflorum*
Spiderwort	*Tradescantia virginiana*
Stiff goldenrod	*Solidago rigida*
Swamp (red) milkweed	*Asclepias incarnata*
Tall phlox	*Phlox paniculata* 'David'
White indigo	*Baptisia alba*
White snakeroot	*Eupatorium rugosum* 'Chocolate'
Wild ginger	*Asarum canadensis*

VINES

Crossvine	*Bignonia capreolata*
Passionflower	*Passiflora incarnata*
Trumpet creeper	*Campsis radicans*
Trumpet honeysuckle	*Lonicera sempervirens*
Virginia creeper	*Parthenocissus quinquefolia*

GRASSES

Big bluestem	*Andropogon gerardii*
Indian grass	*Sorghastrum nutans*
Little bluestem	*Schizachyrium scoparium*
Prairie dropseed	*Sporabolus compositus*
River oats	*Chasmanthium latifolium*
Switchgrass	*Panicum virgatum*

Garden Center Natives? (continued)

no taste, or gorgeous roses that have no scent. Well, some gardeners report that a similar phenomenon seems to occur for butterflies that visit—or refuse to visit—some cultivars of blazing star. Others have wondered if a cultivar of fragrant sumac that was developed for its low growth habit might eventually turn into a native groundcover that could be as unstoppable as some of our invasive exotics.

In addition to their latin genus and species names, garden center cultivars of native species are usually labeled with a proper english name to emphasize their uniqueness and predictability. Since predictable plants are what the horticulture industry sets out to sell, these cultivars may be your only choice at the local garden center. If that's the case, being familiar with local wildflowers through field observations, or even through books, will help you at least be aware of the differences and the similarities between the cultivars and their wild brethren.

If you decide to bring such cultivars into your garden, be especially aware if there are wild plants of the same species nearby. Cultivars also have the potential to cross-pollinate with the local flora to eventually and unpredictably alter long-established genetic and ecological balances. No one knows for sure what kind of changes might occur, if any, but if cultivars are your only choice, and if you're inclined to worry, it may be less worrisome to keep them isolated in your city garden rather than setting them loose amongst their kin at your country place.

THE NATIVE PLANTS LISTED AT THE LEFT have all been spotted at local garden centers and nurseries in the Lexington, Kentucky, area. All are listed by the common names with which they were labeled as well as the botanical names which were usually also noted on the labels. Although few were likely to have ancesters that actually lived in an ecoregion of Kentucky, all of these species are represented by wild, native populations within its borders.

If you have questions about these plants, or if you wonder about the nativity of other species at your local garden center, you can find a definitive answer as well as distribution maps at the U.S. Department of Agriculture's PLANTS website—

http://PLANTS.usda.gov

Joining or starting a local chapter of the Wild Ones in your community would also put you in touch with other gardeners and landscapers who are looking for and sharing sources of native plants. Currently there are chapters of this national organization in Louisville, Frankfort, and Lexington. You can find lots of information about growing wildflowers, the Wild Ones organization, and its goals at—

http://www.for-wild.org

In the meantime, a field trip to search out the natives at your local garden center can be an interesting and educational experience. Take the list at the left or your favorite wildflower book, and when you make a find, let the management know you're anxious to see even more. Happy hunting, and have fun learning and doing.

Kentucky's Wetlands – Part III

by Landon E. McKinney

THIS, THE THIRD PART to a series of articles on Kentucky's wetlands, will discuss the trials and tribulations of wetland restoration and creation. Essentially, when all or a portion of an existing wetland is impacted beyond repair or destroyed, it must be replaced through a process called compensatory mitigation. Mitigating impacts calls for the restoration or creation of a like wetland preferably in the vicinity of the one impacted or destroyed. Most states have adopted replacement ratios such as 1 to 1 meaning that for every acre of wetland impacted, an acre of wetland must be restored or created. In some cases, impacts to wetlands considered of the highest quality in form or function may be mitigated at a much higher ratio such as, for instance, 6 to 1. The object is, of course, to achieve a "no net loss" of wetlands.

Wetland restoration occurs where a wetland, at one time, existed. More often than not, we're talking about converted farmland. Discontinuing agricultural practices, removing drainage systems, and planting a desirable mix of wetland plants can all contribute to a restoration scenario. Restoration has a greater degree of success than creation.

Wetland creation requires the placement of a wetland where one, at least in recent times, never existed. Wetland creation involves various design and construction techniques such as the creation of basins or physically altering hydrologic features.

What problems are we facing with these mitigation efforts? First, the "no net loss" guideline generally refers to acreage and not necessarily function. Currently, many wetland scientists do not believe that we have achieved the ability to design a fully functional replacement.

A study of wetland mitigation in Tennessee suggested a high degree of failure due to problems in site design and the establishment of wetland vegetation. A study in Florida found the success rate for creating freshwater wetlands to be at a dismal 12 percent. The main reason for such a dismal rate of success was the difficulty in duplicating adequate hydrologic functions.

There is also some controversy related to the "in kind" replacement of wetlands. In other words, if a forested wetland is impacted, should it be replaced by the restoration or creation of a forested wetland? Yes, some would argue that replacement should be based on type while others argue that replacement should be based on function or merely size.

I hope that each of you have a better understanding of the "no net loss" requirement through mitigation and its shortcomings. Please take heart in the fact that the technology involved in restoring or creating wetlands continues to develop in a positive manner. We are much more knowledgeable about what works and what doesn't than a decade ago.

During these first three installments on Kentucky's wetlands we have discussed how to define a wetland, the function and values of wetlands, and the ins and outs of wetland restoration and creation. Next time we will discuss the classification of (types of) wetlands in Kentucky.

A Kentucky Student's Perspective of Ecuador / KIIS / 2002

Text and photos by Joyce Porter

THERE WERE 23 OF US who traveled to mainland Ecuador and the Galapagos last summer for a month of college studies both at the Graduate and Undergraduate levels. The studies were offered through the Kentucky Institute of International Studies (KIIS) which is a consortium of universities and colleges dedicated to providing quality international education. The course offerings in Ecuador were Eco-tourism, Geology, and Tropical Biodiversity/Conservation. As I watched the interaction between professor and student, I realized the professors were students also, dealing with a new group of students and traveling some new places though each of the three had made the trip before. It was a well integrated group with students and professors alike forming the necessary bonds to function as a unit, thereby making the learning process much easier.

Our introduction to Ecuador was the flight into Quito. This capital city of the country is located in the Inner Andean Valley at an altitude of approximately 9,500 feet. The Inner Andean Valley is located between two mountain ranges, the Western Cordillera and the Eastern Cordillera. It was a wondrous sight as we landed in a long narrow valley at 10:30 pm. For miles in every direction we could see all sides of the foothills glittering with the lights of the city.

The Andes chain is a young mountain range and is still one of the most active geological areas on the planet. One of our many stops in Quito was the Geo-physical Institute where we were given access to the monitoring station for earthquakes and volcanic eruptions. This facility had a large room-full of monitoring devices such as seismographs and other instruments, recording data 24 hours a day. People seated at computers were assessing the data as it came in. This allows them to issue warnings to the populace in case an eruption appeared likely.

The nearby volcano is just west of Quito and one can see the monitoring devices standing atop the mountain from various vantage points in Quito. Eighty miles south we visited the site of a recent Lahar flow.

The active volcanoes eventually collapse after the magma spews out or drains away leaving a caldera. Near the Equator we visited one such caldera which is home to a small community of people who are farming the flat plain at the bottom of the caldera. The walls of the caldera are covered with grasses, flowering plants and shrubs. Orchids are plentiful. Soil of volcanic origin is rich in nutrients and

(Continued on page 8)

A Student's Perspective: Ecuador (cont.)

supports a wide variety of plants. There was even an Andean species of Bidens (tickseeds) — the plant with pretty yellow flowers that produces the stick tights we collect on our clothing as we walk through a weedy field in Kentucky.

Another caldera that we visited contained a large body of water. Here we took a boat trip and saw the Andean coot which looks similar to American coot with some variation in the frontal shield and size.

I'm a bird watcher and in Quito I saw what must have been the most surprising bird of the trip. Surprising in that I never expected to see a hummingbird with a tail 24 cm (9.5 inches) long. It was the male black–tailed train bearer (*Leshia victoriae*) nectaring on flowering shrubs in the yard of the Herpetarium.

Some of the volcanic peaks of the Andes reach heights of over 5,800 meters (19,000 ft), and Dr. Ron Jones of Eastern Kentucky University was sure to lead us up as high as possible and down again. Ecuador is ranked #1 in the world for biodiversity, and we explored its plant and animal life from the windswept high plain at the base of Cotapaxi where we saw the ground hugging cushion flower to the lowlands of the jungle and the Rio Napo flood plains. Here our study area was the Jatun Sacha Biological Station in the upper drainage system of the Rio Napo. Downstream from here the Rio Napo becomes a major tributary to the Amazon Basin.

The "tropical rainforest" is an environment which almost defies description. Here we botanized, hiking through a forest containing huge trees. Some had a buttressed root system which is a special adaptation to the shallow, infertile soils of the rainforest. The best way to learn the rainforest is to spend some time there. Birding here is good in that there are lots of species. There are 1,500 species in Ecuador. The biggest challenge to birding is identifying them. Since I had never before seen most of the birds I encountered, it was a matter of writing a hurried description in the field then searching bird identification books for a picture that matched.

Buttressed root systems help support some rainforest trees.

It was also here in the rainforest that I saw the most spectacular array of stars. Never have I seen so many stars. The clarity was unbelievable. I learned a new constellation, Corona Borealis (no light pollution here).

The Galapagos Islands were all that we've read about and then some — famous as one of the most significant stops on the voyage of the Beagle in 1835 and for the studies of Charles Darwin. We saw several of "Darwin's finches," and also learned about the many endemic species — both animals and plants. The Galapagos Islands are now the most visited eco-tourist attraction in the world.

Farming the rich soil in the caldera of an extinct volcano.

Dr. Charles Mason, professor of Geology and Earth Sciences at Morehead State University, was particularly excited by all the evidences of vulcanism on the islands. We observed marine iguanas lying about on chunks of lava. There was the lava heron, the lava lizard, lava gull and even an evacuated lava tube underground through which the students crawled.

Even here in the Galapagos, Dr. Jones led us to the highlands and cloud forest. He emphasized the special place of the islands in history and in biology, helping the students to learn the many unique plants and animals of the islands, and addressing the many problems that must be dealt with to preserve their unique environment.

Dr. Richard Sambrook of Eastern Kentucky University was very interested in the eco-tourism aspects of the islands — taking students on walking tours to discuss the local geography, economy, and tourism. Dr. Sambrook was the Director of the program in Ecuador and deserves many thanks for the myriad of details that he took care of to make our studies abroad a successful experience.

When someone asks me about the trip, I reply, "It was the trip of a lifetime."

Giant tortoise and marine iguanas: unique Galapagos residents.

Extinction: The Loss of Our Inheritance

by Gregory T. Myers

WE HAVE ALL HEARD THE STORY BEFORE. You know, the one about the person who wins the lottery or inherits a large sum of money from that long lost relative — enough money to provide comfort and sustenance for a lifetime — only to squander it all away in just a few short years due largely to stupidity or bad judgment. Then we all sit around in amazement and discuss the how's and why's it happened and tell ourselves that if it had been left up to us we would never be so foolish as to lose such a fortune. Well wake up! Even as we speak, humanity as a whole is laying waste to the greatest wealth we will ever know, the biodiversity of the planet Earth.

How so? What exactly is biodiversity in the first place? Simply put, it is the total number of species of plants and animals that exist on our planet. But in reality, biodiversity is not just about the total number of these plants and animals, but more importantly, how they are intertwined to form the complex matrix of life on our small planet — a tapestry of living things so complex that even now we are still uncertain of its origin and design. Yet as we admire its overwhelming beauty, we are becoming more and more aware of the unraveling effects mankind has taken upon it, pulling ever more at the threads that bind it together. Every thread pulled from its fabric represents the loss of a species of plant or animal. Many times the loss of a single thread causes the unraveling or loss of other threads as well. Humanity is killing the very things that make our world unique and special, without thought or regard given to the fact that pulling out those threads may eventually lead to the loss of the thread that represents our own species, resulting in our own extinction.

Darwin said that extinction is part of evolution, and most of us would agree that he was correct. Natural selection, survival of the fittest; most of us know well enough what this means — you don't fit in, or lose your usefulness or fitness in the ecological system, you disappear. The only problem with that picture is that it represents only one side of the coin. You see, at the same time something is, shall we say, going out of business due to a change in market trends, a new guy is opening up a new store across town, fulfilling some other new market opportunity. This same process occurs in biological systems. As one species becomes extinct, another is taking its place. We call this process speciation, or the evolution of new forms of life. These new forms fill in the gaps of the system that are being under utilized or perhaps unrealized.

According to paleontologists, for most of earth's existence we have lost a few species for most types of organisms every million years or so. At the same time, evolution keeps up the tally by adding a few new species to each group. This is called the background level. Simply defined, it is the rate at which species disappear generally offset by the rate at which new species evolve. And while we can't be absolutely sure of the details due to gaps in the fossil records, paleontologists argue that these two sides of the coin have kept mostly in balance for many millennia. Together, extinction and speciation constitute turnover on a global scale.

Mass extinction, however, is different. It is the cataclysmic large losses of biodiversity occurring over a brief period of time. During these events, the rate of extinction greatly exceeds the rate of speciation creating overall chaos and the total breakdown of ecological systems. The devastation of these events requires millions of years for the biodiversity to recover. In the Earth's past there have been at least five such occurrences, all of which are attributed to natural events, unaided by the influence of man. A smaller extinction of larger mammals during the Pleistocene period may have been due to mass armed and cooperative hunting by man, but this extinction was considered minor and confined mostly to the mammal populations.

So what defines a mass extinction event? According to paleontologists, it is when the extinction rate is double the background level and involves a broad range of animals and plants — which brings us to the present. We are now in what could be called the sixth major extinction event, and it could be the biggest yet, far exceeding the devastation of any of the preceding five. What is even more significant is that there is no natural cause for this, as it is completely and totally the result of mankind's indifference, neglect and destructive uses of Earth's natural resources.

In centuries past, as mankind spread across the globe, islands and small continents began to feel the toll of having the threads pulled from their tapestries. Animals that had evolved in an environment without the fear of predation became easy targets for man. By the beginning of the 20th century, the costs of man's expansion was devastatingly evident. Twenty percent of all species of birds were gone. Conservation biologists now estimate that the current extinction levels of birds and mammals is about 100 times the background rate, and that the loss of rain forest species of invertebrates is 1,000 times the background level.

One has to look no further than the rain forests of South America to begin to understand just how mankind affects the biodiversity of this major ecological system. Here the effect of deforestation for the purpose of cattle ranching, human resettlement, mining and timber harvesting has caused the loss of 200,000–400,000 square kilometers of rain forest along the Amazon River basin. Strip logging here causes the greatest damage due to the jungle's sparse availability of desirable trees. Each tree cut damages 27 other trees, requires 40 meters of road to be built, and causes the loss of 600 square meters of canopy. Within the next hundred years, strip logging will lead to the extinction of 12% of bird species and 15% of plant species in this area alone. If you take into consideration that this area represents one of the highest biodiversity areas in the world, the devastation is unfathomable.

SO NOW WE ASK OURSELVES what can we do? Honestly, the solution is not easy or simple, nor do we fully understand the specifics of what it would take to repair or halt this

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Extinction: The Loss of Our Inheritance (cont.)

event. But we do have a few opportunities to affect a change in a positive direction. With regards to rain forest and possibly other natural resource areas, there are three things we could possibly look into doing that would help deter the losses.

The first is to create extraction reserves — areas where the natural and renewable resources of the rain forest could be harvested without the necessity of its destruction or removal. This could easily be applied to a number of other ecological systems as well. Things like game reserves or selective timber logging could be good alternatives here in our own back yard.

Next we could look at the reclamation of degraded or damaged ecosystems. Here we just simply attempt to return the damaged area back to its natural state as best as possible.

We could become ecotourists, visiting areas to observe the biodiversity in a responsible manner. The goal in ecotourism is to visit these rich sites, have as little impact as possible, and pump money into the local economy. The importance of this type of involvement helps to encourage private business and people to invest in areas that possess great biodiversity and to protect its natural state. Many people now going to South America or Africa or southeast Asia, are interested in seeing beautiful landscapes, and animals and plants in their natural settings.

In addition to these opportunities, there is also an opportunity for governments to continue to set aside land as national parks and protect them accordingly. Also there is the need for continued research to help better develop our understanding of how these complex ecological systems work, our impact upon them, and what we can do to correct the damage. One of the best ways to further assist this process is to educate ourselves as to the impact we have on these ecological systems. Each individual could start small, doing simple things like recycling, carpooling, working at home, planting a tree instead of cutting one down, traveling or vacationing responsibly or simply making a financial contribution to an organization that is trying to solve these problems.

So again we ask ourselves why should we care? After all, we don't live in South America or Africa. As Americans we have our national park systems and perhaps we feel our natural resources are well protected. But even with this, we still read all the time of the approaching extinction of some sort of wildlife or plant right here in our own back yard. Still, why not let those countries deal with the problem since the area of concern is on their land. Let them continue to pull at the strings of the tapestry, unraveling a little at a time. They are doing it, it should be their problem and does not concern us at all — that is until one day the thread they pull out is either our own, or perhaps one that causes our own to fall out, of that once beautiful and vibrant tapestry of life.

IT'S TIME TO VOLUNTEER!

Regularly scheduled volunteer opportunities are becoming more and more established around Kentucky for those who want to lend a hand to help preserve, restore, and support our native plants and habitats. This is hands-on learning and camaraderie at its best, and it's free! In all cases, sun-block and appropriate clothing, gloves, and footwear are recommended. If you are aware of similar activities in your part of the state, please let us know.

Restoration Workdays at the Lexington-Fayette/ University of Kentucky Arboretum – On the *second Saturday of every month,* volunteers can participate in the Restoration Workdays at the arboretum in Lexington. For the time being, work mostly involves removal of invasive exotic species from the arboretum's Walnut Woods, a scarce remnant of undeveloped Bluegrass woodland. Work proceeds from *9–11:30 am* and volunteers should meet in the arboretum parking lot on Alumni Drive or walk back to the woods in the direction of Central Baptist Hospital. For more information, contact

Jim Lempke, Native Plant Curator
LFUCG/UK Arboretum
Ph.: 859-257-9339
E-mail: arboretum@lsv.uky.edu

Fourth Saturday Fun Days in "Wildflower Woods," Cherokee Park, Louisville – While site and weather conditions permit, the Louisville chapter of the Wild Ones will gather from *9 am–noon on the fourth Saturday of every month* at its adopted "Wildflower Woods" in Louisville's Cherokee Park. This site is in the wooded triangle behind the Daniel Boone statue, and all are welcome to join in. For more information contact

Ward Wilson
Ph.: 502-299-0331
E-mail: ward@wwilson.net

Bernheim Research Forest Seed Collection and Natural Areas Restoration Projects – Bernheim has several nursery plots that are used as a seed bank for its many natural community restoration projects. Volunteers meet at the Bernheim library and will help keep the nursery beds healthy and productive or collect seeds from *8 am–noon on Aug. 26, Sept. 8, 11, and 23, and Oct. 7, 9 and 23*. In addition, volunteers can meet at the visitor center to help collect seeds in the research forest from *9 am–noon on Sept. 20, and Oct. 4, 14, and 28*. For more information or to sign up as a volunteer, contact

Barbara Hurt, Volunteer Manager
502-955-8512, ext. 249

And from Julian Campbell of the Kentucky Chapter of The Nature Conservancy comes the following:

CALLING ALL CONSERVATIONISTS in Central Kentucky!!!

There is clearly a growing need for a cooperative volunteer network in the greater Lexington area to work on conservation-related matters. The Nature Conservancy, with interested partners, is rekindling its stewardship volunteer program in central Kentucky by focusing on the **Griffith Woods site (Harrison County)** which we have recently acquired — only 30 minutes drive north of Lexington.

Griffith Woods is the best remnant of ancient woodland in the central Bluegrass region, and it could become a regional base for Nature Conservation and Restoration: research, training, education, propagation of native plants, demonstration of sustainable management, watershed protection, compatible forestry, rotational grazing, wildlife management and viewing.

The Nature Conservancy is working with the University of Kentucky, Ky. State Nature Preserves Commission and others to develop a plan for restoration and regional applications. The volunteer program will be a key ingredient to success. Although initially organized at Griffith Woods, we hope that this program can grow to include careful cooperation among other conservation organizations in the central Bluegrass region, working equitably at all worthy sites.

We also want to explore the potential for partnerships and linking this program to employment/training opportunities (e.g., summer jobs for high school/college interns).

Much urgent work is needed at the Griffith Woods site, including eradication of alien plants, planting native species, trash pickup, trail maintenance, collecting dead wood cross-sections for historical research, collecting seeds, preparing for a non-profit/cooperative native plant nursery to support restoration efforts in the region, and preparing and managing some areas with grazing animals and prescribed fire. There will generally be an educational hike and much relevant discussion during the day, so volunteers will learn a lot about natural history, conservation biology and restoration techniques.

Schedule: There will be monthly work-days throughout the year — on the *last Saturday of each month*. If you get on the e-mail list (see below), you will be kept informed at least two weeks before each work-day. On some days, especially in future years, we will probably assign at least part of the volunteer network to other sites in the region. Work-days will be *rain or shine from 9 am–5 pm* at the site; but you are welcome to come for just half, preferably at 9–9:15 am or 1–1:15 pm. Bring picnic lunch and other refreshments; there are no indoor facilities, but there are barns for shelter, and the site is 10 minutes drive from Cynthiana, where there are plenty of consumer services.

Directions: The entrance to the farm (Silver Lake Farm) is easily found from Lexington — go north for 30 minutes on Russell Cave Road (KY 353) until it ends at US 62 (between Georgetown and Cynthiana); turn right onto US 62; enter first driveway on right, about 200 yards from 353. Alternatively, from Interstate 75, exit at Georgetown onto US 62 and go east for about 15 minutes until you see the 353 junction. *Please do not visit the farm at other times without permission*.

What to bring: Lunch/liquid refreshment, work-gloves, work-boots/clothes, a few garbage bags, a straight spade or grubbing hoe, tough loppers or a sharp hand-saw. If you have safe experience with chain-saws, and can bring your own equipment (with hard-hat, goggles, chaps, gloves, boots), please let me know.

Restrictions: *Please do not visit the farm at other times without permission;* it will not be open to the public for a few years, but we are making a short-list of trusted leasors, neighbors and special volunteers who will help us look after the site. Stay away from houses; and no pets (or unsupervised children).

Feedback: Please let me know if you want to be involved. Please distribute this message to others who may be interested. If you would like more information or if you would like to be placed on the e-mail list to be reminded of coming workdays, please contact

Julian Campbell, Conservation Scientist
The Nature Conservancy
642 West Main Street
Lexington, KY 40508
Ph.: 859-259-9655 (office)
229-7711 (cell)
271-4392 (home)
E-mail: jcampbell@tnc.org
sjjjnc@earthlink.net

Kentucky Native Plant Society
MEMBERSHIP FORM

Memberships are for the calendar year (January–December).

Name(s) _____

Address _____

City, State, Zip _____

KY County _____

Tel.: (Home) _____ (Work) _____

E-mail _____

☐ Add me to the e-mail list for time-critical native plant news.

☐ Include my contact info in any future KNPS Member Directory

Membership Categories: *Annual* – ☐ $10; *Lifetime* – ☐ $150

☐ *This is a renewal.* ☐ *This is a new membership.*

Membership $_____

Gift (optional) $_____ Gifts are tax deductible. [IRC 501(c)(3)]

Total $_____ (payable to *Kentucky Native Plant Society)*

Return form & dues to:

KNPS MEMBERSHIP, P.O. Box 1152, Berea, KY 40403

CALENDAR of Native Plant-related Events

Sat., Aug. 9, 9–11:30 am – Restoration Workday at the Arboretum, Lexington, KY. *See p. 10.*

Sat., Aug. 23, 9 am–noon – Wildflower Woods Fun Day, Cherokee Park, Louisville, KY. *Details on p. 10.*

Tues., Aug. 26, 8 am–noon – Seed Collecting/Restoration Nursery Beds, Bernheim Arboretum, Clermont, KY. *See p. 10.*

Sat., Aug. 30, 9 am–5 pm – Griffith Woods Workday, Harrison Co., KY. *Details on p. 11.*

Sat., Sept. 6, 9 am–4 pm – Salato Center Native Plant Sale, Salato Wildlife Education Center, Frankfort, KY. Contact Mary Carol Cooper: 502-564-5280 or marycarol@aol.com

Sat., Sept. 6, 10 am–3 pm – KY's Invasive Exotic Plants: Part 4, Vernon-Douglas Nature Preserve, Hardin Co., KY. This workshop led by KSNPC botanist Deborah White focuses on kudzu, oriental bittersweet, Chinese yam, and common reed. It will include a 2.5 mile hike to the top of a knob in the forested preserve. Free, but register in advance at 502-955-8512 to be mailed directions.

Mon., Sept. 8, 8 am–noon – Restoration Nursery Bed Maintenance, Bernheim Arboretum, Clermont, KY. *See p. 10.*

Thurs., Sept. 11, 8 am–noon – Seed Collecting/Restoration Nursery Beds, Bernheim Arboretum, Clermont, KY. *See p. 10.*

Sat., Sept. 13, 9–11:30 am – Restoration Workday at the Arboretum, Lexington, KY. *See p. 10.*

Sat., Sept. 20, 9 am–noon – Seed Collecting/Research Forest, Bernheim Arboretum, Clermont, KY. *Details p. 10.*

Tues., Sept. 23, 8 am–noon – Seed Collecting/Restoration Nursery Beds, Bernheim Arboretum, Clermont, KY. *See p. 10.*

Sat., Sept. 27, 9 am–12 noon – KY's Invasive Exotic Plants: Part 5, Bernheim Visitor's Center, Clermont, KY. This workshop led by Bernheim Nat. Areas Dir. Margaret Shea features Japanese stilt grass, burning bush, miscanthus, Sericea lespedeza, & purple loosestrife. We'll visit Overalls Creek where stilt grass is invading beautiful bottomland forest. Free, but register, 502-955-8512.

Sat., Sept. 27, 9 am–noon – Wildflower Woods Fun Day, Cherokee Park, Louisville, KY. *Details on p. 10.*

Sat., Sept. 27, 9 am–5 pm – Griffith Woods Workday, Harrison Co., KY. *Details on p. 11.*

Sat., Oct. 4, 9 am–noon – Seed Collecting in the Research Forest, Bernheim Arboretum, Clermont, KY. *Details on p. 10.*

Tues., Oct. 7, 8 am–noon – Restoration Nursery Bed Maintenance, Bernheim Arboretum, Clermont, KY. *See p. 10.*

Thurs., Oct. 9, 8 am–noon – Seed Collecting/Restoration Nursery Beds, Bernheim Arboretum, Clermont, KY. *See p. 10.*

Tues., Oct. 14, 9 am–noon – Seed Collecting/Research Forest, Bernheim Arboretum, Clermont, KY. *Details p. 10.*

Thurs., Oct. 23, 8 am–noon – Seed Collecting/Restoration Nursery Beds, Bernheim Arboretum, Clermont, KY. *See p. 10.*

Sat., Oct. 25, 9 am–noon – Wildflower Woods Fun Day, Cherokee Park, Louisville, KY. *Details on p. 10.*

Sat., Oct. 25, 9 am–5 pm – Griffith Woods Workday, Harrison Co., KY. *Details on p. 11.*

Tues., Oct. 28, 9 am–noon – Seed Collecting in the Research Forest, Bernheim Arboretum, Clermont, KY. *See p. 10.*

SEE PAGE 2 FOR CONTACT INFORMATION.

(*Return address below is for POST OFFICE USE ONLY.*)

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