

The Lady-Slipper

Kentucky Native Plant Society

Number 19:3

Fall 2004



A Message from the President:

Hope everyone is having a great summer so far. We are planning a great and informative fall meeting at Shakertown on the 30th of October. Dr. Bill Bryant from Thomas More College will be our guest speaker. The title of his presentation is "Putting it all together". I hope that you're as curious as I am. Knowing Bill, I am confident everyone attending will thoroughly enjoy his talk.

Otherwise, autumn will soon be upon us so I hope that everyone has made some type of plan to get out and enjoy the fall colors. I would suggest the Ridge and Valley Province of Virginia (especially Interstate 77 south from Bluefield West Virginia to Wytheville Virginia). If the colors are just right, the scenic vistas are fantastic. Anywhere in the Appalachians, Ridge and Valley, or the adjoining Appalachian Plateau (as in E. Kentucky) is well worth a trip during peak colors. While mid-October is a good general time to shoot for, the peak colors can vary somewhat in either direction.

Our Native Plant Certification program is off to a good start at Northern Kentucky University. Our fall courses are plant taxonomy and the woody plants of Kentucky.

While our newsletters haven't been quite on time, please bear with us as we are working diligently to correct the problem.

Landon McKinney



The KNPS's goals:

To serve as the Kentucky native plant education resource;

To support native plant research;

To support efforts to identify and protect endangered, threatened, and rare native plant species;

To promote appreciation of the biodiversity of native plant ecosystems;

To encourage the appropriate use of native plants.

Saturday, October 30: Shakertown, KY

The Annual Fall Kentucky Native Plant Society Meeting will be held at Shakertown at Pleasant Hill.

The meeting will begin at 10:00 a.m. at the West Family Wash House "C" with introductions and announcements. Our speaker, Dr. William S. Bryant, Professor, Department of Biology at Thomas More College, will follow. Dr. Bryant came to Thomas More in 1971. He earned his Ph.D. from Southern Illinois University in 1973. His specialties include aquatic biology and ecology (particularly plant ecology). Dr. Bryant is the state's leading expert on the flora and vegetative communities of the Bluegrass Region of Kentucky. His topic for the program will be "Putting it all together".

Following the speaker we will have a box lunch provided by Shakertown. The lunches usually run about \$10.00 to \$12.00. Everyone coming to the meeting AND wanting a box lunch needs to RSVP to Mary Carol Cooper no later than October 15 so she can place the orders with Shakertown: (859-277-0656 or marycarolcooper@insightbb.com).

Following lunch, the Shakertown Naturalist, Don Pelly, will take us hiking on one of their new trails. Hopefully there will still be a lot of beautiful fall color and late wildflowers. Everyone is invited for this meeting and we hope to have a big crowd.

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The Curious Case of the Disappearing Asters ...

by Alan Weakley

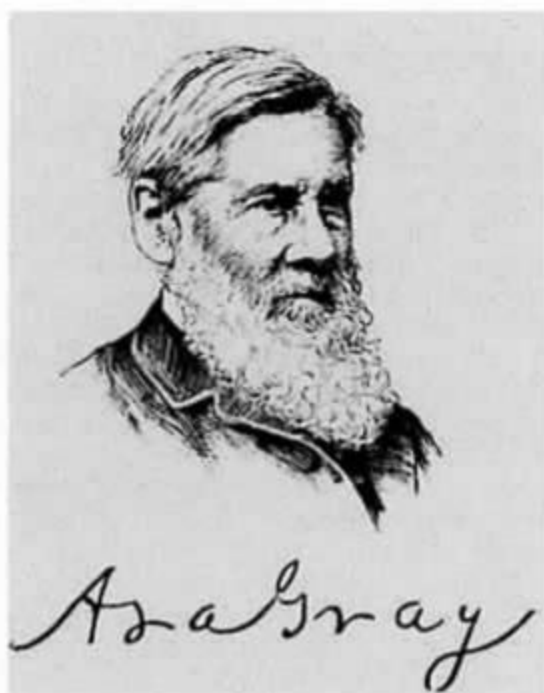
Reprinted with permission of the author from the North Carolina Botanical Garden Newsletter 32(2), March-April 2004.

Would an aster by any other name look as showy?

One dark and stormy night in 1994 I was awakened from a deep sleep by a loud thump. Creeping carefully down the stairs, I discovered to my astonishment that a large bouquet of *Aster* on the dining table had disappeared! In its place was a cornucopia of composites, including *Symphotrichum*, *Ionactis*, *Eurybia*, *Sericocarpus*, *Doellingeria*, *Ampelaster*, and *Oclemena*! Once again, a plant taxonomist had struck in dark of night, taken a simple two-syllable genus with the same English common name, and replaced it with a handful of four- and five-syllable Latin tongue-twisters. Whatever can we do about such things?

The classification of living things is based on the principle that each taxonomic unit (for instance the Composite or Aster Family, the genus *Aster*, or a species) groups together things that are most closely related to one another, and that the group should not also contain things which are disparate, unrelated, or more closely related to another group.

The concept of the genus *Aster* has had a long history of controversy and confusion. Asa Gray, the most influential nineteenth-century North American botanist, struggled with *Aster*—at all levels, from its circumscription (what to include in it), to the taxonomy of the component species. Late in his life, he wrote:



"I am half dead with *Aster*. I got on very fairly until I got to the thick of the genus, around what I call the *Dumosi* and *Salicifolia*. Here I work and work, but make no headway at all. I can't tell what are species and [sic] how to define any of them ... I was never so boggled ... If you hear of my breaking down utterly, and being sent to an asylum, you may lay it to *Aster*, which is a slow and fatal poison."

Ultimately, Gray took a broad view of *Aster*, and with some uncertainty included in it many of the "segregate genera" named in the 1820s and 1830s. His view proved influential, and has generally prevailed until very recently—although Edward L. Greene, John K. Small, and others recognized many of the segregates. In the 1940s and onward, renowned composite expert Arthur Cronquist returned to Gray's broad

view and even added an additional segregate, *Sericocarpus*, to *Aster*.

In the last decade, studies of the genus *Aster* have resulted in major changes in the understanding of the genus and its relatives. In 1994 Guy Nesom (currently at the Botanical Research Institute of Texas) used traditional taxonomic tools (morphology and chromosomes) to suggest two things: that

Gray's broadly conceived *Aster* included disparate components that should not be grouped together, and, even more radically, that none of the American "asters" was closely related to Eurasian asters. Many experts were skeptical, and they set about to prove Nesom wrong, using molecular and



Ionactis linariifolius

other taxonomic methodologies. All methods concluded, however, that Nesom was right: the smaller genera should be used, and North American asters are not closely related to the European genus *Aster*. Since the "type species" of *Aster* is European, the name must remain associated with Eurasia and all our species



Doellingeria umbellata



Oclemena acuminata

So, here is a bouquet of the new asters: climbing aster (*Ampelaster carolinianus*), stiff-leaved aster (*Ionactis linariifolius*), tall flat-topped aster (*Doellingeria umbellata*), whorled aster (*Oclemena acuminata*), common blue aster (*Symphyotrichum cordifolium*), big-leaved wood-aster (*Eurybia macrophylla*), and white-topped aster (*Sericocarpus linifolius*). Fortunately, we

can appreciate our new understanding of the diversity of asters, and in common names at least, they are still "asters"!

Alan Weakley is Curator of the University of North Carolina Herbarium, a component of the North Carolina Botanical Garden.



Symphyotrichum cordifolium



Eurybia macrophylla



Sericocarpus linifolius

He has been researching the flora of the Southeastern United States for the last 25 years. The Garden, part of the University of North Carolina at Chapel Hill, is a center for research, conservation, and interpretation of plants, with special emphasis on plants native to the southeastern United States and horticultural plants having traditional uses or special botanical interest. For information on NCBG or the Newsletter, please see www.ncbg.unc.edu or call 919-962-0522.



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Management Efforts for Short's Goldenrod Are Showing Promise

by David Skinner and Joyce Bender
KY State Nature Preserves Commission

One of the rarest plants in Kentucky is also one of the rarest on Earth. Short's goldenrod (*Solidago shortii*) is federally and state listed as an endangered species. Charles W. Short, an early Louisville physician and botanist, discovered Short's goldenrod in 1840 at the Falls of the Ohio. When the locks and dams were built on the Ohio River this population of the plant was inundated and lost. At the time, this was the only known population of Short's goldenrod. In 1939 E. Lucy Braun, a renowned botanist and ecologist, rediscovered the plant in Robertson County, Kentucky. Fortunately, some of these plants were on land that became Blue Licks Battlefield State Park. To protect this imperiled plant, a portion of the park was dedicated as a state nature preserve in 1981. A two square mile area around Blue Licks harbored the only known Short's goldenrod populations until 2001 when a new population was discovered in southern Indiana along the Blue River. Even with this new population, Short's goldenrod is a critically imperiled species in need of protection and careful management.

In recent years Commission staff have employed a multifaceted approach to managing Short's goldenrod. Exotic invasive species, such as sweet clover, nodding thistle, crown vetch, and Kentucky 31 fescue threaten to displace the goldenrod from its native habitat. Mechanical methods of removing these non-native plants, and the judicious use of herbicides are helping reclaim some of the lost habitat. Another problem the goldenrod faces is being shaded out by encroaching trees and shrubs. Prescribed fire has been implemented to reduce shrubs and small to medium sized trees. The fires also help eradicate some exotic plant species and enhance conditions that stimulate the growth and increase the flowering of the Short's goldenrod. Despite the benefits of the fire, the prescribed burns are not intense enough to impact the larger trees. With the aid of Sierra Club and Kentucky Native Plant Society volunteers for the last few years, we have been clearing an area that has become overridden with red cedar trees. This work is done during the winter rather than the growing season to avoid damaging the goldenrod plants. Often the working conditions are adverse; it was only six degrees Fahrenheit on our January 2004 workday.

In addition to helping this federally endangered plant, we are restoring the Blue Licks landscape to a



Ron Jones

condition more similar to what existed when Europeans first settled in the area. In S. M. Wilson's book, *The Battle of Blue Licks*, there is an historical reference that describes the area as "a desert, covered with a pavement of rocks and stripped of herbage". Bison were attracted to the area because of the Blue Licks salt spring. The bison were so numerous that their trampling and grazing caused the "desert-like" conditions (and maintained the trace that can still be seen within the preserve). It is likely that Short's goldenrod was one of the few plants that could persist in such severe conditions.

To determine if the management efforts have been effective, Commission biologists implemented a goldenrod monitoring project. We are monitoring two management units that have been treated in a similar manner to the unit where our volunteers have been working. On the two monitored units we have had stem count increases of 65% and 567%, respectively. This project was partly funded by a grant from the US Fish and Wildlife Service. This management project

involves a lot of hard, tedious work that is often done under difficult conditions; it is heartening to know that it is paying off.

Fall is the perfect time to see this for yourself. Short's goldenrod is in bloom from late August until the first frost. Take a trip to Blue Licks Battlefield State Park and walk the bison trace within the nature preserve. The goldenrod is growing along the edges of the trace among the gray goldenrod (*Solidago nemoralis*). You can differentiate the two fairly easily. Short's goldenrod has smooth stems and leaves and the gray goldenrod has a hairy stem. Keep your eyes open for another rare plant along the trace, the great plains ladies'-tresses orchid (*Spiranthes magnicamporum*). This species is listed as threatened in Kentucky and blooms in late September-early October. It is another species that has benefited from the increased sunlight brought on by the cedar clearing.

For over 200 years Kentucky's original landscape and native plant and animal species have suffered great losses. It will never be possible to restore everything back to what it was before settlement and development occurred, but thanks to dedicated volunteers and the employees of the Kentucky State Nature Preserves Commission, some important examples our natural heritage will always be with us.

Join us this winter as we continue restoring the goldenrod's habitat. Look in the KNPS newsletter for work dates or contact the Commission this winter for more information at 502 573-2886.

4th Eastern Native Grass Symposium

October 3-6, 2004

Lexington, KY (see pg. 12 for details)

Plenary Speakers: Danny J. Gustafson "Conservation Genetics of Prairie Grass"; Dr. Ed Chester "The Big Barrens Region of Kentucky and Tennessee"; Dr. Charles Allen "Coastal Prairies"

Field Trips: Bluegrass Savanna Woodland in Harrison Co.; Central Kentucky Palisades Region; Green River Conservation Reserve; Glade restoration and dolomitic limestone prairies; Grasslands and herptofauna in the Cumberland Plateau

Workshops: Grass Identification; Small Scale Seed Collection and Cleaning; Drill Set-up and Calibration; and Seed Testing of Native Plant Species

Editor's Note:

This current issue of the KNPS newsletter is the first issue of *The Lady-Slipper* not designed and produced by Charles Chandler in the last six years. Charles was very much agreeable to passing the torch, and the KNPS Board of Directors has selected Amy V. McIntosh to carry on this work. Amy is currently a resident of Richmond, working on a master's degree in the Department of Biological Sciences, at Eastern Kentucky University. Her thesis work involves a floristic survey of selected tracts on Pine Mountain in Harlan and Bell counties. She is a native of Boyle County, and has a BA in art history and a BFA in drawing from University of Louisville, as well as an MFA in printmaking from Miami University in Oxford, Ohio. She worked for three years for the Richmond Area Arts Council, serving as executive director for two years. The KNPS Board of Directors is pleased that Amy is willing to take on the responsibility of

designing and producing the KNPS newsletter, a task that Charles Chandler has so ably performed from issues 13(3) to 19(2).

I would like to express my personal thanks to Charles, who not only handled the basic matters of newsletter design, but often took up the slack when others, including myself, failed to deliver the needed



Sally Stevens

materials. Charles often found himself gathering images, writing text, identifying field activities, and doing many other jobs for which others were responsible. I know that Charles must have been frequently annoyed, but he always carried on, handling his job professionally, and producing one of the best newsletters of any native plant society. Charles has been one of our most dedicated members since the inception of the Society in 1986, working not only with the newsletter, but also with brochures, displays, and other KNPS activities. The entire membership owes Charles a great debt of gratitude for his many contributions to the Kentucky Native Plant Society.

—Ron Jones

Losing the Unseeable Animal

by Jessica Blank*

Several mass extinctions have occurred in Earth's history, including ones at the end of the Devonian (360 million years ago), the Permian (250 million years ago), and the Cretaceous (65 million years ago) periods. Then, a few thousand years ago, prehistoric humans began crossing oceans in dugout canoes, colonizing, using tools, and dramatically changing their environment. Another mass extinction had begun.

Extinction, the yang of evolution, has always been a force shaping and affecting global biodiversity from the beginning of time. Scientists speak of a background level of extinction, the normal average rate at which species go extinct. Normally, only a few species of birds, a few of mammals and a few of reptiles, etc., go extinct every million years. At this rate, speciation is able to counterbalance species losses to extinction.

Mass extinctions historically can be defined as periods when extinction rates have exceeded twice the background extinction rate. Some estimates place the current extinction rates among mammals and birds at around one hundred times beyond the normal levels.

The dynamics of global extinction are mercilessly complex. But ecologists have found manageability in the study of islands. Famously, island biogeography was the academic backdrop in which Charles Darwin explored and formulated his theory of evolution. As we all know, insular speciation occurs rapidly and with dynamic results. Insular extinction does as well. The mechanisms and processes of insular extinction beg attention, especially in the context of this modern mass extinction event.

Islands are applicable, if not essential, to our discussion because of the current condition of our mainland ecosystems. Human developmental activity has scarred the land; roads, farms, cities have sprung up, clearing natural ecosystems in even the most obscure corners of the planet. As David Quammen so succinctly and poignantly put it, 'the world is in pieces.'

As the species-area relationship of islands dictates, smaller islands can support less species richness than larger islands. Also, more remote islands support less species richness than less remote islands. In *The Theory of Island Biogeography*

Robert MacArthur and Edward Wilson concluded that island populations are maintained by a natural balance, an equilibrium in the number of species existing, a set number of species, relative to the size and degree of isolation of the island. Species populations on the island locally go extinct and new species are established either through speciation or immigration. Small islands harbor fewer species than large ones because small islands receive fewer immigrants and suffer more extinctions. Remote islands harbor fewer species than less remote ones because they too receive fewer immigrants and suffer at least equal numbers of extinctions. High rates of extinction and low rates of immigration yield impoverished ecosystems of few species, such as are common on islands. As human related ecosystem destruction creates smaller and smaller islands of natural habitat, farther and farther away from each other, biodiversity will decrease.

So why is the rate of insular extinction so high? Large population is not a luxury many island species enjoy. Small populations are more prone to be affected by not only deterministic, or human factors such as hunting, pesticide usage or say, the introduction of exotic predators, but by stochastic, or random factors as well. Such stochastic factors include demographic, genetic and environmental events, as well as natural disasters. While large populations are able to accommodate such changes without cataclysmic damage, populations of few individuals are highly susceptible to these changes, which often result in substantial population fluctuations such as doubling or halving the size of the original population. Genetic factors such as genetic drift, the founder effect and inbreeding depression, also affect small populations with the possible outcome of a flux to zero. Natural catastrophes such as volcanic eruptions, hurricanes, floods and earthquakes also have the potential to wipe a small population to zero. Below a certain number of individuals, chance dictates extinction.

Conversely, the theory of island biogeography also offers quite a bit of insight into conservation of the world we have begun to destroy... through the creation of biological reserves. Biological reserves, after all, are *islands* of sanctuary. And it seems that some patterns of insularity are less damaging to biodiversity than others. Applying the insular rules of MacArthur and Wilson, large reserves will sustain

* a University of Kentucky student in Tropical Biodiversity class, taught in Ecuador by Ron Jones, Summer 2002.

more species than small reserves and many reserves within close proximity will hold more species than remote reserves.

But are we really doing enough fast enough? Five hundred years ago, the Brazilian Atlantic Forest covered half a million square miles along the rugged Brazilian coast. It once supported up to 7% of the world's plant and animal species. Today, there is less than 2% of this ecosystem left, a sea of tiny isolated islands among a concrete jungle of urban sprawl and a patchwork of sugarcane plantations. The area's myriads of endemic species (those not already extinct) are lethally endangered, existing marginally in small populations in remote islands of habitat that will be unable to sustain such biodiversity for long. As islands do, these forest islands will settle into equilibrium. Only a few representatives of the original ecosystem will be maintained. At least for some, extinction is eminent and at hand. Unless something changes quickly.

The Andean slopes of Ecuador maintain enough species diversity and endemism to bequeath Ecuador the number one ranking globally for biodiversity per unit area. However this area is being cleared and populated so rapidly and unconditionally that in some parts, exotics have entirely out competed



Andean slopes of Ecuador

native species. In some parts of the Intermountain Zone, it is not even known what types of woody plants are native. They are gone. Haiti in the Caribbean and El Salvador in Central America are nearly completely deforested.

Does it *really* matter to us that the Brazilian Atlantic Forest is disappearing or that there are no more natural ecosystems in Haiti? Rising carbon dioxide levels, loss of soil fertility, global changes in Earth's weather and climate pattern... these, among others, are results of widespread ecosystem loss that affect the entire biosphere. We have a lot to lose: organisms that can be used for medicines and foods, many of which may be destroyed before they are ever discovered, clean air which cannot be cleaned without the help of forest ecosystems, sections of coast which may be taken by the sea due to loss of coastal floral erosion control, keystone species such as coral and mangroves without which entire expanses of the most productive ecosystems on the planet, organically and inorganically, will collapse entirely. A favorite poem by Wendell Berry, a poet-biologist, entitled "To the Unseeable Animal" begins:

*My Daughter: "I hope there's an animal
Somewhere that nobody has ever seen.
And I hope nobody ever sees it."*

To know the wonders and mysteries of this planet, to wonder at the vast unknown wilderness, to marvel at the remarkable flora and fauna our world contains, to contemplate the unseeable animal: that is to live. But I fear we will drive the unseeable animal extinct long before it is ever seen. This fear is about the quality of the world and of life for those who follow, those forced to brave our fallout.

So what do we need to save Earth's ecosystems? Lots of undisturbed land. Hope, resolve, ingenuity. We need to spend money. Conservation *can* be made economical. And the results would be priceless. Sustainable, extractive reserves are one approach. Such reserves could only operate through treating the particular ecosystem, for example, a rainforest, as a sustainable resource from which extractives, usually foods, spices, fodder, palm oils, medicinals and biochemicals, etc., could be extracted continuously and with little environmental impact. Unfortunately, it is more economical in the short term to drill without consideration for the environment. Additionally, some ecosystems sustain more economically lucrative resources than others. Although a good idea, extractive reserves are not a universal solution to saving our ecosystems.

Reclamation of degraded ecosystems by returning pasture to forest, converting slash and burn agriculture to sustainable

(continued on page 9)

News Release: Kentucky's Landowner Incentive Program, Partnerships in Protection

The Landowner Incentive Program (LIP) is a federal program funded through the United States Fish and Wildlife Service (USFWS) and administered by state wildlife agencies throughout the country. It was initiated by the United States Department of the Interior in 2002. Realizing that protection of rare species required cooperation of private landowners, USFWS developed a non-regulatory opportunity for landowners to participate in protecting and enhancing habitat for plants and animals considered threatened and endangered or vulnerable to decline and extinction. In most instances, landowners are able to continue using their land while simultaneously improving the habitat for rare species. For instance, improved fencing may benefit fish fauna in the stream or rare plants in a prairie but also reduce impact on the farm from neighboring cattle. This program also provides an opportunity for private landowners to participate in and learn about the natural heritage of Kentucky and contribute to its recovery.

Funds are distributed by USFWS as grants to states on a competitive basis. Only state agencies with primary responsibility for fish and wildlife are allowed to apply. The Kentucky Department of Fish and Wildlife Resources (KDFWR) partnered with the Kentucky State Nature Preserves Commission (KSNPC) and the Kentucky Chapter of The Nature Conservancy (TNC) and was awarded a LIP grant of \$1,495,000.

Kentucky is fortunate to have such a successful collaboration with a federal agency. This partnership provides a means for the federal directive to be implemented in a much more local way. Some of the financial benefits to the state include hiring additional biologists, including a full-time botanist at KSNPC to coordinate the plant projects, and a crew to do the work. The LIP program also provides funding and incentives to participating landowners.

The Kentucky LIP has a hard-working seasonal crew to implement LIP practices. This crew works most of the year carrying out plans proposed by staff biologists on approved projects. Some of the activities that the crew participates in include: conducting prescribed burns, applying herbicides to control invasive exotic plants, operating seed drills for prairie restoration projects, hand pulling weeds around rare plants in sensitive areas, and planting trees.

The partnership between KDFWR and KSNPC provides more opportunities for exchange of information and to coordinate recovery efforts on both plant and animals, many of which occur at the same sites. Many of Kentucky's rare species occur on private lands—95% of the land in Kentucky is privately owned and managed. To protect these rare species on non-governmental lands, it is important to provide landowners with the best management advice and assistance available.

The Kentucky State Nature Preserves Commission currently has ten projects underway targeting nine rare species. Four of these species are federally listed. Management includes work on over 200 acres across the state in five counties.

One of the LIP projects completed this year is a project to protect Short's goldenrod, one of Kentucky's few near-endemics and one that is listed as both federal and state endangered. Short's goldenrod can be found growing in glades and forest openings, as well as in pastures and on roadsides. Like many rare plants, Short's goldenrod benefits from some type of natural disturbance; historically this was thought to be bison migration. It has become increasingly rare primarily due to lack of natural disturbance and habitat loss. See "Management Efforts for Short's Goldenrod . . ." on page 4 of this newsletter for more information on *Solidago shortii*.

This alliance of two state agencies from different cabinets and a non-profit non-governmental organization to implement a federal program is a unique opportunity to protect some of Kentucky's natural heritage and improve the quality of our environment. By combining the resources of The Nature Conservancy, the Kentucky Department of Fish and Wildlife Resources, and the Kentucky State Nature Preserves Commission, the Landowner Incentive Program is certain to improve the future of Kentucky's rare species.

—Heather Housman, KSNPC



Back Issues of
The Lady-Slipper
and KNPS Grant Application
details are posted on the
KNPS WEBSITE --
<http://www.knps.org>

Help for University Herbaria

by Charlie Lapham

Botanists keep their dried specimens in a facility called a herbarium. Once in the herbarium, specimens become vouchers and they are the sole historical record of what taxon was found where and when. In terms of plants, this is the primary biodiversity data.

Many of you are aware universities are cutting back on field botany in favor of Molecular biology. Systematics professors are being replaced by molecular biologists most of the time. In many universities all the field botany positions have been eliminated.

This process has been going on for some time but with most of the conventional botany positions eliminated, the focus has now shifted to the herbaria. The Vanderbilt herbarium is now in Texas. The University of Iowa is being sued over their efforts to get rid of their collection. The Arkansas University of Natural History barely escaped assassination last year. The U of L has their collection in an off campus warehouse. These are just a few examples of what is happening.

It was clear at the ASB meeting this spring that none of the curators were confident their collections are safe any more.

The one thing that seems to help protect these collections is databases and web sites. The problem is how to do this without money or much support from your university. The availability of these databases and websites increase the visibility of these collections and their many potential uses. Another method of guaranteeing the continued existence of herbarium and museum collections is to establish endowments. For those KNPS members interested in financially supporting these herbarium collections across the state contact Charles Lapham (lapham@scrtc.com) or Ron Jones (ron.jones@eku.edu). Three years ago the KNPS has began telling curators they can get free herbarium software and can create their own databases with cast off computers and student labor. One doesn't need a grant or very much, in terms of administrative approvals, to do this. It is a lot of work though.

A few tried it and succeeded. This encouraged some others to try it. Now, too many folks have made their own databases for there to be any real doubt it can be done without grant money or much in institutional support.

WKU and Ole Miss put their databases on the web but it was a lot of work and they aren't linked to other databases in terms of queries. Both had technical help, that most curators do not have.

The federal government created NBII (National Bioinformatics Information Infrastructure) and they got together with an International group who was creating GBIF (Global Biodiversity Information Facility). GBIF has created a portal. A portal looks like a web site but the data is elsewhere, scattered all over the globe in this case. Researchers can query GBIF and it will check on the available data and return what it found to you. The search engine and associated code is in the GBIF portal.

GBIF needs the data in a single table in a particular Schema called Darwin Core. This will only work if everybody uses the same field names.

Index Kentuckiensis has a new table called Darwin core and it is in the schema needed by GBIF. There are customizable queries to put IK data into Darwin Core. If you have sensitive data, you don't have to put it on the web.

All it takes to get on GBIF is to put your Darwin Core table in a database, put the database on a server, and use the DiGIR Provider software, free from NBII, to link you database to GBIF.

The whole process can be done without grant money or very much in terms of support from the university. It should at least somewhat deter any aspiring herbarium assassins.

Mass Extinction (cont. from page 7)

permaculture, increasing ecotourism and creating more national parks and preserves are all viable alternatives for conservation. Careful planning and management by both governmental and private groups could save even the most endangered ecosystems before it's too late.

Only a well-educated global society can make the environmentally responsible, ecosystem-saving decisions necessary in this age of mass extinction. A great deal of both basic and conservation research is needed as well. Additional studies on fragmentation and its effect on ecosystems also must still be done.

We, *Homo sapiens*, are living in an age of self-perpetrated mass extinction. We are living in an age of islands. We are responsible. David Quammen concluded in his novel *The Song of the Dodo* with a message: "There is time. And if there is time, then there is hope."

Report on KNPS certification course in Aquatic Plants

by Ron Jones

This one-day workshop was held at ECU on June 19. There were seven participants. In the morning the class was led through some basic terminology and keying techniques, followed by a trip to the Biology greenhouse, where a variety of aquatic plants were collected and brought to the lab. After identifying most of the aquatic plant samples, we dismissed for lunch. After lunch, we finished the identification work, and discussed aquatic habitat types.



Aquatic Plant Certification Participants

Species in the following families were covered: Lemnaceae, Potamogetonaceae, Nymphaeaceae, Nelumbonaceae, Lentibulariaceae, Hydrocharitaceae, Haloragaceae, Cabombaceae, Azollaceae, Pontederiaceae, and Araceae. Then we took a trip to Lake Reba to view lakeshore and stream habitats, and then visited the water lily pond at Bybee Pottery (see photo of water lily—these were pink-flowered in most).

The class was also given a list of websites that provide information on aquatic plants, and these are listed below to give other potential participants an idea of the kinds of information covered in the class. Although only a 1-day experience, we managed to go over quite a few species and visit several local aquatic habitats. Hopefully we can schedule more classes of a similar nature in the future.



<http://www.devonian.ualberta.ca/peatland/peatinfo.htm>
General habitat info is provided at this site.

http://www.wes.army.mil/el/emrrp/emris/emrshelp2/cowardin_report.htm
What is a wetland? Define lacustrine, palustrine, and riverine systems, define these classes—aquatic bed, unconsolidated shore, emergent, scrub-shrub, forested wetlands.

<http://www.pnwwaterweb.com/PlantPro.pdf>
What are four forms of aquatic plants?

<http://www.wes.army.mil/el/aqua/apis/apishelp.htm>
What are examples of floaters, submersed, and emersed plants?

http://www.bulzeeye.co.nz/aquatic_plants.htm
Good overall discussion of aquatic plants at this site.

http://www.apms.org/book/activity_book.pdf
Problems of invasive aquatic plants, see activities and questions at end.

Next Certification Class:

Woody Plants of Kentucky

Saturdays: October 9-30, 2004

This course will focus on the identifying characteristics of Kentucky's woody flora such as the leaves, bark, and fruit. Additional topics will include the ecology, natural history, and landscape uses of many of our most common woody species. Emphasis will be placed on the study of those groups that tend to commonly stump people such as the oaks, hickories, and ashes. The final session will be a field trip to a yet to be determined location. This course is for the amateur naturalist or plant enthusiast and is also part of the core requirements for the Kentucky Native Plant Society's certificate program in native plant studies.

Instructor: Landon McKinney

Class fee: \$79

Location: NKU, Highland Heights campus, Science Center (new), SC168

To Register: Call 859-572-5600, fax 859-572-5174, or e-mail to connect@nku.edu



News Release: Guide to Gardening with Native Plants Returns to Print

Illustrated with 100 of the author's delightful line drawings, *Field and Forest: A Guide to Native Landscapes for Gardeners and Naturalists* is a useful manual to gardening the natural way.

Both inspirational and instructive, this book provides an introduction to the principles of naturalistic gardening. More than that, author Jane Scott shows readers how, through the craft of gardening, to put these principles into practice. Readers will come away from the book with a basic understanding of how to capture the essence of natural landscapes in their gardens, as well as with an appreciation of the native flora around them.

Early chapters deal with how nature functions and how landscapes were formed over time. Man's intentional and unintentional impact on the development of plant communities is also addressed. Four specific plant communities—deciduous woods, open lands, wetlands and dry lands—are described fully.

Later chapters skillfully depict ecological landscaping—an approach to gardening based on the understanding and appreciation of nature established in the earlier chapters. Jane Scott shows how to recreate and maintain a native landscape in one's own back yard. She also discusses how to reclaim landscapes smothered by introduced plants.

First published in 1992 and now returned to print by The Blackburn Press, this thoughtful book has proven a charming companion to field guides for nature lovers and gardeners alike.

Jane Scott was born in New York City but grew up in Connecticut and on the Eastern Shore of Maryland.

She is also the author of *Between Ocean and Bay, a Natural History of the*

Delmarva Peninsula and was a contributor to The Nature Company's *Guide to Natural Gardening*. For several years she wrote a local newspaper column called "Woodland Diary" and has published articles in *The American*

Horticulturist (now called *The American Gardener*), the *Canadian journal Wildflower* and a number of other publications. She has also served on the board of various conservation organizations, such as the Delaware Nature Society and the Eastern Shore Land Conservancy, and was a member of the committee that founded the annual conference "Native Plants in the Landscape" in Millersville, Pennsylvania. She now lives in Chestertown, Maryland.

Scott, Jane. *Field and Forest: A Guide to Native Landscapes for Gardeners and Naturalists*, ISBN 19930665-61-X, paperback, 195 pages, \$23.95. <http://www.BlackburnPress.com>

Editor's Note: The following is a new feature of the Lady-Slipper. Each issue another plant (or maybe several) will be presented for our membership to investigate. We will treat this as a contest for our members, and the first one to email me the answer will win a prize (for this contest it will be the winner's choice of a KNPS cap or t-shirt). All those with correct answers will be acknowledged in the next newsletter. The answer should include the family name, the genus and species name, the correct author citation, and the geographic range of the species (how many states does it occur in). There are many texts and web sites that can provide these kinds of information. For general information on U.S. plants see the Plants USDA site at <http://plants.usda.gov/>. Let's limit the contest to amateur botanists only—excluding those of us employed in positions that involve plant identification. Email your answers to ron.jones@eku.edu.

Who am I?



I am one of Kentucky's rarest plants—in fact, I grow at only one site in the state (I am almost a Volunteer!). I like wet areas, and limestone rocks. There is a drawing of me above—as you can see I produce only basal leaves, a single stem leaf and 1 flower. My flower does not appear until the fall, and it has 5 green sepals, 5 white petals, each about 1 inch long, that gradually taper to the base, 5 good stamens (with pollen) plus some longer sterile stamens, and fruit a 4-valved capsule.

Calendar of KNPS and Other Native Plant-related Events

Mon., September 27 - Thurs., September 30

2004 Kentucky GIS Conference

Mapping Kentucky's Future

Radisson Plaza Hotel, Lexington, KY

<http://ogi.ky.gov/2004conference.htm>

Sun., October 3 - Wed., October 6

Fourth Eastern Native Grass Symposium

4 Points Sheraton, Lexington, KY

Symposium goals are to share information, experiences, and research about recent projects involving native grasses. Presentations and field trips will highlight diverse aspects of native grass uses, adaptations, and importance.

<http://www.grassconference.com> for on-line registration. See page 5 for more information.

Saturday, October 30

Annual Fall Kentucky Native Plant Society Meeting

Shakertown, KY

See page 1 for more information.

Saturdays, October 9-October 30

Woody Plants of Kentucky

Part of the KNPS Certification in Native Plant Studies program. See page 10 for more information.



SEE PAGE 2 FOR CONTACT INFORMATION.

(Return address below is for

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