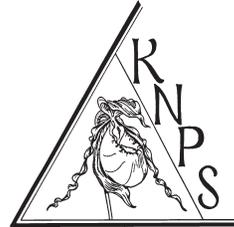


# The Lady-Slipper

Kentucky Native Plant Society

Number 22:4

Winter 2007



## **Winter: A Time for Reflection on the Restorative and Contemplative Basis of Caring for Creation** (A message from KNPS President Tom Barnes)

In today's society we are constantly in motion, running here and there and everywhere it seems. There is never a dull moment, never a time to relax and refresh the mind, spirit, and body. When we finally do find that time, on the weekend or vacation or on a summer evening, where do we go? We go to the back porch, or the lake, or the park or golf course. What is it we seek? We seek refreshment and a respite from the hectic activities in our daily lives and we seek to find something missing in our lives, something to return balance and meaning, something that reconnects us to some primeval basis of our existence. That missing entity that we all seek is nature and closeness to Creation.

Henry David Thoreau said, "We need the tonic of wilderness, to wade sometimes in the marshes where the bittern and the meadow hen lurk; and hear the booming of snipe; to smell the whispering sedge where only some wild and more solitary fowl builds her nest, and the mink crawls with its belly close to the ground. At the same time we are earnest to explore and learn all things, we require that all things be mysterious and unexplorable, that land and sea be infinitely wild, un-surveyed and unfathomed by us, because unfathomable. We can never have enough nature."

An interesting phenomenon is now happening within certain faith communities with respect to environmental stewardship in that they are realizing it is their moral obligation to address environmental issues. It is my firm conviction that people interested in natural history and the environment should embrace this movement and help them along for 77% of Americans consider themselves Christian and only 13% consider themselves to be secular or non-religious. There is empirical evidence that Christianity has been a significant part of the environmental problem as highlighted by multiple theologians but it is also as Wendell Berry has said that Christianity per se isn't the problem, rather how people interpret and practice religion that is the problem. It is my contention that we have been in the environmental education and conservation business for many decades now and I would ask, with all this education and outreach, are we better off and is the environment better off today than 10, 20 or 30 years ago? One only has to look at the most recent NASA report that shows how quickly global climate change is causing Greenland to melt, the rising

*Continued on page 10*

## **Five Certification Classes** planned for **Spring 2008** at ECU and NKU!

The KNPS Courses leading to certification in native plant studies are listed below. The courses offered in Spring of 2008 appear in bold:

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*It is strongly recommended that all 6 be taken.*

**Basic Botany for the Amateur Naturalist**  
**Plant Ecology for the Amateur Naturalist**  
**Plant Taxonomy for the Amateur Naturalist**  
**Plant Communities of Kentucky**  
**Kentucky Wildflowers ( Spring or Fall )**  
**Kentucky Trees and Shrubs**

### Special Topics Courses

*Select at least 6*

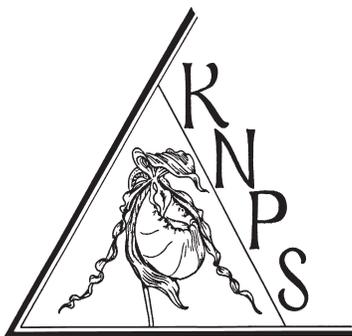
How to Know the Kentucky Mosses  
How to Know the Sedges of Kentucky  
Field Methods for Native Plant Research  
**Field Geology for the Amateur Naturalist**  
Spring Wildflowers and Trees  
Aquatic Plants of Kentucky  
Kentucky Wildflower Keying

Most classes are offered through community education programs by local colleges and universities. Information and class schedules can be obtained by calling the college or university where KNPS courses are offered. You may also email certification coordinator, Landon McKinney, at [lmckinney@ascgroup.net](mailto:lmckinney@ascgroup.net) or see the KNPS website at [www.KNPS.org](http://www.KNPS.org)



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### The Lady-Slipper

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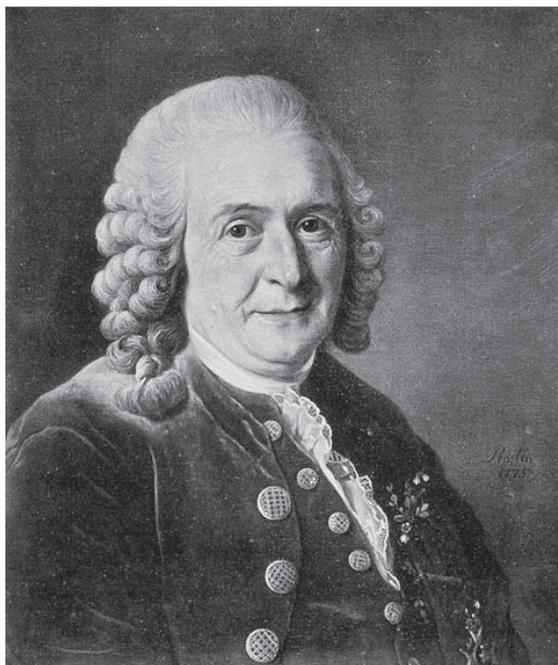
## Linnaeus (1707-1778)

By Dick Rauh, Vice President of the American Society of Botanical Artists

What is the meaning of that L. after the scientific name of so many plants? When you find the Latin binomial of a plant in any book, it is followed by the abbreviated name of the so-called 'author' of that species. The 'author' is one of the three or four hundred botanists who, over the ages, named new species and published their findings. Without a doubt, the abbreviation that comes up far more than any other is the capital L followed by a period. This stands for the Swedish naturalist Carl Linnaeus. His credit is widespread because he not only named the new species that were being discovered at his time, but because he renamed all the species then recognized. You may also indirectly know him by the names he gave some of our familiar genera. The black-eyed susan *Rudbeckia*, was named for one of his benefactors. He named the Peruvian Lily, *Alstromeria*, and the mountain laurel *Kalmia* for two of his students. It's almost scary how he remains omnipresent in the world of plant classification.



The young Linnaeus, depicted holding his botanical namesake, *Linnaea borealis* (also appearing in image on page 3); [www.life.uiuc.edu](http://www.life.uiuc.edu)



Linnaeus at roughly age 68 as painted by Alexander Roslin in 1775; [www.obits.eons.com](http://www.obits.eons.com)

This year is the three hundredth anniversary of the birth of this famous scientist, responsible for shaping the course of taxonomy for those three hundred years. Born the son of a Lutheran minister, Carl's early attempts to follow in the footsteps of his father were confounded by his overwhelming interest in the natural sciences. During the course of his life he taught, led expeditions into Lapland and into under-explored parts of Sweden, became a physician with a specialty in venereal diseases, discovered the centigrade scale, and managed to name all the animals, minerals and plants then known.

I have always been ambivalent about Linnaeus. He is not without his detractors who have accused him of lacking the depth to be credited with much original thinking. I have always gotten the feeling that he is regarded in botanical circles as the bearer of undeserved fame,

when compared to the legions of botanists that have done invaluable work and for the large part remain unsung. Linnaeus, on the other hand, was not a bit shy about singing his own praises, and they have echoed down throughout the ages. His shortcomings not discounted, the breadth of his interest in the natural world provided a solid foundation for the understanding of plants and animals that is just today being questioned.

In Linnaeus' time, the Eighteenth Century, the nomenclature of natural species was in chaos. There was no universal system for naming plants, animals or minerals. The practice of adding adjectives to a genus name to distinguish it from its near relatives produced long lines of words and profound confusion. Every time a new species was discovered it caused scientists to change all the previous names. The Swedish botanist put a stop to this with his use of the binomial system that had been developed 200 years before by the Bauhin brothers. Although the concept of a two word name was not Linnaeus' original thought, he used his strengths: great industry and mental tenacity, clear and concise expression, and methodical organization, to put it into practice. He used binomials to name the 5900 species that he wrote about in his *Species Plantarum* of 1753 and in his *Systema Naturae* of 1758 when the number of known plant species had risen to 7700. Through his works binomial nomenclature became universally accepted by the scientific community both in botany and zoology and it still is.

Linnaeus is responsible, too, for the system of plant hierarchy that dominated the science for generations. He based his system on the number of reproductive parts of a flower. He counted the stamens and placed plants in a group he called a 'class'. He then counted the number of pistils and broke these plants into lesser groupings called 'orders'. This seems to prove him to be something of a male chauvinist. A 'natural' system requires that we look at all aspects of a plant before we classify it. Linnaeus' method was considered an arbitrary and artificial scheme that he himself recognized as such. Its

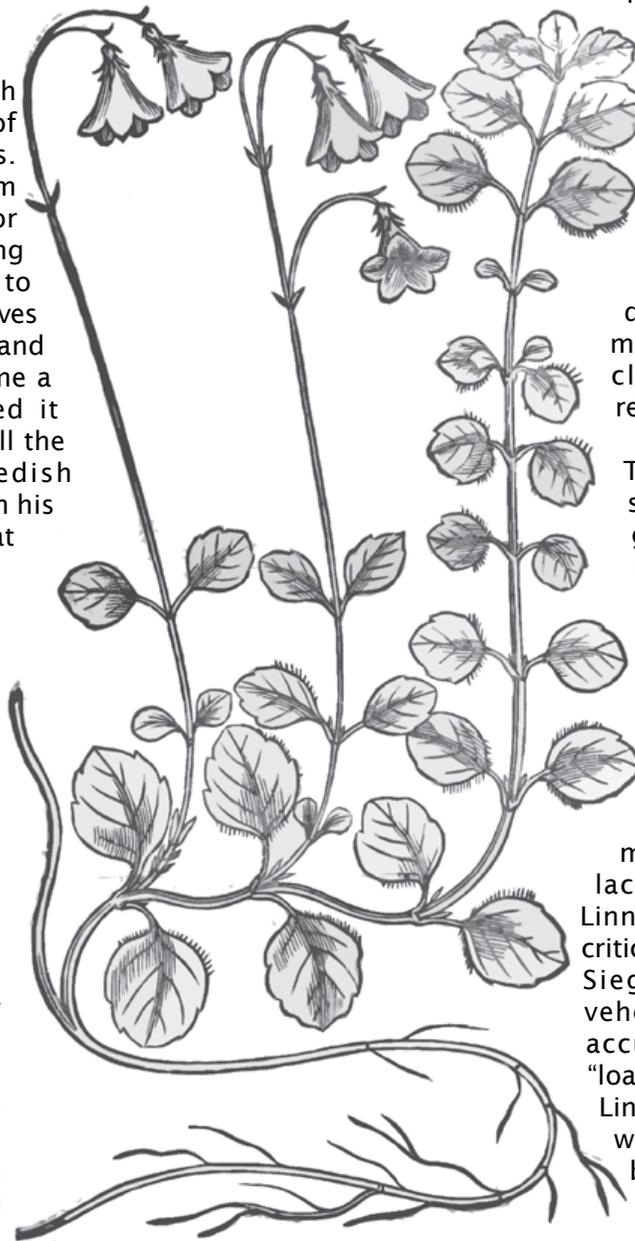
very simplicity, however, proved invaluable. This 'sexual system' of counting reproductive parts has long since been discredited, but at the time it enabled Linnaeus to form the basis for modern taxonomy. Using his system and his own considerable experience of the natural world he was able to do in months what earlier, more 'natural' systems would have taken years, as new and unnamed species inundated Europe from throughout the world. Although it was arrived at by thinking since proven incorrect, some of the framework of his hierarchy remains: order, family, genus and species. The higher classifications have been discarded only recently, as molecular data and the science of cladistics determined new relationships.

This 'reacceptance' of the sexuality of plants was new to his generation. Note again that he did not himself rediscover this; it was experimentally proven by Camerarius in 1694, and written about outside of Sweden. We must credit Linnaeus with recognizing this controversial truth, however, and courageously advocating it. It was a position that brought much criticism from more straight-laced botanists and all his life Linnaeus proved very sensitive to criticism. One Russian botanist called Siegesbeck was particularly vehement in his objections, and accused Linnaeus of espousing "loathsome harlotry". If you ask me, Linnaeus was sort of begging for it when he described flowers "as bridal beds which the creator has so gloriously arranged with such noble bed curtains, and

perfumed with so many soft scents that the bridegroom with his bride might there celebrate their nuptials..." Bridegroom? What about two, three or five bridegrooms?

A story about the artist Georg Ehret throws some light on some of the negative publicity that Linnaeus received. Ehret met the young Linnaeus at the home of George Clifford where Linnaeus was cataloguing the plants in Clifford's garden. Ehret stayed on to paint them. While there, Linnaeus explained his sexual

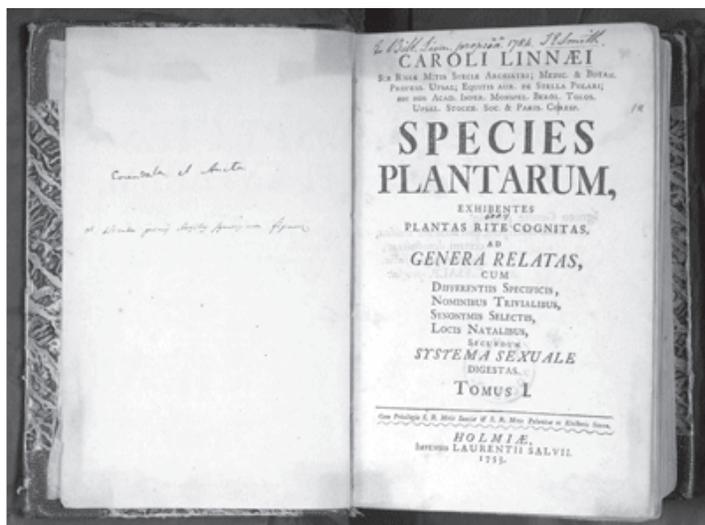
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system to Ehret, who on his own, created a 'tabella', the famous picture showing the various arrangements of the reproductive flower parts based on the system. When Ehret published and sold the tabella he credited Linnaeus for the system. Linnaeus, however, used the drawing in his *Genera Plantarum* without permission and without acknowledging Ehret. Just another case of an egotistical scientist taking an artist for granted.

What is amazing to me is what Linnaeus did three hundred years ago still has much validity today. It is only in the past few years, with our growing knowledge of molecular data, that his taxonomic dominance has been seriously questioned. In his time, however, his system allowed for the recognition and naming of the thousands of species that the surge in exploration brought from all over the globe, brought more often than not by his own students. In a catch 22 manner, the system probably had something to do with encouraging the explorations which provided the material to expand and solidify the system.



Linnaeus' own annotated copy of *Species Plantarum*, 1753; [www.linnean.org](http://www.linnean.org)

Dr William T. Stearn summed up this controversial genius best. "It was the good fortune of Linnaeus that his talents so precisely met the needs of his times ....His essential task was to provide the means of identifying and naming all the organisms then known...Linnaeus lived at a time, possibly the very last time, when a person of his capability could accomplish it single-handed..." We owe a great deal to this multifaceted man who made such lasting contributions to our knowledge of the natural world.



**Editor's correction:** The author of the article about Ollie Combs (Fall 2007) was inadvertently not recognized. Our apologies go to the author, Corbett Mullins.

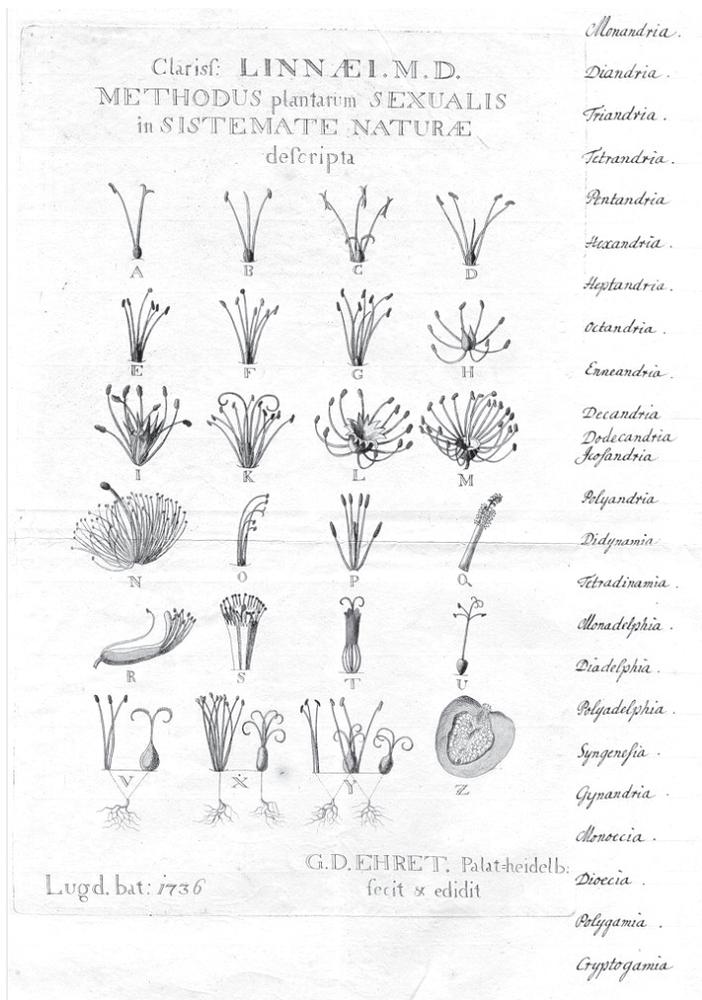
## Membership Renewal Time!

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Dues for 2008 are:

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Ehret's interpretation of Linnaeus' system of classification of plants; [www.huntbot.andrew.cmu.edu](http://www.huntbot.andrew.cmu.edu)

# Hemlocks in Peril:

## Hemlock Woolly Adelgid Spreads Quickly in Southeastern Kentucky

by Tara Littlefield, *KSNPC Botanist* and Andrew Berry, *KSNPC Landowner Incentive Program Coordinator*

In Kentucky, the eastern hemlock (*Tsuga canadensis*) occupies mesic ravines, coves and other sheltered sites on the Appalachian Plateau and in the Cumberland Mountains. This species is also found in the Eastern Knobs region with disjunct populations occurring in the Shawnee Hills (Mammoth Cave area). The forest canopy in hemlock groves is tall and dense with ground cover usually rich and diverse in herbage and invertebrates. Hemlock often dominates in these areas, sometimes forming dense stands, but usually growing in combination with a variety of other mesophytic species including tulip poplar (*Liriodendron tulipifera*), sweet birch (*Betula lenta*), white basswood (*Tilia americana* var. *heterophylla*), yellow buckeye (*Aesculus flava*), beech (*Fagus grandifolia*), and white ash (*Fraxinus americana*). Dense thickets of rhododendron (*Rhododendron maximum*) often occur in the understory but many other species may occur within the microhabitats it produces. It is one of the longest-lived shade-tolerant trees in North America. The hemlock forests cover approximately 2.5 million acres of forest from southern Appalachians to southern Canada and west to the central Great Lake states.

Eastern hemlocks have been a main component of eastern forests for more than 8,000 years (Foster 1998). There have been three documented mass declines in this species' population during this period. The first decline occurred approximately 5,500 years ago as documented in pollen samples collected throughout eastern North America (Ellison *et al.* 2005; Bhiry and Filion 1996). Studies suggest that this decrease in hemlocks resulted from a species similar to the eastern hemlock looper (*Lambdina fiscellaria*), or a combination of this insect pest and climatic effects (Bhiry and Filion 1996; Fuller 1998). According to pollen records, it took almost 2,000 years for the hemlock to re-establish its dominance in many community types throughout the Appalachians. The second decline occurred approximately 200 years ago when much of eastern North America was converted to agriculture and extensively logged (Ellison *et al.* 2005). Since then, hemlocks have remained dominant in

protected coves and have begun to re-establish themselves in much of the former area that they once inhabited. The third decline has occurred from the mid-1980s to the present, as the hemlock woolly adelgid (HWA, *Adelges tsugae* Annand), an insect pest from Asia, causes widespread death throughout infected areas.

It's hard to imagine eastern Kentucky's forests without the eastern hemlock. The hemlock provides a dark, almost primeval, feeling to the sheltered coves and hollows where it dominates the canopy. The communities that inhabit these dark and cool ravines owe much of their existence to the microclimate created by this tree. Frequent hikes in eastern Kentucky Forests can lead us to take for granted the beauty and ecosystem function that these magnificent trees provide. Unfortunately it sometimes takes a tragedy to put things in perspective.

The HWA is a small aphid like insect native to Japan and China. It was accidentally introduced into Virginia in the 1950s and has now spread to 18 states. It is a reddish-purple insect measuring only about 1/32 of an inch long which makes it difficult to see with the naked eye. HWA reveals its presence most of the year by producing a dry, white woolly substance that is

*Continued on page 6*



Hemlock woolly adelgid infestation is best seen by searching for woolly masses on hemlock twigs in late Fall, Winter, and Spring; photo by Bryon Brooks, KSNPC.

Continued from page 5

secreted on hemlock twigs. These “woolly” masses are most abundant in the winter and spring when they are formed to protect egg clusters. HWA are parthenogenetic, meaning that all individuals are female and capable of reproducing. HWA disperses into uninfected areas by wind, birds, deer, small mammals, and people. This pest attacks all stages of the hemlock, from seedlings to mature trees, and can completely eliminate the hemlock from a site. Hemlocks lack the ability to re-sprout after defoliation and the fact that hemlock seeds only stay viable for one year means that no seed bank will be left to re-populate the coves after the HWA has run its course.

It has been shown that sweet birch (*Betula lenta*) is the most abundant seedling that is taking the place of the hemlock (Orwig and Foster 1998), followed by red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*) and opportunistic herbaceous species such as pokeweed (*Phytolacca americana*) (Orwig and Foster 1998). Invasive plant species such as tree of heaven (*Ailanthus altissima*) and Japanese stilt grass (*Microstegium vimineum*) have also been shown to invade these areas, adding further changes to species composition.

For several years the hemlocks in Virginia, North Carolina, and Tennessee have been infected with the HWA. But hearing of the infestation and seeing it firsthand are completely different things. On a recent trip to the North Carolina mountains, the magnitude of the loss of hemlock became terribly apparent. We visited two sites, the famous Joyce Kilmer Memorial Forest and Linville Gorge Wilderness Area. Both areas had lost significant numbers of hemlocks and those surviving were infected and soon to lose the battle against the HWA. Observing Linville Gorge from a lookout one can see the standing ‘ghost’ trees along the Linville River and up the coves that drain into this watershed. Along the canyon floor, the once shaded bottoms are now open to the sun. Large dead hemlocks stood with their bare limbs reaching out. It was apparent that the composition of not only the forest, but the entire community of plants

and animals dependent upon this forest type, was drastically changing.

Since it was first detected in Kentucky in Harlan County in the spring of 2006, HWA has been moving quickly. It is currently known in four counties (Leslie, Letcher, Harlan and Bell) with some urban landscape infestations reported from Grayson and Oldham Counties. In some places, like Blanton Forest State Nature Preserve in Harlan County, hemlock death is already noticeable (Alice Mandt, KSNPC, personal communication). In November of 2007, Kentucky State

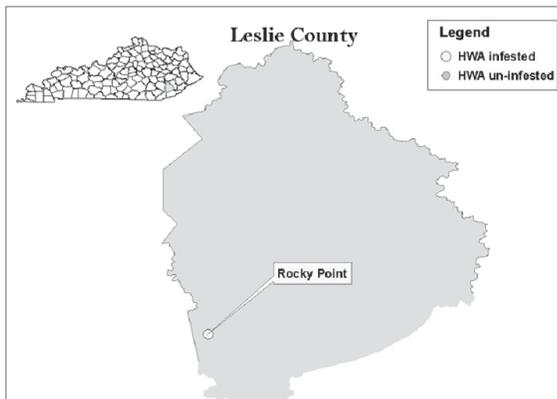
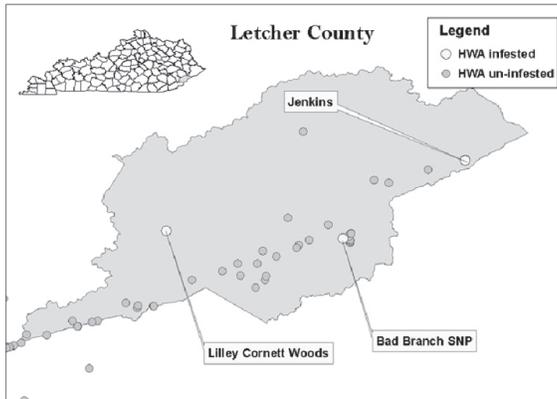
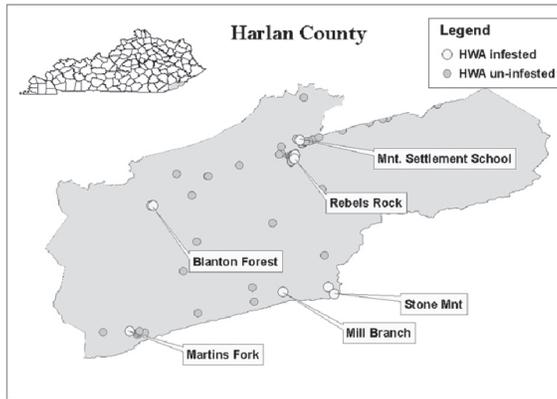
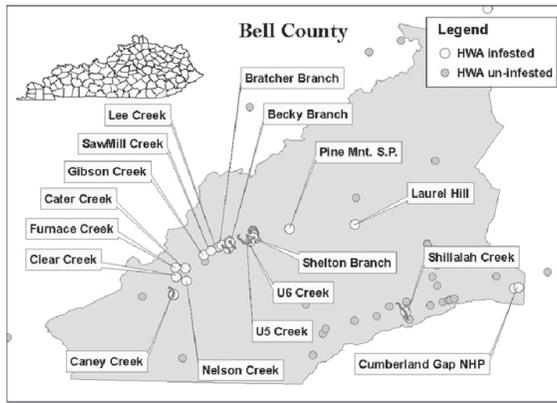


Standing dead hemlock in Linville Gorge, NC; photo by Tara Littlefield

Nature Preserves Commission conducted a volunteer day to survey for hemlock woolly adelgid at Bad Branch State Nature Preserve in Letcher County. While we found that much of the nature preserve was free from the HWA, several infected trees were located in the vicinity of Bad Branch Falls. Numerous volunteer “search days” have been conducted and more will be planned for in the future.

There are several organizations working on monitoring and controlling the HWA infestation in Kentucky including the Kentucky State Nature Preserves Commission (KSNPC), Kentucky Natural Lands Trust, Pine Mountain Settlement School, Kentucky Division of Forestry, University of Kentucky, Kentucky Heartwood, Kentucky Fish and Wildlife and many concerned

citizens. Alice Mandt of KSNPC, along with other agencies, is spearheading an effort to raise funds for the purchase of pesticides and biological control agents to treat high quality hemlock communities and individual trees. The pesticide (Imidacloprid, Merit) is injected into the soil and provides the tree with protection from HWA. This method is both costly (0.70 c/1 in dbh), and has been shown to have negative impacts on aquatic ecosystems. This means that treatments adjacent to streams would have to be avoided. The biological control method involves a predatory beetle which feeds upon HWA. The idea is to save enough mature reproductive trees in order to re-establish the population after the HWA runs its course. This will involve using a combination of



chemical and biological control agents. Please contact Alice Mandt (KSNPC) at [alice.mandt@ky.gov](mailto:alice.mandt@ky.gov) or by phone 502-573-2886 if you would like to contribute to the fundraising efforts or volunteer your time to help survey for HWA.

Now is the time to enjoy the hemlock forests found in Kentucky. Next time you are lucky enough to explore a dark hollow graced with mature hemlocks be sure to make it a good one. Take your kids out to see them, smell a handful of rich decomposing needles, bask in a cool ravine on a hot summer day, and be grateful that you lived in a time when the hemlocks stood in all of their majesty. Let us hope that they will stand on in the future.



Selected References:

Bhury, N. and Filion, L. 1996. Mid-holocene Hemlock decline in eastern North America linked with phytophagous insect activity. *Quaternary Research* 45: 312-20.

Ellison, A.M., Bank, M.S., Clinton, B.D., Colburn, E.A., Elliott, K., Ford, C.R., Foster, D.R., Kloepfel, B.D., Knoepp J.D., Lovett, G.M., Mohan, J., Orwig, D.A., Rodenhouse, N.L., Sobczak, W.V., Stinson, K.A., Stone, J.K., Swan, C.M., Thompson, C., Von Holle, B., and Webster, J.R. 2005. Loss of foundation species: consequences for the structure and dynamics of forested Ecosystems. *Frontiers in Ecology*, 3(9): 479-486.

Foster, D.R. 1998 Hemlocks Future in the Context of it's History: An Ecological Perspective. *Proceedings: Symposium on Sustainable Management of Hemlock Ecosystems in Eastern North America*.

Fuller, Janice L. 1998. Ecological impact of the mid-Holocene decline in southern Ontario, Canada. *Ecology*, 79(7): 2337-2351.

Orwig, D. A. and D. R. Foster. 1998. Ecosystem response to an imported pathogen: the hemlock woolly adelgid. *Arnoldia* 58: 41-44.

Orwig, D. A and D.R. Foster. 1998. Forest Response to the Introduced Hemlock Woolly Adelgid in Southern New England, USA. *Journal of the Torrey Botanical Society*, 125 (1):60-73.

Maps of county HWA infestations; created by Songlin Fei, U. K.

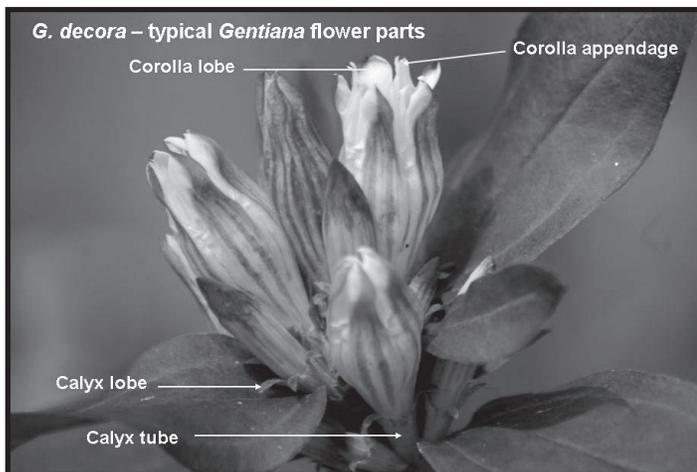
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 and grant information

# The Genus *Gentiana*

by Jim Drake, Suwanee, GA

Members of the Gentian family, *Gentianaceae*, have been found on every continent except Antarctica. They grow in varied habitats from deserts, savannas, prairies, rain and temperate forests to tundra environments. Morphological structure in this group ranges from trees to small herbs, and their flowers span a broad spectrum of colors (Gentiana Research Network 2006). Presently, about 1706 species of gentians within some 90 genera are recognized worldwide. However, this number may change since several genera are in the process of being revised, (Struwe, pers. comm. 2006). The name "gentian" honors the ancient King Gentius of Illyria (near Greece) who studied the plants and found medicinal properties in certain species.

In the Southeast, members of the gentian family can be found growing along roadsides and trails, in meadows, beside streams, within national, state parks and forests and on private land. Despite widespread distribution within certain genera, most species are at best infrequent and at worst rare or endangered.



Personal experience has shown that even the most frequently occurring species are generally spread thinly over their range with only a few plants growing at any given site. To this wildflower hunter, all gentians are rare.

The focus of this discussion will be limited to selected species of the genus *Gentiana*. Much of the following information was gathered from personal observations. Many *Gentiana* bloom from late summer through mid to late fall, and seem to declare "goodbye" to summer while offering a lingering preview of the following spring's return of other wildflowers. Members of *Gentiana* share common characteristics including:

herbaceous structure; perennial life cycle; calyx tubes; corolla tubes; bottle, cylindrical or bell-shaped flowers; pleats or plaits connecting the five "petals" of the corolla. Pleats terminate in appendages and "petals" terminate in lobes.

From a recent review of the United States Department of Agriculture Natural Resources Conservation Service Plants Profile website, the following species of *Gentiana* can be found in Kentucky: *G. alba* (*G. flavida*), *G. andrewsii*, *G. decora*, *G. puberulenta*, *G. saponaria*, and *G. villosa* (USDA, NRCS 2007).



*Gentiana decora*; photo by Jim Drake

A more northern species, *Gentiana andrewsii* has been documented from northern Kentucky. This species seems to be a favorite of native nurseries, and has often been seen for sale at wildflower conferences, and in native nursery catalogs. The deep blue colored flowers tend to be remained closed even at anthesis. One key characteristic are corolla lobes which are shorter than the pleats.

Showy gentian, *Gentiana decora*, seems to prefer higher elevations. Plants are infrequently encountered in mountainous regions of the Southeast, and the species is listed as Special Concern in Kentucky. The "showy" blossoms, which reflect both the common and species names, range in color from white with blue vertical stripes to almost completely white. Flowers are often open at anthesis forming a campanulate or bell-shaped structure.

A more widely distributed species, *Gentiana saponaria*, is commonly referred to as harvest bells and soapwort gentian. Occasionally found along roadsides, *saponaria* seems to prefer boggy areas along streams near wooded areas. Almost royal blue in color, the blooms may sport pale narrow stripes. Flowers normally remain loosely closed but occasionally open fully at maturity.



*Gentiana saponaria*; photo by Jim Drake

Sometimes confused with *G. decora* (above), distinguishing characteristics between the two include flower color, and size and shape of calyx lobes.

Striped gentian, *Gentiana villosa*, also more widely distributed, thrives in dryer areas particularly in or near



*Gentiana villosa*; photo by Jim Drake

open piney woods. Easily recognized by pale blooms with green stripes, flowers may become tinged with purple stripes especially with age. Corollas may open up shortly after blooming only to re-close later on.

*Gentiana puberulenta* and *Gentiana alba* are both mainly prairie species, rare in the Southeast. More common farther north and west, both species are endangered in Kentucky and occur in only a handful of locations where habitat is favorable. Consistent with the common name, cream gentian, flowers are usually pale white and corollas are loosely to fully open. *Gentiana*

*puberulenta* produces open flowers which are distinctly blue in color. Common names include downy gentian and prairie gentian.

Fortunately, the Kentucky State Nature Preserves Commission (KSNPC) has established proactive programs to protect the state's botanical treasures including endangered plants such as certain gentian species. KSNPC's mission is: "to protect Kentucky's natural heritage by (1) identifying, acquiring and managing natural areas that represent the best known occurrences of rare native species, natural communities and significant natural features in a statewide nature preserve system; (2) working with others to protect biological diversity; and (3) educating Kentuckians as to the value and purpose of nature preserves and biodiversity conservation." (KSNPC 2007). Representatives of the Commission are working hard to accomplish this mission. During a recent field trip related to *Gentiana alba* conservation,

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*Gentiana alba*; photo by Jim Drake



*Gentiana puberulenta*; photo by Jim Drake

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botanists Tara Littlefield and Deborah White, and Landowner Programs Coordinator Andrew Berry provided an insight into some of KSNPC's activities. In later communications, Littlefield explained that KSNPC supports research on state nature preserves, monitors populations of endangered species and manages activities such as controlled burning and invasive species removal. In fact, the three known populations of *Gentiana alba* and two of *Gentiana puberulenta* are monitored annually. (Littlefield, pers. comm. 2007). Additionally, the Land Owner Incentive Program provides private landowners with technical and financial assistance to help them protect and enhance habitat for some of the most imperiled species. (KSNPC 2007).



### Acknowledgements

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James S. Pringle, Ph.D. plant taxonomist, biology professor, and author.

Brad Sanders, educator, editor, and wildflower photographer.

Lena Struwe, Ph.D. Gentian Research Network and Rutgers University professor.

### References cited

Gentian Research Network. What are Gentians? (<http://gentian.rutgers.edu/gentians.htm>., 19 October 2006). Site maintained by Dr. Lena Struwe, and hosted by Rutgers University.

Kentucky State Nature Preserves Commission. 2007. Rare Plant Database (<http://www.naturepreserves.ky.gov/>, 5 December 2007). Frankfort, KY.

Littlefield, Tara. "KSNPC Activities." Phone conversation and E-mail to Jim Drake. 4 December 2007.

Struwe, Lena "Gentians." Personal communication. E-Mail to Jim Drake. 20 October, 2006.

USDA, NRCS. 2007. The PLANTS Database (<http://plants.usda.gov>, 5 December 2007). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

*Continued from page 1*

tide of species extinctions, and all the other environmental conditions that indicate we have made some progress in helping common and abundant wildlife and plants along and winning some battles but we are losing the war and our Planet is in serious trouble. Therefore, because such a large proportion of the US population considers themselves Christian and almost every faith community has statements regarding the care for creation, all Christians and people of other faith communities should embrace the concept of Caring for Creation or at least accept the realization that when you care for the Creator you should care for his Creation. There are a number of very excellent books on this topic in the literature today and I highly recommend the following titles: *Caring for Creation: Responsible Stewardship of God's Handiwork* by Calvin DeWitt et al. 1998, *Caring for Creation: An Ecumenical Approach to the Environmental Crisis* by Max Oelschlaeger 1996, *Redeeming Creation: The Biblical Basis for Environmental Stewardship* by Van Dyke et al. 1996, and *Loving Nature: Ecological Integrity and Christian Responsibility* by James Nash 1991. I have read them all and several are highly academic treatise but others are more popular in nature. For those who wish to read something by local authors I would recommend J. Matthew Sleeth's book, *Serve God, Save the Planet* and Norman Wirzba's book, *The Paradise of God*. Matthew is an MD that resides in Wilmore and Norman is the chair of the Philosophy and Theology Department at Georgetown College. For those who want the cut and dried quick version you can visit the Kentucky Society of Natural History Web Page [www.ksnh.org](http://www.ksnh.org) <<https://stuowa.eku.edu/exchweb/bin/redir.asp?URL=http://www.ksnh.org/>> and click on the Caring for Ark Powerpoint presentation which will give you the quick summary of what is in these books.

In summary, this president's message is one that seeks to give you an excuse to sit by the fire on a cold winter's eve and to think about the morality of caring for the natural world including the precious wildflowers our members so dearly love. The world is changing and the ecological challenges that lie before us will probably not be solved by technology alone for it will take each and every one of us to critically examine our lifestyle to determine how we can make the world a better place to live. The late Pope John Paul the II so eloquently stated in his world day of peace message, "Today the ecological crisis has assumed such proportions as to be the responsibility of everyone. I wish to repeat that the ecological crisis is a moral crisis."



~President Tom Barnes

## KNPS Native Plant Certification Courses Spring 2008

The Kentucky Native Plant Society is now starting a new series of courses leading to Certification in Native Plant Studies. It has been about 5 years since the last series of courses were completed. The Society will make a strong effort to offer all needed courses for Certification over the next 3 years. See [www.knps.org](http://www.knps.org) for the requirements of certification. Watch for more courses in Summer 2008. Books, if required, should be obtained before the first class session.

### Courses at Northern Kentucky University

All NKU classes meet at the Highland Heights campus new Science Center Room 168.

Register on line at [nkuconnections.nku.edu](http://nkuconnections.nku.edu) or call NKU Connect Center at (859) 572-5600.  
NKU classes are \$85.

#### *Plant Communities of KY* (Core course)

Instructor: Landon McKinney, Project Manager, Ecological Services, ASC Group, Inc.

This course will deal with the identification and distribution of plant communities in Kentucky. Communities will include forest types, native grasslands, glades, savannahs, and wetlands. Emphasis will be placed on community structure by identifying both dominant and indicator species. Influencing factors such as soil type, moisture, topography, and geology will be discussed. Additional emphasis will be placed on rare or unusually sensitive plant communities. The course will be taught through a combination of lecture and slide presentations. At least one field trip is planned.

Saturdays from 9:00 to 12:00 on Feb. 16, Feb 23, Mar 1 and Mar 8.

#### *Kentucky's Spring Wildflowers* (Core course)

Instructor: Larry Brewer, Senior Plant Ecologist, Center for Applied Ecology, NKU.

If you have good familiarity with basic descriptive plant terminology, join this class and learn to use the technical plant identification keys for the spring wildflowers of Kentucky. The distinctive features of some of the more common spring wildflowers will be emphasized.  
Recommended text: *Plant Life of Kentucky*, (\$65—\$75) by Ronald L. Jones.\*

Saturdays from 9:00 to 12:00 on Apr 12, Apr 19, Apr 26 and May 3rd.

### Courses at Eastern Kentucky University

To register: ECU Community Education at (859)622-1228.  
For more information contact: [ron.jones@eku.edu](mailto:ron.jones@eku.edu)  
EKU courses are from \$59 to \$73.

#### *Basic Botany for the Amateur Naturalist* (Core Course)

Instructor: Dr. Ronald Jones, Foundation Professor of Biological Sciences, ECU.

This is a lecture and laboratory class that will reveal the intriguing details of plant structure and function. It will focus on the study of plant cells, tissues, anatomy, morphology, reproduction, nutrition, development, with an introduction to plant diversity and classification. No previous background is required. Participants will be expected to keep detailed notes, and to complete assignments between class meetings. We will use microscopes extensively. Required text: *Botany for Gardeners* by Brian Capon (about \$15). All classes meet in Moore 202 on the ECU campus.

Feb 2 (Sat): 9 am to 12 pm; Feb 9 (Sat): 9 am to 12 pm; Feb 13 (Wed): 6 to 9 pm; Feb 20 (Wed): 6 to 9 pm.

*Field Geology for Amateur Naturalists* (Special topics course) (Note—this course will count for 2 of the 6 required credits from the Special Topics category in the KNPS Certification Requirements.)

Instructor: Mark Sweet, Geologist, Shield Environmental Associates Inc., Lexington, KY. [Mark\\_Sweet@shieldmw.com](mailto:Mark_Sweet@shieldmw.com)

The objective of this course is to familiarize the student with basic concepts of geology and geology of Central and Southern Kentucky. The course will be very “hands-on” and will include two Saturday field trips. Tuesday night sessions will familiarize students with basic geologic concepts such as geologic time, uniformitarianism, facies changes, types of rocks, dynamic forces within the earth’s crust, the “geologic column” relative to Kentucky, map reading and orientation, and an overview of stratigraphic sections visited during the class. The field trips will involve car-pooling to 1) various sites from Fayette to Pulaski County, and 2) the Natural Bridge/Red River Gorge area. Depending on the wishes of the class, a trip to Southern Kentucky may be substituted for the Natural Bridge / Red River Gorge field trip. Students should be aware that number of hours noted are estimated minimum time needed, and it may be advisable, especially if the class is willing, to extend some of these trips. No background in geology is required.

There will be \$15 fee per student to cover the cost of maps and handouts. Meet at ECU’s Roark Building Room 1.

March 25, Tue., 6:30 pm to 8:30 pm; March 29, Sat., 9:00 am to 12:00 pm.; April 5, Sat., 9:00 am to 2:00 pm; April 8, Tue., 6:30 pm-7:30 pm.

#### *Plant Taxonomy for the Amateur Naturalist* (Core Course)

Instructor: Dr. Ronald Jones, Foundation Professor of Biological Sciences, ECU.

Plant Taxonomy is the study of plant naming, classifying, and identifying. We will address such questions as how and when did plants appear on Earth, what are their patterns of evolution, how can their diversity be studied, how are they named, and what are the techniques for identification? The emphasis will be on learning basic terminology to describe plant parts, and to prepare for keying and the use of manuals in subsequent classes. A great deal of information will be covered, and students should be prepared to work hard and actively participate. The text, *Plant Life of Kentucky*, (\$65—\$75) by Ronald L. Jones\*, will be used in this class and subsequent classes dealing with the identification of ferns, wildflowers and trees.

May 7 (Wed) 6 to 9 pm; May 17 (Sat) 9am to 12 pm; May 21 (Wed) 6 to 9 pm pm; May 31 (Sat) 9 am to 12 pm. All classes meet in Moore 202 on the ECU Campus, and some classes may involve field trips or hikes.

## Calendar of Native Plant-related Events

### KNPS Hike

April 12, 2008. Jessamine Creek Gorge Wildflower Hike led by Tara Littlefield, KNPS, KSNPC botanist.

Come see the beautiful spring wildflower display of this remote and unique palisades gorge. We will meet in Wilmore, Kentucky at 9:30 a.m. and then carpool to the Gorge (~5 minute drive). Please bring lunch and water, hiking shoes and love of spring wildflowers. Registration is required due to limited number of participants. Please call Tara at 859-333-9887 or email her at [tara.littlefield@ky.gov](mailto:tara.littlefield@ky.gov) to register.

### KNPS Spring Conference & Wildflower Weekend

April 18-20 2008 at Natural Bridge State Resort Park. More details in the next issue of *The Lady-Slipper*!



### Invasive Species Volunteer Workdays

**Natural Bridge State Park**, the 1st Saturday of each month

Help stop the invasion of exotic plants by volunteering to assist the naturalist staff in pulling and cutting some of the worst invaders. This is great opportunity for individuals and groups to improve the environmental health of our public lands! Each volunteer day begins at 9:00 am at Natural Bridge's Hemlock Lodge, and ends whenever you get tired! Pre-registration is encouraged; contact Noelle Grunwald at [noelle.grunwald@ky.gov](mailto:noelle.grunwald@ky.gov).

**Floracliff SNP** (Fayette County), 1 p.m. EST, the second Saturday of each month

Join in the effort to remove bush honeysuckle from the preserve as part of an ongoing effort to protect our native species. To register please contact Beverly James at [floracliff@aol.com](mailto:floracliff@aol.com), <http://www.floracliff.org/news>.

### **SEE PAGE 2 FOR CONTACT INFORMATION.**

*(Return address below is for  
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