The Lady-Slipper

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www.knps.org info@knps.org

Gentians: All Fall Color is Not Red, Yellow and Orange

Thomas G. Barnes, Ph.D., Extension Wildlife Specialist, Department of Forestry, University of Kentucky

Gentianopsis crinata by Tom Barnes

Fall is the time of the year when the leaf peepers begin their road trips across the Commonwealth in search of reds, yellows, oranges, and other colors in the tree canopy. For wildflower enthusiasts it is a time of the year when they think of other activities since the goldenrods and asters are done flowering and the drabness of winter is quickly approaching. For those who do love searching for unique wildflowers, like so many do for our native orchids, this is the time of the year to search for fall flowering members of the gentian family, those that typically have beautiful blue flowers. When you think of the rarity of the native orchids found in Kentucky, approximately 38% are listed as rare, special concern, threatened or endangered. Of the fall gentians, 68% fall in those same categories. So if looking for rare plants is your venue, then the fall gentians are an excellent group to focus on. I hope to share with you some information about gentians in general and then which species can be found in Kentucky.

G. decora by Tom Barnes

The fall flowering gentians all belong to the genus Gentiana and there are six species: *G. puberulenta* (prairie closed), *G. decora* (Appalachian or showy), *G. andrewsii* (Closed or bottle), *G. saponaria* (Soapwort), *G. flavida* (Pale), and *G. villosa* (Striped). The Pale gentian actually is the first of the group to flower in August, typically before the fall season actually kicks in September and October. But we will include it in the discussion as well. Other members of the gentian family that reside within the state include the Screw-stems (*Bartonia virginica* and *B. paniculata*), American columbo (*Frasera carolinensis*), the stiff gentian (*Gentianella quinquefolia*), the Pennywort (*Obolaria virginica*) and the Marsh-Pinks (*Sabatia angularis* and *S. campanulata*).

The gentian family of 87 genera and more than 1600 species are known to occur on every continent except Antarctica. They are most often associated with the deep blue flowers found in the Rockies or the Alps but their color can vary from deep blue to pink, red and yellow. The name Gentiana (one of

(Continued on page 4)

The Lady-Slipper is intended to be published by the Kentucky Native Plant Society [IRC 501(c)(3)] in March, June, Sept., and Dec. Deadlines are the 10th of the prior months, but Editorial Committee members welcome article submissions at any time. Send dues and membership status inquiries to:

Kentucky Native Plant Society Membership
801 Schenkel Lane, Frankfort, KY 40601
www.knps.org info@knps.org

For all other business please contact an appropriate officer or board member.

The President's Message

By Alan Nations

Greetings! The year is rapidly coming to an end as we prepare our last edition of the Lady-Slipper. I want to thank our membership for their support and thank the officers and board for their hard work and dedication during the year.

At the time of this writing, severe or moderate drought conditions continue over large portions of Kentucky. Extreme record breaking heat and drought conditions have altered the daily lives of most folks in one way or another since they began this spring. Perhaps that could account for the low field trip attendance this year, but 2009 attendance was also low on several occasions. Our field trips have been very popular in the past, so I cannot help but wonder why we are seeing a decline in interest. In a membership survey three years ago, many responders rated field trips as an activity most important to them. I agree – they are very important to me also, and I am concerned. Field trips give us an opportunity to explain the importance of our mission to protect and preserve native plants and ecological systems. We welcome and would appreciate your suggestions and ideas concerning next year's field trip schedule. You are an important part of the decision making process.

Educational courses were also rated as very important in the membership survey. While the Native Plant Certification program has been temporarily suspended for revision and administrative changes, a new Native Plant Stewardship Certification program is being introduced. It will not replace the Native Plant Certification program – it's an addition to our educational offerings.

2011 will mark the Society's 25th anniversary. Ideas are being considered and plans are being made to celebrate throughout the year. If you have ideas for celebration, or any pictures, articles or recollections of past events, please let us know. Dr. Ron Jones of EKU has copies of all Lady-Slippers archived; otherwise there are few records on file. Wildflower Weekend, our spring conference and membership meeting, will be the largest of all celebrations. Mark your calendar and make reservations for April 29th –May 1st at Natural Bridge State Park.

Wishing you all a safe and relaxing holiday season.

WANTED:

YOUR CONTRIBUTION!

The KNPS *Ladyslipper* is fortunate to have articles written by many of Kentucky's leading botanists, but we want all of our members to have a voice. Send us any thoughts you may have on the articles in this issue, or anything else KNPS related, by e-mailing info@knps.org with the subject "Letter to the Ladyslipper". Have an idea for an article you'd like to write or know about a native plant event in your area? We'd like to hear about them as well!

Announcing the (All New!)

KNPS Native Plant Stewardship Certification Program

Program Objectives

The KNPS Native Plant Stewardship Program was established to provide participants with the following:

Background knowledge about Kentucky's native plant resources
Knowledge about threats to native plant resources
Experience managing for and restoring native plant resources

Program Overview

The full certification program consists of six one-day sessions, and is designed to be completed by one set of participants from start to finish. Three of these sessions are classroom-type courses, and three are field courses. These will be spread out over a six month period, with one course each month. Each full program offering will be based out of one area of the state, but the location will vary over time to allow for participation in different parts of the state.

A one-time registration fee of $60 ($30 for registered high school or college students) covers the entire program, and includes a one-year membership to the Kentucky Native Plant Society. Registration is limited to 15 participants.

Spring 2011 Datea	Course Title	Instructors	Location
Jan 29	Kentucky's Native Plant Communities: An Overview	Tara Littlefield Brian Yahn	Raven Run Nature Center (Fayette Co.)
Feb 12	Threats to Ecological Communities and Biodiversity of Kentucky	Joyce Bender Jody Thompson	Raven Run Nature Center (Fayette Co.)
Mar 19	Enhancing Biodiversity in your Own Backyard: Growing Native Plants	Mary Carol Cooper	Salato Wildlife Center (Franklin Co.)
Apr 23	Management and Control of Invasive Bush honeysuckle	Beverly James	Floracliff Nature Sanctuary (Fayette Co.)
May 14	Rare Plant Management and Invasive Species Control	Zeb Weese	Franklin Co.
Jun 11	Hemlock Woolly Adelgid in Kentucky	Alice Mandt	TBD*

*Location for this field course will be chosen during the January session

For more information e-mail certification@knps.org

Course Descriptions

Kentucky's Native Plant Communities: An Overview / Jan 29 9:30am-3:30pm / Raven Run Nature Center

Instructors- Tara R. Littlefield (Botanist) and Brian D. Yahn (Vegetation Ecologist), KY State Nature Preserves Commission

This class will provide an overview of different types of ecological communities found in Kentucky, and discuss the biodiversity found within them. We will talk about Kentucky's physical environment and natural history, but the focus will be on the different kinds of plant communities, how they differ and where to find them. There will be an emphasis on rare and unique plant communities found within Kentucky, as well as the importance of documenting and mapping communities.

KY Then & Now (natural landscape)
Natural Communities Definition/Classification
- Characteristics: Geology, Soils, Hydrology, Topographic Location, Vegetation, Disturbance Regime
- Classification: standard vs. non-standard
- Development and quality

Physiographic Regions of KY
Natural Regions of KY
Plant Communities of Kentucky, general overview/ types

(Continued on page 12)

(Gentians, continued from page 1)

the largest genera in the group with more than 360 species) is derived from Greek and was originally named by Dioscorides and Pliny the Elder somewhere between 50 and 100 AD. According to these two botanical scholars, the name derived from the last of the king of Allyria (near Albania of today) Genthios who originally discovered its medicinal properties sometime between 180 and 68 BC. This given name is still used by the people of Albania and surrounding areas. Gentians were believed to have evolved from the tropics and moved north and while some species are still found in the tropics, by far the most species now occur in temperate regions of North America, Europe and Asia.

"When you think of the rarity of the native orchids found in Kentucky, approximately 38% are listed as rare, special concern, threatened or endangered. Of the fall gentians, 68% fall in those same categories."

In general, members of the gentian family do not have simple or glandular hairs anywhere on the plant, they have simple, opposite, entire leaves with a prominent midrib with few secondary veins. The flowers are typically bisexual with petals and sepals that are fused at the base. The petals are often large and colorful and twisted (contorted) to the right in the bud. The stamens are inserted into the corolla tubes and the ovary is both superior and bicarpellate.

While many different creatures pollinate gentians including moths, hummingbirds, and bats, by far the most important pollinator of North American gentians is the bumblebee. These strong insects are capable of prying open the closed flowers (for species like *G. andrewsii* and *saponaria*) and accessing the pollen. Sometimes they actually chew a hole in the side of the flower and gain access. The other interesting pollination story about gentians is that most of the fall blooming species close up at night and only open on bright sunny days. Why would a plant do such an outrageous thing? The answer is quite simple. Closing the flowers at night helps protect the pollen from cold and dew or rain and ensures that the pollen is fresh when the bees begin flying when the temperature increases. This means that the pollen is less likely to spoil and remain fresh. The actual opening and closing of the flowers in the gentians is a result of expansion and contraction of the cells that form the petal.

Gentiana andrewsii by Tom Barnes

Here is another interesting facet of the gentians. They have true blue flowers. Since blue flowers are uncommon in nature, how is this color formed by the plant? It basically involves complicated biochemistry associated with anthocyanins. These flavenoids differ from other plant pigments (like chlorophyll for green and carotenoids of yellows, reds, and oranges) in that they exhibit a wider variety of colors. When anthocyanins are found in the petal vacuoles (large sacs that make up 90% of cell volume) they produce reds, purples and blues. What complicates the equation is that pH affects the anthocyanin chromophore (that part of a visibly colored molecule that absorbs light). The creation of blue flowers results from stabilizing the blue anhydrobase anion from weakly acidic to neutral in a system which we do not understand at this time. We do understand that there are four primary ways that plants produce blue flowers: 1) generating a more oxidized chromophore (add oxygen or remove electrons), 2) increasing vacuolar pH to more neutral, 3) adding metals like Al3+,Fe3+, to the anthocyanins, and 4) stacking aromatic groups to the anthocyanin chromophore so that it absorbs a different wavelength of light. Most plants use a combination of strategies to create the blue color. It appears that the blue color in gentians is formed adding metals, oxidizing and stacking.

G. puberulenta by Tom Barnes

Once a gentian has been pollinated and the seed is mature, the seeds are primarily dispersed by wind. Many of the gentian seed pods rattle in the wind and hence the tiny seed is dispersed farther from the mother plant. If you are attempting to grow gentians from seed, the seed should be sown as soon as possible after ripening as viability appears to decrease dramatically under storage. The seeds should be sown directly onto the growing medium, do not cover with soil, and the seeds need darkness to germinate. It typically takes between two to seven years to produce mature plants that will flower and some species can't be grown because they have an intricate relationship with soil mycorrhizae.

Now that you understand a bit about gentians, lets discover some Kentucky blues beginning with the largest and showiest of them all, the prairie gentian (*G. puberulenta*). Of the fall blooming species, this is the only one where the corolla is mostly open compared to the others which are mostly closed. This species is listed as endangered by KSNPC and is only known from several locations in the Mississippian Plateau area. It is a true prairie or grassland species which ranges from Canada through the Great Plains and reaches it southern distribution in Kentucky and Tennessee. This perennial reaches from three-quarters to one and a half feet tall and stays in flower for about a month. The central stem has a reddish tint and it has up to three inch long and an inch and a quarter wide leaves. It has a long stout taproot with few lateral roots. It is usually considered an indicator of original prairie habitat.

The first of the closed fall gentians is Showy or Appalachian and is listed by KSNPC as special concern. In Kentucky it is only known from the three counties with true mountains, Bell, Harlan, and Letcher and is considered a southern Appalachian mountain endemic. It typically grows on the upland, sandstone ridges and at the edge of mesic forests or openings. The color of this species can vary tremendously and I have seen specimens that are quite blue to some that are almost white. In Kentucky they appear to be more cream colored with darker blue streaks.

Gentiana flavida by Tom Barnes

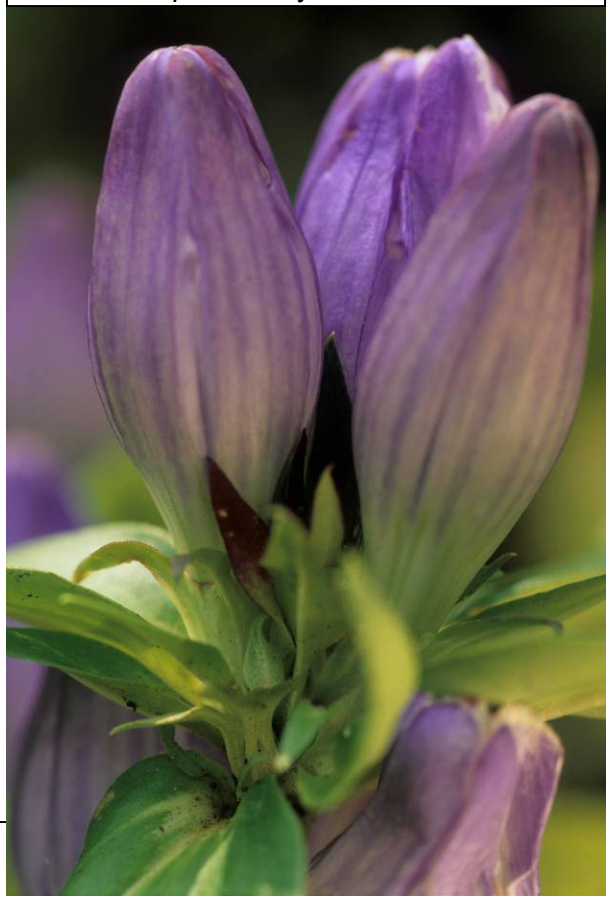
The closed or bottle gentian (*G. andrewsii*) looks quite similar to the soapwort gentian (*G. saponaria*). These are both wetland species and can typically be found in wet grasslands or open wet woods. The soapwort gentian can be found statewide whereas the bottle gentian is found in the Interior Plateau. The primary difference between the species is that *G. saponaria*

Gentiana villosa by Tom Barnes

has rounded corolla tubes that are equal or exceed the length of the appendages between them. In Kentucky *G. saponaria* is listed as infrequent and *andrewsii* is listed as rare. Hybrids between the two species have been reported in the literature.

The pale gentian is the earliest flowering of the closed gentian species often flowering in August. It is endangered and only known from several locations and the best population occurs on private land. It is also much taller than the previous listed species and can obtain heights of three tall or more. The flower color is typically white to off-white or cream but may have a hint of yellow or green. It is synonymous with *G. alba*.

Gentiana saponaria by Tom Barnes



The final pale colored fall gentian in the state is the striped gentian, *G. villosa*. This plant is listed as infrequent and pretty much occurs statewide except for the gulf coastal plain region. It typically grows in dry to wet woodlands or at the edge of open woodlands. It is more typical of size for the other gentians in the state growing from six to eighteen inches tall.

On a final note, the greater fringed gentian (*Gentianopsis crinata*) is a particularly beautiful species that occurs at the edge of bogs throughout the northeastern states and in the high elevations throughout the southern Appalachians. It has been discovered in both Ohio and West Virginia and there is no reason not to believe that it might occur in Kentucky because like most of the other fall gentians, the plants are pretty inconspicuous when not in flower and most botanists are not up in the well known bog systems in the mountains during the fall of the year. So perhaps one day with some exploring, this wonderful species could be an addition to our flora. Then when fall weather comes around, wildflower enthusiasts will have something else to look for and for photographers, well the possibilities are limitless when shooting fall blues.

Tall Tree Tales: FIRE!

By Dr. Ryan McEwan & Dr. Neil Pederson

Fire is an issue that enflames the opinions of natural resource managers, conservationists and tree lovers. It is seen as a serious threat to natural resources, a management panacea, a danger to public, and both a "natural part of forests" and a human intrusion into forests. It is so deeply imbedded in humans that we just might find a pyromania gene in our genome. What *IS* the role of fire in forest ecosystems, and how did we get so mixed up about it?

Let's start by getting clear on some facts. First, fire is a keystone ecological process in at least some ecosystems. By "keystone process" we mean simply that fire is crucial to maintaining the structure, function and composition of the system. Some examples that we think are indisputable at this point in temperate eastern North America include: 1) longleaf pine savanna, such as can be found in sandy soils of the deep southeastern US, and 2) red pine forests, which can be found in cool conifer forests of the Great Lake Region. In these systems (and some others), there is really strong data to support a role of fire as a central driver of ecosystem structure and function. When fire is removed, the system changes dramatically. In these systems, fire suppression is a serious ecological threat to the integrity and functioning of the forest.

Fire! submitted by Ryan McEwan

Fire in Kentucky Forests at the turn of the Century

In Kentucky forests the role of fire is often less readily discernable. Let's start with some things we can say with confidence. Fire has been present in Kentucky forests for at least the last 10,000 years. Analysis of charcoal from sediment cores in Kentucky and the surrounding region have proven this to be true. We also know that fire was a very important part of Kentucky forests at the turn of the last century. Using a technique called "fire history reconstruction", which uses tree-rings to develop records of past fire events from scars that are created when fires pass by the trunk of a tree, evidence indicates that fire was a frequent occurrence in forests of Kentucky from around 1880-1940. When these fires pass by a tree, heat often causes some tissue death of the living tissue below the bark. The tree encapsulates, or compartmentalizes, this injury and, in doing so, creates a permanent record of the fires' passing. As long as the wood is intact, we can use these fire scars to build a history of fire within a particular area. If you sample many trees in a given area you can build a well-replicated and reliable record. We can say with pretty strong certainty that many forests of Kentucky burned from 1880 to 1940 or so. Some of the features of these fires (as outlined in a paper from McEwan and others, *The Journal of Vegetation Science* 2007: 18: 655-664) that might aid in understanding fire as a management tool in modern forests:

1) Fire was present in the forests of Kentucky from around 1880 to 1935. This is quite a lot longer than most prescribed fire experiments

2) Fire was irregular through time. There were periods of frequent fire, and also 3-5 year pauses. Most prescribed fire experiments have regular intervals. This irregularity is likely important.

3) Fires occurred in different kinds of climate conditions, including extreme drought.

4) Fires occurred in young forest. All of the fire scars we found were from young forests. In fact, it seems from the data, that fires were taking place in areas that had been heavily cut over. Thus, the fire disturbance is intertwined with the disturbance from harvesting in the study area.

(Continued on page 8)

Fire in the Pre-historical Forests of Kentucky

The role of fire as a process in forests during intense Euro-American utilization of the landscape ca. 1880-1935 is inarguable and there is good evidence from charcoal diagrams of fire in the deeper history of Kentucky and southern Appalachian forests. What about fire in pre-history forests? In particular, we are very curious about the role of fire in Kentucky forests over the last 400-500 years. We think there is a lot of room for increasing our understanding of how Kentucky forests work by focusing on that period. The fact is, we have very little data supporting a role for fire in Kentucky forests over the last 400 years. Pollen charcoal resolution is very poor during that time period and *there is very little properly dated fire scar data prior to the Civil War*. The data that do exist have a very interesting story to tell.

Conventional wisdom suggests that Native American's utilized the forests of North America, and specifically Kentucky. These peoples used fire as a management tool in forests. When thinking about the deep history of eastern forests, we think these facts are quite certain. In fact, we would argue that eastern North American, prior to Euro-American arrival, can be profitably be thought of as a cultural landscape; this is strongly argued in the book "1491" by Charles Mann. The more recent history, though, is a bit murkier. Conventional wisdom is that the fire regime created by Native American's abuts that of the Euro-Americans who arrived - almost like there is a seamless passing of the anthropogenic fire history from Native Peoples to the European colonizers and the forests hardly took notice who was lighting the torch. Indeed, we have even heard this discussed using the analogy of "passing the baton." Cultures working together in a relay race for forest ecology!!

Hmmmm, the trouble is, this analogy ignores the basic facts. There are abundant data that suggest that Native American populations crashed dramatically prior to the arrival of serious Euro-American colonization! A series of plagues, including small pox and others related to the arrival of swine, is well-known to have spread far ahead of the Anglo settlers. These plagues were devastating to Native populations. Estimates vary, but we think it is safe to say that populations declined by 80-90% in many locations. And, it might have been worse than that. There is good evidence from Kentucky that Native populations were devastated and that social structures were shattered by plague. By 1650 much of the forested landscape of Kentucky was likely abandoned. When the first intrepid Anglos arrived they were awed by the "virgin forests" when in reality they were seeing a widowed landscape.

What does this mean for fire as an ecological factor in forests of Kentucky? If fire is an anthropogenic process in these forests (which has been convincingly argued) with Native American's as a primary ignition source in pre-history forests, and if their populations were eviscerated by Anglo plagues nearly 200 years before serious Euro-American settlement (which has also been convincingly argues, albeit by a completely different set of researchers), then we are left to conclude that pre-settlement forests of Kentucky must have been largely devoid of fire. This contention has been supported by the some of the few old-growth fire history studies from deciduous forests in eastern North America. In fact, Rich Guyette's tree-ring lab at the University of Missouri has several papers that note a period of very low fire frequency in study sites during the period when Native American populations were deci-

Fire scar on a white oak from Kentucky

mated, and prior to the arrival of firebug Anglos. Indeed, in the "passing the baton" analogy, we would argue that the baton clattered to the ground and lay there for 150 years before the first Anglo came by to pick it up.

That's the long answer to the question "What is the role of fire in Kentucky forests." We think the shorter answer is that we need a lot more data before we can say much of anything definite about fire prior to the Civil War. The truly scary thing is that it is exceedingly difficult to acquire evidence of fire in the period prior to Euro-American activity! The forests of Kentucky were heavily cut over. The only way we can access this information is by sampling downed wood in old-growth forests, and there are only a few small pockets remaining in the state. The preciousness of these old-growth stands cannot be overstated. In our view, these stands of ancient trees are key for understanding how our forests function, and are absolutely the best way to begin to understand the role of fire in our forested ecosystems. We need to build higher and stronger walls around our old-growth forests to protect them, and then turn around and let the researchers in!!

NOMINATIONS FOR THE 2011 KENTUCKY WILDFLOWER OF THE YEAR

Each year the Salato Native Plant Program (Kentucky Department of Fish and Wildlife Resources) joins with the Kentucky Native Plant Society in selecting a native wildflower as Kentucky's official "Wildflower of the Year". The program is designed to increase appreciation for the beauty, horticulture, wildlife, and other values of our native plants; to promote conservation of native species in the wild; and to encourage local nurseries to make these species available to Kentucky gardeners. The Wildflower of the year for 1997 was Butterfly Milkweed *(Asclepias tuberosa)*, in 1998, Cardinal Flower *(Lobelia cardinalis),* in 1999, Purple Coneflower *(Echinacea purpurea),* in 2000, Wild Columbine *(Aquilegia canadensis),* in 2001,Wild Bergamot *(Monarda fistulosa),* 2002, Great Blue Lobelia *(Lobelia siphilitica)*, 2003, Spiked Blazing Star *(Liatris spicata),* 2004, Joe-Pye Weed *(Eupatorium maculatum),*2005, *(Solidago speciosa),*2006, Orange Coneflower *(Rudbeckia fulgida),,* 2007, Black-eyed Susan *Rudbeckia hirta),* 2008, Cup Plant *(Silphium perfoliatum)* 2009, Wild Blue Indigo *(Baptisia australis,* and 2010, New England Aster (*Aster novae-angliae).* As part of this year's effort to promote the program, the Department of Fish and Wildlife Resources distributed 10,000 packets of New England Aster. seeds to schools, garden clubs, and conservation groups across Kentucky. Special attributes of a Wildflower of the Year should include its native origin and common distribution in Kentucky, its easy cultivability in appropriate habitats, a known value to wildlife, and ready availability of plants or seed (at least through mail order sources) for gardeners and landscapers.

Please choose one of the wildflowers listed below, fill out the Nomination Form and return it to the Salato Native Plant Program, Salato Wildlife Education Center, #1 Sportsman's Lane, Frankfort, KY 40601. Nominations must be received no later than January 14, 2011.

Aromatic Aster *(Aster oblongifolius)*

Golden Alexander (*Zizia aurea*)

Culver's Root *(Veronicastrum virginicum)*

Wild Quinine *(Parthenium integrifolium)*

Rattlesnake Master *(Eryngium yuccifolium)*

Pale Purple Coneflower *(Echinacea pallida)*

Rose Mallow *(Hybiscus moscheutos)*

Ox-eyed Sunflower *(Heliopsis helianthoides)*

Yellow Coneflower *(Echinaces pallida)*

Swamp milkweed *(Asclepias incarnate)*

Autumn Sneezeweed *(Helenium autumnale)*

Smooth Beardstongue *(Penstemon digitalis)*

Ky. Dept. of Fish and Wildlife and KNPS

2011 WILDFLOWER OF THE YEAR

NOMINATION FORM

Wildflower's Common name_____

Latin name_____

Reasons for Nominating_____

_____

_____

Your name_____

Address_____

City, State, Zip_____

Tel: (Day)_____**E-mail**_____

Date Received (for office use only)_____

See the accompanying article for nomination details.

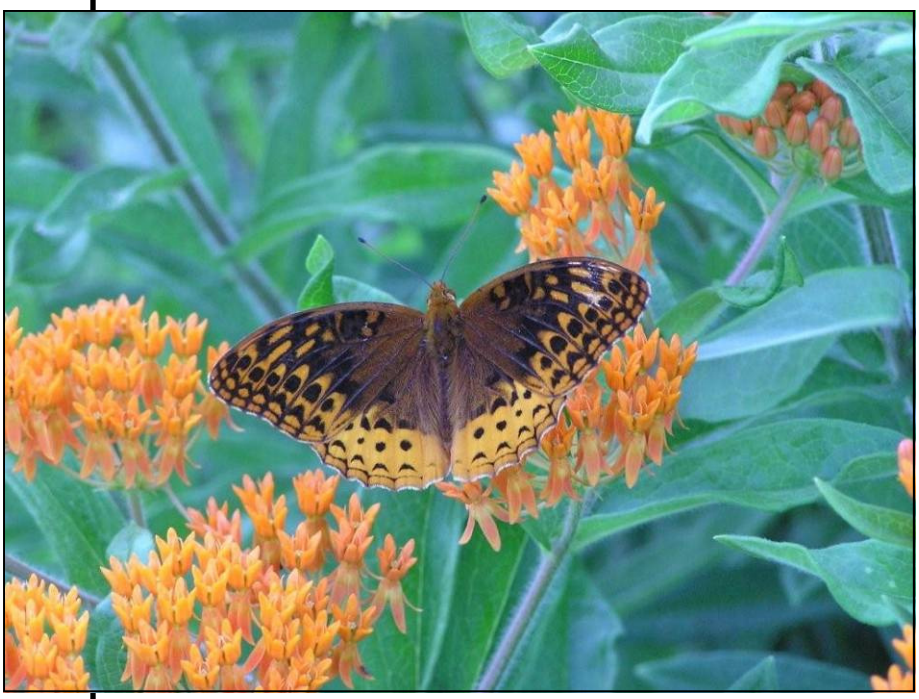
Nominations must be received by January 14, 2011

Return form to:
Salato Native Plant Program,
#1 Game Farm Road, Frankfort, KY 40601

In Your Own Backyard:
Planting a Micro-Forest for Butterflies and Birds

by Connie May, Chrysalis Natural Landscapes,

Many people plant perennial gardens to attract butterflies and some of us have learned that we need to plant milkweed plants for monarch butterflies to lay their eggs. But did you know that many lepidopteron (butterfly and moth) species require native trees and shrubs to complete their lifecycles? Giant Swallowtail, the largest butterfly in north America, cannot reproduce without hop tree or prickly ash leaves to lay its eggs on. The caterpillar of our state butterfly, the viceroy, prefers willow or tulip poplar while pawpaw is the only host plant for the larva of the stunning zebra swallowtail. And the list goes on.



Without the specific native plants needed to complete their lifecycle, butterflies and moths simply cannot reproduce. And without caterpillars to feed their young, birds cannot reproduce. (A pair of wrens will catch 300 caterpillars a day to feed their nestlings!) As habitat continues to be destroyed to make way for development, the diversity of native plants required to sustain life is disappearing.

Over 40 million acres of the U.S. are planted to lawn. All of that land was once habitat. Your backyard, your own little piece of Kentucky, was once a forest, field or wetland and home to a vast array of species. The good news is that you can quickly bring some of that diversity back into your yard by planting native plants. A backyard forest for butterflies and birds is a great way to provide habitat for butterflies and birds and trade some of your lawn for more life in your landscape.

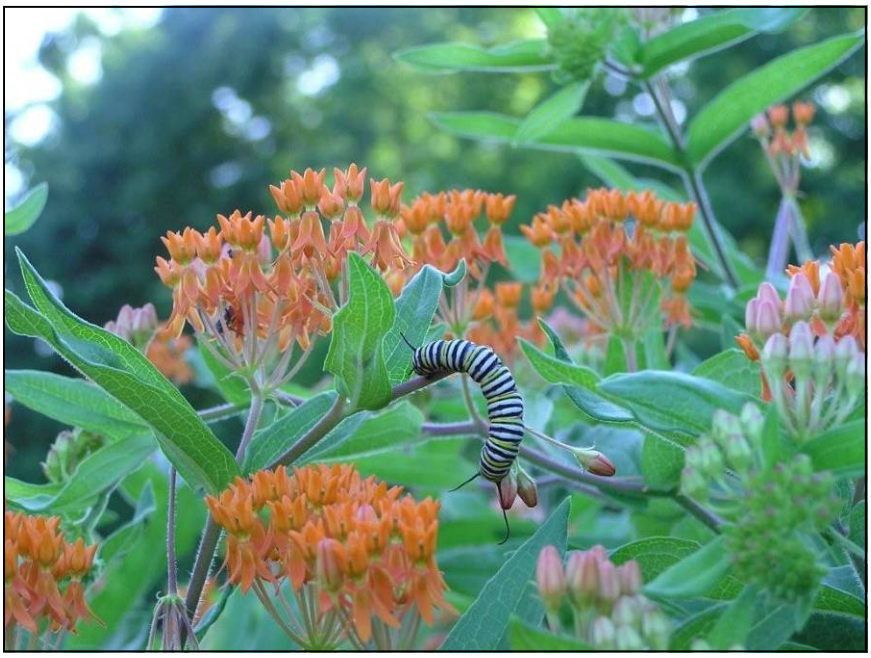
You may think you don't have room in your yard for a forest. But you probably have room for a micro-forest. A micro-forest replicates a young forest where lots of native trees and shrubs grow close together. The high density of numbers and species of native plants in a natural forest provides habitat for a wide range of native insect and animal species. A microforest in your backyard will also attract many butterflies and moths as well as birds and other species to your yard.

Planting a micro-forest is simple and easy on your budget. Choose native trees and shrubs that are adapted to your location and plant them close together. Planting the species close together allows a higher diversity and number of species in a smaller space and overlapping branches provide quick cover for foraging and nesting birds. Planting trees close together isn't usually recommended so you may want to visit an immature forest for inspiration--you will see that the trees are growing very close together and thriving. Succession will occur over time and some of the species will be shaded out, but succession takes years and the surviving trees will continue to grow long after we are gone. You can expect the same to happen in your microforest.

Most native trees grow incredibly fast in their first few years of growth—some easily grow 5 feet in a year. To manage your micro-forest simply trim or remove some of the trees as needed. In the meantime you have the unique opportunity to watch the growth of a young forest in your own backyard. You can delight in seeing the beautiful blossoms of a tulip poplar at eye level, uncurl a spicebush leaf to find a cute caterpillar hiding inside, or watch a hummingbird catch tiny insects for her nestlings.

You won't have to wait long to see your backyard forest full of life. Native trees and shrubs often pro-

Photos for this article by Alan Nations, taken at the 2010 KNPS Fall Meeting at Shaker Village



duce berries the first year and butterflies are adept at finding newly planted host plants to deposit their eggs on. If you are lucky, you may experience the wonder of watching as a caterpillar nibbles your spicebush and eventually emerges from its chrysalis as a beautiful spicebush butterfly. A joy to behold and a wonderful way to share the miracle of the natural world with your family and friends-- all in your own backyard!

An easy, inexpensive method of creating a micro-forest in an existing lawn or area with invasive groundcover such as euonymous or English ivy is by the smothering method. Plant the trees and shrubs, then cover the grass between the trees with cardboard or 6-8 layers of newspaper followed by a 3-6" layer of chipped mulch and/or shredded leaves, keeping mulch 2" from the trunk. Chipped mulch can often be obtained free from tree-trimming companies and may include tree seeds and thereby a free source of seedlings. Shredded hardwood mulch can compact and inhibit water penetration and oxygen transfer if too deep: reduce mulch to only 2-3" if using commercial mulch. In one to two growing seasons the area beneath the trees will be ready to plant with wildflowers and native groundcovers to increase the beauty and diversity of your microforest. Replacing the mulch as needed will keep the area relatively weed free and low maintenance.

If you visited a young forest for inspiration, you probably noticed rotting logs and scattered piles of stones. Including these elements in your micro-forest will add visual interest as well as places for butterflies and other insects to overwinter. Nest boxes, bird feeders and water sources will bring more life to your yard as well. Leaving a mowed or mulched path and adding sitting areas will add to the visual appeal of your forest and make it more accessible.

To attract particular species of butterflies, choose the host plant they require to reproduce. Some trees or shrubs such as oaks, hickories and walnuts are host plants for numerous species of butterflies, moths and other small insects and therefore birds. Don't be afraid to experiment and remember that you don't need room for a full-grown oak or hickory in your yard. You only need room for small trees NOW. As your trees begin to out-grow the space you can simply remove them. In the meantime, food and habitat are being provided, carbon is being sequestered and you have had a lot of fun. With a little effort and a little faith you can create a beautiful micro-forest with butterflies, birds and other beautiful things…right in your own backyard!

UPCOMING: Trees, shrubs and wildflowers to include in your micro-forest, sources for plants, providing nestboxes for birds, how to raise a butterfly from a caterpillar indoors, and more. Please feel free to send your questions, comments, and suggestions for future articles to:

connie@chrysalisnaturallandscapes.com

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(Certification, continued from page 3)

Natural plant communities
Wetland Communities
Forest, swamp, marsh, meadow, grassland, seep, etc.
Terrestrial Communities
Forest, woodland, grassland, glade, cliff, etc.
Anthropogenic (and Semi-natural) plant communities
definition
types
Rare plant communities
list, discussion, highlights
Conservation
Examples/places to visit: Nature preserves and natural areas
Inventory, Monitoring and Mapping Tools
Natureserve- role
KSNPC/TNC- scope and role
mapping projects: KLS, GAP, site specific, etc.
Public Awareness/Outreach

Threats to Ecological Communities and Biodiversity of Kentucky / Feb 12 9am-3:30pm / Raven Run Nature Center

Instructors – Joyce Bender, KY State Nature Preserves Commission and Jody Thompson, KY Division of Forestry

This class will provide an introduction to invasive plants, pests, and pathogens currently causing alteration and disruption to Kentucky's ecological communities, as well as control methods used to combat these threats.

Invasive Plants – Topics that will be covered:
Introduction to problem caused by invasive plants
Natural communities and threats from invasives across KY
Identification of commonly encountered invasive plants
Management issues related to natural communities and invasive plants
Current research
Control methods
ways to help/learn more – EDDMaps, volunteer opportunities with KY EPPC-- Capitol Makeover, local natural areas, etc.
Invasive Insect Pests and Pathogens
Introduction to problem
Management issues
Identification of specific pests and pathogens
Control methods

Field time – looking at invasives at Raven Run, discussing management successes/shortcomings on site. Examining the effects of invasive pests and pathogens on ecosystem health.

Duration: 9 AM to 3:30 PM. We may consider combining control methods of plants and insects into a single time frame.

The field portion will be toward the end of the day, so that the temperatures are at their best and so that we can show the things that we discuss in class then provide a summary after the field time.

Suggested Readings:
Examples from current literature
Pesticide label data

Handouts:
KY EPPC invasive plant booklets
Invasive plant alerts

Enhancing Biodiversity in your own Backyard / March 19 8:45am-4pm / Salato Wildlife Education Center

Instructor – Mary Carol Cooper, Ky Division of Fish & Wildlife Resources (Retired)

This class will focus on ways to enhance plant biodiversity in your own backyard with a focus on how to grow native plants, where to find them and how to indentify (Plant ID, 101) them. We will discuss different plant species for different uses. We will also discuss how to collect, clean and propagate seeds.

- What is "native"?
- Tour of native plant greenhouses
- Plant propagation
- Plant ID, 101
- Plant diversity
- Native Plant Gardens for different uses
  - Micro forest
  - Rain gardens
  - Backyard Wildlife Habitat (butterflies, birds, wildlife, insects, herpes)
- Tour of Kentucky's Ecoregions

Manangement and Control of Invasive Bush Honeysuckle / April 23 9:30am-4:00pm / Floracliff Nature Sanctuary

Instructor- Beverly James, Floracliff Preserve Manager

This field course will focus on the management techniques of invasive bush honeysuckle. Tools and water will be provided. Participants should bring a lunch and work gloves.

Topics to be covered include:

- why bush honeysuckle is considered invasive
- identification of bush honeysuckle and its look-alikes
- other woody invasives that could be encountered
- manual and chemical control methods and personal protective equipment
- applying appropriate control methods for a particular site
- site selection and prioritizing
- removal of honeysuckle in a site selected by participants
- discussion of follow-up treatments

Rare Plant Management and Invasive Species Control / May 14 10am-2pm / Rockcress Hills SNP

Instructor- Zeb Weese, Ky State Nature Preserves Commission

This field day will focus on removal of invasive species on a nature preserve in Franklin County which harbors populations of two federally listed plants. We will discuss site assessment and management options, then hand-pull garlic mustard and common chickweed around the rare plants. You should have long pants/sleeves, appropriate footwear, work gloves, drinking water, and a sack lunch. The preserve is approximately 15 minutes northwest of Frankfort. Detailed directions provided upon registration.

Hemlock Woolly Adelgid in Kentucky / June 11 Time TBD / Location TBD

Instructor- Alice Mandt, Kentucky Division of Forestry

This class will provide an overview of hemlock woolly adelgid in Kentucky with a field session to demonstrate treatment methods. Students will leave with a basic understanding of the issues facing landowners and ecological impacts of this species. Because hemlocks are located mostly in eastern Kentucky, participants will vote on the time and location for the day during the January session. Choices will include Natural Bridge State Park and Pine Mountain State Park; an overnight trip will be included in the choices, but not be required. Participants should wear long pants and appropriate footwear for rough terrain. Please bring work gloves, drinking water and lunch. Depending on the location, the terrain could be fairly steep and rough. Please be prepared to hike and enjoy a beautiful day in the woods!

KNPS Fall Meeting at Shakertown: A Good Time Was Had By All

A few dozen KNPS members braved the stormy weather to enjoy the September 2010 meeting at Shaker Village of Pleasant Hill! Highlights included:

- a birding trip led by Don Pelly, Shakertown Naturalist
- a woody plant walk with David Taylor, Forest Service
- a Kentucky River canoe float with board members Tara Littlefield, Sarah Hall, Brian Gasdorf, and Zeb Weese
- a hike to Shawnee Run with Tara Littlefield, KSNPC
- an invasive species hike with Alan Nations, NativeScapes, Inc.
- a trip to Tom Dorman State Nature Preserve with Sarah Hall, KNPS officer
- Dr. Luke Dodd, UK Forestry, presented a talk on "Impacts of forest management on foraging bats in hard-wood forests"

Photo by Alan Nations

- Greg Abernathy, KY State Nature Preserves Commission, discussed "Biodiversity of Kentucky", which ties into the Kentucky State Nature Preserves new "Biodiversity Atlas"
- Plans are now underway for the 25th Anniversary Spring Wildflower Weekend at Natural Bridge State Park to be held from April 29th to May 1st, 2011. BE THERE!

KNPS Fall meeting photos by Tara Littlefield

Submit your 25th Anniversary T-shirt Design!

We are accepting t-shirt designs to commemorate the 25th Anniversary of the Kentucky Native Plant Society at Natural Bridge State Park during Wildflower Weekend 2011. Designs are due Jan 15, they may be one or two sided (front/back), and may include color. Submit as a PDF, JPG, or BMP to info@knps.org, with "WW t-shirt design" in the subject line. If your design is selected you will receive a free t-shirt at Wildflower Weekend!

Conservation News

From: Terry Cook [tcook@TNC.ORG] Sent: Wednesday, November 03, 2010 3:36 PM

To: Alan Nations et al Subject: Election 2010: Land and Stewardship Update

As many of you may know, Election Day 2010 was not just a big day for political candidates. It was also a huge day for conservation-related ballot measures at the state and local level. Seven Conservancy state chapters were actively involved in some of these conservation-related ballot measures, and overall the results are impressive.

Last night, these efforts helped create over $7 BILLION in new conservation funding for the next 25 years, and defeated ballot measures that would have rolled back conservation policy in two states. These wins included a statewide constitutional amendment in Iowa that when implemented will permanently dedicate $150 million per year to land, water, and soil conservation.

WINS

California

No on Proposition 23: A ballot measure that would have suspended California's climate change laws.

61% NO

Iowa

Proposition 1: A constitutional amendment that will permanently dedicate $150 million per year in future state sales taxes for land, water, and farmland preservation.

62% YES38% NO

Oregon

Measure 76: A constitutional amendment to continue dedicating a portion of the state lottery for parks and natural resources which will generate about $100 million per year.

68% YES32% NO

Maine

Question 3: A statewide bond measure to provide $9.75 million for the Land for Maine's Future program.

60% YES40% NO

San Antonio, TX

Propositions 1 & 2: Two local measures that will extend the current sales tax which will provide an additional $90 million to protect land around the Edwards Aquifer, and another sales tax to provide $45 million for various open space and parks funding.

Prop 1 66% YES32% NO Prop 2 67% YES 33% NO

Rhode Island

$14.7 million statewide bond for parks and open space.

65% YES 35% NO

Town of Narragansett, RI

A $2 million bond for local open space acquisitions.

PASSED

Klamath County, OR

No on Measure 18-80: Defeat of this measure will ensure ongoing support for fish habitat restoration for the Klamath River Basin in south-central Oregon.

DEFEATED

LOSS

California

Proposition 21: A measure to approve a new annual vehicle fee which would have provide dedicated, stable funding for state parks and conservation for the next 25 years.

42% YES 58% NO

TOO CLOSE TO CALL

Cochise County, AZ

Question 1: A local ballot measure that would establish a new water district to protect the Upper San Pedro River in south-eastern Arizona.

Terry Cook

Kentucky State Director, The Nature Conservancy of Kentucky

642 W Main St, Lexington, KY 40508

Kentucky Conservation Committee

The Kentucky Native Plant Society is an official Affiliate of the Kentucky Conservation Committee!

The KCC is the state's only organization dedicated solely to providing a non-partisan voice for Kentucky 's environmental community in Frankfort. KCC works to make sound environmental stewardship a priority for elected officials and voters. For more information on KCC's activities, just go to:

http://www.kyconservation.org

Kentucky's Ash Trees Are Under Attack!

This attack comes in the form of an insect known as Emerald Ash Borer (EAB). EAB is an invasive insect pest from Asia and was first discovered in Kentucky in May 2009. EAB has already killed millions of ash trees in neighboring states and is costing local governments, property owners, nursery operators and forest products industries tens of millions of dollars. To help prepare our state for the impact of EAB, the Kentucky Division of Forestry, UK Forestry Extension and the U.S. Forest Service will be hosting an Emerald Ash Borer (EAB) Conference for urban planners, arborists, parks and recreation personnel, landscape architects, extension agents, community leaders, community tree board members, and other decision makers and support positions involved in urban EAB management. The conference will be held December 8-9 at the Embassy Suites in Lexington. For registration information and continuing education opportunities please go to:

http://www.ca.uky.edu/forestryextension/eab/EABindex.php

Kentucky Native Plant Society
801 Schenkel Lane
Frankfort, KY 40601

This is your last issue!

Please renew your 2011 KNPS Membership

TODAY!

2010 KNPS Membership Application or Renewal

Detach and send to: Kentucky Native Plant Society / 801 Schenkel Lane / Frankfort, KY 40601

Note: To pay by credit card or PayPal account, please visit the website www.knps.org.

Name(s)*_____

E-mail(s)*_____

Address*_____

City, State, Zip*_____

Telephone_____

Membership Type: (memberships are for calendar year)

_____Individual $15 (includes e-newsletter)

_____Family $25 (includes e-newsletter to 1-4 e-mails)

_____Lifetime $200 (includes electronic newsletter indefinitely)

_____Additional gift (optional, tax-deductible)

Total _____ Check No. _____

* denotes required fields, we MUST have your e-mail address in order to distribute the newsletter!

The Kentucky Native Plant Society was founded in 1986 for everyone interested in the native plants, trees, and wildflowers of Kentucky. Plants are essential to both the well-being of our Commonwealth's natural ecosystems and our enjoyment of its unique environment. With members in Kentucky and neighboring states, the Kentucky Native Plant Society is a leader in promoting education about, appreciation for, and conservation of the native flora of our Commonwealth.