# The Lady-Slipper

Kentucky Native Plant Society  DOUBLE ISSUE / Nos. 14:4–15:1  Fall 1999–Spring 2000

## A Message from the President:

DEAR FRIENDS,

I would like to thank you for allowing me to be your President for the last four years. It is time for me to step aside and let someone else have the opportunity. It has been a wonderful four years filled with new and interesting challenges.

Standing on the shoulders of those who came before us we were able to establish a long-range strategic plan for the Society. The new brochure, our reformatted newsletter and the web page have been well received by our members and the general public. I predict they will only improve over the next few years. Our Wildflower Weekend continues to draw hundreds of participants, although our attempts to establish a viable Fall Meeting in the western part of the state have not come to fruition.

I have enjoyed working with Beth Galloway on *The Lady-Slipper* as co-editor and would like to thank all who have given their time to collect articles and material for each issue. It is a difficult and time-consuming task, and my hat is off to all previous editors, especially Tim Weckman.

I hope you will continue to work with us to establish an accurate and complete mailing list of our members. We need to find a different way to collect dues since it is easy for all of us to forget to send our money each year. It was truly unfortunate that we had a major computer glitch as we passed the torch from one treasurer to another. We believe all is well now.

In closing, I would like to thank all of our board members for their support and friendship. May God bless each of you in this coming year!

*The tide recedes,*
*but leaves behind bright seashells on the sand,*
*The sun goes down,*
*but gentle warmth still lingers on the land,*
*The music stops,*
*and yet it echoes on in sweet refrains...*
*For every joy that passes,*
*something beautiful remains.*

—Anonymous

—Dr Dave

## Mailing List Problems...

ON OUR LAST NEWSLETTER, we requested that you check the expiration date on your mailing label and update it if necessary. Many of you noticed that the information on your mailing label was incorrect. The reason for this was computer related. We transferred the membership database to a different computer when the new treasurer took over. When we printed the labels, however, what actually was printed was not necessarily what was entered into the computer, so we did not realize there was a problem. Also, not everybody has a problem with their mailing label.

First, we want to apologize for any inconvenience this problem has caused.

Second, we want to stress that this was not a people problem, but a computer problem. In almost every case reported to us, our database was correct. The mailing labels just printed incorrectly. If your check was cashed, your update was entered and recorded.

One of our goals this year is to make sure the database is in good shape. If your mailing label is incorrect on this issue, please notify one of the officers *in writing* (contact information is on page 2). We don't mind getting phone calls from you, but in this case we need the information in writing so we can keep it on file. If your membership has indeed expired and we don't hear from you, your name will be dropped from the list so we can use funds for paying members.

We appreciate your understanding and support as we work to fix this situation.

—Angie Begosh, Treasurer

**Natural Bridge/ KNPS WILDFLOWER WEEKEND!**

***May 5–7, 2000***

**Natural Bridge State Resort Park, Slade, KY**

*See p. 11 for details!*

**Watch for the latest KNPS news and updates on the KNPS WEB SITE**

http://sac.uky.edu/~mthom0/KNPS/knps.htm

**(Be sure to use Capitals or lower-case letters as they appear above.)**

***In this Issue—***

***The Lady-Slipper***

is intended to be published by the Kentucky Native Plant Society [IRC 501(c)(3)] in February, May, August, and November. Best intentions and efforts notwithstanding, the actual schedule tends to be less frequent and regular. Submission of letters or articles is welcomed at all times.



# KNPS Grant Announcements for 2000 . . . .

## KNPS Summer 2000 Field Botany Grant

KNPS is accepting applications for a *$500 grant for a summer field botany class.* The applicant must be a *student at a Kentucky college or university* and the course must be a *summer field class* involving *plant taxonomy and/or plant ecology.* The class does not have to be in Kentucky. The grant can pay for tuition, books, travel, and living expenses while taking the class.

Applicants should send a *Curriculum Vitae* detailing their course and work background, emphasizing past botanical training, and a letter stating their reasons for taking the course and how it will further their career plans. *Give one reference* (with phone number and/or email), *preferably a college or university professor.*

Application deadline is May 19, 2000. Send application to:

**Dr. David Eakin**
**Department of Biological Sciences**
**Eastern Kentucky University**
**Richmond, KY 40475**

## KNPS Native Plant Demonstration Garden Grants for Kentucky Primary and Secondary Schools

KNPS is pleased to announce the fifth year of offering funding for school demonstration gardens to further awareness by young Kentuckians of native plants and their importance in the environment.

In June of 2000 up to two grants of $250 each will be awarded to help fund the cost of establishing native plant gardens on school grounds to promote an understanding and appreciation of Kentucky's flora and natural communities. Grants may be awarded to Kentucky primary or secondary schools or other educational organizations, but preference is for primary/middle schools.

The awarded funds are intended to supplement funds already secured from other sources. Grants may be used to purchase native plants (seeds or plants of wildflowers and shrubs). Up to $75 may be used to purchase native plant reference materials such as books and slide sets. The grant may not be used to pay for earthwork, pond building, building supplies, equipment rental, field trip expenses, or classroom equipment. Proposals may be submitted by groups or individuals from Kentucky educational organizations.

Preference will be given to 1) proposals which create native plant gardens reflecting the species of particular communities (e.g., prairie, woodland) bringing a piece of the wild close to classroom areas; 2) proposals which create a garden comparing and contrasting common, usually non-native, garden plants with native species promoting the idea of landscaping with nursery grown natives; or 3) rehabilitation of deteriorated wild areas with native species.

Proposals will be reviewed by the KNPS Grant Committee. Proposals must include:

1. A brief resume presenting project direction experience, educational experience, etc., which indicates the knowledge/experience to carry the project to completion;
2. A proposal (not to exceed three pages, excluding supporting drawings/diagrams) which describes the project, explains how it promotes education toward botanical/ecological understanding of Kentucky's environment, lists other project contributors (e.g., financial, in-kind and labor), and describes the role the grant would play in the project;
3. A maintenance plan and schedule for the garden;
4. An itemized budget; and
5. A letter of support from the school principal.

Applicants are encouraged to become members of the KNPS, but membership is not required to be awarded a grant.

(Continued on page 4)

## Help Wanted!

Assistance with any of the current KNPS committees or formation of other work or interest groups is always welcome.

***If you can help, please contact anyone on the list at the left!***

## E-mail Anyone?

If you have an e-mail address, and would like to be notified of last-minute native plant rescues or other time-critical native plant-related activities, send your e-mail address to Michael Thompson at

*KNPS_events@hotmail.com*

# Bidding Fond Farewell... Sherri Evans

by Andy Mead, Lexington Herald-Leader staff writer

It was 1992 and the Kentucky Transportation Cabinet had found yet another winding road it deemed in need of straightening.

In line to be dynamited in the U.S. 127 project north of Frankfort were steep hillsides covered with wildflowers.

And the road ran near Shooting Star, a native plant nursery owned by Sherri and Marc Evans.

Sherri Evans realized she couldn't stop the construction, so she organized the state's first large-scale wildflower rescue.

"We see this as a way for people to have a direct effect," Evans said. "You can actually dig them up, put them in your garden, and you've saved a plant."

So many turned out that police were needed to direct traffic.

The rescue was quintessential Evans. She cared deeply about the natural world and wanted to spread that feeling to as many people as possible.

Sherri Ann Wadham Evans died in September from liver disease and other health problems. She was 46.

Her death left a void in the ranks of botanists, biologists and others who work in Kentucky. Some of them are putting together a $2,500 scholarship in her name to be administered through the Kentucky State Nature Preserves Commission.

Evans did many things in her two decades in Kentucky. She worked in the nongame program at the Department of Fish and Wildlife Resources, looking after those animals that aren't fished or hunted but are an important part of the environment.

For a time she directed the state's Wild Rivers Program, reactivating it after years of inaction.

She ran Shooting Star, the state's first native-plant nursery. She helped design the natural areas at the Champions Golf Club in Jessamine County.

Mary Carol Cooper

**Sherri Evans among the prairie grasses at the Western Kentucky Wildlife Managment Area in McCracken County.**

The Kentucky State Nature Preserves Commission has established a ***Sherri Evans Memorial Scholarship Fund*** with an initial $2,500 contribution from East Kentucky Power Cooperative. The fund will support student research and restoration projects in Kentucky nature preserves.

For more information, or to make contributions contact:

**Sherri Evans Memorial Scholarship Fund**
**Kentucky State Nature Preserves Commission**
**801 Schenkel Lane**
**Frankfort, KY 40601**
**502/573-2886**

She returned to Fish and Wildlife to run the native-plant program, one of the few of its kind in the nation, and planted natural areas around the Salato Wildlife Education Center in Frankfort. She also co-authored or contributed to several books.

Those who knew Evans say Kentucky has benefited enormously from her efforts.

"From the first day I met her she was committed to the care and protection of nature," said Don Harker, a friend and co-author. "She was one of those people who quietly went about the work. She never jumped up and grandstanded about it."

*Sherri Evans was a frequent contributor to* The Lady-Slipper *and served generously as a KNPS program resource and board member.*

*Andy Mead's article is reprinted with permission from the December 31, "1999: The Year in Kentucky" edition of the Lexington Herald-Leader.*

## . . . . . KNPS GRANT ANNOUNCEMENTS for 2000 (Continued)

Submit three copies of all items listed above, including letters of support, to:

**David D. Taylor**
**USDA Forest Service**
**1700 Bypass Road**
**Winchester, KY 40391**

Proposals may be submitted at any time. *To be considered for the June 2000 disbursement, all material must be received by May 19, 2000.* Proposals received after this date will be held and considered for the next disbursement.

## Report from a Summer 1999 FIELD BOTANY GRANTEE

by Rain Storm


**Three Pitcher Plants identified in Alphonso Wood's 1863 *Class-book of Botany* as (left to right) *Sarracenia psittacina, S. purpurea,* and *S. Gronovii.***

THE SCHOLARSHIP awarded to me by the Kentucky Native Plant Society enabled me to take a course on Coastal Aquatic and Wetland Plants at the Gulf Coast Research Laboratory in Ocean Springs, Mississippi, this previous summer. The two-week course, taught by Dr. Ron Jones of Eastern Kentucky University, was my first exposure to the landscape and flora of the Mississippi river delta and coastal surroundings. Throughout the course I was transported to unique localities of plant life in order to study and identify them and their distinct habitats.

I spent the days traveling, usually by boat, to swamps and marshes along the coast and on the tidal rivers, such as the Pascagoula. The plant life was diverse as I traveled from the barrier islands through salt, brackish, and tidal fresh marshes and swamps, to end up in nontidal wetlands. We even visited such unique habitats as pitcher plant savannahs and salt flats. Throughout the course I was instructed on the identification and specific habitat requirements of nearly two hundred species.

Emphasis was placed on the importance of coastal wetlands for stabilizing the shoreline and maintaining water quality. Although the aesthetic and recreational importance of these areas was obvious, I was made aware of the abuse that these wetland habitats are now encountering, the possibility of losing them forever, and the damage that this would do to the planet.

I would like to express my gratitude to the members of KNPS who offered me this educational and greatly enjoyable opportunity to experience the beauty and importance of coastal wetland habitats.

### KNPS STUDENT RESEARCH GRANT

KNPS is pleased to announce the fifth year of offering a funding source to support botanical knowledge and understanding in Kentucky. One award of $500 will be distributed for a *field-based botanical project which contributes to the knowledge of Kentucky's flora or natural communities.* A grant will be awarded to a student attending a Kentucky college or university. Both graduate and undergraduate students are eligible. The grant may be used to purchase consumable supplies and materials such as rebar, herbarium paper, label stock, and topographic maps. The grant may also be used to cover mileage expenses. It may not be used to pay time (e.g., labor) for any party. The successful applicant will be notified by the end of June 2000.

Proposals will be reviewed by the KNPS Grant Committee. Proposals must include:

1. A current curriculum vitae;
2. A proposal (not to exceed two single-spaced typed pages) describing the proposed research and the role the grant would play in the research;
3. An itemized budget; and
4. Two letters of recommendation, one of which must be from the applicant's major professor or project director.

Applicants are encouraged to become members of the KNPS, but membership is not required to be awarded a grant. Grant recipients are expected to provide KNPS with a short summary of the funded research suitable for publishing in KNPS's newsletter *The Lady-Slipper* within one year of receiving the grant. Grant recipients are also expected to present their work at the annual Kentucky Academy of Sciences meeting within one year of completion of their research.

Submit three copies of all items listed above including letters of recommendation to:

**David D. Taylor**
**USDA Forest Service**
**1700 Bypass Road**
**Winchester, KY 40391**

Proposals may be submitted at any time. *To be considered for the June 2000 award date, all materials must be received by May 19, 2000.* Any proposals received after that date will be held and considered in the next available disbursement.

# WILD COLUMBINE...WILDFLOWER OF THE YEAR 2000

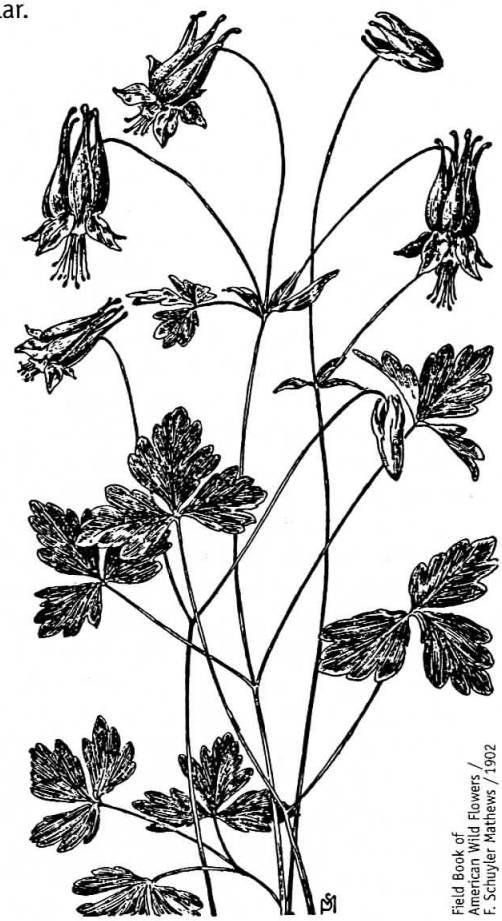
by Mary Carol Cooper,
Native Plant Program Coordinator,
Salato Wildlife Education Center

WILD COLUMBINE (*Aquilegia canadensis*) has been selected as the Salato Wildlife Education Center's Wildflower of the Year 2000 by wildflower enthusiasts from all across the state. The Wildflower of the Year is chosen based on the number of nominations it receives and how well it fits the established criteria (must be native, common and widespread across the state, seeds must be readily available, must be easy to grow, and must have wildlife value).

Wild columbine is quite frequent and widespread in Kentucky and is one of our most graceful wildflowers. Each flower is approximately one-and-a-half inches long and consists of an outer whorl of five red sepals and an inner whorl of five yellow petals with a column of bright stamens that extend out from the center. Projecting backward from the petal are the conspicuous nectar-bearing spurs. The leaves are compound. Plants range in height from one to three feet tall, depending on the habitat. Plants that grow in crevices in cliffs are smaller than the plants that grow in moist rocky valleys. Columbines are among the first plants to break ground in early spring.

Wild columbine is one of the earliest nectar sources for hummingbirds, and it is also the only known food source for the Columbine Duskywing caterpillar.

Historically, wild columbine was used medicinally as an astringent, diuretic, and anodyne. American Indians used very small amounts of crushed seeds for fevers, headaches, and as a "love charm" (are those last two uses related?). The seeds were rubbed into the hair to control lice. The root was chewed or made into weak tea for diarrhea, stomach troubles, and as a diuretic. Today, this plant is not used medicinally as it is considered potentially poisonous.



Field Book of American Wild Flowers / F. Schuyler Mathews / 1902

Wild columbine seeds and wild columbine plants are available from many native plant nurseries and are relatively inexpensive. The seeds require a cold period, so should be planted in the fall or early winter in order to have at least two months of cold weather to help them germinate. As an alternative, seeds can be stored in an air-tight container in the refrigerator for two months, then planted directly in the garden as soon as the soil is unfrozen.

# SB216: A Natural History Museum = More Botany for Kentucky

by Charlie Lapham

AT THE TIME OF THIS WRITING, both houses of the Kentucky legislature have passed SB216 to establish a Kentucky Natural History Museum. The passage, of course, was facilitated by the elimination of any funding to actually accomplish the start up, but nevertheless, the idea of a Kentucky Natural History Museum only needs the signature of the governor for a show of official thumbs up all around.

A natural history museum for Kentucky is, therefore, a big step closer to reality. Such a museum's educational exhibits will surely be very nice and worthwhile on their own, but it is the associated research facilities that will probably be most interesting to KNPS members.

Kentucky universities are continuing to drop plant systematics courses when the systematizers retire. This could eventually leave such institutions with herbarium collections they no longer need taking up valuable space. These herbaria are both the universities' property and Kentucky's natural heritage documentation. They are the sole source of scientifically verifiable data of what plant existed where at what time. This is the essence of biodiversity documentation. When Vanderbilt University in Tennessee discontinued its plant systematics program, the second largest collection in the state went to Texas! With a natural history museum, the same fate may not be so inevitable here.

A natural history museum will have the facilities and expertise to properly maintain collections of orphaned biological specimens. If you do not maintain herbarium specimens properly, herbarium bugs can eat them. Unless you top off the alcohol in the critter jars yearly, you risk ruining the specimens. They are all biological archives, and a museum will provide for plants, critters, artifacts,

(Continued on page 6)

## A Kentucky Natural History Museum (Cont.)

fossils and all the bits and pieces of our natural history. These Museum specimens will all be entered in a database to greatly help researchers find out if what they need exists and if so where. A database will also sort and reassemble data into special purpose sets.

Such databases already exist, but most herbaria in Kentucky aren't even able to get a four-year-old computer to run free software. State help with data entry is certainly overdue. The current Ky. Academy of Science-approved database for plants is the *Index Kentuckiensis,* a KNPS project. At present the EKU herbarium is using it to enter data on the Dr. E.T. Browne collection, and WKU is working on the Dr. Max Medley collection. This will add about 30,000 more specimens—many on the rare side. The fine Kentucky Natural Heritage Database, a joint program of the Ky. State Nature Preserves Commission and The Nature Conservancy, also only covers the state-listed rare species, a very important, but still small, portion of our biodiversity.

While there are probably more than 300,000 total records in Kentucky's herbaria, that is still only a limited record of our botanical diversity. Dr. Julian Campbell's Kentucky Atlas database fills in some gaps, but much of the data in Kentucky herbaria came from areas near the universities. Jefferson and Fayette counties, for example, both have around 1200 documented plant species while many other counties have fewer than 120. In fact, if you go by the plant records in the various Kentucky herbaria, the common dandelion has not yet been discovered in 58 Kentucky counties!

Obviously there's lots of inventory and data entry work still to be done. When funding eventually materializes for the natural history museum, it will necessarily include grant money that can be dispersed through the museum, the Dept. of Fish and Wildlife Resources, and the Nature Preserves Commission to address this problem. Talented students may then be able to work on field biology instead of pitching burgers for one of our fast food franchises part time and during the summers as is often the case now.

Dr. Bill Martin, director of Natural Areas at EKU and former comissioner of the Ky. Dept. for Natural Resources, has worked indefatigably on the natural history museum legislation for five years. We've never before had the good fortune of having a biologist who really understands the machinery of state government working for the cause.

SB216 was introduced by Sen. Joey Pendleton, a Hopkinsville veteran of the 1995 biodiverstiy council. Eminent Kentucky historian Dr. Thomas Clark also spoke before committees in both houses about Kentucky's long history, beginning with Big Bone Lick, of losing its unique natural artifacts to other states. After his remarks, the bill was immediately moved, seconded, and unanimously approved by both committees. Although it detoured into a few cul-de-sacs, when the bill did get to the floor in both legislative houses, the votes were again unanimous.

This bodes well for funding the next time around. We are certainly much farther along with this effort than we have ever been in the past.

## Kick 66 or Pave Paradise?

by Connie May

*In Kentucky, we lose 100 acres a day to development and new road construction. Sometimes there's something we can do to prevent our natural heritage from being paved over...*

Julian Campbell

**Rockcastle Aster**

I have participated in several wildflower rescues and have seen the annihilation that road construction causes. I am horrified when I consider the construction of an interstate highway through the Daniel Boone National Forest between London and Somerset. Congressman Hal Rogers and the Ky. Transportation Cabinet had attempted to fast-track the new I-66 link, but local residents and other Kentuckians are at least slowing the process down.

The Nature Preserves Commission says rare bogs with their rare plants would be threatened by the initial route proposal. Stands of pine-oak forest being managed for federally endangered red-cockaded woodpeckers would be impacted as well as extensive cave systems and wild and scenic river corridors. Populations of rare orchids and 17 other rare species are threatened. These include Lucy Braun's snakeroot (*Ageratina luciae-brauniae*) and Rockcastle Aster (*Aster saxicastelli*) which occur only in Kentucky and Tennessee, and the rare Ky. Lady's Slipper orchid (*Cypripedium kentuckiense*), Wood Lily (*Lilium philadelphicum*), the federally listed Virginia spiraea (*Spiraea virginiana*), and Blue Monkshood (*Aconitum uncinatum*).

Illus. Flora of the Northern United States.../ Britton & Brown / 1913

**Wood Lily**

Opposition has spawned 10 alternative routes including the shortest, following the existing Ky. 80 corridor. The alternatives, however, still impact the species and habitats and the quality of life for residents and visitors to one degree or another. Current information about the project's status and public meetings can be found at

**http://www.seidata.com/~kalwin/kick66**

and

**http://www.caves.org/cavetalk/messages/2119.html**

If you would like to get involved, contact Hilary Hopper (606)299-4054 or **hlhopper@prodigy.net**

Britton & Brown / 1913

**Virginia spiraea**

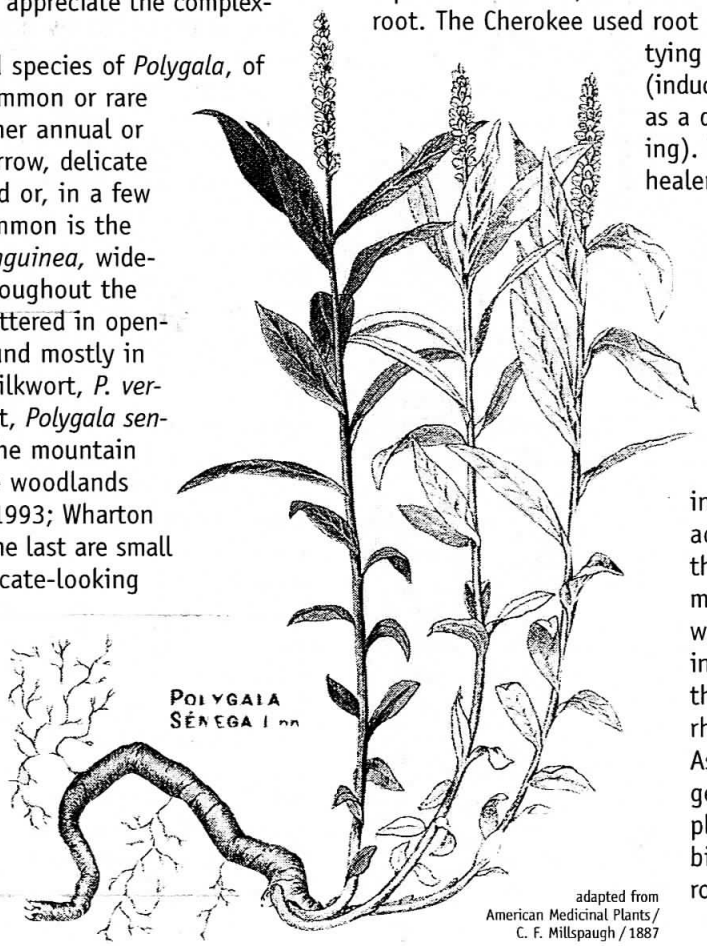
# The Medicinal History of Seneca snakeroot or SENEGA, *Polygala senega*

by Robert Paratley, Curator, Univ. of Kentucky Herbarium

OUR NATIVE MILKWORTS, genus *Polygala*, are an inconspicuous and often overlooked part of the Kentucky flora. The family Polygalaceae is found worldwide: its 900 plus species include tropical trees, shrubs, and woody vines of wet tropical forests; herbs of seasonally-dry tropical grasslands; and herbs of temperate woodlands and meadows. *Polygala* is by far the largest genus, with over half the species in the family (Cronquist, 1981). The genus name, created by Linnaeus, comes from the Greek *polys* (much) and *gala* (milk), referring to the belief dating back at least to classical times that the plants stimulate milk production in cows and nursing mothers! (Coombes, 1994). The common name, milkwort, also stems from this belief, which persisted until the modern era in spite of the lack of a single documented case in its favor.

Kentucky's milkworts are herbs of rocky woods or open habitats—meadows, glades, or prairie patches. Their small flowers are displayed in a congested inflorescence, either in a clover-like head or an orchid-like spike (they have been mistaken for both). Flower color ranges from magenta to pale pink, white or greenish. The flowers in our native milkworts require careful observation, revealing superficial similarity to those of the pea family, the Fabaceae. (One must venture north or to the higher Appalachians to view the gaywings, *Polygala pauciflora*, with its 2 cm long rose-purple flowers, to more easily appreciate the complexity of the milkwort flower.)

The state has nine verified species of *Polygala*, of which five are listed as uncommon or rare (Medley, 1993). They are either annual or perennial, mostly possess narrow, delicate leaves either spirally arranged or, in a few cases, whorled. The most common is the purple milkwort, *Polygala sanguinea*, widespread in moist meadows throughout the state. Others encountered scattered in openings are *Polygala curtesii*, found mostly in Eastern Kentucky; whorled milkwort, *P. verticillata*, and Seneca snakeroot, *Polygala senega*, found in rich coves in the mountain counties and rocky limestone woodlands in Central Kentucky (Medley, 1993; Wharton and Barbour, 1979). All but the last are small herbs with narrow, often delicate-looking leaves. In contrast, Seneca snakeroot, or senega, can be as much as half a meter tall, and has lanceolate to ovate leaves up to 8 cm long. It is a perennial from a thickened, knotty root. Like other milkworts, it may bear reduced, scale-like lower leaves. It produces a loose spike (technically a raceme with very short flower stalks) of white flowers in late May or June (Gleason and Cronquist, 1991).




adapted from American Medicinal Plants/ C. F. Millspaugh / 1887

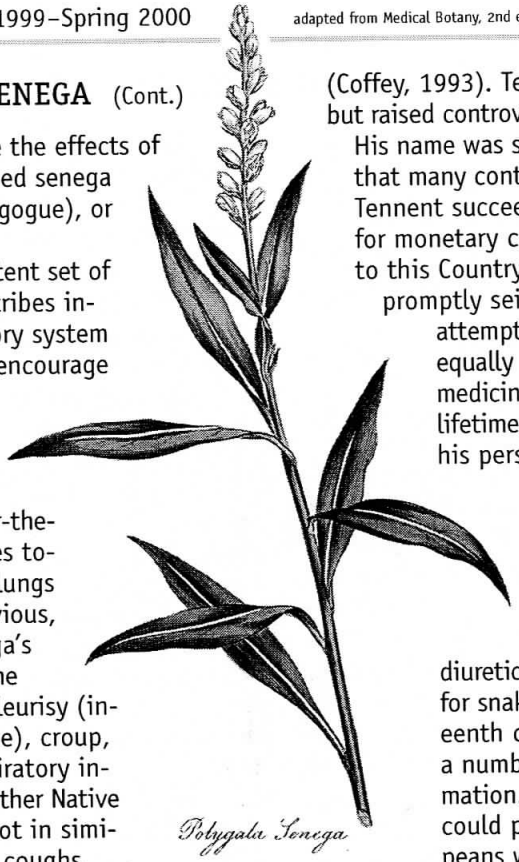
Of the Kentucky milkworts, only *Polygala senega* has an interesting history of human use as a North American medicinal plant. The common and species names refer to the Seneca tribe of upstate New York, who were one of a number of tribes to use it. A number of variations of this name have been used colloquially—senega, Seneca (snake)root, Senneker (snake)root, rattlesnake root (Coffey, 1993; Bolyard, 1981). Other names recorded are polygala root, mountain flax, and milkwort (Fetrow and Avila, 1999). Senega, the name most commonly used in contemporary treatments of medicinal plants, will be used here.

Its use in North America was widespread among native tribes when European colonists (and later, American settlers) first encountered them. The Cherokee of the southern Appalachian woodlands are the major tribe in our general region with recorded uses for the plant. The other tribes with recorded uses were inhabitants of northern U.S. to southern Canada—the namesake Senecas, the Chippewa (or Ojibwa) of Minnesota and Ontario, and the Micmac and Malecite of Atlantic Canada, Blackfoot and Cree of the Great Plains to Rocky Mountain foothills (Moerman, 1998).

As is often the case with a medicinally potent plant, a number of actions and uses for senega are recorded. In all reported instances, the medicine is obtained from the thick root. The Cherokee used root powder as a cathartic (emptying the bowels) and a diuretic (inducing urination), and, at times, as a diaphoretic (inducing sweating). These actions were used by healers for a number of ailments (fevers, stomach, cold, flu). The active principle was usually drunk as an infusion or as a decoction, a very bitter medicine. The former involves simply steeping the root in water, the latter requires boiling for an extended period of time, resulting in a stronger concentration of active principles. The root was thought to possess anti-inflammatory properties as well, so it was applied to injuries, swellings, and was also used to treat the swollen joints and aches of rheumatism (Moerman, 1998). As several common names suggest, native peoples also applied a root poultice to snakebite wounds. In addition, the root was chewed and swallowed

(Continued on page 8)

## Medicinal History of SENEGA (Cont.)




directly in an attempt to mitigate the effects of snake venom. Cherokee women used senega to initiate menstruation (emmenagogue), or to induce abortion.

The most important and consistent set of uses for the Cherokee and other tribes involved its action on the respiratory system as an expectorant. Expectorants encourage the expulsion of mucus from the throat and lungs in a number of ways, senega by irritation (see Chemistry box). Synthetic expectorants are found in many over-the-counter cough and cold medicines today. The benefits of clearing the lungs of bacteria-laden phlegm are obvious, and there is little doubt of senega's effectiveness for this purpose. The Cherokee drank a decoction for pleurisy (inflammation of the lung membrane), croup, and a number of throat and respiratory infections (Moerman, 1998). Most other Native American tribes employed the root in similar fashion—sore throats, colds, coughs, snakebite and other wounds. The Chippewa are recorded as employing a decoction for heart trouble or convulsions, and, rather unusually, "an infusion of leaves [was] taken to destroy water bugs that have been swallowed" (Moerman, 1998). The Cree used it as blood medicine, probably as a purifier. Some tribes used senega in combination with other herb medicines as a stimulant or as a tonic. Other recorded uses include kidney medicine (as a diuretic) and for stomach trouble (Johnson, 1999).

Contact with Euroamericans eventually led to the incorporation of senega into the pharmacopeia of the English and French (Canadian) colonies, but not without heated debate. Its first advocate was William Byrd of Virginia, who advocated "rattlesnake's oil" for gout in an infusion with wine (Coffey, 1993). Note that because many medicinal plants bear common names like snakeroot or rattlesnake plant, it is not always clear which herb was being touted in old records. In particular, a colonial chronicler might be referring to *Aristolochia serpentaria* (Virginia snakeroot), *Sanicula*, or *Cimicifuga* (both sometimes called black snakeroot), or others. While a collector is unlikely to confuse these plants, the somewhat interchangeable common names leaves room for doubt about a particular reference.

The most important advocate in the English colonies was John Tennent, an early eighteenth century Scot who came to Virginia to practice medicine. As a result of research among native peoples and his own investigations with the root, he began using senega for respiratory problems, noting that some symptoms of snakebite were similar to those of pleurisy and pneumonia (Millspaugh, 1892). He apparently enjoyed success with it for these and a number of other respiratory ailments, leading to bold public claims of its efficacy. In 1736, he stated, "Snakeroot hath become universal and by great experience found very serviceable to all." (Coffey, 1993). Tennent's hyperbole was effective marketing but raised controversy, and he was publicly attacked by many.

His name was so strongly associated with *Polygala senega* that many contemporaries referred to it as Tennent's root. Tennent succeeded in petitioning the Virginia legislature for monetary compensation for "a discovery so beneficial to this Country and Mankind in general." (The prize was promptly seized by his creditors.) (Coffey, 1993). His attempts to improve his fortunes in England proved equally unfruitful, as his advocacy of the snakeroot medicine fell largely on unreceptive ears during his lifetime. His financial situation endured wide swings, his personal life a scandal or two, and he died in England a few years before public interest in "Tennent's root" took off (Coffey, 1993).

By the late 1750s, senega became quite popular both in the Colonies and in Europe, used in many of the same ways as by Native Americans— expectorant, diuretic, diaphoretic, emmenagogue, and, of course, for snakebite (Crellin and Philpott, 1990). In eighteenth century Germany the root was used to treat a number of eye ailments, especially eye inflammation. Some German practitioners claimed that it could prevent cataracts (Millspaugh, 1892). Europeans were already using their own milkwort, *Polygala vulgaris*, but senega supplanted it when it was realized that the North American herb was more potent. There is no record of its being cultivated on the Continent at that time, so presumably it was available in European apothecaries as an imported medicine.

From the late 1700s to the beginnings of the twentieth century, senega continued to be debated by plant-based healers, focusing on the efficacy of the root to mitigate snakebite. Robert James wrote with dramatic flair in 1744, "There is another species of snake root, called the Seneka snakeroot, which is said to cure effectively the bite of a rattle snake, if taken immediately after it. The bite of this snake is sudden death for the most part." However, by the early 1800s, it had fallen from favor as a snakebite remedy, one writer dismissing it as having "long since lost all credit" for that purpose. Pursh in 1814 noted, "...this is the famous Seneca snakeroot, formerly so celebrated for the bite of rattle-snakes; but other more efficacious remedies have supplanted it." (Crellin and Philpott, 1990).

Consider an eighteenth century snakebite remedy losing favor over the years, as healers find inconsistent results or complete ineffectiveness. Senega's (and other spurious snake remedies') fall from esteem represents many unrecorded tragedies, and we will never know how many people suffered or died as a result of taking this medicine. Fortunately, there is no indication in the current literature that the root is still used for this purpose. The *Handbook of Complementary and Alternative Medicines* (Fetrow and Avila, 1999) definitively states, "Although Native Americans first used senega root for rattlesnake bites, evidence for this is lacking." The question of widespread use (at first) of a spurious remedy by Native Americans and colonists is left unaddressed.

On the positive side, senega's efficacy as a treatment for respiratory ailments apparently won many converts. Nine-

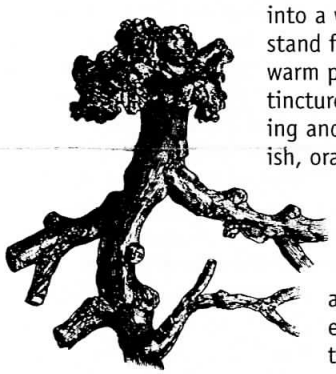
teenth century herbal healing saw many fads and waves of enthusiasm for one remedy or another. Apparently, Seneca snakeroot rode one such wave, to the point where C.J. Cowle in 1870 stated that senega was "one of a few certain roots, seeds &c. you cannot get too many of." A year later Appalachian physician A.A. Scroggs praised the root: "The remedy has long been before the medical profession and has always been highly esteemed. The demand much exceeds the supply." (Crellin and Philpott, 1990). Again, pleurisy, coughs, pneumonia, and asthma were some of the ailments treated with it. It was recorded as useful for various chest ailments and dropsy (swelling from fluid retention) in the Appalachian region. There are records of occasional application by Appalachian herbalists to treat eye inflammation and even small pox. Strong doses were cathartic. (Bolyard, 1981).

Old pharmacopeiae listed two varieties, a more robust northern variety (Great Lakes, Canada) and a more southern type with a smaller root (Youngken, 1948). *Gray's Manual* (Fernald, 1950) lists two varieties differing in stature and leaf size, but there is no indication that one is more northerly than the other. (Kentucky *Polygala senega* are mostly variety *latifolia*, the supposedly more robust version—Medley, 1993). Local use, of course, consisted of whatever variety was available to the herbalist, but most of the root collected for resale (and possible export) was the more robust type, offering more bulk root for the collection effort. Because the plant is more common in northern woods than further south, surpluses for resale were easier to collect in the north. It is conceivable that collectors there could be more selective about the size of the plant (and hence thickness of the root) they collected. There is no record of a difference in potency.

The root was usually collected in fall, dried, and ground into a brown to pale yellow powder (Youngken, 1948). A variety of medicines were prepared from the powder carried by apothecaries—infusions, decoctions, tinctures (in solution with alcohol), as well as senega lozenges and senega syrup, usually taken as expectorants. A very bitter taste, senega was very frequently mixed with other more pleasant-tasting expectorants or sweeteners in syrup (Bown, 1995). Two samples of early nineteenth century medicines made of senega root:

> Two ounces of the root boiled in one quart of water until 1/3 of the water is boiled off; 1–2 oz of the decoction is mixed with cinnamon water or Madeira wine and drunk. (Bolyard, 1981)

> The dried root, gathered before the first frost, is coarsely powdered and covered with five parts by weight of alcohol, poured into a well-stoppered bottle and allowed to stand for eight days in a dark, moderately warm place, being shaken twice a day. The tincture, separated from this mass by decanting and filtering, has a clear, slightly brownish, orange color...an odor greatly resembling sweet cider, at first an aromatic then bitterish and chokingly acrid taste, and an acid reaction. After tasting the tincture or chewing the rootlets, a very peculiar sensation of acridity and enlargement is felt at the root of the tongue." (Millspaugh, 1892).



Plant Kingdom Compendium / Jim Harter, ed. / 1988

Since its nineteenth century heyday, senega has declined in use by plant-based healers. It is still listed in most books

(Continued on page 10)

### The Chemistry and Physiological Action of *Polygala senega*

CONTEMPORARY SOURCES list a number of secondary metabolites found in the root of senega. Most important are several triterpenoid saponins. Terpenoids in general are lipid-derived substances, often found in plant resins, latexes, cork, or waxy coatings. People are generally more familiar with the low-weight, volatile monoterpenes because these are responsible for a number of characteristic plant aromas—oil of menthol, citrus oil, terpentine, eucalyptus oil. Triterpenes in contrast are higher weight molecules (a molecular skeleton of 30 carbons) and hence non-volatile, so they give off no appreciable aroma. They are often bitter (acrid) in taste. Triterpenoid chemistry is complex—many structural types and hundreds of individual kinds have been isolated in plants. Saponins are one large group of triterpenoid product, found in many diverse plant groups. They are noted for their soap-like properties: when mixed with water, saponins create a frothy lather. (Try this at home!) The Latin root word for saponin and soap is the same. Many saponin-rich plants have been (and are) used as soaps or soap substitutes, although senega is not recorded as such. (Soapwort, *Saponaria officinalis* is a good example of a traditional soap plant, very rich in saponins.)

Saponins are also characterized by attachment of simple sugars at one or more places along the molecular skeleton. (Try this in the organic chemistry lab!) The fancy name for any such metabolite with sugars attached is a glycoside. Glycosides are easily broken down in the body into sugar and non-sugar portions, the latter portion in saponins termed a sapogenin. After this easily accomplished cleavage, the sapogenin may itself become metabolically active. Many saponins in glycoside form are reported to be blood-poisons when injected directly into the bloodstream. When ingested by mouth, however, they are readily broken down into sugar and sapogenin, neither of which is harmful to blood cells (Eldin and Dunford, 1999). It is the sapogenins, however, freed of their sugars, which are the active medicinal principles. They are commonly tissue irritants or stimulants with variable and wide-ranging impacts.

The crude mixture of saponins in *Polygala senega*, 6–12% of the root by weight, is usually referred to as senegin. Analysis of senegin has led to isolation of a number of active substances: the most important are senegenin and polygalic acid (Evans 1996). As with other saponins, they are tissue irritants, which is the source of the widely reported expectorant function of the plant. Senegenin and related compounds stimulate (by irritation) the bronchial mucous membranes to secrete fluid as a reflex reaction (PDR, 1998). This lowers the viscosity of the mucus, making it easier for the infected patient to bring up (Eldin and Dunford, 1999). Warnings and potential complications all stem from potential irritating or stimulating action on the stomach, intestines, or uterus. High dose or chronic use can lead to physiological complications (see main text).

Other chemical constituents which may bear on the activity of *Polygala senega* are salicylic acid and related methyl salicylate. Both have been shown to have sedative effects, a notable example is the salicylic acid in willow bark used traditionally as a pain-killer and a forerunner of synthetic aspirin. Although a small component of the root, these compounds may relate to its reported actions as an anti-inflammatory and anti-rheumatic (Johnson, 1999). The Chinese healers prescribed the related *Polygala tenuifolia* (Siberian milkwort) to "calm the spirit and quiet the heart" (Chevallier, 1996), possibly a reflection of the aspirin-like aspects of these compounds. Could the salicylates be responsible for any minor or occasional effectiveness as a snakebite remedy? I am unwilling to find out.

## Kentucky Native Plant Society
# MEMBERSHIP FORM

Memberships are for the calendar year (Jan.–Dec.). Our dues are modest, please keep your membership current. *Membership expiration date is listed at the top of your mailing label.*

Name(s) _____

Address _____

City, State, Zip _____

KY County _____

Tel.: (Home) _____ (Work) _____

*Membership Category* (check appropriate boxes):

*Annual* — ☐ $7 - Individual ☐ $10 - Family

*Lifetime* — ☐ $100 - Individual ☐ $140 - Family

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

*Membership* $_____

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

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

*Return form & dues to:* KNPS Membership, c/o Dept. of Biological Sciences, Eastern Kentucky University, Richmond, KY 40475

## *A Status Report on Membership Status*

On the last newsletter, we asked you to check your membership status on the mailing label below. Please see the article on page 1 for a report on some problems that you and we found.

Thank you!

**Kentucky Native Plant Society**
c/o Department of Biological Sciences
Eastern Kentucky University
521 Lancaster Ave.
Richmond, KY 40475-3102

NON-PROFIT ORG.
U.S. POSTAGE
**PAID**
RICHMOND KY 40475
PERMIT NO. 116