The Lady-Slipper

Kentucky Native Plant Society | Number 20:1 | Spring 2005

A Message from the President:

Hello everyone. Another winter has passed and I trust that everyone survived. Spring is here and for Lela and I, the last couple of weekends have been beautiful and full of those early spring landscaping and gardening chores.

Around our house, I have designated this year as the year of the wasp. We have a bumper crop of wasps buzzing around, looking for places to build homes. As I am somewhat allergic, much of my time has been spent urging them to move on.

Our Spring Meeting and Natural Bridge State Resort Park's 25th annual wildflower weekend is coming up and it looks to be great one as usual. If you've never made it to one of our annual Spring meetings, I'd encourage you to do so. Everyone has a great time, multiple wildflower walks to choose from and informative presentations on Friday and Saturday nights.

Our Native Plant Certification program at Northern Kentucky University is doing great. We have a number of people taking every course, targeting the certification program and we have also had our share of people just interested in one or two courses. *Plant Communities of Kentucky* went well and *Plant Taxonomy* will also be a success. While our biggest draw is certainly from around the greater Cincinnati/Northern Kentucky area, we've had people from Bowling Green, Winchester, and even Murfreesboro, Tennessee.

In closing, I wish everyone a joyous Spring. Don't let those busy lives keep you from getting out and enjoying nature, especially those Spring wildflowers. While I normally wouldn't do this, Lela and I would ask that each of you keep our Son, Adam in your thoughts and prayers as he just recently left for Iraq.

Landon McKinney

The KNPS's goals:

To serve as the Kentucky native plant education resource;

To support native plant research;

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

To promote appreciation of the biodiversity of native plant ecosystems;

To encourage the appropriate use of native plants.

Wildflower of the Year 2005

Showy Goldenrod

Solidago speciosa var. *speciosa*

see page 7 for more information

In this issue--

The Lady-Slipper
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CLUB-MOSSES IN KENTUCKY

by Landon McKinney

"Club-moss" is a collective term for a very interesting group of non-flowering plants related to the ferns. In the ancient swamp forests some 300 million years ago, this group of plants often dominated, some of which, were trees reaching heights in excess of 100 feet. They were very important components in forming the coal seams that now sustain much of the economy of eastern Kentucky. Today, our species are small, herbaceous and often inconspicuous components of our flora.

While we have such names as shining club-moss or running club-moss, several species have other names like ground-cedar or ground- pine. Until recently, the genus for all club mosses was *Lycopodium.* Now, several species within this genus have been bumped into new genera *Huperzia* and *Lycopodiella*. All are in the family Lycopodiaceae.

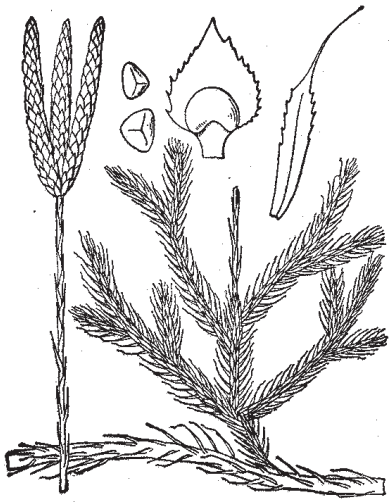
Like ferns, these seedless vascular plants produces two types of plants. The gametophyte produces the reproductive cells, is usually quite small, and may even develop underground. The sporophyte is the nonsexual, vegetative portion of the plant that we see in the field. In most, the small green, scale-like leaves are essentially arranged in a spiral pattern, all the way around a stem. Several species have leaves that are all oriented in the same plane and appear flattened (those called ground-pines) while others the leaves appeared fused to the stem as with shingles giving them the appearance of tiny cedars (the ground-cedars). The leaves are unique in the plant kingdom because they only have a single, unbranched vein that supplies water and distributes nutrients. For this reason, the leaves are often referred to as microphylls. These green plants often produce a narrow, scaly, brownish stalk as the fruiting structure upon which, the spores occur.

According to Jones (2005), Kentucky has the following species in the Lycopodiaceae:

Huperzia lucidula Shining fir-moss
Huperzia porophila Rock club-moss
Lycopodiella alopecuroides Foxtail bog club-moss
Lycopodiella appressa Southern (or appressed) bog club-moss
Lycopodiella inundata Northern bog club-moss
Lycopodium clavatum Running club-moss
Lycopodium digitatum Southern running-pine
Lycopodium hickeyi Hickey's club-moss
Lycopodium obscurum Tree club-moss
Lycopodium tristachyium Blue ground-cedar

Of these, most are confined to the eastern portion of the state or other areas where we find sandstone cliffs and ledges. Two exceptions are *Lycopodiella appressa,* which is considered Endangered, but is scattered across the state, and *Lycopodium digitatum,* our most abundant species and occurs throughout the state.

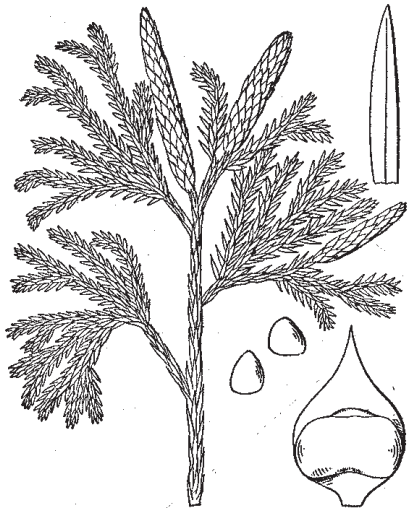
One of our prettiest club mosses is the running club-moss or *Lycopodium clavatum.* The rich, green vegetation with creeping stems (rhizomes) provide a distinct contrast to the yellowish- brown fruiting structure standing about five inches above the vegetation. The fruiting structure is where the spores are



Lycopodium clavatum

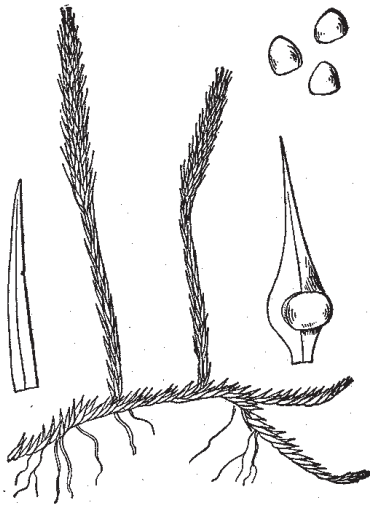
produced. The spores of this species are very small and have been used over the years for a variety of purposes from baby powder to gun powder. One of our species, *Lycopodium obscurum* has often been used in Christmas wreaths.

While several species would seem to make an excellent ground cover for shady areas, all species have such specific requirements that none will tolerate any attempt to transplant to a home garden. Additionally, most, if not rare, are pretty darn infrequent.



Lycopodium obscurum

In addition to the very rare *Lycopodiella appressa*, mentioned above, two other species are considered rare and listed as endangered on the Kentucky State Nature Preserves Commission's threatened and endangered species list—-*Lycopodiella inundata*, and *Lycopodium clavatum*.



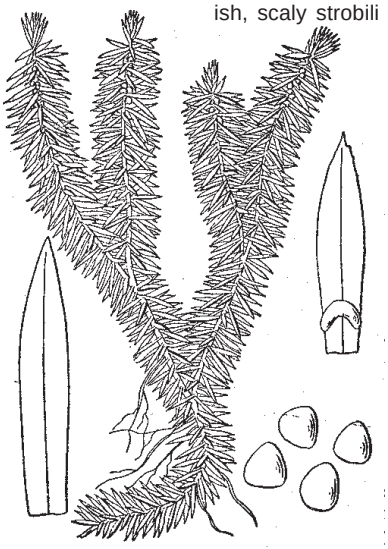
Lycopodium inundata

Several species may be encountered in the Red River Gorge area as well as other parts of the Daniel Boone National Forest and state parks like Pine Mountain and Natural Bridge State Parks. Just remember, marvel at their unique appearance but leave them alone so others may have the opportunity to experience these interesting little herbs.

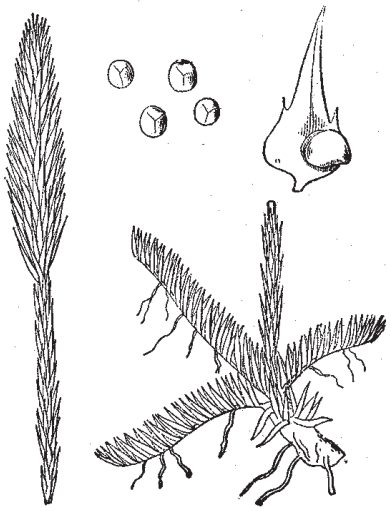
Ref: Jones, R.L. 2005. *Plant life of Kentucky, an illustrated guide to the vascular flora*. Univ. Press of KY, Lexington.

Examples of the three genera of Lycopodiaceae present in Kentucky:

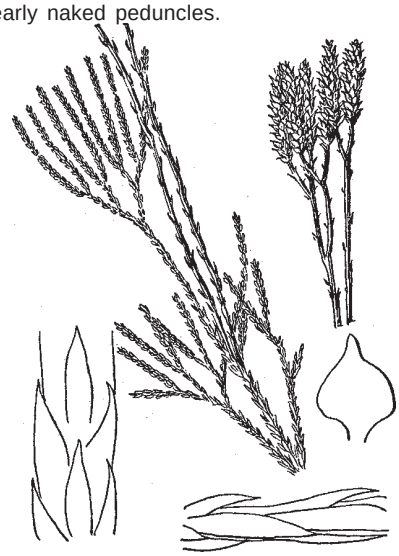
Huperzia lacks horizontal stems, often has clustered upright stems in which sporangia are scattered within the axils of unmodified leaves. *Lycopodiella* and *Lycopodium* both contain horizontal (rhizome) stems with distinct strobili concentrated at the apex of the upright stems. *Lycopodiella*'s strobili are green and leafy, with similarly shaped sporophylls and microphylls and leafy peduncles. *Lycopodium* have yellowish, scaly strobili with disimilar sporophylls and microphylls and scaly or nearly naked peduncles.



Huperzia lucidula



Lycopodiella alopecuroides



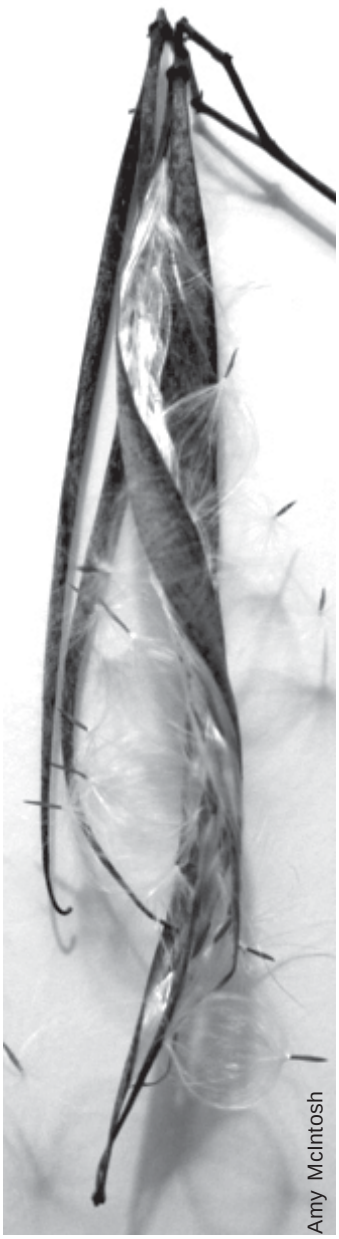
Lycopodium tristachyium

Images from *Illustrated Flora of the Northern U.S. . .* / Britton & Brown / 1913

The world of the dogbane family Apocynaceae

Robert Paratley
Curator, University of Kentucky Herbarium

Indian-hemp or dogbane, *Apocynum cannabinum*, is a tall, branching perennial found in most parts of Kentucky. It is very common in old fields, roadsides and other disturbed habitats, but is not particularly conspicuous in flower, with small greenish-white flowers whose petals are fused into a small urn-shape. Indian-hemp is more conspicuous in fruit, where the two parts of the pistil separate at maturity and elongate into narrow, dark, long-pointed follicles (pods). These are filled with numerous light, tufted seeds adapted to catch the wind, making it an effective seed disperser. Break the plant and the sap is milky white. Another species, the spreading dogbane (*Apocynum androsaemifolium*), is similar but smaller than Indian-hemp and is widespread in northern U.S. It is listed as rare in Kentucky. Both species are on any serious list of poisonous plants. Numerous cases of livestock poisoning have been recorded, although apparently no human cases are known. (Turner and Szczawinski, 1991).



Apocynum cannabinum

Both are members of the Apocynaceae, a large, mostly tropical family of mostly woody members. This article will highlight the features of this complex, diverse family that barely gets a toehold in the temperate zone. The Latin genus name *Apocynum* was coined by Linnaeus. He combined two Greek roots, a*po* meaning "away" or "off", and *cyn* meaning "dog" – a dog repellent. The common name echoes this idea. (Perhaps dogs found the scent of the European dogbane *Apocynum venetum* unpleasant and kept away from it.) *Apocynum* became the namesake genus for the family Apocynaceae, whose name is credited to the French botanist Antoine-Laurent de Jussieu in the early 1800s. Until recently, the concept of the family remained fairly consistent, including about 200 genera and 2,000 species (Cronquist, 1981). Recent research has expanded the concept of the family to include the milkweeds, which have traditionally been taught as a distinct but closely related family. Following older fashion, I will not discuss milkweeds here.

Look up the Apocynaceae in the Gleason and Cronquist *Manual of vascular plants of Northeastern U.*S (1991), and you'll discover just how poorly represented the family is in eastern U.S. Only four genera are included, covering less than two pages. Briefly rounding out the listing for our state, there is blue star, *Amsonia tabernaemontana,* a perennial herb common in moist woods and streambanks, particularly in western Kentucky. Clusters of pale blue flowers make it conspicuous in spring and a popular item in perennial gardens. The final native is the hardest to find— a rare climbing vine of wet woods and stream banks named *Trachelospermum difforme*, the climbing-dogbane. It is scattered in southern and western Kentucky and is mostly a plant of the southern Coastal Plain. Its small yellowish flowers appear in the summer.

A close look at flower structure and pollination in periwinkle

Probably the most familiar member of the dogbane family is the common garden periwinkle or myrtle, *Vinca minor*, an evergreen ground cover from Europe with handsome blue flowers in early spring. The creeping stems root and send up leafy shoots with one or two attractive blue flowers. It is most often seen in older gardens, and is sometimes discovered persisting for many years in overgrown old homesites, having naturalized in many places throughout our state. Less commonly seen is *Vinca major*, the greater periwinkle, a Eurasian cousin that is more robust in all respects. It rarely naturalizes.

Exploring the periwinkle in some detail gives us a chance to understand many characters of a typical member of the Apocynaceae. *Vinca* bears opposite, simple leaves with

Vinca minor

smooth margins. While *Amsonia* and a small minority of Apocynaceae bear alternate leaves, the vast majority of the family bears opposite leaves very much like *Vinca*. The large, showy and tubular *Vinca* flower is more typical of the Apocynaceae than the flower of Indian-hemp. Like *Apocynum*, the petals are fused. But here a narrow tube is formed for most of the length of the corolla. The lobes of the petals flare out, perpendicular to the tube, as a bold signal to pollinators. This shape is called salverform, a very common form in the family. The corolla lobes of periwinkle show a slight bend even when the flower is completely open, because they were tightly twisted around each other in the closed bud. This is consistently seen throughout the family. Some members possess little glands or outgrowths, called colleters, on parts of the flowers. (Other members have these on leaf bases or leaf stalks.)

A look inside the periwinkle flower reveals more about its construction. The narrow corolla tube is nearly blocked by a large stigma, the upper portion of the pistil. It often resembles an engine piston in shape and is composed of three distinct regions with different functions in pollination. The five stamens are attached to the inside of the narrow corolla tube by very short filaments. The longer anthers, the actual pollen-producing organs, are in close proximity to the stigma. In many members of the family, the anthers are actually fused directly to the stigma. Pollination in the Apocynaceae is usually a specialized affair, and the stamens and pistil are modified to facilitate the transfer of pollen from one flower to another. Visiting insects come in search of nectar, offered at the base of the corolla tube by secretion of two glands. In periwinkle (and most Apocynaceae), the tube portion of the flower is fairly long as well as narrow. For an insect to successfully feed, it must have a lengthy feeding part. This long feeding tube or tongue is guided to the base of the flower through a very tight space between the anthers. When the insect finishes feeding, it withdraws, depositing any pollen it obtained visiting a previous flower at the base of the stigma, which is shaped like a thin inverted cone. It is called the scraper, and does just that to the pollen on the visitor's mouthparts on its way up and out. The interior of the scraper— the lower region of the stigma— is the only area where pollen can germinate. As the insect withdraws further, it comes in contact with a midsection of the stigma that secretes a sticky substance. This adhesive comes into play as the insect withdraws to the top of the stigma. Pollen from the flower's anthers has been deposited on the brushy surface here, sticking to the insect, which then carries away the new pollen to the next flower. Cross-pollination is ensured. (The periwinkle will not self-pollinate; it is self-sterile.) If successfully fertilized, periwinkle and most of the family produce fleshy fruit produce many-seeded follicles, often paired (Zomlefer, 1994; de Wit, 1965).

A family of warm climates- examples from Southern gardens and conservatories

To experience the range of diversity in the family, we must explore the tropics and subtropics of the New World, Africa, and Asia. Its species range from tall, buttressed canopy trees in the rainforests of Malaysia and Indonesia, to cactus-like succulents of dry southern Africa and Madagascar. A great many are shrubs or small trees in the understory of closed rainforests or in seasonally dry open areas. The Mediterranean and Southeast Asian coastal dunes are particularly rich in shrubby Apocynaceae. Central and South American rainforests harbor many lianas, woody vines that use canopy trees for support. West African rainforests also contain many lianas and small trees.

But before heading for exotic parts, we can make quick a stop in our temperate gardens to find the rosy periwinkle, *Catharanthus roseus*, originally from Madagascar. The white, pink to rosy red flowers are quite similar to those of the periwinkle. A very popular temperate zone bedding or container annual, its real significance is as an important pharmaceutical plant (see below).

Most of us will not experience first hand a Javanese rainforest or Madagascar scrub, but we can travel to the Gulf States and lower Southeastern gardens to experience the beauty and diversity of the exotic Apocynaceae. California gardens and roadsides will also do nicely, as will the always-warm conservatories further north. Among the most popular and well-known outdoor shrubs in the South is the oleander, *Nerium oleander*. This Mediterranean shrub is also a popular houseplant in cooler climates, sporting pinkish flowers (varieties are white, yellow, or even deep red) showing the typical features of the family. The corolla lobes have a striking fringe growing out of the top of the tubular part of the flower. Oleander, though tender to frost, is a very tough plant, tolerant of both drought and salt. It is one of the

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WILDLIFE & NATIVE PLANTS

What is the impact of deer on native trees and shrubs?

By Dr. Charles Elliott, EKU professor

David Hewitt, Texas A & M

"Record deer harvest again this hunting season"…. headlines like this have become quite common in local newspapers over the past decade. The efforts by state fish and wildlife agencies to enhance deer populations have been extremely successful in many regions of our country—including right here at home in Kentucky!! As deer herds have increased, an increasing number of biologists have started to ask the question 'What might these high numbers of deer be doing to the native vegetation?' What I'd like to do is share some of the information that has appeared in professional journals concerning the impact of deer on native plants, focusing today on the impact on trees and shrubs. The information I will present is distilled from an article by Donald Waller and William Alverson entitled "The white-tailed deer: a keystone herbivore" which appeared in the Wildlife Society Bulletin [volume 25, pages 217-226]. The authors reviewed research concerning the impact of deer on native vegetation.

Research in forested regions of the Allegheny Plateau in Pennsylvania revealed that at very high deer densities and under certain conditions, the seedlings and saplings of all trees species are eliminated and stands with park-like, grass and fern-dominated understories emerge. It was found that the ferns themselves interfere with the germination, growth, and survival of tree seedlings and may extend the indirect effects of deer browsing on native tree regeneration. Over the years, deer browsing in the Allegheny National Forest in northwestern Pennsylvania has suppressed or eliminated most of the oak seedlings and saplings…resulting in a slow conversion of the region from an oak-dominated to American beech dominated forest.

In an assessment of the impacts of deer browsing on forests in central Illinois, researchers noted that deer ate a disproportionately large amount of relatively uncommon species such as white oak and shagbark hickory. In a ten year study of upland beech-maple, lowland ash-elm, and young pin oak forests in Ohio, researchers observed that deer browsing was a major factors in determining what tree and shrub species survived.

Slow growing conifers like eastern hemlock appear very sensitive to the long-term effects of deer browsing. One study examining changes over a 20-year period in a virgin hemlock-hardwood stand in the Allegheny Mountains noted that deer browsing stopped the typical patterns of succession by eliminating the advance regeneration of hemlock seedlings. Deer browsing on hemlock in a region of Upper Michigan prompted biologists to predict that hemlock would be essentially eliminated from stands if browsing levels did not change. Declines in seedling abundance due to deer browsing has also been reported for eastern hemlock and northern white cedar in other areas of the Great Lake states.

In areas where biologists have performed long-term studies, evidence is accumulating which supports the troubling conclusion that high deer populations can, over time, start to change the tree and shrub composition of a forest….and may even eliminate a species from the forest.

2005 Wildflower of the Year
SHOWY GOLDENROD (*Solidago speciosa*)

By Mary Carol Cooper
Salato Native Plant Program Coordinator
Salato Wildlife Education Center


Tom Barnes

Wildflower enthusiasts from all across the state have selected Showy Goldenrod (Solidago speciosa) as the Salato Native Plant Program's Wildflower of the Year for 2005. 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 to Kentucky, common and widespread across the state, seeds must be readily available, must be easy to grow, and must have good wildlife value.

Showy Goldenrod is a hardy perennial that grows 2 to 6 feet tall, depending on where it is planted. It is a rather showy species with stout, smooth, reddish stems and smooth, deep green leaves that are 4 to 10 inches and not toothed. It grows in rich thickets, woodland openings, fields, and prairies. It likes average to well drained soil and grows in sun to partial sun. It has dense upright pyramidal flower clusters. Each flower head has 6 to 8 rays. Showy Goldenrod blooms in late in the summer (August to September) and is wonderful as a late summer nectaring source for bees, butterflies and hummingbirds. It also provides food for several species of songbirds such as the Goldfinch, Junco, Pine Siskin, Song and Tree Sparrows.

Goldenrods are insect pollinated and their pollen is heavy and sticky. Therefore their pollen is never in the wind, so contrary to popular belief, this is not the plant that has always been blamed for causing hay fever. It is ragweed that causes all the misery! Ragweed blooms at the same time and is wind pollinated. I've enjoyed watching more and more floral designers use goldenrods in their arrangements and wonder how many people are aware that their lovely bouquet is full of the "dreaded goldenrod".

Goldenrod is truly a North American flower. There are approximately 125 species in North America and more than 30 of these are native to Kentucky. Since the State Flower is Solidago ssp. this must mean that we have 30 State Flowers! Two of out native goldenrods, White-Haired Goldenrod and Short's Goldenrod are on the Federally endangered species list.
Showy Goldenrod makes a nice background or mid-ground plant in a sunny perennial garden. Establish this plant at the very rear of the garden or in the very middle of a circular or oval garden. Allow 3 feet between plants as this species grows into large clumps very fast. They can be divided every year or so and given to friends and neighbors. Nice companion plants are Ironweed, Great Blue Lobelia and New England Aster. Plants naturalize quickly on dry sunny banks. The cuttings are outstanding in arrangements.

The genus name Solidago comes from the Latin word that means "to make whole" or "to heal", a name chosen because of medicinal power the plant was believed to have. The Native Americans used this plant for many things including ridding people from pain and evil spirits. One Goldenrod superstition says that he who carries the plant will find treasure, therefore, Goldenrod is the symbol for treasure and good fortune

Goldenrod seeds and plants are available from many native plant nurseries. It is also very easy to propagate either by seeds, or division. Sow seeds thickly in outdoor seedbeds early in the fall or sow stored seed later in a flat indoors or in a cold frame. Transplant when there are 3 to 4 leaves. When the roots fill the pot, transplant in the garden after the last frost date. Collect seeds in late September or October. Cut off seed heads and put them upside down in a large paper bag. Let them dry for up to a week and then shake them in the bag and put the seeds in a sealed container.

Apocynaceae *cont. from page 5*

woody plants of choice in sandy areas near the salt spray of the ocean. One often sees it in moveable tubs in areas with too long or cold a winter, away from the modifying influence of the Gulf or Atlantic. I noticed that it is a very popular highway beautification shrub in California, somehow enduring the scorching Central Valley summer heat. Oleander is notoriously poisonous, and can be a dangerous houseplant if accidentally ingested. There are oleander-related fatalities yearly, and it is said that even the smoke from its burning wood is poisonous (Riffle, 1998).

Also grown outdoors in the South are two species of East Asian climbers and groundcovers of the genus *Trachelospermum*, the star-jasmines. The small white very fragrant flowers are produced in profusion in the spring. One sees star-jasmines as ground-covers, trellis and wall climbers, and as hedges. It will thrive near the Atlantic coast as far as Delaware (Dirr, 2002). Another genus with a "jasmine" common name is *Tabernaemontana*, the pinwheel jasmine and wild orange jasmine, fragrant-flowering shrubs growing in nearly frost-free areas in the coast. These shrubs are not related to the true jasmines, which are in the olive family (forsythias, lilacs, and privets).

> "The ability of cardiac glycosides to kill through heart or respiratory failure has been exploited by many indigenous tribes, which have tipped their blowgun darts with serum prepared from *Mandevilla* (Brazil) or *Strophanthus* (Africa)."

As we head south into subtropical Florida, we find the most popular and widespread is frangipani, *Plumeria rubra*. Native to seasonally dry coastal hillsides of Central America and the West Indies, it was brought to southern Europe where it was introduced into cultivation under glass. The common name comes from Italian, referring to the fragrance of the flower oil distilled into perfume. It was soon adopted throughout the world. The plant drops its leaves in climates with a dry season, its few-branched habit looking barren until the rainy season returns. In areas of consistent rainfall it is evergreen and blooms periodically throughout the year. (Riffle, 1998). Called the Temple flower in Buddhist Asia, frangipani is chosen for its consistent blooming for planting around sacred sites. "Its singular ability to burst into leaf—and even into flower—when lifted from the ground not unreasonably suggests immortality, so it is frequently planted near graves." (Perry, 1972). Like oleander, frangipani does well in the spray of salty ocean air.

Two commonly grown vines, *Allamanda* and *Mandevilla,* both hail from the South American tropics and bear large salverform flowers typical of the family. *Allamanda*, also called golden trumpet, is typically bright yellow, while *Mandevilla* (a large genus of often weedy vines, often confusingly called allamanda) is white, pink or red. *Mandevilla splendens*, the commonly grown species, is seen even here in Kentucky as a summer flowering potted plant that must be moved indoors before fall. These climbers too are notoriously toxic, as discovered by peoples in their native Brazil (see below).

Other important horticultural genera of southern gardens and streets are *Alstonia*, the scholar tree, an important timber and medicinal plant in India, and *Carissa macrocarpa,* the Natal plum, with edible berries. Edible fruit is rare in the Apocynaceae, but the dense spines of the Natal plum are not. Referring to its dense armament of spines, Kirsten Llamas (2004) claims "Clambering varieties can infiltrate tree canopies and become difficult to control. Be forewarned that climbing forms are used to fence out elephants in Africa." Unfortunately, a number of these plants are invasive in Florida.

From Africa and the arid portions of Madagascar come a pair of horticultural curiosities: *Adenium obesum*, the desert-rose, and *Pachypodium*, the clubfoot. Both exhibit pachycauly— a short, thick and usually swollen trunk bearing whorls of leathery leaves. Unrelated to cacti, *Pachypodium* especially bears an uncanny resemblance to that mostly New World family. Many species have stems that are low, ground-hugging mounds; some are trained into odd bonsai forms. Only when the large, salverform flowers with slightly twisted petals come out do *Pachypodium* and *Adenium* betray kinship to oleander and periwinkle.

Toxic plants, plant medicines, latex

It is the potent and complex chemistry of the family that makes plants like oleander so toxic, and has made several others so important as medicinal plants of great benefit. The Apocynaceae commonly produce two types of metabolites important to humans. Alkaloids, nitrogen based compounds that very often affect our nervous system, are widespread in the family. Their effects, usually disruptive, are varied depending on the particular alkaloids present. These include raising or lowering blood pressure or heart rate, sweating, or paralysis. Alkaloids can also alter mood, perception, stimulate or depress. Some alkaloids disrupt cell division and growth, and it is for this reason that two alkaloids isolated from the rosy periwinkle (*Catharanthus roseus*) have helped modern medicine fight childhood leukemia and Hodgkin's disease. An indigenous remedy for diabetes, the rosy periwinkle failed screenings as a glucose regulator but was noted to shrink or

arrest cancerous tumors. Success in clinical trials has put its most active alkaloids on the market as vincristine and vinblastine. Rosy periwinkle is now grown commercially for its active principles by the Lilly Company in southern Texas. (Sheldon, et. al., 1997).

An alkaloid named reserpine, collected from the root bark of *Rauvolfia*, the serpent-wood, is the active principle in medicines that control hypertension (high blood pressure). Members of *Rauvolfia* are found in the Old World from West Africa to Indonesia, as well as in Central America and the West Indies. They have been important medicinals in local cultures throughout this range. Before serpent-wood was saving lives in modern times, its Indian species *Rauvolfia serpentina* had a 3,000 plus year history in Ayurvedic medicine. Its powerful alkaloids have been used to stimulate contractions in childbirth, sooth spasms, allay snakebite (hence the name) and to bring down fever. Its tranquilizing effects have been used as an aid in meditation. Various species elsewhere have been used as powerful emetics, to combat digestive parasites, and to alleviate symptoms in syphilis, leprosy, and dysentery. The active principle resperpine was isolated by Indian doctors in the 1930s and found to relax blood vessels and reduce heart output, lowering blood pressure. It came to attention of Western doctors in the 1950s. For a time, it was tried as a treatment for schizophrenia. Demand led to over collection, which created serious pressure on wild populations. The Indian government has at times restricted export and made a not yet successful effort to cultivate the plant on a large scale

The second group of active principles in the family is the cardiac glycosides. As the name suggests, these chemicals affect the heart in mammals including humans. They are specialized metabolites related to steroids, and are dangerous because they very difficult to regulate as effective medicines. The correct dose is an effective stimulant to the heart muscle; a small overdose leads to severe complications and possible death. From West Africa and Indonesia comes *Strophanthus*, whose wild-looking flowers are conservatory curiosities. Heart stimulants and respiratory aids have been developed from species of *Strophanthus*, the most notable heart medicine stimulant named strophanthin. The seeds of several *Strophanthus* have been used as the natural starting point to the synthesis of the anti-inflammatory cortisone

All of the plants mentioned in this article are poisonous, some markedly so. People who grow oleander or frangipani must keep pets and children away from any part of these plants, which may contain alkaloids, cardiac glycosides, or both. The ability of cardiac glycosides to kill through heart or respiratory failure has been exploited by many indigenous tribes, which have tipped their blowgun darts with serum

continued on page 10

Who am I?

I am herblike, but slightly woody, with semievergreen leaves, these often crowded toward the tips of the stem; my flowers are unisexual, each with 4 sepals but no petals; the male flowers have 4 stamens and the female flower has a 3-parted, superior ovary; the male flowers are more numerous and occur above the fewer female flowers on the same stalk; my fruit is a capsule. I grow chiefly in the the mesic woods of the southern portions of the Interior Low Plateaus in KY.

Winter 2004 Who Am I? answer:
Hottonia inflata (featherfoil)
in the Primulaceae family

The following KNPS members correctly identified the last species:
Bob van Hoff (winner)
Allen and Susan Sweetser
Mark Gorton
Bob Dunlap
Dennis Horn
Judy Dumke
Fred Foote
David Fothergill
Charlie Lapham

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

Apocynaceae *cont. from page 9*

prepared from *Mandevilla* (Brazil) or *Strophanthus* (Africa). A similar glycoside is found in oleander! Also in West Africa is a plant the natives call iboga, *Tabernanthe iboga*. Chemists have isolated twelve psychoactive alkaloids from the root of the shrub. The power of the plant as a hallucinogen has led to a cult centered around rituals where it is ingested. Shamanistic practice in Gabon and other West African countries employ iboga to communicate with spirits, ancestors. The tribal name iboga means guide to the ancestors. Out-of-body experiences and trances are parts of these complex rites. One such ritual is a rite of passage for young males. The plant is quite toxic—the active and lethal doses are similar— and the ritual is essentially a test of survival that not every participant finishes alive (Schultes, et. al., 2001).

Lastly, the latex from a number of Apocynaceae has been commercially developed into rubber. None are important in worldwide commerce, but, historically, several were important. The Allies in World War II brought several into play when supplies of hevea rubber in Southeast Asian plantations were cut off by the occupation of the Japanese. A cousin of our blue star, *Amsonia palmeri* of southwestern North America, has been tapped as a substitute source for rubber, but on a small scale. The latex of several species in different parts of the tropics has been developed into a gum-like chew, and a number of tropical Apocynaceae are used for timber

Although the Apocynaceae is barely present in the Kentucky flora, our few representatives are just the smallest hint of a large, interesting, and very useful plant family. From beautiful shrubs and climbers of conservatories and southern gardens, to medicines and poisons, the Apocynaceae have delighted, intoxicated, healed, and hurt us.

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