



On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

Spring 2007 Events

Ohio Botanical Symposium

Fri. March 30, 2007, 9am to 4pm: **7th Annual Ohio Botanical Symposium**. OSU Fawcett Center, 2400 Olentangy River Rd., Columbus, OH. \$15 registration fee.

The Ohio Botanical Symposium was first presented by the Ohio Division of Natural Areas & Preserves in 2001 to inform interested botanists about Ohio's Natural Heritage Program. Since then, the Symposium has diversified to include a range of topics on Ohio's native flora. The Symposium brings together people of various backgrounds who are interested in Ohio's native plants and natural history. This is a day of lectures by the best botanists in Ohio.

For information about registration go to www.dnr.state.oh.us/dnap/symposium/.

Great Smoky Mountains Spring Wildflower Pilgrimage

April 23-29, 2007: **The Great Smoky Mountains National Park 57th Spring Wildflower Pilgrimage**

This is an annual seven-day event in Great Smoky Mountains National Park consisting of a variety of wildflower, fauna, and natural history walks, motorcades, photographic tours, art classes, and indoor seminars. Most programs are outdoors in the Park, while indoor offerings are held in various venues throughout Gatlinburg, TN. New Venue for 2007! The 2007 Spring Wildflower Pilgrimage will return to the newly renovated W. L. Mills Auditorium in Gatlinburg, TN. On-site registration, indoor seminars, and departing for programs on trolleys will all be conducted from W. L. Mills Auditorium.

For information about registration, go to www.springwildflowerpilgrimage.org/

Dandelion May Fest

Something new and different in the world of wildflowers.

May 4-5, 2007: **14th Annual Dandelion May Fest**, Breitenbach Wine Cellars, Dover, Ohio for information call 330-343-3603, and

May 6, 2007, 1:30pm: Holden Arboretum. **Anita Sanchez book signing.**

Anita Sanchez will speak about her new book *The Teeth of the Lion* [5x8, 144 pages, 15 b&w illustrations, bibliography, index. Paper; 0-939923-22-X; \$14.95]. In her new book Sanchez describes the mosaic of natural and cultural history of the dandelion in ten chapters, exploring different themes that discuss the dandelion's relationship with a broad range of environmental issues and human history.

Historical uses of the plant are presented in an entertaining and personalized style. Wildflower lovers will also enjoy the book's descriptions and insights on plants which are dandelion relatives, including some of America's most beautiful and beloved wildflowers. Detailed botanical illustrations of dandelion flower parts, roots, and seeds, as well as a diagram of the germination and growth of a dandelion are included. As a bonus, the book contains a selection of recipes using dandelions, and discusses medicinal qualities.

The book will make people aware of the very real dangers to human and wildlife health posed by the unbridled use of herbicides on home lawns. It makes the case for using organic, environmentally friendly methods of lawn care, and nudges us a little closer to living happily with a stray dandelion or two on our lawns.

(continued on page 3)

We thank all those who have remembered to renew their memberships for 2007, and we remind those who have not yet done so that this will be your last issue of ***On The Fringe***.

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Spring and Early Summer 2007 Program Schedule

Apr. 29, Sun: HUBBARD VALLEY PRESERVE, Medina County - 1:30 P.M. Dan Bertsch of Medina County Park, leads this trip to Hubbard Valley Preserve, a rich wildflower area known for its spring ephemerals. Included are massive displays of trillium species: hillsides of large-flowered trillium together with drooping trillium and red trillium along with an acre of forest floor covered with sessile trillium including the uncommon yellow-green variety. Easy walking on and off trail. Directions: Take Rt. 71 south to Rt. 76 east. Exit Rt. 76 at Wooster Rd. Head north to Blake Rd. Turn Rt. on Blake to Hubbard Valley Rd. Turn right, park is one mile south of Blake. Call Diane to register: (H) 216-691-1929 (W) 440-603-7195.

May 5, Sat.: SPRING FLORA OF HOGBACK RIDGE, Lake County. - 9:00 A.M. Bordered to the north by the Grand River and the south by Mill Creek, Lake Metropark's Hogback Ridge is known as a superb spring wildflower area. The 413-acre park includes upland hardwood forests, hemlock ridges and floodplains. Discover the resilience of plants as we explore the flood plain and uplands to see the results of the 2006 summer flooding along the Grand River. Directions: Take I-90 east to Rt. 528, go south 2 miles to Griswold Rd. Turn left and head east 1 mile to Emerson Rd. Turn left and head north ½ mile to park. Call Judy to register: 440-564-9151 (H) or 440-286-9516 Ext 2011 (W).

MAY 26, Sat: MOHICAN STATE PARK AND HEMLOCK FALLS, Loudonville, OH – 10:00 A.M. - The Mohican Native Plant Society hosts the Northeast Ohio Native Plant Society as we explore Mohican State Park with a rich display of wildflowers including whorled pogonia. After lunch visit Hemlock Falls, a sandstone ridge with 18 species of ferns. Pack a lunch.

Directions - Follow I-71 south from the Cleveland area, past Mansfield, to exit 165, which is the SR 97, Bellville-Lexington exit. Go east (left) onto SR 97 and follow SR 97 through Bellville and Butler. This brings you right into Mohican S.P. and the Memorial Shrine, a church-like structure with a big parking area to the right just as you enter

Mohican State Park on SR 97 from the west.. We will meet you at the Memorial Shrine in Mohican State Park at 10:00 a.m.

It takes about 50 minutes to an hour from the I-71 - I-271 split just north of Medina to the SR 97 exit. It's about 25 minutes north to Cleveland on I-71 and about 1/2 hour north to Mayfield Hts. on I-271. From I-71 to Mohican Park on SR 97 is about 1/2 hour. So, depending on your departure point in Cleveland, it's probably a good 1 and 1/2 to 2 hour trip.

Bring a sack lunch, water, and good hiking boots or shoes. We'll go to selected sites in Mohican (depending on blooms), probably lunch at Mohican (plenty of picnic areas) and then go to Hemlock Falls in the afternoon, which will be relatively short, but a very nice area - many ferns. Degree of difficulty is about a 2-3 (on a scale of 1-5). It will mostly be on trails, but there will be some inclines. Call Diane to register: (H) 216-691-1929 (W) 440-603-7195.

June 9, Sat: HUDSON PRESERVE PLANT SURVEY - 9:00 AM. - Explore one of the preserves most recently protected by the Western Reserve Land Conservancy while assisting in a plant survey of this two-hundred-acre property in Hudson. Call Judy for reservations and directions: 440-564-9151 (H) or 440-286-9516 Ext 2011 (W).

June 16, Sat: KELLEYS ISLAND, Erie County, OH - 9:00 AM. - Jim Bissell leads this combined trip with Northeast Ohio Naturalists (NEON.) This limestone based Lake Erie Island habitat hosts hackberry and prickly ash, known noteworthy caterpillar host plants of the snout butterfly and giant swallowtail, nine state listed plants including rock elm, and the Lake Erie water snake. Directions: Take Ohio Rt. 2 west to Rt. 269. Take Rt. 269 north to Rt. 163. Turn right on Rt. 163. Assemble at Kelleys Island Ferry Landing in Marblehead on north side of Rt. 163. Bring ferry fee and lunch. Call Diane to register: 216-691-1929 (H) 440-603-7195 (W)

(Spring 2007 Events - continued from page 1)

Flora-Quest

May 4-6, 2007: Botanists to Lead Weekend Flora-Quest

Many of Ohio's best botanists are gathering the weekend of May 4 through 6, 2007, in the beautiful hills of the 65,000-acre Shawnee State Forest in southern Ohio. Flora-Quest is a new and innovative event; a botanical retreat geared towards learning, gaining ideas and inspiration, meeting like-minded people, and above all, appreciating the most spectacular flora in all of Ohio.

Shawnee is commonly known as Ohio's "Little Smokies", and with good cause. The rugged, hilly landscape is eerily reminiscent of the Great Smokies National Park, with the steep forested slopes blanketed with an incredible array of flora. Botanically, Shawnee represents the northernmost outposts for many Appalachian plants that one would otherwise have to go to the real Smokies to find. Shawnee is without a doubt one of Ohio's greatest botanical paradises, and one of its best-kept secrets. Located just west of Portsmouth in Scioto County, Shawnee Forest has the richest diversity of any place in the state. About 1,000 species of plants grow here, including many that are very rare. Early May is peak for wildflowers, and the hills will be cloaked with trillium, over a dozen species of violets, native magnolias, wild azaleas, orchids and many more. As an added bonus, well over 100 species of birds occur in the forest in spring, including scores of our most colorful jewels like Scarlet Tanager, Hooded Warbler, and Rose-breasted Grosbeak. Bring your binoculars! In order to help participants appreciate

the vastness of Shawnee and find all of its treasures, a team of the very best botanists in Ohio has been assembled. All of them are familiar with Shawnee and its plants, and most know other facets of natural history, like birds, very well. As your guides, they will help you learn the forest and Ohio's native flora on organized field trips. Trekking through Shawnee is made easy via a network of seldom traveled but well-maintained forest roads, and most trips do not involve great amounts of hiking. Virtually all of the interesting plant life can be seen right along the roadsides!

The center of activities will be the beautiful Shawnee Lodge and Resort, located in the heart of the forest. The accommodations and food are outstanding, so there is no need to "rough it", but camping and cabins are available. Friday evening keynote speaker will be Jim McCormac and Saturday evening, Chris Bedel. Both are intimately familiar with the flora of the region; indeed, they have discovered new species to Ohio in Shawnee! There will be other bonuses, too, such as special evening field trips, planetarium shows, vendors, and more. Please, visit the website at www.flora-quest.com for more information. Registrations and complete trip descriptions are now available on-line. Take this opportunity to trek to the top of a "permit only" nature preserve, Raven Rock. Ask for the Flora-quest discount on your room at The Lodge to save between \$39.00-\$50.00 per night. You will discover the diversity at Shawnee.

West Virginia Wildflower Pilgrimage

May 10-13, 2007: 46th Annual West Virginia Wildflower Pilgrimage

Blackwater Falls State Park, Davis, WV. A little-known wildflower weekend. Our neighbor to the south is full of gorgeous wildflowers at that time and leads wonderful hikes, with 23 choices of walks during the festival. Participants will choose one tour a day. For more information please call Emily Fleming or Vicki Hash at (304) 559-2754 or write WV Division of Natural Resources, State Capitol Complex, Building 3, Room 669, Charleston, WV 25305.

FRIDAY, MAY 11, 2007

1. Smoke Hole
2. Dolly Sods Wilderness Hike
3. Germany Valley
4. Dolly Sods
5. Jennings Randolph Lake
6. Smith Mountain Road
7. Plants, Animals and Geology of Canaan Valley
8. Stuart Knob Hike
9. Hand-Lens Exploration of Trees, Ferns, And Mosses of Cathedral
10. Natural History of WV Wildflowers
11. Wildflower Identification Workshop

SATURDAY, MAY 12, 2007

1. Seneca Rocks Birding Tour
2. Sinks of Gandy & Spruce Knob
3. Elk Garden
4. Seneca Rocks Hike
5. Upper Dry Fork/ Southern Canaan Valley
6. Dolly Sods
7. Bear Haven - Bickle Knob Tower
8. Fernow Forest
9. Ferns And Birds
10. McGowen Mountain Walking Tour
11. Jenningston - Gladwin
12. Red Creek Trail for Wildflowers and Birds

Two Important Program Changes

The **Allenburg Bog** trip will be **July 28 instead of July 14**. This is a must-see field trip. Please make a note of this change on your program cards.

The Edge of Appalachia. Rick Gardner has agreed to lead a field trip for us in Adams County on **Sept 8th and 9th**. We will join the Cincinnati Native Plant Society for this event. They are a great group and will add much knowledge of the area to the trip. We will be visiting The Nature Conservancy preserves. We will meet about 1:00 P.M. on Saturday, spend the night somewhere, then meet at another location on Sunday before heading home. Please call or email Judy if you are interested: 440-564-9151 (H) or 440-286-9516 Ext 2011 (W), bunchberry1@netzero.net

BOTANY 101 Lesson 25

Mint Family = Lamiaceae = Labiatae

Rebecca Dolan, Ph.D. Friesner Herbarium, Butler University

Worldwide the mint family comprises about 180 genera and 3,500 species centered in the Mediterranean region. Indiana has about 30 genera and 70 species.

Characteristics

Herbs or shrubs with square stems. Leaves simple and opposite or whorled, with aromatic oils. Inflorescence axillary or whorled. Flowers irregular with 5 parts. Fruit of 4 nutlets.

Economic Importance

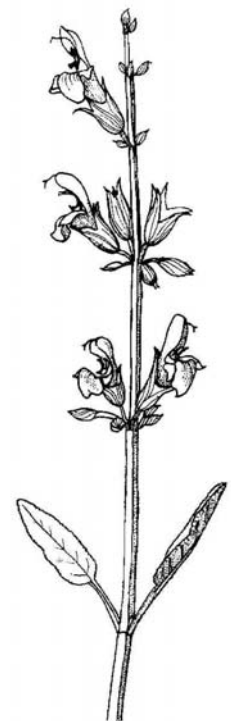
Source of aromatic essential oils, many ornamentals, and important culinary herbs. Garden plants include ajuga (bugle), coleus, catnip, ground ivy, lavender. Herbs include sage, marjoram, thyme, rosemary, basil, oregano, mint, peppermint, spearmint.

Many mints that grow wild in Indiana are introduced. Common mints in Indiana include some non-native noxious field and yard weeds: dead-nettles (*Lamium purpureum*), hen-bit (*Lamium amplexicule*), gill-over-the-ground (*Glechoma hederacea*)

Some Nice Natives

Lyre-leaved sage—*Salvia lyrata*
 Mad-dog skullcap—*Scutellaria lateriflora*
 Obedient-plant—*Physostegia virginiana*
 Bee-balm, wild bergamot—*Monarda fistulosa*
 Virginia mountain-mint—*Pycnanthemum virginianum*
 Smooth hedge-nettle—*Stachys tenuifolia*
 American germander—*Teucrium canadense*
 Virginia bugleweed—*Lycopus virginicus*

Illustration by Janice Glimn Lacy, *Botany Illustrated*.



Salvia flower

Eastern American Trilliums, Part 3 of 4

By Frederick W. Case, Jr.

The Sessile Trilliums

The sessile trilliums, subgenus **Phyllantherum**, comprise a large and confusing group of American trilliums. Most are less showy of flower than those of the pedunculate group, but all hold interest for the gardener. In this group, the "leaves," really enlarged bracts on the flower scape, possess, in Eastern species, varying degrees of mottling in green tones and underlying bronzes. Even without the flower, they are worthy of cultivation as accent plants. The flowers differ from those of the pedunculate group in that the petals and sepals stand directly upon the leaf-bracts (i.e., they are sessile). Except in one species, the petals are erect and somewhat connivent, rather than spreading to reveal the reproductive organs within. Petal colors run mostly into maroon or bronzy reds with varying degrees of green and brown intermixed. Yellow and green flowered species occur, and albino, partially albino, and pallid color forms abound.

Sessile species occur only within the continental United States and adjacent Canada.

The most recent taxonomic treatment (and in my opinion, the most accurate and useful treatment so far) by Dr. John D. Freeman, appeared in **Brittonia**, Vol. 27, No. 1, pp. 1-63, January-March, 1975. Serious students and gardeners must consult Freeman's work to gain insights into the nature of the "species" in this section, for all previous works badly confuse populations and forms.

Some species in this subgenus appear less distinct from one another than do species in subgenus **Trillium**.

Freeman divides the sessile subgenus **Phyllantherum** into three somewhat informal "species groups." These, he says, are groupings of species which he feels show affinities with each other. The groups do not represent taxonomic sections in the usual sense.

The Eastern Sessile Trilliums

Group I - The *Trillium recurvatum* group

T. recurvatum
T. lancifolium

Group II - The *Trillium sessile* group

T. sessile
T. decumbens
T. underwoodii

T. decipiens
T. reliquum
T. discolor
T. stamineum

Group III - The *Trillium maculatum* group

T. maculatum
T. foetidissimus
T. cuneatum
T. luteum
T. ludovicianum
T. gracile
T. viride
T. viridescens

Group I

Trillium recurvatum Beck

The aspect of this species is tall and lanky, but the plant varies considerable depending upon its vigor, the local race, and the type of soil on which it grows. The species ranges from northern Alabama to extreme southwestern Michigan, and from Ohio and Kentucky west into Iowa, Illinois, Missouri, and to northern Louisiana. It can be locally abundant or very rare in various parts of its range. Its common names include prairie trillium, toad trillium, and perhaps most imaginative of all, "bloody noses," a folk name in parts of Missouri.

Structurally one of the most distinctive of the sessile trillium species, *T. recurvatum* plants are tall, with strongly petiolate leaves up to six inches long, heavily to rather obscurely mottled. The sepals recurve to become adpressed to the scape below the leaves, a feature found (to a lesser degree) in only one other sessile trillium. The petals, usually rather ovate-lanceolate are acute at the tips, condensed into an almost stalk-like claw at the base and are about one to one and one-half inches long. Their color is a dark maroon red to purple, fading to a brownish red with age and varying in color forms to greenish brown, maroon or even pure yellow.

The very clear colors make particularly desirable subjects for garden use.

The rhizomes of this plant are rather narrow, elongated, and brittle and must be handled with care. The plant is completely winter hardy.

In most of its habitats it grows in a heavy clayey or limey soil. Riverbank or low woodlands constitute favored situations northward.

In my garden, the plant is prone to form small offsets which, in my sandy soil, are slow to mature.

The open growth habit and darkly mottled leaves make this an interesting, if not terribly showy plant. It is common enough over most parts of its range that reasonable collections for horticulture ought not in any way to injure wild populations. Wildflower dealers from Indiana westward to the Great Plains may occasionally offer this species to the trade.

***Trillium lancifolium* Raf.**

Trillium lancifolium appears to be poorly known, but its narrow segments, its almost wire-thin petals, and its rather delicate proportions make the plant a most desirable contrast plant in the wild garden.

The lance-leaved trillium ranges from eight to eighteen inches tall, with somewhat drooping sessile, narrowly lanceolate-elliptic mottled leaves. With narrowly linear, crepe-paper textured, crinkled, purplish-green petals one to two inches long, the plant is one of the most distinctive of all sessile trilliums. The entire aspect of the plant, scape, leaves, and petals, is one of narrowness.

Found from South Carolina to Alabama, especially in areas adjacent to the Cumberland Plateau in Alabama and Georgia, it seems not to have a generally distributed population, occurring instead in local areas with wide gaps between colonies. Besides the localities bordering the Piedmont, it occurs in the vicinity of Lookout Mountain, Tennessee, and much farther south in Georgia and Florida in areas bordering the Chattahoochee River.

The colonies I have seen grew on clayey floodplains and adjacent stream bank soils in mature woods which, in that area, are somewhat brushy and rank. The plant is both local and unobtrusive where it occurs. Until one is experienced, locating the plant in the wild is not easy.

The narrow, linear white rhizomes grow just below the surface of the heavy soil, and break easily. Digging the plant, therefore, is difficult, but pieces of broken rhizome soon produce small plants.

The generally delicate aspects of this species seems to imply that the plant might lack hardiness. This seems not to be so, for it has survived seven winters, some of them very open and bitter, in central Michigan.

T. lancifolium seems to be unknown to most gardeners, at least in the North. This is a pity, for it is quite unlike any other species. I prize it highly, and am

trying to find a ready means to propagate my plants for distribution.

Group II

***Trillium sessile* L.**

Trillium sessile, the toad trillium, enjoys a wide range, from western Virginia westward about to the Indiana-Illinois state lines. It is largely absent from Illinois, but abundant again in Missouri and northern Arkansas. Northward it reaches to southwestern Michigan where it is very rare, all of Ohio, and eastward into southwestern Pennsylvania and barely into southern New York. Southward, it ranges into central Kentucky and Tennessee, with a few outlying stations in Alabama and North Carolina. It grows in a great variety of woods, thickets, and even in fence rows and hog pastures. It prefers a rich, fairly heavy, limestone soil.

Horticulturally, a much misunderstood species, most plants illustrated in magazines as *T. sessile* do not represent this species, but rather either *T. cuneatum* or one of the western species formerly lumped by horticultural writers into "*T. sessile californicum*."

True *T. sessile*, is a plant of low stature, rarely more than ten inches tall, with relatively broad, obscurely mottled, broadly sessile leaves. The sepals spread but do not reflex. The inch long petals, widest at the middle, and tapering without a claw to their base, range in color from rich maroon-purple to dingy liver brown or greenish yellow.

One of the most tolerant of trilliums, its chief value horticulturally lies in its great adaptability to most climates and soils, and to its early blooming period. It deserves a place in the garden even though it is not as showy as some. Plants offered as *T. sessile* by many dealers may prove to be other species.

In Kentucky, west of Louisville, *T. sessile* intergrades at times with *T. recurvatum*. Intergrades possess narrower leaves than *T. sessile*, with varying degrees of the petiolate condition. Their petals, too, vary between the conditions found in both species.

***Trillium decumbens* Harbison**

If I had to choose but one sessile trillium for the rock garden, it would be this species. It is almost unbelievable in growth habit. Truly decumbent, its great, strikingly mottled leaves spread flat upon the forest litter and rocks among which it grows. The first time we found it in the wild, we were amazed; we could not escape the impression that the plants resembled ancient oil lamps with the four-inch petals the red, glowing lamp fires. The fact that this species

often grows in large patches accentuates its striking manner of growth.

T. decumbens arises from a stout, deeply buried rhizome. The five-to eight-inch scape literally bends and lies along the ground. The sessile leaf cluster, up to eight to ten inches in diameter on robust plants, bears at its center relatively short green sepals, but very erect, slightly twisted, lanceolate three to four inch dark red-maroon petals. When sunlight strikes these large petals the "ancient lamp" effect is stunning.

This species appears very early in the season, but blooms from mid to late season. Long before the buds open, the highly colored, mottled leaves draw attention in the garden. As fruits develop following flowering, the stem elongates somewhat, but remains decumbent. The leaves are short-lived and soon dry up or rot away leaving the scape and fruit to mature over the summer.

A natural rock plant, we find the decumbent trillium in sloping rocky woods, talus below shaley ledges, and at the bases of massively weathered tufa-like limestone boulders. Typically, the plant forms colonies of hundreds of plants neatly spaced so that the leaf tips just touch. We have seen the plant growing in very mature woods where dense shade develops early, and in open, second-growth woods of oak and maple, where sufficient light prevails to allow some grasses to grow.

T. decumbens occurs in a narrow band from northwestern Georgia, to Tuscaloosa, Alabama, mainly in foothills of the Cumberland Plateau and the Ridge and Valley Provinces. *T. decumbens* is not present in every available habitat within its range as some species of trillium are: rather large colonies occur somewhat sporadically.

Rock gardeners ought to make every effort to get this species into cultivation, for it is truly an outstanding plant. Although it can be locally abundant (Freeman, 1975), its range is limited. Alabama conservationists have expressed special concern (Freeman, et al. 1979) that it might be collected excessively. It should be propagated by nurseries or botanical gardens and offered to the trade, not heavily collected from the wild. It is not, to my knowledge, offered commercially at present.

Planted in a well drained, slightly acid loam, this species has not only wintered well for me, but has seeded in my garden. Its manner of snuggling up to the contours of the garden ledges or against a rock is unlike that of any other species. Those who have seen it, desire it.

***Trillium underwoodii* Small**

I have found Underwood's trillium in the wild only once. My experience with it is therefore limited.

A trillium of medium stature, it stands from five to 10 inches tall with sessile, lanceolate leaves. The leaves bear conspicuous mottlings in shades of light and darker greens. According to Freeman (1975), the mottling varies from colony to colony. The sepals, lanceolate to ovate, and one to two inches long diverge or spread. The oblanceolate to narrowly elliptic petals are one and one half to three inches long. Color as in nearly all the sessile species varies from dark purple or maroon to brownish purple, or greenish yellow. This variation is influenced both by the genetics of the individual plant and the age of the flower; most sessile species losing the rich reddish maroon tones with age and developing a liver-brown, less attractive color.

In *T. underwoodii*, the stamens bear very short filaments and lateral pollen sacs on a connective which extends a millimeter or two beyond the pollen sacs. Stigmas are very short and recurved upon the ovary.

Although this species is very closely related to and like *T. decipiens* in many aspects, Freeman (1975) asserts that they can usually be distinguished in the field readily. *T. underwoodii*, apparently, does not grow in mixed populations with its closest kin. Its short, erect scape permits the drooping leaves (at flowering) to touch the substrate (not so in the taller *T. decipiens*).

Within its range *T. underwoodii* blooms from mid-February to April. It occurs from Mobile, Alabama, across north Florida to western Georgia, extending northward onto the Piedmont, especially in Alabama.

We found Underwood's trillium growing along the base of ravine slopes near a small stream, in a very rich beech and oak woods. Soil was slightly sandy and rich in humus. Plant companions at this station were acid-soil species.

Plants we observed in John Lambert's arboretum collection at Mena, Arkansas, were particularly rich in both leaf and flower coloring.

***Trillium decipiens* Freeman**

The epithet "decipiens" means "deceiving," and refers to the similarity between this species and *T. underwoodii*. A much taller plant, with stiffly spreading leaves, the scapes attain heights of up to one foot. The broadly lanceolate petals range from greenish brown to maroon, the maroon tones fading to liver brown with age. The strongly mottled, lanceolate leaves often with a light band of pale green along the midrib and almost maroon tones below the greens would render the plant striking in the garden if it never

bloomed. At blooming time, the flowers are large in proportion to the leaves, making them appear quite conspicuous for this type of trillium.

We have seen this trillium growing in a very robust form in acid woodlands in Alabama, and on limestone soils in woods and along stream banks near Marianna, Florida. It grows in much the same situations as do both the sessile and prairie trilliums farther north, preferring the lower slopes of wooded bluffs along streams.

A few of the Florida plants have survived one severe, open winter here at Saginaw. This past spring we collected a few rhizomes from plants farther inland in Alabama which may prove to be even more hardy. Our experience with widely ranging Coastal Plain and Piedmont plants found from the Mobile Bay area eastward into the Carolinas has been that populations from Alabama tended to be more winter-hardy than those from farther east.

One disturbing note on collecting this plant: in Florida, we found a whitish fungus destroying the leaves and fruits of a great many plants of some populations. Persons collecting this species from the wild ought to take great care not to introduce disease to their gardens or to introduce this disease to new areas where it might spread to other species.

***Trillium reliquum* Freeman**

This very rare and limited trillium has a peculiar distribution. It grows along the Savannah River near Augusta, Georgia, and in adjacent South Carolina, and also disjunctly in southwestern Georgia near the Chattahoochee River. In both localities it grows in mature hardwoods with oaks and beeches, on bluff summits and slopes to the flood plain.

This species, like *T. decumbens*, has scapes which can be semi-decumbent, although, in my experience, not so strikingly so as the description of the species by Freeman implies. The scapes, with a slight S-shaped bend stand out over eight to 10 inches tall. The sessile, bluntly tipped leaves show beautiful mottling of light and dark greens underlain with some maroon tones. The flowers are somewhat nondescript, with lanceolate-ovate, maroon purple petals about one to one-and-a-half inches long. Yellow-petaled forms occur.

T. reliquum blooms from mid-March to late April in the wild. In my mid-Michigan garden, it blooms in mid-late May, being one of the later trilliums here. Although it is winter-hardy (Augusta, Ga., plants) it does not grow well nor flower well for me. A deep forest species, its leaves are extremely sensitive to windburn. It is not, therefore, particularly desirable horticulturally.

As the rarest of the sessile trilliums in the East, it deserves designation as an endangered or threatened species and should be left in the wild.

***Trillium discolor* Wray ex Hooker**

After *T. decumbens*, this species would be my choice as the best sessile trillium for the rock garden. It is a small plant, with leaves held close to the ground, rarely growing six inches tall in cultivation, but growing occasionally to eight or ten inches tall in the wild.

The sessile leaves, richly blotched in dark green over a softly mottled background, and broadly ovate-elliptic, appear very early in spring. In its native haunts, the plant blooms early, but in my northern latitude the leaves and buds appear, followed by a period of several weeks of waiting. Finally, when most of the other trilliums begin to fade, the delightful lime to lemon colored flowers appear. The short, wide, tapered petals show greenish veins and are distinctly apiculate. The flowers last long but slowly fade to a light straw color. Fresh blooms are spicy-fragrant.

This trillium is restricted almost entirely to the upper tributaries of the Savannah River system in the Piedmont of Georgia and South Carolina and the valleys of the Blue Ridge Mountains in North Carolina. Although it grows in a variety of woods, it prefers small flats along mountain streams where thickets of *Leucothoe*, *Kalmia*, and *Rhododendron* occur. In such localities, the most vigorous plants grow in bright, open areas under tall trees.

The small size, late blooming, distinctive lemon coloring, full hardiness, and attractive leaves all season make this a truly outstanding plant for the rock garden. It is, however, a very local species. If it is not yet designated for protection under the endangered species act, it probably will be, for a large part of its originally limited range has been destroyed through the building of power dams and impoundments. Efforts by some botanical gardens or qualified horticultural societies to obtain and propagate the plant for release commercially would undoubtedly take pressure off the remaining wild populations, and should be undertaken.

I have grown this plant in Michigan for almost twenty years; it is beginning to seed around the parent colony. I will attempt to make seed available through the ARCS seed exchange.

***Trillium stamineum* Harbison**

A large and distinctive species, *T. stamineum* is practically unknown to gardeners outside its range. It is the only trillium with spreading, corkscrew twisted

petals borne directly atop the obscurely mottled leaves. The aspect of this plant is like no other trillium.

Scapes stand twelve to twenty inches tall, with the leaves variably lanceolate to ovate-elliptic, usually fairly broad for their length and weakly mottled to plain green. The petals are short, one to one-and-a-half inches long, twisted, and dark maroon in most forms, although I have a form with pale yellow petals overlaid with pink. Clear yellow forms have been reported. In this species, as in *T. discolor*, the petals are apiculate. The stamens are massive, erect, clustered into a conspicuous ring, almost more apparent than the petals to a visiting insect.

T. stamineum is too tall for the usual rockery, nevertheless one should grow it for its distinctive flower. A place at the back of the rock garden or in a woodland setting would be best.

This species grows natively in a north-south band from northern Alabama and Mississippi into Tennessee. Within this area it is locally abundant in rich woods, on ledges and on slopes above and descending onto flood plains. We have found it growing with *T. recurvatum* but have seen no evidence that they hybridize.

T. stamineum is completely winter hardy with me in central Michigan. It is illustrated in color in the Time-Life book on Wildflower Gardening (Crockett, et al. 1977).

Frederick Case was Chairman of the Biology Department of a High School in Saginaw, Michigan and is the author of *Orchids of the Western Great Lakes Region*.

Parts 1 & 2 appeared in Sept & Dec 2006, Part 4 will be printed in the June 2007 issue of *On The Fringe*.

Jane Louise Forsyth, 1921-2006

BOWLING GREEN - Jane Louise Forsyth, 84, a distinguished researcher on the era when glaciers covered northwest Ohio and the first female geology professor at Bowling Green State University, died recently at the Alterra Sterling House assisted-living facility here.

Much of Dr. Forsyth's life work was in Pleistocene geology, a period that lasted roughly from 1.8 million years ago to 12,000 years before the present and included the Ice Age. Her research focused on the time when continental glaciers covered much of northwest Ohio more than 10,000 years ago.

For her devotion and expertise in her field of study, Dr. Forsyth was known among colleagues as "The Queen of the Pleistocene," recalled Richard Hoare, a retired BGSU geology professor who shared an office with her. She wore many hats during her long career of scientific inquiry. She was recognized as a scientist, geologist, geobotanist, naturalist, educator, and conservationist.

Dr. Forsyth joined Bowling Green's faculty in 1965, after holding a position as a geologist with the Ohio Geographical Society. At the university she taught introductory and advanced courses in geology, and also several classes in ecology before her retirement in 1992. She wrote two books, several textbook chapters, and was the author of numerous articles dealing with geology that appeared in scientific as well as mainstream publications.

Twice she was vice president of the geological division of the Ohio Academy of Science, and from

1963 to 1973 she was editor of the Ohio Journal of Science. She was also a longtime board member of the Nature Conservancy in Ohio.

In 1973 she received a university distinguished teaching award, and in 1975 she was appointed to the Ohio Natural Areas Council. The following year she received the Ohioana Library Citation Award for research and publications in Ohio geology. She was honored by the Ohio Conservation and Outdoor Education Association in 1983.

Ms. Forsyth was born on Nov. 9, 1921, in Hanover, N.H. She graduated from Hanover High School, received her bachelor's degree in geology from Smith College in 1943, and later a master's degree in geology from the University of Cincinnati. Ms. Forsyth received a doctorate from Ohio State University in 1956.

Ms. Forsyth stayed active in her retirement, and continued to give an occasional public lecture. Until about three years ago, she took trips to Canada to observe polar bears, said Robert Spittler, her friend and attorney.

Ms. Forsyth never married, and lived by herself until about two years ago, when she moved into the assisted-living facility,



**THE SEARCH FOR LOST HABITATS:
30 Years of Exploring for Rare and
Endangered Plants – Book 1
Perry Peskin**

Orange Frazer Press
272 pages; 8 x 8.75 inches; paper
ISBN 1-933197-16-1
\$34.95

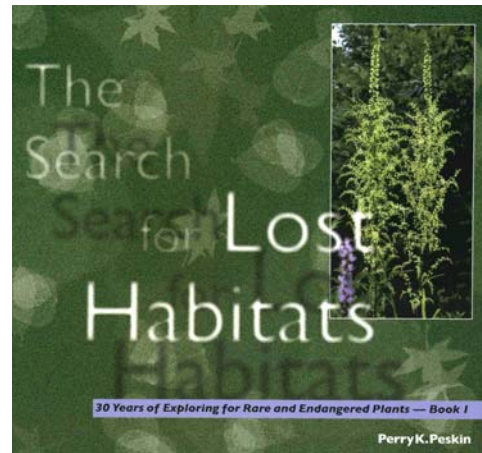
Reviewed by Paul Martin Brown

This assemblage of 15 essays by Perry Peskin that cover more than 30 years of field exploration presents a remarkable dedication to searching for both the “lost habitats” as well as the species within them to be found in the Ohio/Upper Great Lakes region. Peskin’s articles previously appeared, in somewhat different formats, in several different publications over the years and are presented here in a more unified format, copiously illustrated with over 400 of (primarily) his photographs. His narratives are always interesting, well-written (for he *was* an English teacher for many years in the Cleveland, Ohio area), often, as in the chapter on *Orchidophilia* (10), injected with wry humor. The work is dedicated to his wife Carolyn. Extensive credit is given to all of the people, both professional and enthusiast, who have guided or accompanied the Peskins on their many forays over the years.

The book is arranged in a series of 15 chapters, each one a complete essay unto itself. An initial introduction, concluding chapter, “Putting Back the Pieces,” and two appendices with additional photos and listings of federally endangered plants of Ohio and the Upper Great Lakes states complete the work. The photographs vary from excellent to passable to, unfortunately, a few that are less than ideal. This may very well reflect the equipment or conditions available at the time the photographs were taken. It is well known among plant photographers that the plants do not always present themselves in as ideal conditions as we would like! Peskin carefully explains the various terms that relate to rare, threatened and endangered species and notes these ranges each time a species is mentioned in the text or a photograph shown. This is most helpful in trying to understand the concept of “endangered species.”

Peskin’s self-admitted policy of changing the names of the locations and often the names of people to his version of a pseudonym is fully understood as he is adamant about protecting the specific locations, but can be very frustrating to the reader who has been to these places and becomes confused as to the names.

The book is very nicely designed and easy to read, with crisp clear type and chapter titles arranged along the outside vertical margin of the pages which makes for ease



in thumbing the margin and finding the chapters quickly. Two points which are more to be directed to the publisher, Orange Frazer Press, than the author are that in all of the advance publicity and website postings the book is designated as a hardcover and in fact it is soft. They also list the book as 288 pages and it is 272 pages, and the size is 8 x 8.75 not the 10 x 10 inches in the catalogue. Things do change during the publication process and it can only be assumed that this is the case.

As an author of many orchid field guides I have an obsession with the index. In this case the index presented here is incomplete, confusing, and almost impossible to use. I wanted to go back to the aforementioned *Spiranthes romanzoffiana* and could not find any plants listed under their Latin names, nor could I find it under ladies’-tresses, hooded ladies’-tresses, Romanoff’s ladies’-tresses, etc. and finally found it under orchids – where all of the orchids are listed. They are also not referenced by page number but by chapter and photo number, i.e. 10:10.

Only one photograph appears to be misidentified, that captioned *Spiranthes romanzoffiana* is clearly *Spiranthes cernua* (p. 154). Text errors would include Ile Royale for Isle Royale (consistent throughout); on p. 148 the parentage of Andrew’s lady’s-slipper is given as *Cypripedium parviflorum* var. *parviflorum* x *C. candidum* and the correct parent is *C. parviflorum* var. *makasin*. Also he refers to the lip as the *labium* and the correct term is *labellum*.

Although our native orchids are only one part of the whole in this *Search for Lost Habitats* the book will certainly appeal to those whose scope extend somewhat beyond the wild orchids and should be of interest to all native plant enthusiasts and a pleasant edition to any library. Peskin promises a second volume to cover a wider geographic area including Alaska and Costa Rica!

Paul Martin Brown is a research associate at the University of Florida Herbarium at the Florida Museum of Natural History in Gainesville, Florida. He is the author of many books on the orchids of North America.

Kelleys Island North Pond State Nature Preserve

Description:

Two hundred years ago, Kelleys Island was nearly all forest. During the latter part of the 19th century, most of the trees were harvested for timber. The wood was used to fuel steamers operating on the Great Lakes or for the construction in the fast-growing cities along Lake Erie. The Kelleys Island North Pond State Nature Preserve is a haven offering a glimpse at how the island may have appeared to its very first inhabitants and visitors -- members of Native American groups such as the Wyandot, Erie, Delaware and Shawnee.

The North Pond, a 30-acre forest and marsh sanctuary, is a natural lake embayment pond. Lake embayment ponds occur within the coastal zone of the Great Lakes, and their water levels rise and fall with the level of the lakes. Of the 12 original embayment ponds on the islands, North Pond is one of only three remaining. The recycled plastic lumber boardwalk leading visitors through the preserve is needed because when the lake's water rises, the lower areas of North Pond can accumulate up to 12 inches of water. With the constant fluctuation of water level, the pond hosts a variety of plant life.

One of the most abundant trees on Kelleys Island is the juniper, more commonly known as the eastern red cedar. This tree is able to thrive in the shallow limestone soil of the island. It is a conifer with blue, fleshy cones that resemble berries, a favorite winter food for birds. These hardy trees may live up to 300 years.

The thin, twig-like growth forming thickets throughout the island and at the trailhead is red osier dogwood, a source of twigs for making baskets. Also

seen at the trailhead are sumac, redbud, blue ash, hackberry, oaks, red maple, red elm and many wildflowers. Near the road, nodding wild onions can be seen. These plant stems form an "s" curve when the fruit, a white flower, forms.

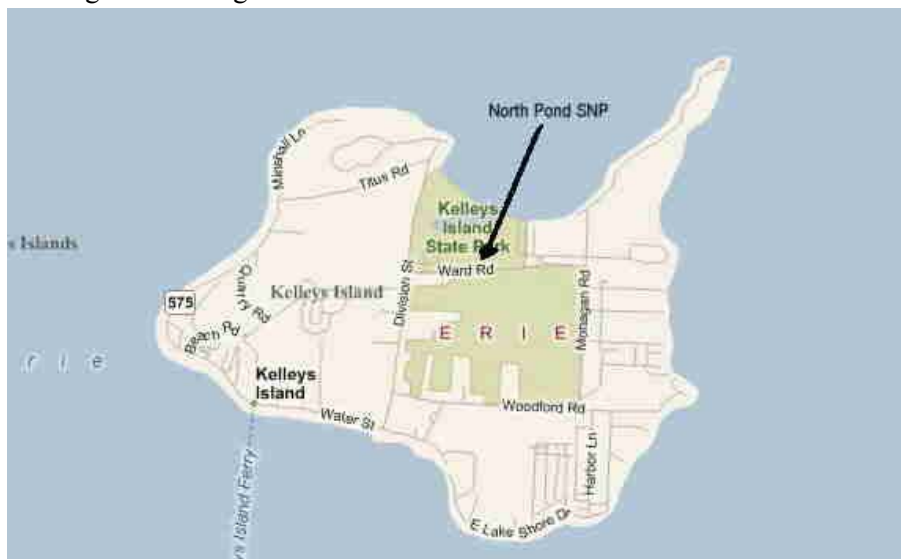
Bisecting the preserve is a definitive rock ledge. This was an ancient shoreline that divided the island into two islands nearly 3,000 years ago. The ancient shoreline runs from the northern shore to the far western side of the island. The valley that was formed is known as the Sweet Valley. Cottonwoods, wild grapes, trumpet creepers, and thoroughwort are found along this fertile area.

Stand on the observation deck and observe the plant communities of the North Pond. Straw-colored umbrella sedge lies close to the bank. As the land becomes less wet on the outer reaches of the pond, you'll find buttonbush shrubs, with round button-like fruit. Continuing away from the pond are fens and willows, followed by the swamp forest. When the pond is dry, swamp rose mallow, a native hibiscus, grows in the pond area with bur marigolds.

Directions:

To reach Kelleys Island, take the Kelleys Island Ferry Boat Line from Marblehead or airline flights from Sandusky or Port Clinton. The North Pond boardwalk can be accessed by taking Division Street from the Village of Kelleys Island. Turn right on Ward Road. The entrance is on the left. A trail extension also reaches into the Kelleys Island State Park swimming beach area.

Reprinted from www.coastalohio.com/site.asp?id=58



The Needs of Seeds: Sowing

by Natalie Helferty

A seed is an embryo, ready and waiting to enter the soil. All seeds, no matter how they are dispersed, must make contact with soil in order to germinate and grow. Even aquatic plants need an anchor; they must be able to withdraw essential minerals from the bottom muck.

Each plant species evolves under unique conditions, called a niche. The niche isn't just the place where the plant grows, but also the abiotic (non-living, e.g., moisture, sun) and biotic (living, e.g., mycorrhizal fungi) conditions that both nurture the plant and keep its growth in check by selective pressures, such as disease and herbivory (being eaten by animals).

As for its place, a seed often needs the same conditions its parent plant needs, but it doesn't always grow best near its parent, or even near its own kind. Like the young of animals, seeds prefer to move away from their parents so as not to compete with them for resources, and so they don't end up cross-breeding with their siblings or mom or pop! The 'mooches' of the world also don't survive long. By living too close they can suck their parents' resources dry as they grow, so killing off their genetic lineage.

Seeds can be transported by ants, they can be collected, eaten and then defecated out by birds or rodents, they can attach themselves to mammal fur and be deposited far away, or they can be moved by wind or water. Since plants are reliant on dispersal for gene flow and a seed may or may not survive where it's dropped, plants produce many seeds in order to 'beat the odds' of survival.

Soil conditions are usually the same for the parent and its seed—from porous, like rock or sand, to almost impermeable, like silt and clay. The type of soil, along with elevation, orientation of slope, aspect, frost pockets and other microhabitat factors, dictate the amount of soil moisture that the plant receives via the roots.

Finer sediments (clays) hold water at the surface, slowing drainage. Clay soils that dry out can bake and crack open allowing water to drain quickly often resulting in desert-like conditions. This can occur where water-taking is too high due to aquifer pumping (with wells or irrigation). Clay that is deposited deeper in soil can be compressed and so will hold water for a long time enabling survival of roots at the surface through dry periods. Clay that is compressed will not easily rebound. Only mechanical disturbance and re-suspension in water and subsequent resettling on the

bottom of a lake or river will bring the elasticity of clay back again.

If you are planting seeds in clay, be sure the clay won't dry out. A light top-dressing or lots of moisture and shade is often needed. Seeds can be lost in the cracks of dry clay soils, so don't be surprised if germination is low under these conditions. Clay is plentiful and is great for growing due to its ability to retain moisture. Also the fine composition of clay allows for plentiful nutrient uptake via roots, but becomes a curse if the soil is mistreated. This is usually the case in newer urban developments, especially when the organic topsoil is removed exposing the clay to the elements. Soil conditioning (by top-dressing with compost and watering) is often needed.

Sand is coarser than clay. Plants that do well in sand need to have their seeds sown in well-drained conditions or the seeds will rot. Sandy soils do not have as much water-holding capacity as clay when exposed to the sun. A light top dressing of slightly damp (not wet) compost, after a thorough watering of the soil after sowing, will retain enough moisture so that watering will only be necessary during prolonged droughts. Springtime rains and melted snow are often enough to kick-start seed germination.

Loam is a mesic mixture of sand, clay, silt and organic content. This is the garden soil that most gardeners aim to achieve. A seed grown in loam usually does fairly well, unless it is a desert species or aquatic species that requires submerging. Yes, desert plants need full water saturation of their seeds to germinate, which mimics the annual flooding to which they are accustomed.

A seed sown in water can germinate, as in hydroponics, but as the rootlet develops, contact with soil is needed. This allows the seedling to start absorbing nutrients from the soil that are necessary for its survival. Fine root hairs are the means of absorbing these nutrients that go beyond the PKN content (phosphorus, potassium, nitrogen) of most commercially produced fertilizers. Nature is far more diverse in what it delivers and what it requires, so soils that contain a variety of vitamins and minerals for the plants are needed. That is why compost is best for topdressing soil.

Mycorrhizal fungi also exist in most soils in a symbiotic relationship, penetrating the fine root hairs to provide soil nutrients to the plant in exchange for

sugars made through photosynthesis by the plant. A very delicate balance of give-and-take exists in healthy soil ecosystems beneath the greenery that most people identify as “the plant.” As a seed germinates, adjacent plants that are supplying sugars to the soil's mycorrhizal fungi will inadvertently assist their neighbors in that the fungi also penetrate the adjacent growing seedling roots. Fungi can produce spores to propagate themselves, but the fungi use roots to survive. In nature, as nutrients are depleted from the soil with uptake by plants, the fungi can assist the plants in squeezing the last of the nutrients out of the soil. Many plants that are found in forests, the climax of succession, will thrive only in the presence of these fungi. (Hint: If your woodland plants don't grow very fast or propagate on their own by seed, try inoculating your garden with some forest soil. A little goes a long way.)

Many woodland flowers have their seeds dispersed by ants (e.g., wild ginger, *Asarum canadense*). The ants love the elaiosomes, a fatty waxy substance that they eat after carrying off the seed to their burrow, thus helping to propagate a new colony of plants. If the wax dries out the ants won't eat it, so many woodland seeds are adapted to be sown immediately. Alternatively, they can be kept in a plastic bag of moist vermiculite in the fridge (cold moist stratification) thus ensuring that the seeds do not dry out. It is best to sow them into conditions that mimic the humus layer of the forest

floor, like partially decomposed compost over damp sand that is covered with a layer of leaves.

Seeds with hard shells (e.g., bitternut hickory, *Cardia cordiformis*) must have the seed coat scarified (abraded mechanically and/or chemically) to weaken it before planting. For seeds with fleshy fruit (e.g., nannyberry, *Viburnum lentago*), remove the flesh and then abrade the seed lightly with sandpaper. Legumes can be soaked in hot water overnight. Water, winter frosts or passage through an animal's digestive tract are nature's ways of preparing seeds.

Sunlight is the other critical factor in seed germination. Too dark or cool a space will often delay germination indefinitely. Most seeds, even acorns, should be planted no more than two centimeters (one inch) deep allowing light and heat to penetrate. Some very small seeds (smaller than a grain of salt), such as wild columbine (*Aquilegia canadensis*), require full sunlight. They normally disperse onto bare rocks or the surface of the soil when in the wild. Most other seeds need filtered light so are sown just beneath a compost or soil layer to mimic a shaded forest (e.g., maple keys) or grassy meadow (e.g., milkweeds, *Asclepias* spp.).

Consider the natural growing conditions of the plant and how the seeds are normally dispersed. Mimic these conditions for best results. With a bit of luck, your sown seeds will grow to fruition.

Natalie Helferty is a terrestrial biologist.
Reprinted from the *Blazing Star*, newsletter of the North American Native Plant Society, Fall 2005.

Favorites From Seed

by Jim French

Here are four wonderful plants for your garden.

Mexican hat (*Ratibida columnifera*): This knee-high beauty is covered in flowers of large, drooping yellow petals (or rays, to be precise). Also known as prairie coneflower, it blooms from mid-summer to mid-September. It is truly a dazzling sight when planted in large groupings. It has not reseeded itself for me but in the wild it is widespread across North American plains, prairies and ravines.

A close relative of Mexican hat is *Ratibida pulcherrima*, but the rays are maroon/purple occasionally mixed with yellow. When they are planted together, the result is very colorful.

A more distant relative, grey-headed coneflower (*R. pinnata*), stands much taller at a full meter (three feet), but bears the same attractive, drooping yellow

rays. This coneflower has reseeded itself quite actively in my dry, roadside, prairie garden. A good choice for large gardens where it can roam.

All these coneflowers are easily grown from cold, moist-stratified seed and the seedlings need no special treatment.

Golden Alexanders (*Zizia aurea*): This spring bloomer is a true prairie species with a range from Quebec to Saskatchewan and as far south as Florida. The multi-stemmed branches have clusters of small yellow flowers. When full-grown it reaches about half a meter (1½ feet) in height with attractive light green foliage. In my prairie it looks spectacular, blooming with my blue lupines (*Lupinus argenteus*). It is a vigorous self-seeder in my prairie, which receives only rainfall for moisture. The seeds and seedlings should be treated as above.

Wood poppy (*Stylophorum diphyllum*): What a delight to see this yellow-petalled beauty blending so perfectly with other ephemerals like the great white trilliums (*Trillium grandiflorum*) and sky-blue Virginia bluebells (*Mertensia virginiana*).

This woodland plant was once thought to be extirpated in Ontario but new colonies have now been found. I find it interesting that this plant should be so uncommon in the wild since it reseeds itself quite reasonably in my woodland gardens. If you can't get fresh seeds, buy a few plants (from a reputable source) then plant the seed as soon as it ripens in a spot that's moist and shady for the rest of the season. (Flowering usually starts in spring and may continue until early summer.) Germination will occur in the spring. The seedlings require no special care.



Prairie Dock

Prairie dock (*Silphium terebinthinaceum*): This two-meter (six-foot) giant is at home in North America's prairies. It has large, broad basal leaves earning it the nickname elephant ears. The tall, slender stems branch into numerous shorter stems producing a candelabra of palm-sized yellow flowers. The effect is striking. Prairie dock is drought-tolerant and can produce new shoots from its taproot. The large seeds germinate readily after cold, moist stratification. Seedlings should be transplanted early to allow for the fast-growing taproot. There are several species in the genus *Silphium* and all provide a special prairie ambience, especially when combined with our tall native grasses.

Jim French is NANPS Honorary President. He gardens with North American natives at his cottage on Stoney Lake near Peterborough, Ontario.

Reprinted from The Blazing Star, Newsletter of the North American Native Plant Society, Winter 2005.

Viola In the West Virginia Mountains

by Barry Glick

Living at 3000 feet in the Appalachian Mountains of West Virginia has some definite advantages. For instance, there are almost 30 *Viola* species native to West Virginia and most of them can be found in the woods and meadows near my farm. All of the species are abundant in the wild and there is no such thing as a rare *Viola*. This abundance does not diminish the joy of stumbling onto a new population.

They all make excellent garden plants and will surprise you as to how well they perform when you remove them from the competition of weeds, surrounding species, and tree roots.

The earliest *Viola* to bloom in the spring is *Viola rotundifolia*. *V. rotundifolia* springs forth from a rather rough rootstock that becomes horizontal as the plant ages. The Spring leaves are orbicular or ovate and are mildly pubescent with short white hairs. The flower petals are bright primrose yellow with three lower brown striations, sometimes chocolate tinted. The summer leaves are almost orbicular, but cordate at the base. It is the only stemless yellow violet found in West Virginia. When I say stemless, I am referring to the plant not the flowers.

Viola hastata is a fascinating plant. Even if it never flowered it would be well worth growing for its silvery

marbled foliage. The specific epithet *hastata* refers to the almost arrow shape of the leaves. The variation among populations is astounding. I have spent much time in the woods leaping around on the ground looking at leaves as different as snowflakes. *Viola hastata* has yellow flowers.

Viola canadensis is the tallest of our native *Viola* species. As with the aforementioned species, this *Viola* can be found in moist rich woods throughout the state. Attaining a height of 12"-16", this species has large white flowers with a spur petal yellow at the base and striped with fine, dark lines. The three lower petals are purple veined.

Viola pedata is known locally as the "Birds Foot Violet". This common name comes from the fact that the foliage resembles the shape of a birds foot. In contrast to the above species, *Viola pedata* is found mainly in a shale barren setting in well drained shaly, rock soil. Its variable colored flowers are among the most showy of the genus. The flowers are produced in profusion in early spring and held well above the foliage. Colors range from pale blue to dark lilac.

Reprinted from <http://www.sunfarm.com/plantlist/viola2.htm>

Tilia sp. L.: Linden or Basswood

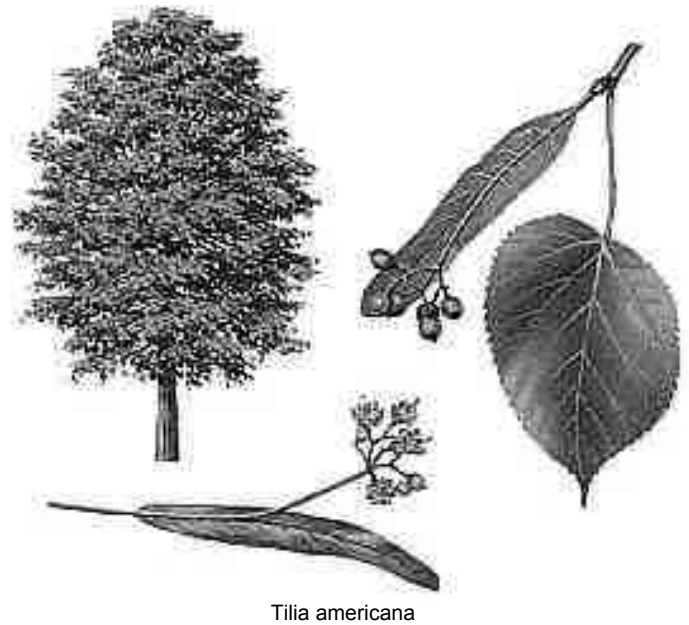
by Richard Ware

Introduction

Linden or basswood has, over the past 30 years or so, been one of my personal favorites. The reason that this article is a generic article about *Tilia*, rather than about one individual species, is that when I did the research I found that botanists were in such disagreement, even downright confusion, about what, or how many species were found in the Southeastern United States, that I found it best to write about the genus in general, and avoid adding to the confusion. Some of the most recent books on Georgia trees only recognize one species *Tilia americana* L. (American Basswood), while much earlier botanists acknowledge as many as sixteen, and these references didn't even recognize *Tilia americana* as a species! I, personally, agree with some of my other references who have identified three or four species as valid. The names I consider valid are *Tilia americana* L. (which most range maps show isn't found in Georgia), *Tilia heterophylla* Vent. (White Basswood), *Tilia caroliniana* P. Mill. (Carolina Basswood), and perhaps *Tilia floridana* Small (Florida Basswood). The main reason for the disagreement is that the main characteristics for splitting out the different species is only the color and hairiness of the leaves, and some say that this feature varies from tree to tree, even among the same species. Since this is not intended to be a key to the different species of the genus, we will try to state features that would hold true for most species.

Other Common Names

Lumbermen call it basswood, horticulturists call it Linden, in Europe it is called Lime or Limetree. It has also been called Whitewood, Bass, Linn, Spoonwood, Whistlewood, Wahoo and Beetre. Taxonomy: *Tilia* means wing and is the classical Latin name for the Lime tree. *Tilia* is in the family Tiliaceae, a family of about 48 genera, with 725 species. A number of *Tilia* species are used for timber; *Corchorus capsularis* is the source of jute; and other species are grown for ornament. Of the species names mentioned earlier, *americana* means of or from America; *heterophylla* would mean diversely-leaved (referring to the difference in color of the upper and lower leaf surface); *caroliniana* would mean from Carolina; and *floridana* means from Florida. A most interesting story is how Carl Linnaeus, the father of botany, received his last name from the Linden tree. Because his father Nils was a peasant in seventeenth century Sweden he only had a Christian or first name. After raising himself to the



Tilia americana

position of pastor in his village, he gave himself the surname of Linné, because he so loved trees, and in particular a beautiful Linden tree near his home. When Carl grew up and went to teach at the world-famous University of Upsala his name was Latinized into Linnaeus, as we know it today.

Description

Lindens are medium to large trees with rather stout zigzag twigs, without terminal buds, and rather large, flattened, pointed and axillary buds with many scales. When forest grown they frequently exceed 100 feet in height, with a straight trunk and narrow crown. One fact which often makes identification easy, even in the winter, is the characteristic sprouting from the root crown. Sometimes this manifests itself as many small stems surrounding a large trunk and sometimes as several trunks of almost uniform size. The large leaves are alternate, deciduous, are heart-shaped or truncate at the base, and frequently oblique and unsymmetrical. The fragrant flowers, with five each of white, creamy or yellow petals and sepals, are small but numerous and are borne on slender stalks in branched clusters (cymes). The stalk is adherent for approximately half its length to a leaf-like, veiny, strap-shaped bract which accompanies both flowers and fruit. The fruit, rather woody and nut-like, takes the form of a round capsule enclosing one or two light reddish-brown seeds.

Habitat

It is found in mixed, hardwood forests; on gentle mountain slopes with moist but well-drained soils; rare on the coastal plain. Although it is adaptable to various soils, its best growth is in the rich soils of mountain coves and the moist soils near creeks and rivers.

Distribution

The combined distribution of the four species mentioned earlier would cover an area from Maine to eastern North Dakota, and south to Texas and east to Florida. *Tilia americana* is the more northern species, evidently not reaching Georgia; *T. floridana* is mostly a southern coastal plain species; *T. caroliniana*, also a southern species, extends a little further into the Piedmont; and *T. heterophylla* is an Appalachian Mountain and Piedmont species. In Georgia, most collections of *Tilia* are from Atlanta northward, with the other collections coming from a dozen scattered southern counties.

Natural History & Principal Uses

Previously, basswood often formed pure stands, but now, although common in cultivation, it is not as common in the wild, although not rare by any means. In June or July when the basswood is in full bloom, its wonderful fragrance can sometimes waft over a mile away. It is a great favorite of the honey bees, and when it is in bloom bees forsake all others and cleave only unto these flowers. The basswood honey is white in color, with a rather strong flavor, but of high quality. Although there is a short blooming period, and abundant honey flows in only two or three years out of five, an unusually heavy flow yields enormous quantities.

The basswood is an excellent shade and street tree, providing a deep cool shade, and certainly worthy of planting near a south exposure to shade the home with its lovely crown. As a park and street tree it is sometimes rivaled by the European lindens, with their smaller leaves and masses of flowers, but none can match the splendid stature of the American basswoods. The wood of basswood is soft and ideal for carving. The Iroquois Indians carved false-face masks on a living tree, and after finishing the outside, cut them off to hollow out the back. The wood has a quality of toughness which makes it the chosen material for honey section boxes. Here an extremely thin portion at the corners must stand a 90 degree angle bend and dry without breaking. Basswood bark is perhaps the best source of woodland rope, string, and thongs or strips for sewing birch bark. To make cordage, the bark is

placed in water and weighted down for two weeks to a month, leaving behind the somewhat slippery, fibrous material. The long strips are then twisted to form rope or string. The Indians claim that this rope is superior to that of the white man, since it is softer on the hands when wet and does not kink when dry. As a timber tree, basswood belongs to a special class of woods which, though soft and very light, have their own sort of value. Because it is so light, basswood is used for crates and boxes and the core of chair stock that is to be veneered with fine cabinet woods, for toys and drawer slides, window sashes, picture frames, and musical instruments. It is familiar to us all as the household or dressmaker's yardstick, and on the backs of picture puzzles.

Famous basswoods

An American Basswood (*Tilia americana*) is one of the five remaining trees which were planted by Thomas Jefferson at his beloved Monticello. He began clearing the site in 1768, but didn't draw up a planting plan until 1807, so the oldest of the trees still standing are not more than a few years past 200.

Champion basswoods

The national champion American Basswood (*T. americana*) has a circumference of 24 feet 4 inches, a height of 78 feet and a crown spread of 100 feet. The national champion Carolina Basswood (*T. caroliniana*) has a circumference of 11 feet 7 inches, a height of 120 feet, and a spread of 79 feet. The national champion White Basswood (*T. heterophylla*) has a circumference of 18 feet 7 inches, a height of 116 feet and a spread of 57 feet. The only champion listed for Georgia is a White Basswood (*T. heterophylla*) which has a circumference of 9 feet 1 inch, a height of 102 feet and a spread of 74 feet and is located in Rome, Floyd County.

References

- Allaby, Michael, 1992. *The Concise Oxford Dictionary of Botany*. Oxford University Press.
- American Forests, 1999. *1998-1999 National Register of Big Trees*, American Forestry Assoc.
- Brown Claude L. & L. Katherine Kirkman, 1990. *Trees of Georgia and Adjacent States*. Timber Press.
- Collingwood, G. H. & Warren D. Brush, 1964. *Knowing Your Trees*. American Forestry Association.
- Coombes, Allen J., 1985. *Dictionary of Plant Names*. Timber Press.

- Duncan, Wilbur H. & Marion B. Duncan, 1988. *Trees of the Southeastern United States*. Univ. of Georgia Press.
- Elias, Thomas S., *The Complete Trees of North America*, 1980, Van Nostrand Reinhold Co., New York, NY.
- Fernald, Merritt Lyndon, 1950. *Gray's Manual of Botany*. Dioscorides Press.
- Georgia Forestry Commission 2000, *Georgia's Champion Trees*. Georgia Forestry Commission.
- Gledhill, D., 1989. *The Names of Plants*. Cambridge University Press.
- Green, Charlotte Hilton, 1939. *Trees of the South*. University of North Carolina Press.
- Harlow, William M., *Trees of the Eastern and Central United States and Canada*, 1957, Dover Press.
- Harrar, Ellwood S. & J. George Harrar, *Guide to Southern Trees*, 1962 Dover Press.
- Peattie, Donald Culross, *Natural History of Trees*, 1963, Houghton Mifflin Co.
- Randall, Charles Edgar & Clepper, Henry 1976. *Famous and Historic Trees*. The American Forestry Assoc.
- Sargent, Charles Sprague, 1965. *Manual of the Trees of North America*. Dover Press.
- Small, John Kunkel, 1933. *Manual of the Southeastern Flora*, University of North Carolina Press.
- USDA, National Plants Database, 1974. *Important Trees of Eastern Forest*, USDA Forest Service. <http://plants.usda.gov/plants/>

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 Reprinted from *Chinquapin*, the newsletter of the Southern Appalachian Botanical Society, Winter 2001 who reprinted it from *BotSoc News* 75 (4): 3-4, 2001

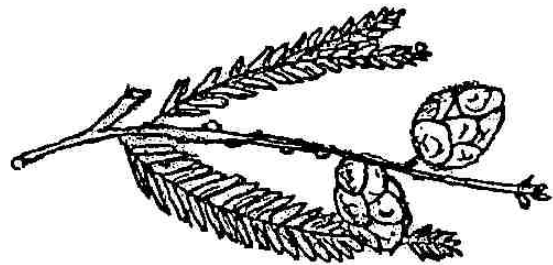
The Tree of Many Names

Robert L. Tener

The Bald Cypress, a tree of many names, has to be seen in mid-summer or late fall to appreciate its transcending beauty. Botanists refer to it as *Taxodium distichum* and assign it to the *Taxodiaceae* family. This tree is also called Bold Cypress, Cypress, Swamp Cypress, Southern Cypress, and Common Bald Cypress. The name for the family is a blend of *Taxus* and Greek *eidos* referring to the shape of the leaves. There are three members of this family, two being native to the United States (*T. distichum* and *T. ascendens* called Pond Cypress, sometimes referred to as *T. distichum* variety *nutans*.) The third one is *T. mutcromatum* called the Montezuma Cypress. The Bald Cypress is an amazing tree, some of whose members can live to be a thousand years old and reach a height of 200'.

One of my favorite trees here at High Hawk, the Bald Cypress is a tall magnificent pyramidal deciduous conifer with a narrow tapering trunk, the largest conifer of the eastern United States, buttressed at its base, and usually reaching 80' to 100' with a diameter of 3' to 4', but it can go up to 150' with a diameter up to 20'. In flooded swampy areas it grows unique, fascinating roots called knees which stick out of the water and are 4' to 6' high and 1' thick. On the other hand, its regular roots are long and radiate out horizontally.

Like other conifers, it has needle leaves. These are lace-soft, linear, faint green on both sides, feather-like, flat, 1/4" to 7/8" long, and may sometimes be three-



sided. After they fall in autumn, they leave small scale rough buds on the twigs and branches. These, like the trunk, are covered with brown fibrous bark. The flowers are small. Both sexes develop on the same tree; the males are loose drooping panicles, 4" to 6" long, and the females are globose appearing near the end of twigs. Their fruits are egg-shaped cones 1" in diameter, appearing in pairs or alone.

Hardy from zone 3 south, the Bald Cypress is native to swamps, alluvial bottom lands, and the streams of banks, though it will grow on ordinary soil. Its needles turn an oat-yellow in the fall just before they fall. It is then most magnificent to see as its strong pyramidal shape is revealed. It ranges from Delaware south along the coast to Florida, west to Tennessee and Kentucky, over to Mississippi, Missouri, Indiana, Illinois, and west to Texas. It does have a few insect problems such as Twig Blight, Cypress Moth, spider mites, and gall-forming mites.

Its wood makes handsome finish lumber for buildings, doors, shingles, cooperage, fencing, railroad ties (I can't imagine this!), buckets, bowls (from its knees), beehive boxes, water pipes, lining for vats, and support columns for front porch roofs. The wood is light brown and easy to work and takes a fine polish. It also resists decay and warping. In Ohio it is chiefly used as an ornamental tree with outstanding visual appeal for large yards and park vistas where it can dominate the scenery.

One of the tallest deciduous conifers in the eastern United States, it is most magnificent in winter when all the surrounding deciduous trees have lost their leaves and stand like dark silhouettes with their large and small branches at odd angles. But the Bald Cypress is

not bald! Its strong central branches thrust out, pointing slightly upward in ascending shorter and shorter whorls to produce a perfect arrow-shaped contour. Each branch has many small, delicate branchlets which give the tree a density that angiosperms lack, a texture that matches its winter color of a dull rich red-brown rust, often adorned with a few hanging rusty needles. Best of all just before the needles drop they turn a rich oat-yellow color to rival the Larches and Dawn Redwoods. While the Larches are most attractive when planted in groups or in lines, the Bald Cypress needs to be by itself as it dominates the area visually.

Robert Tener is a member of the Native Plant Society of Northeastern Ohio.

Dolly Sods in the Rain and Fog, Part 2

September 9, 2006: Breathed Mountain Trail (#553)

By Bill Grafton

Dolly Sods Wilderness is located on the Cheat-Potomac Ranger District of the Monongahela National Forest in Tucker and Randolph Counties, West Virginia.

[See the December 2006 issue for a description of Dolly Sods and the account of the Graftons' September 2 hikes.]

Many trails of the Dolly Sods area are now easily reached by driving Forest Service Road 80, which is a continuation of Freeland Run Road in Canaan Valley. The road was in terrible condition a few years ago. An amazing transformation occurred when the US Fish & Wildlife Service's Canaan Valley National Wildlife Refuge decided to put "our tax dollars to work" and the road is now a smooth gravel surface that is easily driven in any sedan vehicle.

At the end of Forest Road 80 is a small parking lot but no trail signs. Fortunately for us and a couple from Pennsylvania, a bear hunter was training his dogs and knew where the trails were located.

We continued on out the road (walking mode) another mile or so to a low gap where there was a kiosk with a nice map and trailhead signs for Breathed Mountain, Big Stonecoal and Cabin Mountain Trails.

The weather was nice, the ravens soared overhead and croaked their "caw caw" notes, as we headed down Breathed Mountain Trail (#553). The first mile or so of the trail is rugged with lots of boulders and roots to walk on or around. The forest is typical red spruce and northern hardwoods with dense mountain laurel shrubs

and occasional breaks of heath barrens and small boggy areas.

Emily discovered snowberry and round-leaved sundew in one of the small bogs, and they were complemented by sphagnum mosses of deep red, dark green, and whitish green colors. The marsh St. John's-wort was showing off its bright red capsules, the white puffs of cottongrass waved in the breeze, and the narrowleaf gentian was beautiful in the bright sunlight.

About a mile or so down the rocky trail there is a 30-acre bog on the north side of the trail. It was a scene to remember as thousands of puffy cottongrass waved in the afternoon sun. We explored to find lots of fruits on the small cranberries, the small but rare *Juncus filiformis*, *Carex canescens*, and black-girdled bulrush (*Scirpus atrocinctus*).

A lot of this bog had been beaver ponds "in another life" as evidenced by the old dams and channels where the beaver float wood through shallow areas of the ponds. We saw several *National Geographic* shots where narrowleaf gentian and cottongrass were growing together. But, darn it, our one digital camera had just run out of space. So we will store the memory in our "personal hard drives" called the human brain.

We did walk another 1½ miles over nice smooth trails through the forests, plantations of red spruce and red pine, and more nice heath barrens where we ate our fill of black huckleberries.

We also saw the "revenge of nature" where quite a few beech trees were covered with white adelgid insects and the accompanying black areas of nectria canker. Together they are the deadly beech bark

disease that has ravaged the beech on more than 100,000 acres of our high mountain forests. "Revenge" is because we continue the unlimited international commerce and keep shipping animals, plants, insects and diseases back and forth around the globe. It is great for business but devastating for our manmade and natural ecosystems.

Fortunately the beech bark disease is a background memory and the fantastic bog and spruce forest are

what I remember from Breathed Mountain. I must get back and explore the big 30-acre bog more thoroughly. It is intriguing and now I wonder how many more bogs are out there?

So many bogs, barrens, swamps, and riverbanks, and not nearly enough time. The dilemma of the ages!!!

Reprinted from *Native Notes*, the West Virginia Native Plant Society Newsletter, Volume 14:2, October 2006

Bloodroot (*Sanguinaria canadensis*) 2005 Virginia Wildflower of the Year

Throughout eastern North America, a patch of bloodroot blooming on a woodland hillside is one of the early and widely cherished signs of spring. Bloodroot is an herbaceous perennial that grows from a persistent, branched underground stem or rhizome. Early in the spring, while the forest canopy is still bare, each well-developed rhizome tip produces one leaf and one flower stalk. The leaf is kidney-shaped in its overall outline, but it is also divided into a pattern of rounded lobes and sinuses, rendering a complex overall shape. At flowering time, bloodroot leaves form a loose vertically-oriented collar around the flower stalk with the bluish-green lower leaf surface forming the outside of the collar; as the season progresses, the leaves open flat and expand to their full size, which commonly ranges from 6 to 8 inches across, but can become larger in favorable locations.

The flower buds are enclosed by a pair of sepals that promptly fall away as the flower opens. Petals are white, relatively narrow, variable in number from 8 to 16 or so. The bright yellow stamens number from 12 to 24. At the center of the flower there is a single greenish simple pistil with a short style and bi-lobed stigma. Inside the ovary, two rows of ovules are attached along the suture line of the carpel margins. The ovary forms a tapered cylindrical follicular fruit that opens while still more or less pale green or with just a hint of yellowing. The seeds are black or dark reddish brown, and fitted with an oil-rich elaiosome.

Linnaeus gave bloodroot its scientific name, *Sanguinaria canadensis*. The genus name is based on *sanguinari* (Latin, bleeding), a reference to the

reddish latex found in the rhizome, petiole, and flower stalk; and the species name means "from Canada." Bloodroot is classified in the poppy family, Papaveraceae. Thus, it is related to the celandine or wood poppy (*Stylophorum diphyllum*), as well as the various species of poppy frequently cultivated in gardens and the notorious opium poppy, *Papaver somniferum*.

Like other members of the poppy family, bloodroot contains alkaloid molecules that are responsible for both toxic and therapeutic effects. Thus, the plant can be considered both poisonous and medicinal. There is a long tradition of use in folk medicine and bloodroot extracts can be found as an ingredient in over-the-counter oral hygiene products. Pharmacological studies demonstrate antibacterial and anti tumor activities, but the same constituents also have harmful effects on fundamental metabolic processes of human cells. Despite folk tradition, ingestion of bloodroot products cannot be recommended. The red pigments contained in the latex can be used to dye fabrics or craft items like baskets.



In the wild

Bloodroot grows in the shade of deciduous trees. It prefers rich sandy soil, but can tolerate clay if the site is well-drained. Bloodroot ranges throughout the eastern deciduous forest region, from southern Canada to the Gulf Coast and westward to the Great Plains. Flowering dates vary from year to year. Throughout

much of Virginia, flowers can be expected sometime in March, or somewhat later at higher elevations. Ants gather the seeds for the food value of the elaiosome and, in doing so, they disperse seeds away from parent plants.

In the garden

Bloodroot adapts well to cultivation. Garden conditions that mimic its natural woodland habitat are best. Thus, a site under deciduous trees will provide sunlight in late winter to early spring and shade in the summer. Moderately rich soil and good drainage are recommended. In overly moist soils, the rhizomes are subject to decay.

Bloodroot grows well from seeds provided that they are planted promptly, as soon as the fruits open. If the elaiosome is allowed to dry while still attached to the seeds, germination is severely inhibited. Also,

seedlings from ant-dispersed seeds will be common around established garden specimens. Large plants can also be propagated by division of the rhizome when the plant is dormant, i.e., fall or very early spring.

Bloodroot is frequently available in the commercial nursery trade, but to preserve wild populations, responsible gardeners should insist on purchasing only nursery-propagated specimens. There is a large-flowered variety, *S. canadensis* var. *grandiflora* and forms with "double" flowers are known horticulturally as cultivars 'Multiplex' or 'Flore-pleno.' Although bloodroot flowers are short-lived, the bold leaves provide a distinctive textural feature in the woodland garden. Mulching will help to conserve foliage during summer.

Reprinted from a leaflet published by the Virginia Native Plant Society. Illustration from Brittain & Brown.

Bloodroot reproduction plan: Hurry up and wait, and then hedge your bets

W. John Hayden

"Hurry up and wait." The phrase that epitomizes life in the military or any other large, bureaucratic organization, applies surprisingly well to bloodroot and similar ephemeral wildflowers. Each year these plants race to flower as early as possible to assure sufficient time for fruits to ripen and seeds to mature while sunshine is abundant at the forest floor, for all too soon the forest floor will be draped in shadows cast by the trees' leafy canopy. Ephemerals do everything quickly: sprout, grow, flower, disperse seeds, and re-enter dormancy.

But flowering in very early spring can be risky. Some days will be fair and pleasant, but just as surely other days will be cool and drizzly, making successful pollination by insect visitors uncertain. In general terms, plant ecologists have proposed that self-pollination (autogamy) should be common in plants that bloom under unpredictably variable conditions. In fact, some ecological studies have concluded that blood-root is autogamous (e.g., Schemske 1978). Bloodroots are, or can be, autogamous, but the full story is a bit more complicated.

Notably, bloodroot flowers are protogynous, meaning that the stigmas are receptive to pollen as soon as the flowers open, but the anthers do not shed pollen until sometime later. Literally, protogynous means a first phase female. Studies by D.L. Lyon (1992) show that the female phase can last from one to three days, which coincides with the open-period of any given flower. On day one, petals and stamens spread perpendicular to the pistil, forming a shallow bowl-like configuration. Only a few anthers open on day one. As daylight fades, petals and

stamens re-orient upward, closing the flower for the night. Little self-pollination takes place as the flowers close because the anthers do not normally contact the stigma at this point. On day two, if conditions are favorable, flowers re-open and re-assume their bowl-like shape. More anthers dehisce, rendering their pollen available for transfer. As before, flowers close at the end of day two. The events of day three are subtly different: petals reflex, but stamens remain upright. Moreover, as day three progresses, stamens bend inward, bringing their anthers and pollen into direct contact with the stigma. Thus, autogamy certainly can occur. A few stray pollen grains may reach the stigma on day one or two, but stamen action on day three assures abundant self-pollination. If, however, autogamy is the basic reproductive mode, why wait until day three to consummate the process?

The protogynous character of bloodroot flowers and their undeniable showiness suggest that blood-root has potential, at least, for out-crossing (xenogamy). The above-mentioned study by Lyon convincingly demonstrates a role for native bees in bloodroot pollination. This study involved careful observation of blood-root flowers in all sorts of weather, following the fate of individual flowers over multiple days, and a series of controlled experiments involving all combinations of bagged and unbagged flowers, flowers with intact anthers and with anthers removed, and both hand-pollinated and open-pollinated flowers. The bottom line is that when weather conditions are sufficiently warm and dry to permit insect flight, *Andrena carlini* bees are effective

pollinators of blood-root. Upon approaching an open bloodroot flower, the bee lands directly on the stigma and forages for pollen among the anthers surrounding this central spot. Bees spend little time on recently opened flowers with few open anthers; these visits are, however, sufficient to transfer pollen from a previously-visited flower to the stigma. On older flowers, a bee might spend as much as two or three minutes foraging for pollen and, while doing so, it accumulates a load of pollen on the underside of its thorax and abdomen. The bees exhibit good flower constancy, so, upon visiting the next bloodroot flower, pollen from the bee's underside transfers readily to the stigma. Since bloodroot stigmas are receptive from the moment a flower opens, any floral visit by a bee is likely to deliver pollen from another flower and in this way out-crossing (xenogamy) can occur. But if weather conditions are cool and drizzly, the bees are grounded, and after a few days bloodroot flowers can pollinate themselves, assuring seed production for the year.

Genetically, self-pollination incurs some cost in terms of less genetic diversity among the offspring relative to out-crossed offspring. On average, two parents are likely to encompass more genetic diversity than one. For many reasons, genetic diversity is considered advantageous for the long term success of a species. For example, nature is

often patchy; at any given location within a forest, some genetic types may function better than others. Also, the process of long-term adaptation to the environment involves the action of natural selection on genetically variable populations. Bloodroot pollination biology allows for the benefits of cross-pollination, but given the unreliability of the early spring weather and, consequently, the unreliability of its pollinator, self-pollination (autogamy) exists as a default or back-up system that assures production of offspring, though these offspring may be somewhat homogeneous in their genetic make-up.

To summarize bloodroot pollination strategy: hurry, wait, and hedge against uncertain fate.

(For more reading, try Lyon, D. L. 1992. "Bee pollination of facultatively xenogamous *Sanguinaria canadensis* L." *Bulletin* Torrey Botanical Club 119: 368-375 and Schemske, D. W. 1978. . "Sexual reproduction in an Illinois population of *Sanguinaria canadensis* L." *American Midland Naturalist* 100: 261-268.)

W. John Hayden is Botany Chair of the Virginia Native Plant Society.
Reprinted from the *Bulletin*, a publication of the Virginia Native Plant Society, Winter 2005.

Some Medical Notes on Bloodroot

John Churchill

Some notes about the chemistry and pharmacology of this pretty woodland poppy family (Papaveraceae). *Sanguinaria* contains alkaloids called isoquinolones, among which morphine is the best known.

Bloodroot contains isoquinoline, called by the trivial name sanguinarine. For those who might think about getting a "a fix" from it, forget it. This plant has none of the pain-relieving, euphoria-producing high promised by the honorable poppy.

This plant when ingested will cause colic from inflammation of the stomach, pulmonary congestion compounded by respiratory depression, drooling with thirst, and staggering. Soon after falling to the ground, convulsions herald the final period of stupor and coma.

Surprisingly there have been very few deaths from this plant, in as much as the root suggests use for curing conditions of the blood. Perhaps it has been used by the Indians as a war paint, but painting the juice on one's skin is a bad idea because the chemical can be absorbed through skin.

A very dilute solution of the compound has been marketed in plaque-fighting toothpastes. The

sanguinarine fixes to the protein cell walls of plaque bacteria and so kills them; it does work for this purpose. This is good news; but the bad news is that sanguinarine causes a rise in pressure within the eye, glaucoma. This poses a special problem for people who have any threat of this great silent thief of sight.

Sanguinarine is most concentrated in the root rind, and its reason for being, probably, is to protect the root. For instance, it destroys the root rotting fungus *Phymatrichum*. I found that as little as 9.16 grams of wet root kills fish within one hour.

Well, plants with pretty spring flowers need to have defenses.

John Churchill, a medical doctor and past president of the Tennessee Native Plant Society, offered these notes on the medical qualities of bloodroot. The information came from the Tennessee Native Plant Society Newsletter (vol. 14, No. 2, April 1991).

Reprinted from the *Bulletin*, a publication of the Virginia Native Plant Society, Winter 2005.

Fringed Polygala: A Rare *Polygala*

Gordon Mitchell



Fringed Polygala, *Polygala paucifolia*

Sometimes a plant, which is clearly a member of one family, may be easily mistaken for a being member another family simply because of the shape of its flowers. One such plant, the Fringed Polygala (*Polygala paucifolia* Willdenow), is often mistaken as a member of the Orchid Family (*Orchidaceae*).

The Fringed Polygala is actually a member of the Milkwort Family (*Polygalaceae*). The generic name, *Polygala*, is Latin for *polygalon*, which is Greek for “much milk”. (*Poly* is “much” and *gala* [or *galon*] is “milk”.) *Gala* is also the root word for “galaxy”, as in the Milky Way Galaxy. The specific epithet, *paucifolia*, is Latin for “few-leaves”. (*Pauci* is “few” and *folia* are “leaves”.)

A previous scientific name for this plant was *Triclisperma paucifolia* (Willdenow) Nieuwland. Other common names for this plant are Baby’s Feet, Baby’s Slipper, Baby’s Toes, Bird-on-a-Wing, Dwarf Milkwort, Evergreen Snakeroot, Flowering Wintergreen, Fringed Milkwort, Gaywings, Indian Pink, Lady’s Slipper, Little Pollom, Maywings, Purple Maywings, and Satin Flower.

There were a few medicinal uses of the Fringed Polygala. Most of the plant, especially the roots, has a strong smell and taste of wintergreen, which was added to some medicines. Many also believed that milk production (lactation) would increase if the Fringed Polygala were consumed by dairy cows or by nursing mothers.

Description Of the Fringed Polygala

Perennial

Height: 2-7 inches.

Stem: Has scaly leaves.

Leaves: Simple. Alternate. Evergreen. Most leaves are clustered (usually in clusters of 3-6) near the top of the plant. Each leaf is elliptic, oval, or ovate, blunt-tipped, and has an entire margin. The upper leaves are about $\frac{3}{4}$ -1 $\frac{1}{2}$ inches long and about $\frac{1}{2}$ inch wide. The lower leaves are scaly.

Flowers: Pink, purple, red, rose, rarely white. Located solitarily within the clustered leaf axils. There are only about 1-4 flowers per plant. Each flower is about $\frac{3}{4}$ -1 inch long and is bilaterally symmetrical. The calyx consists of 5 separate sepals. Three of the sepals are smaller, pointed, and green and the larger 2 sepals form spreading lateral wings. The corolla consists of a tube with its 3 petals that are united at their bases and are fringed at their tips to form a crest. The lower petal is usually keeled and is fringed at its mouth. The 8 stamens are fused into a tube. There are also cleistogamous (small, closed, self-pollinating) flowers located at the base of the stem or upon the underground stem. (Cleistogamous is Greek for “closed marriage”. *Kleistos* is “closed” and *gamos* is “marriage”.) These cleistogamous flowers ensure that the plant will still produce seeds, albeit genetically identical seeds, even if the larger flowers do not. Flowering season is usually May to June.

Fruit: Capsule. These small, rounded capsules, which are 2-chambered, will split into 2 halves. The seeds, which are black, hairy, and ovate, have small, soft, oily, sac-like appendages (caruncles) that are located at one end. Ants will remove the seeds from the capsules and will only consume these caruncles. Afterwards, the ants discard the rest of the seed

Roots: Rhizomous. This plant can spread by rhizomes.

Habitat: Moist woodlands, usually found in patches.

Gordon Mitchell works for the Columbus, Ohio, Metroparks and is a member of the Columbus Native Plant Society



Chapters of the Ohio Native Plant Society

Cincinnati Wildflower Preservation Society
Dr. Vic Soukup
338 Compton Road
Wyoming OH 45215
513-761-2568

Central Ohio Native Plant Society
Dick Henley
11800 Poplar Creek Rd
Baltimore OH 43105-9407
740-862-2406

Native Plant Society of the Miami Valley
Nancy Bain
444 Acorn Drive
Dayton OH 45419
937-698-6426

The Mohican Native Plant Society
Mike Klein
1778 Dougwood Drive
Mansfield OH 44904
419-774-0077
mklein1@neo.rr.com

Native Plant Society of Northeastern Ohio
J. Bradt-Barnhart, President
10761 Pekin Road
Newbury OH 44065
440-564-9151
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On The Fringe

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