



On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

Native Plant Society of Northeast Ohio

ANNUAL DINNER

Friday, September 14, 2007

At the Cleveland Museum of Natural History

Socializing: 5:30 p.m.

Dinner 6:15 p.m.

Lecture by Dr. Doug Tallamy at 7:30 p.m.

“Fighting Extinction With Native Plants: A New Role For the American Garden”

This speaker is co-sponsored by the Cleveland Museum of Natural History Explorer Series.

Tickets: Dinner and lecture: \$22.00

Students: \$15

Send checks to Kathryn Hanratty, 9059 Auburn Road, Chardon, Ohio 44024; 440-285-3722

Tickets for the lecture only: \$9.00, purchased through the Museum

TICKETS ARE LIMITED, SO MAKE YOUR RESERVATIONS EARLY

Annual Dinner Speaker

Doug Tallamy is Professor and Chair of the Department of Entomology and Wildlife Ecology at the University of Delaware in Newark, Delaware, where he has authored over 65 research articles and has taught Insect Taxonomy, Behavioral Ecology, and other courses for 26 years. Chief among his research goals is to better understand the many ways insects interact with plants and how such interactions determine the diversity of animal communities. His new book, *Bringing Nature Home*, will be published by Timber Press this fall.

With 150 species of plants and animals already lost from Pennsylvania and another 800 species threatened or endangered, it is clear that we must change our approach to landscaping if we hope to create homes and food for our local biodiversity. Native plants will play a key role in the restoration of our living spaces because only natives provide the coevolved relationships required by animals. By supporting a diversity of insect herbivores, native plants provide food for a large and healthy community of natural enemies that keep herbivores in balance and our gardens aesthetically pleasing.

Grant Announcement

The Native Plant Society of Northeastern Ohio hereby announces that it will consider applications and nominations for an Annual Grant to be awarded to a person or persons working in the field of botany or conservation who demonstrates excellence in research, conservation or education, including land trusts, organizations, and causes that clearly support the Mission of the Ohio Native Plant Society. Please see the back page of any issue of *On The Fringe* for our mission statement.

The amount of the grant will be \$500.00. Deadline for submissions is September 1st, and the grant will be awarded at the annual meeting in September.

Applications should include contact information, summary of the project, and how money will be used. Awardee will be asked to give a brief presentation on the project the following year at the Annual Meeting.

Please e-mail your request to bunchberry1@netzero.net or submit 3 copies to: **Judy Barnhart, President, Native Plant Society of Northeastern Ohio, 10761 Pekin Road, Newbury, Ohio 44065.**

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Native Plant Society Summer and Fall Programs

June 9, Sat: SHIVERICK PRESERVE PLANT SURVEY, Hunting Valley, Cuyahoga County - 9:00 AM. - Join us for our annual plant survey for the Western Reserve Land Conservancy as we explore this 133-acre mature forest in Hunting Valley that the Conservancy is working to preserve, known for its wildflower-laden ravines. Directions: Take Rt. 271 to Rt. 322. Head east to Chagrin River Road. Head south to Fairmount Blvd. Property is at the southwest corner, with parking on the west side of the Chagrin River Road. Call Judy for reservations: 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 Kelley's Island Ferry Landing in Marblehead on north side of Rt. 163. Bring ferry fee (adults \$14) and lunch. Call Diane to register: 216-691-1929 (H) 440-666-4870 (cell)

July 21, Sat: O'NEIL WOODS, Metroparks Serving Summit County, OH -10:00 A.M. - A variety of trees, ferns and wildflowers, scenic views of the Cuyahoga River Valley, and Yellow Creek, considered the cleanest tributary to the Cuyahoga River, highlight this trip. Directions: Take Rt. 271 south to Rt. 303. Head east 1½ mi. to Riverview Rd. Head south approx. 3 mi. to Ira Rd. Turn west on Ira then left on Martin Rd. 0.2 mi to 2150 Martin Rd., Bath OH 44333. Call Diane to register: 216-691-1929 (H) 440-666-4870 (Cell)

July 28, Sat: ALLENBERG BOG, Cattaraugus County, near Fredonia, N.Y. -10:00 A.M. - The Niagara Frontier Botanical Society invites us to explore the primitive 500-acre Allenberg Bog sanctuary, owned by the Buffalo Audubon Society, and known for its rhododendrons. Wear shoes to get wet as there is no boardwalk. Take I-90 east to I-86 east. Exit Rte 394 past Jamestown. Head northeast to Napoli. Turn left (north) on Rt. 10. Park along east side of road (look for cars). Call Diane to register: 216-691-1929 (H) 440-666-4870 (cell)

Sept. 8 & 9, Sat & Sun: EDGE OF APPALACHIA PRESERVE & SHAWNEE STATE FOREST, Adams and Scioto Counties, OH. ODNR State Botanist Rick Gardner and Dan Boone of Cincinnati Wildflower Preservation Society will lead this trip to one of the most biologically diverse areas of the state. Owned jointly by The Nature Conservancy and Cincinnati Museum Center, the Richard and Lucille Durrell Edge of Appalachia Preserve provides habitat for 100 rare plant and animal species. Visit Lynx Prairie, Buzzardroost Rock and Shawnee State Forest, known as Ohio's "Little Smokies." Meet at Bill's Store in Lynx, Ohio, on Rt. 125 (only store in town) at 9:00 a.m. Saturday. A later meeting time will probably be established for those not able to make it by 9:00. Further details on overnight facilities to come. For more information contact Ami Horowitz at (216) 561-7059.

Sept. 29, Sat: BIRDS & BOTANY ALONG THE LAKE - 9:30 A.M. - This joint program with Cleveland Audubon will take us to several natural areas along Lake Erie beginning at Mentor Marsh, then to Headlands Dunes State Nature Preserve, then to Mentor Lagoons, as we discover the plants and bird-life found in these coastal areas. Join us for a picnic between locations. Hotdogs and beverages provided. Bring a side to share if you wish. Directions: Take St. Rt. 44 north to Rt. 283 Lake Shore Blvd. Head west to Corduroy Rd. Turn right, continuing to the Marsh House at 5185 Corduroy Rd., Mentor, on the right side of road. Call Bill Oberdick to register: 216-371-3345 (H) or 216-392-7027 (cell).

Eastern American Trilliums, Part 4 of 4

(Parts 1 to 3 appeared in the previous three issues of On The Fringe)

by Fredrick W. Case Jr.

The Eastern Sessile Trilliums

Group III - The *Trillium maculatum* group

T. maculatum

T. foetidissimum

T. cuneatum

T. luteum

T. ludovicianum

T. gracile

T. viride

T. viridescens

Trillium maculatum Raf.

This large and quite showy trillium ranges across the middle and outer Piedmont and Coastal Plain of South Carolina, Georgia and Alabama, and locally south into the panhandle of Florida.

Plants range in height from a foot to almost two feet tall, with sessile, elliptic to broadly elliptic leaves. The leaves may be obscurely to strongly mottled. In the best forms we have seen (near Augusta, Ga.) the leaf markings were especially prominent, with light, medium and dark bronzy green blotches, some underlaid with a deep maroon red. The petals, distinctly spatulate, broadest beyond the middle and stiffly divergent/erect, are rich maroon-red to a dark garnet red. The color does not fade to the dull liver tones of so many of the sessile trilliums. The spotted trillium, therefore, is a colorful and particularly desirable garden plant.

T. maculatum blooms very early in the season, both in the wild and in the garden. It grows in a variety of rich woodlands of both upland and floodplain. We have seen it on acidic and limestone soils.

As in most of the sessile trilliums, bi-colored yellow- and purple-petalled and pure yellow-petalled forms occur, but we have not seen them.

This trillium has been much confused by botanists with other Coastal Plain and Piedmont species. Much of the literature prior to Freeman's treatment (1975) may refer to other entities so one cannot rely upon stated characteristics or distributions in the older works.

Despite its Deep South distribution, plants from near Augusta, Ga. have proved completely hardy here for many years. Recently we obtained a few plants from west Florida. These were relatively taller, with smaller leaves and flowers than those from Augusta. It remains to be seen how they prosper.

In leaf and flower color, this is almost more desirable as a garden plant than the larger and more vigorous *T. cuneatum* which is of similar aspect. *T. maculatum* is not, to my knowledge, offered in the trade.

Trillium foetidissimum Freeman

The fetid trillium quite strongly suggests *T. sessile* in its general size and habit. Its leaves, however, are far more strongly mottled, and are carried at a slightly different angle. One gets the impression, in the field, that the leaves are carried at a precise right angle to the stem and droop less at the tips than do those of *T. sessile*.

While the ranges of *T. foetidissimum* and *T. sessile* do not overlap, specimens of either from horticultural sources could easily be mistaken for the other species.

In *T. foetidissimum*, the leaves are more conspicuously mottled with more varied tones, the ovary is not distinctly six-winged, the stigmas are usually not as long as the ovary (at flowering). The scent of the flowers in *T. sessile* is spicily unpleasant, while those of *T. foetidissimum* have, according to Freeman, a "strong, nearly stifling, carrion odor."

T. sessile occurs in the midland states mostly north of Tennessee and Arkansas. *T. foetidissimum* occurs east of the Mississippi and that portion of Louisiana which lies east of the Mississippi River.

We found this species growing in low woods along a small river in rather trashy thickets, and also in more attractive cover on lower ravine slopes near the headwaters of small rills. It grew on open forest floors in leaf mold, and occasionally on low rocky outcroppings. Plants were mostly scattered, with little tendency to form clumps.

Freeman (1975) says that *T. foetidissimum* inhabits floodplains, river bluff forests and ravine slopes under beech, magnolia, and pine.

This is an attractive plant, particularly in leaf. If it proves to be sufficiently winter hardy for northern gardens, it will be very useful in the rockery. If it proves not to be hardy, it is sufficiently like *T. sessile* so as not to be badly missed.

***Trillium cuneatum* Raf.**



Trillium cuneatum, also widely known as *T. hugeri*, is one of the plants frequently illustrated as "*T. sessile*," especially in European articles. A large trillium, it is worthy of a featured spot in the wildflower garden.

Plants stand one to two feet tall and bear large, chordate-ovate acuminate leaves which possess strong mottlings in light and dark green with some maroon undertones. These leaf markings fade and blur somewhat during the season, but the plant remains a good accent until it dies down at season's end. In the best garden forms, two- to three-inch, cuneate (wedge-shaped), heavy-textured, inch-wide maroon-purple to bronzy-purple petals stand upon the leaves. Petal bases are not narrowed or thickened into a claw in this species. The narrower sepals may be green or with strong maroon-purple coloring on their upper surfaces.

An early emerger and bloomer, *T. cuneatum* remains in bloom for weeks. When fresh, the flowers have a faint, pleasant scent. Older blooms lack odor and fade to the usual liver-brown undertones, which, to my mind, detract somewhat from the plant's beauty.

Last spring, we found plants in Tennessee which developed undertones of orange as the flowers aged. Some of these plants now grow in my garden where we will observe them. If they still show promise, we will attempt to self-pollinate them and work toward the possibility of producing orange trilliums.

Trillium cuneatum grows natively on Ordovician limestone soils in Southern Kentucky, Tennessee, western North and South Carolina, Georgia, Alabama and northern Mississippi, occurring farther south into the Piedmont and Coastal Plain as one moves toward the Mississippi River. It occurs in a variety of woods and thicket from very mature beech and oak forests to dry scrubby oak wood. Plants from Georgia and Alabama which we have observed have smaller, narrower petals of darker purple-maroon than those

from Tennessee and Kentucky. The largest plants we have ever seen grew near Huntsville, Alabama in a mature beech woods. They stood fully two feet tall, with immense leaves and four-inch petals.

As with most of the maroon-purple sessile-flowered species, color forms occur with brown, liver, greenish-yellow, lemon-yellow petals, or bi-colors with dark bases and green or yellow extremities. We grow a beautiful, clear light green form from the hills of northern Georgia. It is not a very large form, but it is very attractive.

Despite its being rather closely associated with specific limestone soils in the wild, the plant is extremely easy to cultivate in almost any garden soil. Even in very unsuitable sandy acid soil, seedlings appear regularly.

Appalachian wildflower nurseries offer the plant (often listed as *T. sessile*) and it is well worth growing.

***Trillium luteum* (Muhl.) Harbison**

Except for flower color and petal shape, the general description for *T. cuneatum* might serve also for *T. luteum*. In *T. luteum*, the somewhat narrower, lanceolate petals range in color from pale lemon yellow to a strong clear darker yellow in wild plants. However, some of these darker yellow forms, transplanted to my garden consistently yield paler, greener tones at this latitude.

Flowers of *T. luteum* emit a pleasant lemon scent, those of *T. cuneatum* a spicy, musky or faintly fetid odor.

T. luteum, an excellent garden plant, occurs naturally in western North Carolina and then, more abundantly in eastern Tennessee, where it is the only sessile trillium in Great Smoky Mountain National Park (Freeman, 1975), and thence northward and westward it occurs into south-central Kentucky. In the vicinity of Gatlinburg, Tenn., the blooming plants light up the forests and roadsides with a soft yellow glow.

It prefers to grow in rich, moist, rocky woods and lower hillsides, often on lower slopes above a small stream bed. Unlike some sessile species, however, it is not confined to river drainage areas.

In southern Kentucky *T. luteum* and *T. cuneatum* occur in the same woodlots, a situation seldom seen elsewhere. In such stations obvious hybrids and intergrades abound.

Authors prior to Freeman frequently lumped *T. luteum* with *T. viride* Beck, or with various pallid

color forms of other species. Consequently, the confusion in the literature about its range and characteristics is considerable. Freeman's treatment (1975), seems to me best to reflect the situation which exists in nature.

***Trillium ludovicianum* Harbison**

Louisiana trillium stands about six to twelve inches tall. The bracts or leaves are sessile, lanceolate to broadly ovate, and from three to five inches long. The leaves are mottled distinctly, but not so strongly as in *T. decipiens* or *T. underwoodii*. Petals are linear-oblongate, one-and-one-quarter to two-and-one-quarter inches long, somewhat divergently erect. In color they are green, merging into purplish at their bases. In this species the lower portion of the petal is narrowed and somewhat thickened into a claw-like base. Flowers have a distinctly bi-colored appearance. The ovary is six-angled.

This species, according to Freeman (1975), is somewhat intermediate between the species found in Missouri Arkansas and the Texas-Louisiana border country, and the sessile species found farther east.

We have not seen this species in flower yet, but we have seen the plant and collected it in the wild in central Louisiana. Because our time was very limited, we were able to visit only one small station. Here, under beeches, magnolias, and a scattering of pines, on small ravine bluffs along a stream, Louisiana trillium grew in heavy leaf mold at the bases of trees and about old rotten logs. In this woods, which had been recently pastured, plants were not common. Freeman (1975), however, avers that the plant is locally abundant in central Louisiana. He gives its range as "Upper Coastal Plain of Louisiana (west of Mississippi River) and eastward into Mississippi." It is very local in Mississippi and is said to intergrade there with *T. cuneatum*.

Since we have just obtained this species this past summer (1980) we cannot yet comment on whether or not it will prove hardy.

Except for the avid collector, this species, like several others from the Gulf Coast region, is not essential to gardeners, for its horticultural differences from other, thoroughly hardy and readily obtainable species is minimal.

***Trillium gracile* Freeman**

Trillium gracile is another sessile species with which I am only slightly acquainted. We found it growing abundantly on floodplain alluvium of tributary streams to the Sabine River system in extreme

western Louisiana. The plants we found had been completely inundated, and while covered with dry mud, were in full bloom.

Stems (scapes) of this species stand eight to twelve or more inches tall. The sessile, elliptic or elliptic-ovate leaves (bracts) are only two-and-one-half to three-and-one-half inches long, the apices of those we saw bluntly rounded. Color was a dull bluish green with some darker spotting, but lacking the dramatic coloration of some of the more southern sessile trilliums found farther to the east.

The petals are linear-elliptic, fairly short, one to one-and-one-half inches long, their tips acute or rounded. Freeman gives the color as either dark purple or yellow. Those we saw were exclusively dark purple. Because of the flooding, the plants we observed at first hand were deteriorating. We observed no characteristic odor. Freeman likens the odor of graceful trillium to that of the morel mushroom (*Morchella*).

T. gracile grows in open to dense pine and hardwood forests on slopes, stream-banks and alluvium. While Freeman says that the soils where it grows are usually sandy, where we collected our plants the soil was distinctly clayey.

T. gracile ranges from extreme southeastern Texas eastward into Louisiana where it occurs primarily on the upper Coastal Plain of counties bordering on the east Texas boundary.

We have yet to see how this species winters in central Michigan. Like *T. ludovicianum* and *T. foetidissimum*, if it fails to survive here, it is not sufficiently distinctive horticulturally to be deeply mourned. If it is hardy, then from the collector's viewpoint — hurrah!

***Trillium viride* Beck**

In northeastern Missouri and southern Illinois, in counties close to the Mississippi River grows a trillium which until recently, was much confused with *T. luteum*. This plant, *T. viride*, the green trillium, seems to be quite distinct.

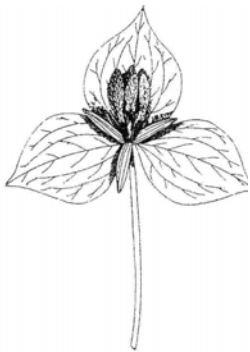
A moderate plant, *T. viride* stands ten to eighteen inches tall, with elliptic leaves either dark green or only very faintly mottled. Leaves are somewhat blunt-tipped and exhibit numerous stomata on their upper surface (Freeman, 1975, page 44), a feature generally not found in other sessile species. The petals are narrow, spatulate to linear, up to two inches long, and somewhat clawed (narrowed basally). Petal color is frequently dark purple at the base, becoming green to yellowish-green distally. All purple and all green

forms occur. In my plants there is a tendency for the petals to be divergent, spreading, and somewhat twisted.

T. viride grows in rich woodlands, rocky, but damp hillsides, and slopes above river flats within its range, often on limestone soils. We were surprised to find it at its best in very thin open sites often quite brushy and grassy, with a minimum of tree cover overhead.

Plants from Missouri have proved difficult to grow and even more difficult to flower here. This may be because of the sandy, dry, acidic nature of my soils, but in any case it is unfortunate, for the dark leaves and green flowers make this a desirable garden plant.

***Trillium viridescens* Nutt.**



This Ouachita-Ozarkian Mountain species bears a close relationship and physical similarity to *T. viride*. It grows somewhat taller, to over eighteen inches, with broader leaves which end in acuminate tips. Mottling of the leaves may be absent or obscure. Leaves tend to be carried at right angles to the

scape. The narrowly linear-spatulate petals stand erect with a gently graceful single twist. Petal color is a clear green above a dark maroon base. (See color photograph, Crockett, et al., 1977). As with the other sessile species, yellowish, green, and all purple forms occur.

T. viridescens occurs in southwestern Missouri, all of western and northwestern Arkansas, and eastern Oklahoma, with a few stations known from extreme southeastern Kansas and northeastern Texas. Its habitat is rich soil on slopes, bluffs, talus and river alluvium under mature trees. Magnificent native colonies grow in John Lambert's Mountain Fork River Arboretum near Mena, Arkansas, often in surprisingly heavy floodplain soils among canebrake.

A handsome species, well worthy of cultivation, *T. viridescens*, like *T. viride*, had proved difficult for me. It is prone to a leaf dieback here, so early in the season as to interfere with food manufacture. Consequently plants linger but do not store sufficient food to flower well. Perhaps my sandy, acid soil is the problem.

From the standpoint of interest and the collector, there is no such thing as a "bad" trillium species. All evoke uncommon interest, many present a real challenge to those who search for them, some possess great grace and beauty. Surely they are among the loveliest of American wildflowers and a noble contribution to the world's forests and gardens.

A Personal Point Of View

In this day of high interest in and concern for endangered species. I am sure that some readers will feel that one ought not to discuss or to encourage the growing of any "rare" species. True, some trilliums are rare and local, but within their ranges, all but about two or three species are really quite common. Wise collection, coupled with propagation and nursery availability is quite feasible, and should, in my opinion, be undertaken. It will not endanger any species if approached properly.

I sit on the Technical Advisory Committee on Endangered Plants for the Michigan Department of Natural Resources. It is our function to review, recommend, and establish the rarity status of our native Michigan plants. I also speak before many types of garden clubs and conservation organizations. I have heard all kinds of statements and arguments relating to the conservation of our native plants. Many are irrationally overzealous and some, such as the frequently heard statement that picking trilliums kills the plant, are simply untrue.

Endangered species laws seek to protect rare wild plant populations, or prohibit commercial exploitation of wild plants. The purpose of such laws is not to totally prohibit the growing of these species or the sale of horticulturally propagated stock.

I believe that a most worthy function of plant societies, arboreta, and botanical gardens is to obtain, propagate, and disseminate stock of even rare or endangered species to gardeners and nurserymen. Such organizations, working carefully with conservation departments, can monitor and grow with continuity from generation to generation many horticulturally desirable rare plants. By introducing selected horticultural forms these institutions and organizations can help to satisfy the demands of collectors and gardeners, thus taking pressure off wild populations through illicit collecting and black market trading, which, unfortunately, will exist so long as no other source of plants is available to the inveterate collector.

From seed, or from rhizome divisions and offsets, trillium propagation is quite easily accomplished. In my opinion, wise and carefully monitored collection and dissemination should be undertaken. It can be done without endangering any species, and it can add new dimensions to our gardens.

Both trillium seeds and rhizomes have built-in dormancy factors which must be considered in propagation. Trillium seeds have a double dormancy; a first period of low temperatures and freezing stimulates the emergence of the root from the seed. A further period of shoot or stem dormancy is necessary, which usually in nature involves a second winter before the shoot dormancy is broken. Trillium seeds, therefore, usually take at least two years to appear above ground. Maturation from that point requires from three to seven years depending upon species, soil fertility, and other cultural factors.

Trillium rhizomes also have a bud dormancy. New growth is not initiated until the buds have been cooled sufficiently following a given period of growth. Also, if the top of the plant is removed, the plant will make no further growth above ground that season. It will, however, appear again the following season after the required low temperatures break the bud dormancy.

Unless one is prepared to care for seeds in a frame or pot for several years, I believe it is more practical for gardeners to sow the seeds in a suitable spot in the wild garden and let development take its own course.

Trillium rhizomes may be scarified or partially girdled to produce a ring of buds which will ultimately develop into offset rhizomes. Once formed on the girdled rhizome, however, these offset buds must first undergo the required dormancy-breaking temperatures before any growth appears above ground.

Propagation is not difficult, but it does take time. Someone with the proper facilities ought to undertake a program of tissue culture and experimental dormancy-breaking to speed the propagation process.

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This article originally was published in the Bulletin of the American Rock Garden Society, Vol. 39, Nos. 2. & 3. Frederick W. Case was our speaker at the Annual Dinner in November of 1984 and remains interested in our group. He has just retired as a teacher, but remains active in horticulture and research.

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



Trillium cernuum



Trillium recurvatum

GE's Adams County Facility Protects Native Plants

Rick Gardner, Heritage Botanist, ODNR

Adams County, Ohio, is well-known in botanical circles as an area rich in plant and animal diversity. Nature's best can be seen at several protected areas like Ka-ma-ma Prairie, managed by the Highlands Nature Sanctuary, or Chaparral Prairie State Nature Preserve. In addition, there are a number of significant natural areas under private ownership.

One such site is owned and managed by the General Electric (GE) Corporation. In addition to testing jet engines at its 7,000-acre facility in Adams County, the company has left a significant portion of its property in a natural state where an amazing diversity of plants and animals is thriving.

John Howard, a local naturalist and GE employee, has become an advocate for recording the diversity of the site.

"In 1997 I began inviting other naturalists and botanists to the area for field trips, so that they could see the great diversity of the property, as well as help me learn more about the plants and animals there," explained Howard. "The area had been completely closed to the public since 1954, and probably had not had any botanizing done since the 1930s when E. Lucy Braun was working in the area."

With fellow biologists, Howard has recorded hundreds of species including more than 400 species of vascular plants, 15 of which are state-listed. During the past few years, GE granted permission to the Division of Natural Areas and Preserves to visit the restricted facility.

The facility has hundreds of acres of mature forest and the area has not been timbered since GE purchased the land in the 1950's. Oak-hickory and mixed mesophytic forest are the most common forest associations.

"The birds are nearly too numerous to count, as the 7,000 acres of contiguous forest is a major stopping area for migrating neotropical birds, and the numerous ponds and wetlands draw many species of migrating waterfowl," said Howard.

Nestled within these forests are some interesting habitats, especially for the region. There are a number of broad, flat ridge tops where, amazingly, vernal pools and buttonbush swamps occur. Although these wetlands are small, they are packed with life, especially amphibians. Spotted salamanders, marbled salamanders, wood frogs, and spring peepers are just a few of the amphibians found breeding in these pools.

Around the vernal pools, a number of state-listed plant species occur, including netted chain fern (*Woodwardia areolata*) and the threatened pale straw sedge (*Carex albolutescens*).

More rare plants may be found in the dry woods on the ridge tops including the Virginia ground-cherry (*Physalis virginiana*), dwarf hackberry (*Celtis tenuifolia*) and hairy wingstem (*Verbisina helianthoides*).

The GE property is located primarily on the Allegheny Plateau and most of the bedrock is Ohio shale with some dolomite and sandstone patches. One of Ohio's threatened species, Wherry's catchfly (*Silene caroliniana* ssp. *wherryi*) grows on the shale; more grow here than anywhere else in the state. This stunning spring wildflower is only known in Ohio from less than 20 sites in Adams, Highland and Pike counties. Although the population at this site has decreased since Braun reported it in 1932, the plants still number in the thousands. The flowers can be seen growing along an old railroad grade on Beaver Pond Road, one of the few public roads through the property.

The main creek flowing through the property is Dunlap Creek, a tributary of Scioto Brush Creek. Beaver have dammed portions of the creek forming small ponds. A number of rare plants can be found in and around the ponds including short fringed sedge (*Carex crinita* var. *brevicrinis*), straw-colored sedge (*Carex straminea*), round-fruited hyssop (*Gratiola virginiana*), Pursh's bulrush (*Schoenoplectus purshianus*) Tennessee pondweed (*Potamogeton tennesseensis*) and Virginia meadow-beauty (*Rhexia virginica*);

Because of Howard's strong interest in butterflies, the diversity of this group is well documented. Some of the most noteworthy species include cloudless sulfur, least sulfur, goatweed butterfly and the sleepy orange butterfly. Rare dragonflies, such as the endangered blue corporal, have also been recorded here.

Thanks to Howard and his fellow biologists and botanists, many interesting and rare species have been found at the GE site. It is likely that this significant natural area will continue to yield rare finds for years to come.

Reprinted from *Natural Ohio*, Fall 2006; newsletter of the Division of Natural Areas and Preserves.

The Practice of Restoring Native Ecosystems

One-day Regional Seminar

Thursday, June 27, 2007

Blacklick Woods Golf Course, Columbus, Ohio

The practice of restoring native ecosystems is not only becoming more common, it is becoming a crucial element in the effort to maintain natural systems and habitats. A broad cross-section of professionals is involved in the restoration and creation of ecosystems across the country and around the world. The restoration of degraded ecosystems, or the creation of new ones, can be a powerful tool in environmental stewardship.

This seminar will examine the principles behind the concept of restoration as well as important issues, approaches, and techniques. Case studies will be included to provide real-world examples to show how you can apply what you learn in your own projects.

For more information and to register go to www.arborday.org/RNE

The 2007 Annual Joint Field Meeting of the Botanical Society of America – Northeastern Section, Torrey Botanical Society, and Philadelphia Botanical Club:

The 2007 Joint Botanical Field Meeting will meet on the campus of Davis and Elkins College in Elkins, West Virginia, from Sunday, June 17 to Thursday, June 21. Our program will include three all-day field trips plus four evening lectures on pertinent topics.

Elkins is a gateway to the high Allegheny Mountains of West Virginia. Much of this magnificent, scenic region is conserved within the Monongahela National Forest. Our field trips will visit Canaan Valley State Park, Dolly Sods Wilderness Area, and other interesting botanical sites. Canaan (pronounced *kin-naine*) is a high, cool valley at about 3000 ft. above sea level, with an average growing season of less than 100 days. It supports a varied flora, with plants such as balsam fir (*Abies balsamea*) and bunchberry (*Cornus canadensis*) growing near the southern extreme of their range. Dolly Sods features spectacular rock outcrops in addition to its remarkable flora.

For further information or a registration form please contact:

Larry Klotz, chairperson

lhklot@ship.edu

717-477-1402

Book Review: *Native Alternatives to Invasive Plants*

With the landmark release of *Native Alternatives to Invasive Plants*, Brooklyn Botanic Garden presents the first-ever double issue in the acclaimed All Region Guide series. In 1996, BBG published the groundbreaking handbook *Invasive Plants: Weeds of the Global Garden*, the first comprehensive publication to identify North America's worst invasive plants, and for years readers have asked for a companion volume featuring ecologically safe alternatives. *Native Alternatives to Invasive Plants* is an indispensable guide for everyone who loves dazzling gardens and cares about the health of North America's natural landscapes. In the Garden's newest handbook, plant professionals and home gardeners alike will discover hundreds of spectacular native plants for every region, specially chosen as alternatives to the invasive species that are degrading the continent's natural habitats. These beautiful wildflowers, shrubs, and trees not only serve as alternatives to invasive plants but also offer food for butterflies, birds, and other wildlife.

The book features an indispensable encyclopedia of native alternatives to invasive plants that is conveniently organized by horticultural plant group: trees, shrubs, vines, herbaceous plants, and grasses. For each invasive species, one to four regional natives are profiled, including full-color photographs, ornamental attributes and uses, related species, and growing tips, along with a list of additional alternatives, provided on Brooklyn Botanic Garden's website at www.bbg.org/nativealternatives.

Native Alternatives to Invasive Plants (ISBN 1-889538-74-4) is available at a discount from Brooklyn Botanic Garden's online store at www.bbg.org or by calling 718/623-7286. It is also available in bookstores for \$9.95.

Reprinted from **The Harbinger**, quarterly newsletter of the Illinois Native Plant Society, January 2007.

Loss at Headlands Beach is Sheldon Marsh Gain

Steve Harvey, North District Preserve Manager, ODNR

A tremendous storm in July 2006 produced a 500-year flooding of the Grand River in Lake County. The flood waters crested the banks of the river and flowed north down state route 49 and into Headlands Beach State Park, which lies west of Headlands Dunes State Nature Preserve. The resulting flood washed out parking areas and sidewalks and left a dramatic 50-foot-wide by 10-foot-deep gash across the beach to the shoreline.

Unbelievably, less than a half-mile away, the shoreline and unique dunes habitat of the preserve remained untouched by the receding waters. Other than some excess water in the dunes, the damage from the devastating flood waters was insignificant.

As clean up commenced, state park staff were left with a critical question – how to return the beach to its pre-flood condition so they could re-open one of Lake Erie's most popular beaches. Park staff needed sand, a lot of it, to fill in the washed-out beach.

The solution lay just a few yards away. For years staff had piled and pushed wind-blown sand from the road and parking lots to an area at the end of the beach. Over the years, the man-made sand pile grew to 400 feet long, 50 feet wide and 10 feet tall. However, nature had also moved in. Beach grasses colonized the dune-like structure. Some of the plant species found on the sandy hill were the same plants occurring in the state nature preserve; plants that are only found in a handful of Lake Erie sites. Park personnel needed the sand, but worried about the fate of the unique plants.

Park staff consulted with staff from the Division of Natural Areas and Preserves regarding the possibility of coordinating a plant rescue. The rescue, while giving staff a chance to move uncommon plants to safety, also presented the possibility of a solution to a challenge facing the fragile barrier beach at Sheldon Marsh State Nature Preserve in Huron County.

In the early 1990s, the Army Corps of Engineers built a riprap breakwall off the Huron River to reduce sedimentation from Lake Erie into the shipping channel. While this greatly benefited shipping, it became a detriment to the barrier beach at Sheldon Marsh.

A barrier beach is a thin strip of land that separates the main lake from the coastal marsh or estuary wetland. The barrier beach is important in the protection of the marsh from storm surges and wave

action allowing a "sheltered" environment where many plant and animal species can thrive.

The weakened beach at Sheldon Marsh has been further damaged by Lake Erie's legendary northeasterly winds. Battered by endless waves, sand continues to be pushed into the marsh behind the beach. In less than 40 years, the beach has been moved back more than 1,000 feet, creating a loss of valuable and irreplaceable wetlands.

Most of the Lake Erie shoreline has been ripped (large limestone boulders placed along the shoreline to prevent erosion), making the beach habitat at Sheldon Marsh even more critical. The barrier beach is used by migrating shorebirds, including piping plover and common tern, as a critical nesting habitat.

Past attempts to secure funding to protect and restore the beach have not succeeded, so when asked if the division would like to move the beach grass plants from Headlands, the division saw an opportunity to try a natural approach to protecting the barrier beach.

Beach grass (*Ammophila breviligulata*), a state threatened species in Ohio, is unique because it can tolerate a harsh beach environment. It grows on sand where rain water can percolate through the sand and create an almost desert-like environment. Its large rhizomes grow quickly in the sand and can have a stabilizing affect as they hold the sand together. Beach grass also traps windblown sand and helps create dunes that grow higher each year. Historically, beach grass was known to occur on the Cedar Point beaches near Sheldon Marsh.

North District staff moved 210 plants from Headlands State Park to the barrier beach at Sheldon Marsh. The plants were removed by hand, transported to the bed of a truck, alternately covered with water and sand and then trucked to Sheldon Marsh, where the plants were moved more than a mile to the barrier beach transplanting area.

Predictions about beach grass mortality rates have ranged from 90 percent to 50 percent, depending upon sources. However, three months later, most of the plants show signs of thriving and many are sporting long, green leaves. The true test of the grasses' resilience will be how they survive the winter on their new beach. Next spring, this year's transplants will hopefully thrive and begin to help stem the erosion at Sheldon Marsh State Nature Preserve.

For more information on either preserve, please visit www.ohiodnr.com/dnap.

BOTANY 101 - Lesson 26

Reprinted from **Natural Ohio**, Division of Natural Areas and Preserves, Fall 2006.

Rosaceae = Rose Family

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

The rose family comprises about 100 genera and 2000 species worldwide, mainly in North America. Indiana has 21 genera and 101 species.

Characteristics

Herbs, shrubs, and trees, often armed with thorns or prickles. Leaves alternate, simple or compound, with paired stipules (extra bits of green leaf-like tissue at the base of the leaves). Flowers 5 petals and 5 sepals; many stamens. Fruit variable.

Economic importance

Fruits and ornamentals. Quince, pear, apple, blackberry, raspberry, strawberry, almond, peach, cherry, plum, apricot. Rose hips. Essential oils for perfumes from *Rosa*. Spirea, rose, hawthorn, flowering crabs.

Herbaceous Indiana Natives

Agrimonia—Agrimonies
Filipendula rubra—Queen-of-the-prairie
Geum spp.—Avens
Potentilla spp.—Cinquefoils

Woody Indiana Natives

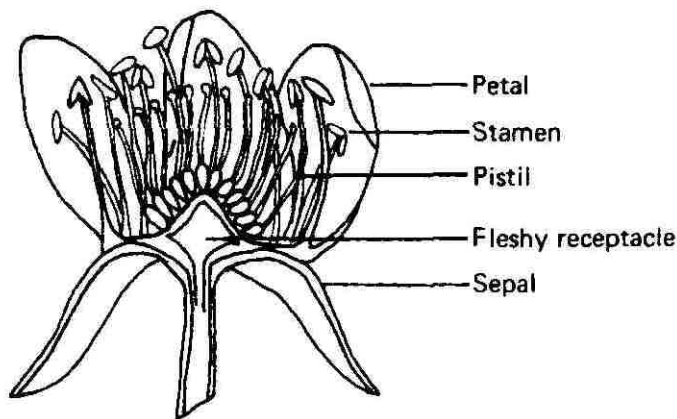
Amelanchier—Serviceberry
Aronia melanocarpa—Black choke-berry
Crataegus spp.—Hawthorns
Physocarpus opulifolius—Ninebark
Prunus serotina—Black cherry
Ribes spp.—Blackberries
Rosa spp.—Roses
Rubus spp.—Raspberries

Non-Natives Common in Indiana

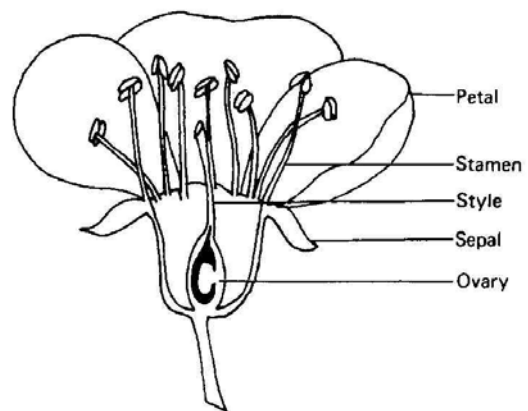
Duchesnea indica—Indian strawberry
Rosa multiflora—Multiflora rose

Illustrations from S.B. Jones and A.E. Luchsinger. Plant Systematics. New York: McGraw-Hill, 1979.

Reprinted from the Indiana Native Plant and Wildflower Society *INPAWS Journal* Autumn 2005



(a) *Rubus* (Rosaceae)



(b) *Prunus* (Rosaceae)

[Ed.: In response to our article on the infestation of lesser celandine in Louisville, we received a request for further information about this plant and the extent of its invasion. There are many infestations already in northeast Ohio.]

Invasive Species: Lesser Celandine

Global Invasive Species Database

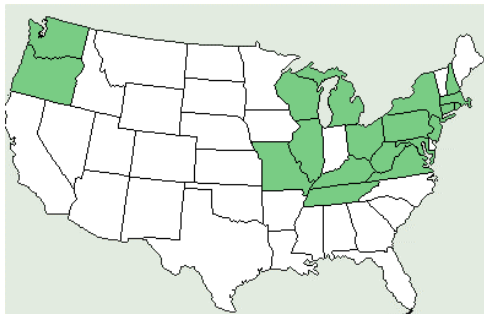
Taxonomic name: *Ranunculus ficaria* L.

Common names: fig buttercup, lesser celandine, pilewort

Ranunculus ficaria is a perennial plant and spring ephemeral that spends much of the year underground as thickened tubers.

Description

R. ficaria, commonly known as lesser celandine, is a low-growing perennial herb with shiny, somewhat lustrous dark green leaves that form a rosette. Leaves are kidney to heart-shaped, with smooth to coarse toothed edges. Each rosette forms a single bright yellow flower that is up to 2.5cm (one inch) wide. Seeds ripen early, and the entire plant dies back by early summer, but not before it has developed numerous tubers in which it has stored energy for early growth the next year. Large colonies of *R. ficaria* can cover acres of forest floor. They are easy to spot in the spring because of the high density of bright yellow flowers on the bright green carpet of leaves



Habitat description

R. ficaria occurs in moist forested floodplains and in some drier upland areas, and seems to prefer sandy soils.

General impacts

R. ficaria is primarily a threat to native plants and native plant diversity in lowland woods and on flood plains. It out competes native plants through its extremely early seasonal growth and the development of a dense network of roots and tubers in the soil. Over time it forms extensive carpets in natural areas, crowding out native plants, especially native ephemeral wildflowers. The survival strategy of native ephemeral wildflowers is to grow and flower early in the spring before leaf-out of the forest canopy. By doing so, these plants receive needed sunlight and can take advantage of nutrients released from decaying material over the winter. *R. ficaria* uses the same strategy, but starts growing earlier in the season and is far more aggressive in its use of space. Unfortunately, *R. ficaria* is still available commercially for garden plantings.

Uses

The spring leaves of lesser celandine make an excellent salad. The leaves, stalks and buds can be used like spinach. Unfortunately, The leaves turn poisonous as the fruit matures, and caution is advised regarding the use of this plant in any food recipes. The plant can be used as an astringent, and it is thought that *R. ficaria* has been used for thousands of years in the treatment of hemorrhoids and ulcers. It is not recommended for internal use because of its toxicity. The flower petals can also be used as a tooth cleaner.

Management

Management primarily consists of delicate chemical treatments that must occur before native species emerge. Care must also be taken not to cause harm to flora that is emergent during chemical treatments.

Reprinted

from: <http://www.issg.org/database/species/ecology.asp?si=844&fr=1&sts=>

Sundew and Sun Don't

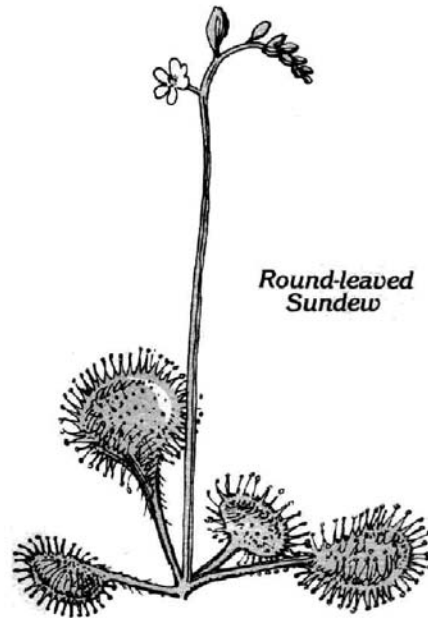
By Tom Sampliner

Sundews are a worldwide group of carnivorous plants named for the glistening appearance in bright sunlight due to clear glands upon the plant and leaf surfaces. Worldwide, the group includes three different genera: namely, *Byblis*, *Drosera*, and *Droseraphyllum*. While there are over 100 species of *Drosera* worldwide, here in North America we have only *Drosera* and of that genus we have four recognized species according to some authors and only three by others that are at home in the Great Lakes region.

Each leaf is stalked and both the leaf and the stalk (pedicel) are edged with stalked clear globes that are actually glands. It is these that give the sundew its well-recognized appearance. The gland puts forth a mucilage which traps insects like fly paper. The various liquid substances manufactured by the plant drown and digest the trapped insects upon the leaf pad. Because of the clear tentacled globes, the plant has a jewel-like appearance.

Most common of the species is the round-leaved sundew (*Drosera rotundifolia*). Its extensive range takes us from Alaska in the far west, south into California, across northern U.S. and Canada through the Great Lakes down into the Appalachians, eastward to Newfoundland. It favors sphagnum substrates as home. Each single-stalked flower is usually white, though there are occasional pink ones. A thin stalk holds aloft a rounded leaf pad which easily distinguishes this from other species in our area.

Another species is the linear sundew (*Drosera linearis*). In range this is a farther north denizen extending north of the lower Great Lakes and west



Round-leaved
Sundew

through Michigan. Each leaf pedicel is long-stalked (2cm.) and the expanded portion of the leaf can be to 3cm. This species is a habitat specialist confined to alkaline marl wetlands (primarily fens) hence a good candidate for the Bruce Peninsula. Notice how the leaf blade edges are parallel to the stalk holding them aloft.

A species commonly called the spatulate sundew, (*Drosera intermedia*) is widespread over eastern North

America and down the eastern coastline through the Gulf Coast states. Notice how the leaf margins are not parallel and instead enlarge into a spoon shape for each leaf. It's as if each were ready to serve up a tasty portion of insect meat. As compared to the next species, the leaves are narrower, smaller and usually more reddish in color. Also notice these leaves are held more ascendant, or directly aloft rather than basally parallel to the substrate before bending upward in the next species.

Lastly, we come to what some authors view as merely a hybrid evolved from *D. linearis* and *rotundifolia*, while others view as a valid current species. (*Drosera anglica*) is a more robust plant than the immediately preceding one. It ranges from Newfoundland on the east, through the Great lakes area north of both Lakes Ontario and Erie westward all the way to the Aleutian Islands.

All species grow vegetatively during winter by putting forth hibernacula (winter leaves) which in turn can give rise to new plantlets.

Tom Sampliner is a member of the Native Plant Society of Northeast Ohio, a botanical photographer and tour guide.

Those Cultivars Gardeners Can't Live Without

Nancy Hill

Tony Avent of Plant Delights Nursery in North Carolina says that a sure-fire way you can tell a NON-gardener is if she looks at a plant and says "Oh, that's gorgeous, but where would I put it?"

We gardeners are passionate about plants, and especially about any new plant that catches our eye. Catalogs, books, and home and garden magazines conspire to make us lust after the breeders' latest triumph—the freshest green foliage, the most brilliant blooms, the most intriguing variegation, the richest autumn hues. Only the strongest among us can resist a new cultivar.

As gardeners who love native plants, we rescue native plants, propagate them, share them with each other, and purchase them at the INPAWS plant sale each May—and we put them to work in our gardens. We set a few Virginia bluebells and trilliums among the hostas, and hydrangeas. We turn problem drainage areas into sweet wetlands with turtlehead, monkeyflower, and gentian, and our backyards into wildlife habitats with butterflyweed, cranberrybush, and serviceberry.

Every year we see more native plants at our local nurseries and even the big box retailers. Not just the species are available, but many cultivars of them as well. That puts the native plant purists among us in a quandary. Can we consider these cultivars natives? Does planting them in our gardens violate the principles that led us to favor natives over exotics?

A cultivar is a plant considered sufficiently different from its parent species to have its own identity. Plant breeders select among naturally occurring variations for their garden-worthy characteristics, or conduct breeding programs to develop specific traits. The name of the resulting cultivar is written in single quotation marks following the plant's genus and species names, for example, *Monarda didyma* 'Marshall's Delight'. And just to make things confusing, a plant can have a marketing name that is different from its cultivar name. For example 'Bailtiger' is the actual cultivar name of a staghorn sumac sport marketed by Bailey Nurseries as Tiger Eyes sumac. When a cultivar receives a plant patent, it is denoted by the number that follows "PP" on its label. "PPAF" with no number means the plant patent is applied for.

What do we get from cultivars? Often a brighter or different color, a better (perhaps more compact) growth

habit, prettier fall color, better flower production, better disease resistance, a pretty leaf variegation, or a longer bloom period. *Hydrangea arborescens* is a somewhat rangy native woodland shrub. Its cultivar 'Annabelle', on the other hand, is a garden workhorse if ever there was one, producing profusions of lime green and then white snowball blossoms all summer long.

Joe-Pye weed is another good example of a successfully cultivated native. Spotted Joe-Pye weed (*Eupatorium maculatum*) can grow over 8 feet tall in the wild, a daunting prospect for a home garden. The cultivar 'Gateway' was developed to reach its zenith at around 5 feet and, when cut back in early summer as suggested by Tracy DiSabato-Aust in her popular *The Well-Tended Perennial Garden*, it becomes a lush, rounded, purple-headed plant of about 3 feet, a handsome specimen in a perennial border.

Many cultivars are produced in dedicated selection and hybridization programs—some academic, some commercial, some a hybrid of both. But the surprising truth is that most cultivars are simply discovered by sheer dumb luck.

Like anything that reproduces sexually, a plant is subject to mutation, a spontaneous rearrangement of DNA. Over half of the new, exciting plant introductions we can purchase today are these genetic anomalies, sometimes called sports. They had a characteristic different from the plants surrounding it, a characteristic that caught someone's eye.

One day Steve Jergenson, an employee of Bailey Nurseries in Minnesota, was in the field taking inventory in a stand of *Rhus typhina* 'Laciniata', a cutleaf cultivar of our native staghorn sumac. Laciniata's fernlike leaves made it a popular cultivar, but it still grew to over 20 feet and suckered vigorously. Steve saw a small plant he thought was sick, or chlorotic. Its leaves were not dark green, but light yellow. He brought it to the attention of the growers, who scratched their heads and said, "What the heck, let's see what it does."

They grew clones and evaluated them. The new leaves started out a vivid chartreuse, changed to a bright yellow in summer, then turned a stunning orange and scarlet in fall. The clones had fuzzy, purple-red stems that angled upward, while the lacy leaves drooped downward to give a lovely oriental habit. To their delight the growers also found that the plant stayed only 6-8 feet tall and did not sucker as

aggressively as its parent, making it a well-behaved plant for home gardens.

They had difficulty propagating it in quantity until they used root shoots, a time-consuming but successful method. Next, they tested it in gardens throughout the country to see what temperatures and soil conditions it would tolerate. In all, it took them nearly 15 years from discovery to having enough plants to offer for sale. They called it Tiger Eyes sumac.

An excellent sport of our American highbush cranberry (*Viburnum trilobum*), so highly praised by Carolyn Harstad in her popular book *Go Native!*, was discovered by Bailey employee Freddy Garcia, a field worker. One fall day he noticed a smaller-than-normal, compact plant with extra brilliant red-orange color. It was developed, propagated, and is now offered for sale as the cultivar 'Alfredo'. It grows to a compact 5-6 feet tall, making it an ideal viburnum for planting close to the house where its dense foliage will soften a bare wall.

Bailey employees also discovered a sport of *Acer saccharum*, our native sugar maple, that has unsurpassed intense orange-red, long-lasting fall color. It became *Acer saccharum* 'Bailsta', marketed as 'Fall Fiesta'. Through the years, Bailey has introduced around 60 new sports to the gardening public. All of them were found by employees.

A field discovery that has become a landscape staple is the Winter King hawthorn, *Crataegus viridis* 'Winterking', which just celebrated its fiftieth anniversary. It was discovered by Bob Simpson, owner

of Simpson Orchard in Vincennes, Indiana. One day he spied a small hawthorn tree growing in a fence row that still had its berries when others were gone. The berries seemed bigger as well, and the tree had a silver-gray bark peeling off to reveal an attractive orange inner bark. Simpson propagated it, and now Winter King is the tree that can be seen in the dead of winter displaying cheery masses of bright red fruit, sometimes in gorgeous contrast with snow on its limbs—a treat for us and the birds.

Can we call a plant derived from the "species" a native? Should we plant cultivars in our "native gardens"? Who knows? But don't tell gardeners you are going to take away their Silver King artemisia, or Alma Potschke aster, or Hot Lips turtlehead, or Magnus and White Swan echinaceas, or Kobold liatris, or Marshall's Delight and Jacob Kline and Raspberry Wine monardas, or Husker's Red penstemon, or Bright Eyes, and David and Eva Cullum phlox, or Goldsturm black-eyed susans. Strict definitions aside, perhaps we can simply allow ourselves the joy of growing what we love where it loves to grow.

Cultivars offer us a veritable smorgasbord of choices. They satisfy our thirst for variety. They pique our curiosity. But let us not forget the assets of the original wild species—those tough, determined natives that, like 100-year old roses in an abandoned Texas cemetery, need no gardener's help to survive.

Reprinted from *INPAWS Journal*, Indiana Native Plant and Wildflower Society, Winter 2006-7.

Eastern White Pine: A Majestic Pine

Gordon Mitchell

When the Europeans first landed upon the eastern shores of North America, they must have been awed by the immensity of her forests and the by size of her trees. These early settlers knew that it would take a lot of hard work to clear these forests to build their homes and to raise their crops. The settlers also knew that these same trees would provide the much-needed lumber to build their homes and other structures.

Many of these North American tree species would provide the lumber that was needed by the settlers. One tree species that was exceptionally valuable for lumber was an evergreen tree, the Eastern White Pine (*Pinus strobus* L.), which is also a fast growing, long-lived, and shade-tolerant tree.

The Eastern White Pine is a member of the Pine Family (*Pinaceae*). The generic name, *Pinus*, is a Latin word for "pine". *Pinus* probably originated from the Greek word *pitys*, which also means "pine". The specific epithet, *strobus*, is either Latin for "coned" or for "gum wielding", the latter refers to another tree species that was once tapped for its resin. A previous scientific name for this tree was *Strobus strobus* (L.) Small.

At different times and places, this tree went under the names of American Deal Pine, American White Pine, King's Pine, New England Pine, Northern Pine, Northern White Pine, Pumpkin Pine, Quebec Yellow Pine, Sapling Pine, Soft Deal Pine, Soft Pine, Spruce

Pine, Tree of Great Peace, Weymouth Pine, and White Pine.

The Eastern White Pine is native to northeastern North America. In the United States it is native to New England, New York, Pennsylvania, the Great Lakes states (including parts of Ohio), and along the entire Appalachian Mountain range. In Canada, it is native to the Atlantic Maritime Provinces, Quebec, and Ontario. According to many pollen deposit findings, this tree had a much more extensive range about 5,000-8,000 years ago, which was during a post-glacial warming period.

The Eastern White Pine is the state tree of both Maine and Michigan and is the provincial tree of Ontario. As an ornamental tree, the Eastern White Pine may be found far out of its native range.

Description

Crown: The crown is conical or pyramidal when young. (Essayist Henry David Thoreau once referred to these trees as being “Tall arrowy white pines”.) However, this tree becomes more irregular in form as the tree ages. Many species of birds will nest or roost within this tree’s crown.

Trunk: The Eastern White Pine is the tallest coniferous tree in the East. Its height may reach about 50-150 feet, although some trees have reached up to 220 feet. Its diameter is about 2-4 feet, sometimes up to 6 feet. This tree grows rapidly and adds 1 row of whorled (about 5) parallel and densely horizontal branches per year. On most trees, the distance between these whorls may be 1-3 feet.

Twigs: The twigs are slender, flexible, and are green and downy when young but will later become orange-brown and hairless. Each twig has 1 terminal bud and about 5 lateral buds.

Buds: Each bud is about ¼-½ inch long, red- or gray-brown, oblong or ovate, slender, and has a pointed tip. Its scales are brown, long, and overlapping.

Leaves: Evergreen needles. Needles are alternate and are clustered in bundles (fascicles) of 5. (This is the only eastern pine to have 5 needles.) Each needle is about 2-5 inches long, blue-green, slender, soft, flexible, and has small serrulated teeth along its edges. Each needle is triangular in cross-section with the apex having an angle of about 72 degrees. Two sides of each needle have very fine white lines of breathing pores (stomata). The needles may persist on the tree for up to 2-3 years. Every year, about half of the tree’s needles are shed. These needles also have a low resin content, which makes this tree less flammable. The needles are

a favored food of the White-tailed Deer (*Odocoileus virginianus*).

Flowers: Monoecious. Male (staminate) flowers, also called catkins or strobuli, are about 1/3 inch long, oval, cylindrical, orange or yellow, and are located near the base of the new year’s growth. The pollen is yellow, wind-borne, and can travel for miles, even out to sea where superstitious sailors sometimes called it “raining brimstone”. The pollen usually sheds around April to June. However, it may take about 13 months for any fertilization to occur. The female (pistillate) flowers, or cones, are about ½ inch long, woody, light green or pink or reddish with purple-rimmed scales, and are located near the tips of the new year’s growth. The tree may begin producing flowers after 5-10 years but usually doesn’t produce abundant flowers until after 20-30 years.

Fruit: Cones. Each cone is about 3-11 inches long, red- or yellow-brown, narrow, cylindrical, tapering, slightly curved, and has a ½ inch long stalk. These cones may exude a gummy resin. The cones usually mature at the end of the second year. The scales of the cones are thin, flat, flexible, rounded, and thornless. One cone may have about 50-80 scales that are arranged in 5 spiral rows. Each scale bears the seeds. These cones usually mature in August and September

Seeds: There are 2 seeds per scale. These seeds are winged and are red-brown or gray, with black mottling. Each seed is about ¼ inch long. The wings are asymmetrical and are about ½-¾ inch long. The wind may carry these seeds for a distance of up to 700 feet. These seeds will only germinate in a cool, moist environment and only after enduring a cold spell. A single tree produces a bumper crop of seeds about every 3-5 years. The seeds are a favored food of several bird species, such as the Black-capped Chickadee (*Parus atricapillus*), Evening Grosbeak (*Hesperiphona vespertina*), Pine Siskin (*Carduelis pinus*), Pine Warbler (*Dendroica pinus*), Red-breasted Nuthatch (*Sitta canadensis*), Ruffed Grouse (*Bonasa umbellus*), White-breasted Nuthatch (*Sitta carolinensis*), White-winged Crossbill (*Loxia leucoptera*), and Wild Turkey (*Meleagris gallopavo*). Mammal species that favor these seeds are White-footed Mice (*Peromyscus leucopus*), Eastern Chipmunk (*Tamias striatus*), and Red Squirrel (*Tamiasciurus hudsonicus*). It was said that the Red Squirrel is able to strip off an entire cone within 45 seconds.

Bark: The younger bark is thin, smooth, shining, and green-brown or black. The older bark is dark gray or black, rough, deeply furrowed and with flat-topped

ridges or rectangular blocks. Mature bark may be 1-4 inches thick. The older trees with thicker bark are more likely to survive forest fires than the younger trees. Unlike other pine bark, this bark is usually not scaly. The Eastern Cottontail Rabbit (*Sylvilagus floridanus*) will sometimes eat the bark.

Wood: The wood is light, soft, close- or straight-grained, and is not highly resinous. The sapwood is creamy white but may turn orange or yellow with age. The heartwood is brown, orange, or red, and is decay-resistant. Unlike other tree species, this wood does not easily crack or warp. Because this wood is easily worked, it is used in all types of home construction. This wood also takes a good polish.

Roots: The root system has about 3-5 large, deep lateral roots with accompanying sinker roots. These roots anchor the tree during windstorms. However, there are no large taproots on the Eastern White Pine.

Final Note: A good way to remember the eastern White Pine is to think of the number "5". There are five needles per fascicle, 5 lateral buds per twig, 5 branches per whorl, and 5 letters in the word "white".

Uses

Both the Native Americans and the European settlers had many uses for the Eastern White Pine. Aside from home construction and shipbuilding, it was used for making boxes, coffins, matches, and pulpwood. Many parts of this tree also had edible and medicinal uses.

The pine needles, especially the younger ones, were chopped up and then brewed into a tea. This tea is rich in vitamins A, C, and K. (The needles contain about 5 times as much vitamin C as an equal weight of lemons.) The needles were some times boiled or crushed and were used as a poultice for headaches. These needles were also steamed and inhaled as a treatment for headaches and backaches.

A tea was made from the twigs. This tea was used for treating kidney and lung ailments and was used as an emetic.

A decoction from the leaf buds was used as a purgative.

The male flowers had their uses, too. These flowers could be boiled and eaten. The flowers were also used as a liniment for rheumatism.

The seeds are edible for humans. They can be either ground into flour or roasted.

The tree's bark had a lot of uses, too. This bark was sometimes soaked in water and then applied to wounds and swellings. The inner bark, which contains about 10% tannin, was used for treating coughs, chest pains,

piles, ulcerations, and intestinal ailments. It was also made into candy or was ground into flour. A tea made from the bark was used for treating kidney and other urinary problems. It was best to harvest as little bark as possible so as not to harm the tree.

Even the wood had uses besides lumber. A concoction made from the resinous gum was used for treating arthritis, rheumatism, colds, sore throats, and consumption. The wood tar, which is both a local irritant and an antibacterial, was used for treating burns and itches. A poultice made of the pine's pitch was used to treat boils, broken bones, bruises, cuts, felons, inflammations, and sores. The pine's pitch was also used as a filler, glue, and for water purification.

From 1916 to 1965, the Eastern White Pine was listed in the *National Formulary*.

History

Since the early 17th Century, the Eastern White Pine was a valued lumber tree of the Europeans. In 1605, Captain George Weymouth of Britain's Royal Navy explored the coast of present-day Maine and observed the Eastern White Pine. Captain Weymouth was so impressed with the Eastern White Pine that he took some samples of this tree back with him to England. Many of these samples were planted at the Weymouth Estate in Wiltshire, England.

The first sawmill in America was built in present-day Maine in 1623. Afterwards, America became a major lumber production nation. During the following years, much of the Eastern White Pine was harvested and was exported around the world.

The Eastern White Pine had made such an impression in America that the first coins that were minted in New England were silver shillings etched with a White Pine tree. These coins were minted between 1652 and 1682.

The British Royal Navy began importing this tree in 1653. The British valued the trunks of this great tree for use as masts on their tall ships. Large pines were very scarce in Europe and were not as good as the Eastern White Pine.

In 1661 or 1691, England implemented its "Broad Arrow Policy". All Eastern White Pines that were at least 2 feet in diameter and that were located within 3 miles of any navigable body of water were either blazed with the "King's Broad Arrow" or with the letter "R". These marked trees were strictly reserved for use of the Royal Navy.

Many of the Colonists, some of whom owned the land that had these marked trees, resented this ruling. In defiance to this policy, the Colonists, who sometimes

disguised themselves as Indians, poached these trees at night. Some poachers even blazed the King's Arrow or the letter "R" on inferior trees to confuse the English tree surveyors. The Colonists either used these poached trees for their own uses or sold them to England's rivals, like France, Holland, or Spain.

To combat this poaching problem, the English hired spies to track down these poachers. These spies also destroyed sawmills and logging camps. If the poachers were caught, the spies would flog them, fine them, or even confiscate their land holdings.

The Colonists fought back any way they could. Their local courts refused to prosecute or convict these poachers. Any spies that were caught usually received harsh treatment by both the poachers and the local colonists. For their own protection, these spies would bring British soldiers along with them.

Britain's White Pine Acts of 1705, 1722, and 1729 expanded this Broad Arrow Policy to her other North American colonies. This policy was just one of the many of England's "Intolerable Acts" that ultimately led to the American Revolution. In 1774, the Continental Congress banned exportation of the Eastern White Pine to England. Because of this tree's importance to the colonies, some of America's early Revolutionary War flags had images of white pine trees upon them.

After America had won her independence, the timber industry began to flourish. Some of the larger trees were reserved for the America's fledgling navy. America needed warships to battle the Barbary Pirates of North Africa, who preyed upon American merchant ships.

The timber industry first began in some of America's original 13 Colonies, such as New England, New York, and Pennsylvania. As these trees became scarce in the East and as America expanded westward, the timber industry moved to the Great Lakes states, such as Michigan, Wisconsin, and Minnesota. The industry was most profitable in the Great Lakes States.

Much of America's growth in the Northeast and in the upper Midwest resulted from the Eastern White Pine. Whole towns, complete with their lumber camps and sawmills, practically grew overnight. Many of these lumber camps were occupied with new immigrants who had come from places like French Canada and Scandinavia. The railroad and shipping companies often followed the timber industry around the country. Because the Eastern White Pine is such a light tree, it was easy to transport the logs on sleds in the snow or to float them down our rivers. About 25

years after the arrival of the loggers to a new area, the farmers and other settlers followed them and set up their own businesses. Many fortunes were made during these exciting and booming times!

Unfortunately, with every boom comes a bust. Whenever an area became depleted of its Eastern White Pine, the sawmills and lumber camps closed and the loggers moved elsewhere. What was once a thriving, prosperous town became a ghost town. What was once an extensive forest of large trees became a barren forest of stumps. Although the Eastern White Pine can readily reseed itself, there were few or no plans to reforest these areas. Most of the seed trees were cut down and most of the young saplings and seedlings were burned with the slash. Without the trees, many of these barren areas were subject to extensive erosion.

Between 1900 and 1915, the southern states near the Appalachian Mountains experienced a short Eastern White Pine logging boom. However, this boom wasn't nearly as big as the boom in the Great Lakes States.

Problems with the Eastern White Pine

Despite its many uses, the Eastern White Pine also has its share of problems. These problems are either biotic or abiotic.

There are over 100 diseases that affect the Eastern White Pine. The most serious of these diseases is the White Pine Blister Rust (*Cronartium ribicola* [Fischer]). The White Pine Blister Rust is an alien disease that was first discovered in America in 1909. The Eastern White Pine shares this disease with alternate hosts, Currants and Gooseberries (*Ribes* sp.). The best way to fight this disease is to remove all *Ribes* species from within ¼ mile of the Eastern White Pine.

There are over 250 different insect species that attack the Eastern White Pine. The most destructive insect that attacks this tree is the White Pine Weevil (*Pissodes strobi* [Peck]). The White Pine Weevil, a native insect, causes deformation of the tree but rarely kills it.

The Eastern White Pine cannot tolerate alkaline soils (high pH). This high pH will lead to yellowing (chlorosis) of the tree's needles. It is best to get the soil tested before planting this tree.

Sunscald is another problem of the Eastern White Pine. Sunscald affects younger trees with a bark thickness of less than 1/3 inch. The heat from the Sun kills the tree's cambium layers. This problem is more prevalent on the south and the west sides of the tree.

The Eastern White Pine is also intolerant of fluorine halogens, ozone pollution, sulfur dioxide, and

road salt spray. Any of these trees planted near freeways will usually turn yellow and brown and then die. Because of these environmental intolerances, the Eastern White Pine is a good indicator of environmental quality

Finally, the Eastern White Pine is highly susceptible to fire. Whenever a forest was logged, much of the slash that was left behind was frequently burned. Sometimes these small slash fires got out of control and became forest fires, especially when the weather was exceptionally warm and dry. The most severe forest fire occurred in Peshtigo, WI, on October 8, 1871. Another large forest fire occurred in Hinckley, MN, on September 1, 1894. However, despite the destructiveness of forest fires, they can also benefit the

Eastern White Pine. Forest fires also eliminate competing vegetation. The ash-covered ground, following the fire, also makes for a good seedbed.

Conclusion

After extensively logging this majestic tree for over 3 centuries, there are very few remaining virgin stands of Eastern White Pine in North America. It is unfortunate that we will never see what these massive stands were really like when the first Europeans landed upon North America's shores.

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

Hackberry (*Celtis occidentalis*)

The biggest common hackberry tree found in the United States grows in Mason City, Illinois. Its circumference is 235 inches, its height 94 ft., and its spread is 88 ft. Wow! That's some tree. Carolyn Harstad writes in *Go Native!* about the 120 ft tall tree that Charles Deam, who wrote *The Trees of Indiana*, found in 1921. Hackberries can live for 200 years. It is one of the best trees for wildlife. The purple fruits

are favored by at least 25 species of birds especially the northern flicker, northern mockingbird, Swainson's thrush, and the cardinal. It is also the only larval food source of the Snout, Twany Emperor, and Hackberry butterflies. Mourning Cloak and Question Mark butterflies also spend their larval stage munching the leaves, after which new leaves soon grow.

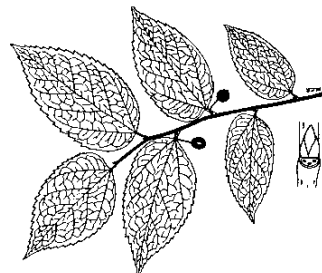
Hackberry trees are indicators of limestone soil. The bark is distinctive, grayish brown with corky warts or ridges. The bark harbors hiding or wintering insects and that makes the trees valuable for insect-eating birds. Some say the fruits taste date-like. Uncultivated trees are prone to galls on the leaves and witch's broom, which does not harm the trees, but makes hackberries important food sources for wildlife, especially birds.

For the small yard, there is a dwarf hackberry (*Celtis tenuifolia*). Hackberries are easy to grow and useful for windbreaks. Although they do not have showy fall color, hackberries nevertheless are very important in the landscape.

If you study the leaves of a hackberry, you will notice that they resemble elm leaves. That is because hackberries are in the Elm family. If you are out in the field, it is interesting to compare the leaves with the different elm trees.

Unlike elm trees, hackberry wood is not an important timber source. The birds can be thankful for that. Like an elm, hackberries make good shade trees, and sitting under a hackberry can provide a good birding experience any season.

Reprinted from *The Bark*, newsletter of the Native Plant Society of the Miami Valley, Spring 2001.



Poke Milkweed (*Asclepias exaltata*)

Barry Glick

Flowering in dappled sunlight to medium shade with curiously interesting white flowers, *Asclepias exaltata* brightens up any woodland or shade garden. It's commonly known as the "Poke Milkweed" for its resemblance to *Phytolacca americana*, "Pokeweed". The flowers are long lasting and weep down from atop 36" - 60" tall plants. After fertilization, the flowers fade and 6" to 10" vertical seed pods are set that persist all Summer and well into Autumn. These seeds are easy to collect and germinate. I like to collect them as soon as the first pods start to split open at the seams. At this point, it's easy to scrape them from their silky parachutes before they're dispersed into the air.

The genus name *Asclepias* is derived from the Greek name of Aesculapius, an ancient god of medicine. The common name "Milkweed" is for the milky sap that flows from a snapped stem in most species. In this species, the specific epithet *exaltata* refers to the tall height of the plants.

"Milkweeds" are very popular butterfly attractors. *Asclepias exaltata* attracts Silver-spotted Skippers, Pearl Crescents, Cloudywing, Great Spangled Fritillaries and Tiger Swallowtails to name a few.

Taxonomic Hierarchy

Kingdom - Plantae - Plants
Subkingdom - Tracheobionta - Vascular plants
Superdivision - Spermatophyta - Seed plants
Division - Magnoliophyta - Flowering plants
Class - Liliopsida - Monocotyledons
Subclass - Asteridae
Order - Gentianales
Family - Asclepiadaceae
Genus - *Asclepias*
Species - *exaltata*
Common name - genus - "Milkweed"
Common name - species - "Poke Milkweed"
Synonyms - *A. phytolaccoides*
Native range - See -

http://plants.usda.gov/cgi_bin/topics.cgi

USDA Hardiness Zone - 5, maybe 4

Light preference - Open bright shade

Soil fertility preference - Average to rich

Soil pH preference - neutral to slightly acidic

Soil moisture preference - Average to moist, not wet

Bloom time - Mid Spring to early Summer

Bloom color - White

Foliage - Dark green

Spread - 12" - 24"

Height - 36" - 60"

Deer palatability - Seems deerproof

Landscape uses - Specimen or colonial plantings in the shade garden, butterfly garden

Related species - Many species of "Milkweed"

Medicinal uses - See:

<http://www.botanical.com/botanical/mgmh/a/ascle072.html>

Illustration from Brittain & Brown.

Reprinted from Glick's Picks,

<http://www.sunfarm.com/picks/>

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Shrubs

Richard L. Bitner

***Viburnum trilobum* (American cranberry bush)**

Azaleas and rhododendrons are just fine, but for me the premier spring-flowering shrubs are the viburnums. They are the favorite plants of many horticulturists, but are strangely under-used in our gardens. One lovely viburnum not often cultivated, though indigenous from New Brunswick to British Columbia and south to New York, is *V. trilobum*, (also known as *V. opulus* var. *americanum*), American cranberry bush. In late spring, the shrub is covered with typical flat-topped, creamy white viburnum flowers. Its heavy, bright-red fruit display, beginning in September and holding into February, is its best feature. The berries provide a feast for birds such as ruffed grouse, brown thrashers, cedar waxwings, bluebirds, and cardinals, as well as other wildlife like red squirrels and chipmunks. Gardeners can enjoy eating the fruit, too - it makes a fine ruby-colored jam with a distinctive flavor. The dense foliage of *V. trilobum* provides cover for turkeys, grouse, and pheasants. It is also a larval food source for the spring azure butterfly.

In suburban and rural gardens, American cranberry bush is excellent for integrating designed areas with the surrounding native landscape. It will grow in sun or partial shade, in well-drained, moisture-retentive soil, but will not thrive under prolonged hot, humid conditions. The cultivar "Wentworth" has an upright habit (growing 12 feet in height) and makes an outstanding plant for screening and hedging, while providing white spring flowers, heavy fruit display, and burgundy fall foliage color.

***Vaccinium corymbosum* (Highbush blueberry)**

This shrub is native from Maine to Florida and is perfect for areas in the garden that tend to stay wet. It's best planted alongside other acid-loving plants in a marshy border. The urn-shaped late-spring flowers are not particularly ornamental, but they provide edible fruits in the fall. The fall foliage display is stunning, with varied hues of orange to red. Many cultivars of this species have brightly colored yellow to red twigs in the winter. Check with your county Extension agent to learn about the best cultivar for your area, and plant more than one of them for cross-pollination.

Vaccinium corymbosum transplants easily thanks to its fibrous root system. I grow it for the many quarts of late-summer blueberries. A hungry gardener might cover the plants with netting to protect berries from foragers and then make pies, pancakes, jelly, and, of course, muffins - but my berries are for the birds. Blueberries are an important food source for grouse, scarlet tanagers, thrushes, woodpeckers, blue jays, bluebirds, catbirds, and numerous other songbirds. A friend of mine uses blueberry as a foundation planting to draw winter birds closer to her study window. She must keep her plants pruned, however, or they would reach up to 12 feet in height. The blueberry's foliage is a larval food source for hairstreaks and elfin butterflies.

Reprinted from *Plants & Gardens News*, Brooklyn Botanical Garden, Spring 2001.

Federal Grant Protects Rare Southeast Ohio Orchid

The future of a rare orchid in southeast Ohio may be more certain because of a \$322,910 federal grant that is helping the Division of Natural Areas and Preserves better protect the state's only known population of the small whorled pogonia (*Isotria medeoloides*). The plant is considered rare throughout its range, which includes the midwest and eastern United States.

A Recovery Land Acquisition grant from the U.S. Fish and Wildlife Service is funding the purchase of a 160-acre conservation easement within the 617-acre

Camp Oty'Okwa, which is owned by Big Brothers Big Sisters of Central Ohio,

"With this grant, we can create a buffer of habitat, helping to better protect the orchid's population while hopefully providing it more room to successfully reproduce," said Melissa Moser, project coordinator and division researcher.

Moser, along with preserve management staff, is working closely with camp staff to implement a variety of protection measures. The project includes trail improvements, such as a new staircase and a

fence to protect the orchid population from foot traffic, while discouraging browsing wildlife, such as deer.



The small whorled pogonia is a state endangered and federally threatened species. Scattered populations of this rare plant are known to occur in only 14 other U.S. states. The five-leaved, white or yellow-flowered orchid—often confused with Indian cucumber root—grows up to 10 inches tall and typically blooms in late May or early June.

The federal grant is funding 65 percent of the conservation project, with the division providing a 30 percent match, using funds from Ohioans who donated a portion of their state income tax refund to the Nature Preserves, Scenic Rivers and Endangered Species Fund. The remaining 5 percent is from other sources, including Big Brothers Big Sisters of Central Ohio.

Recovery Land Acquisition grants aid in protecting against loss of habitat, which is the primary threat to most rare plant and animal species. Land acquisition is the most effective means of protecting habitats essential for the recovery of these rare species.

Reprinted from **Natural Ohio**, Division of Natural Areas and Preserves, Fall 2006.

After-effects of Amur Honeysuckle Removal

More than a few homeowners who are ridding their properties of Amur honeysuckle (*Lonicera maackii*) have noticed not only that the birds disappear, but also that it takes awhile for native plants to regenerate. Of course, the birds disappear because they've lost an understory—albeit a pretty inadequate one—that provided shelter, food, and nesting habitat. But why does it take so long for the native plants to return, if indeed, they return at all?

Could it be the change in the amount of leaf litter? Does honeysuckle exude toxins from its roots or leaves the way black walnut trees do to prevent other plants from growing around them? Does honeysuckle somehow displace or inhibit the development of mycorrhizae?

From *Understanding Forests*, by John Berger: "The roots of many tree species are coated and interpenetrated with fungi known as mycorrhizae. These intimate associates are fed by the roots and in return offer the roots some protection against root disease, stimulate root tip growth, and greatly facilitate nutrient uptake. About 90 percent of all plants are thought to have mycorrhizae"

As anyone can imagine, these are just a few questions to ask when it comes to the problem of dealing with monocultures such as those created by *Lonicera maackii* in our forests.

In 1998, Cybil Franz, a senior botany student at Miami University in Middletown, researched the changes in a deciduous forest after the honeysuckle was removed. Cybil began her undergraduate work in zoology before switching to botany. So when she took on this project, she "had no idea of the severity of the (honeysuckle) problem," she said. She noted also that "a lot of burning bush (*Euonymus alatus*) was mixed in." What she mainly saw, however, was "no forest regeneration." Somehow the presence of bush honeysuckle sterilizes the location it takes over. The results of her research have been published in the *Ohio Journal of Science*.

Reprinted from *The Bark*, newsletter of the Native Plant Society of the Miami Valley, Spring 2001.



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- Encourage surveys and research on natural plants and publication of the information
- Promote cooperation with other programs and organizations concerned with the conservation of natural resources

On The Fringe

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