# On The Fringe

Journal of the Native Plant Society of Northeastern Ohio


### Mark your calendars NOW

Friday November 14 we are having an excellent, nationally recognized, speaker Ann Haymond Zwinger. She has written more than a dozen books, edited four others, and appeared in numerous magazine articles. Her talk will be on the Alpine Plants of North America, the subject of one of her books, *Land Above the Trees*. From the dust jacket of the book: "This beautifully illustrated volume, including 24 pages of color plates, is the first comprehensive book on the ecology of the alpine tundra of the U.S." She is known as a lyrical writer with deep knowledge of her subject. We will be sharing her with the Museum's Explorer Series. The June issue will carry an in-depth article about her.

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## A Lily of Many Aliases

### By Stanwyn G. Shetler

The great lily family flourishes in springtime in our gardens and in our native hills and hollows. Whether you skip through April's garden among the snowdrops, daffodils, and tulips or walk in April's sunlit woods amid entrancing drifts of trilliums or trout-lilies, spring would not be spring in Virginia without the lily kin.

Yellow trout-lily, *Erythronium americanum*, a Paul Revere of spring, is a signature member of that band of ephemerals of the forest floor that march through their life cycles and disappear for another year almost before you have time to notice them. It is one of the earliest to send up its leaves – broad, yellowish to dark green, pointed tongues dappled with brownish maroon spots and flowers soon after. Some would say that these leaves, which suddenly arch above the dried leaf litter like a serpent's tongue and virtually pant for sunshine, are the basis for one of the plant's well-known common names, "adder's-tongue." Personally, I suspect it was the extruding stamens of the flower that, to some name-coiner long ago, conjured up the darting tongue of a snake poised to strike.

(*see **Trout Lily**, page 2)*

Thank you all who have renewed so promptly.
IF THERE IS A RED MARK ON YOUR MAILING LABEL YOU HAVE NOT RENEWED.

### Demystifying the Mosses
### by Jean Roche

Dr. Barbara Andreas, botanist, author, researcher, teacher and, incidentally, vice president of our Native Plant Society shared her talents with us for the February workshop. On Saturday, February 15, members of the NPS filled her lab at Kent State to capacity to hear her "demystify the mosses." They were definitely not disappointed.

Focusing on the lifecycle of mosses, namely gametophytes (the leafy green part) and sporophytes (the spore capsule), Dr. Andreas was able to explain what to look for in identifying the mosses. She gave a lecture for the first half of the allotted time which clarified terminology, described plant parts and told us what to look for in identifying the bryophytes. Bryophytes, by the way, are the third largest group of green land plants in North America.

The second half of the workshop was hands-on identification. Assisted by Diane Lucas, another of our very own, we used dissecting microscopes to identify the species collected by Diane and Dr. Andreas. It was one of those times when the scientists, the flower lovers and environmentalists shared the moment. Did you ever see a moss leaf or stem in cross section? Do you know what the reproductive organs of the mosses are called? Did you know that hybridization in mosses is very rare and why? Did you know that teeth on the sporophytes are identification points? And, did you know there are no salt water mosses? Amazing!

Dr. Andreas recommended several books to help the group continue where the workshop left off and generously offered a follow up. That offer was enthusiastically accepted by everyone in the lab and we can't wait!

*The Journal of the Native Plant Society of Northeastern Ohio* is published 4 times a year at Novelty, Ohio. Questions or comments are welcome and may be addressed to the Editor, Jane McCullam, 9880 Fairmount Road, Newbury, Ohio 44065, 440-338-3253; npsohio@hotmail.com, or to Ann Malmquist, 6 Louise Drive, Chagrin Falls, Ohio 44022; 440-338-6622, inky5@juno.com

## Spring 2003 Programs and Field Trips

**Woodland Wildflowers: Conservation and Propagation** Saturday, March 22, 9:00 a.m.**The West Woods Nature Center.** Jane Rogers of the Akron Garden Club and her committee have rescued over 20,000 wildflowers from development sites and given them to various public gardens throughout Northeast Ohio. Through slides she will reveal some of the most beautiful of woodland wildflowers, including Dutchman's breeches, squirrel corn, hepatica, bloodroot, trillium and many more, their stages of development, and how you can propagate them in your own yard. Presented in conjunction with the Geauga Park District. Directions: Take State Rt 87 east into Geauga County, cross Rt 306, continue on about 2 miles to The West Wood on the south side of the road.

Saturday, April 26, 2:00 p.m. **Parkman Gorge** The headwaters of the Grand River have carved a narrow gorge lush with spring wildflowers including an unusual cream-colored form of the red trillium. Directions: Take Rt. 528 south through Geauga County into Parkman. Cross Rt. 422 then bear left on Nelson Rd. a short distance to a private drive on left just before crossing bridge over the Grand River. Follow drive down to the park. To register call Judy Barnhart at (440)564-9151 (W) or (440)286-9516 (W).

Saturday, May 17, 9:00 am. **Cottonwood Hollow** This joint field trip with NEON (Northeast Ohio Naturalists) led by Jim Bissell, Curator of Botany, Cleveland Museum of Natural History, explores a hemlock ravine adjacent to Big Creek. Swamp cottonwood, not seen in Lake County since 1893, was recently discovered here as well as mountain water cress. Directions: Take I-90 to the Rt. 44 exit. Head south to Girdled Rd. Turn left (east) on Girdled to Cascade Rd. Turn left (north) onto Cascade Rd. Preserve is just beyond second bridge on west side of road across from a split rail fence. Registration limited. Call (216) 231-4600 ext 219.

Saturday, June 14, 10:00 a.m. **Lake Kelso by Canoe** Glacial Lake Kelso harbors many varieties of bog loving plants including several varieties of ferns, shrubs and herbaceous plants growing in zones around the lake. Directions: Take St Rt. 44 south of St Rt. 87 approximately 1 mile to Burton Heights Blvd. Turn left (east) and continue until crossing over Hotchkiss Road. Parking area for Burton Wetlands State Nature Preserve is on the left. Registration limited. To register call Judy Barnhart at (440)564-9151 (H) or (440)286-9516 (W).

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*(**Trout Lily** – continued from page 1)*

The trout-lily has more vernacular aliases than a scam artist, bespeaking its widespread occurrence and popularity as a wildflower. Each features some prominent characteristic of the plant. Most apt are "trout-lily" and "fawn-lily," said to have been coined by naturalist John Burroughs to replace the inappropriate name "dogtooth-violet." Indeed, the plant is a lily by affinity, and its nodding 1-2-inch flowers that bloom a mere 5-10 inches above the ground are shaped like miniature lilies. Why "trout"? Maybe because the flowers bloom at the beginning of trout season, maybe because the mottled leaves suggest the speckled sides of a brook or brown trout. Why "fawn"?

The up-thrusting, mottled leaves suggest the fawn's spots, and to some, the two basal leaves that flank the solitary flower on its naked, 4-6-inch scape also mimic the fawn's erect ears.

Probably the earliest English name was dogtooth-violet, originally applied to the European species, Erythronium *dens-canis*, first described by Linnaeus. Its white corm was fancied to look like a dog's tooth, hence the *dens-canis*. *Erythronium* referred to the red or purplish flower, suggesting a violet. Of the approximately two dozen species of *Erythronium* worldwide, all but this one are North American and yellow- or white-flowered. Thus, while the "dogtooth" shape of the corm-applies as well to the North American species, the "violet" color of the flower does not.

(*see **Trout Lily**, page 3)*

# WOODLAND WILDFLOWERS

## Easy Propagation of Spring-maturing Seeds - Second in a Series

### by Jane Rogers

As spring begins, the first flowers one might notice are what are called "ephemerals". These delightful flowers need the longer days and the full sun to warm the forest floor before the tree canopy emerges. The warmth and the moisture from melting snow encourage them to push upward. Some of the most common ephemerals are Hepatica, Dutchman's Breeches, Squirrel Corn, and Bloodroot, which I will cover below. Other common ephemerals are Pepper and Salt, Spring Beauty, Dutchman's Breeches, Virginia Bluebells, and Toothworts. Since they are only seen for a short time during early spring, they clearly deserve the "ephemeral" appellation. When weather conditions are right, ephemerals grow profusely. During cooler springs, you may happen upon only a brave few pushing up through the snow. They need to get enough spring sunlight to produce seed. If spring conditions are not just right, they will not set seed. Their flowers may last for a day or a week, but by the time the trees leaf out, most of their blossoms are gone. Their chief pollinators are bees.

As we see woodlands being lost to development, protecting and propagating such wildflowers and native plants can be a satisfying and important conservation effort. Many such plants are easy to propagate by seed. Since many are dormant by early summer, ephemerals can be planted among spring bulbs, next to hosta that will emerge later, or anywhere they will not be disturbed. They would easily be smothered by the competition from a thick groundcover, such as ivy.

Whether you have a small shady corner, or a large wooded area, increasing your population of wildflowers can be rewarding. The keys to success are:

1) recognizing the fruit or seedpod;
2) learning when the seed is properly ripe; and
3) knowing how to treat the seed for optimum germination.

It is important to consider where these valuable seeds can best flourish on your property. To have success with your seeds, it will help to study the soil and light condition needs of each plant and attempt to supply that environment. In your proposed planting area, give them plenty of organic matter, provide for good drainage, and plan ways to provide sufficient moisture until plants are established.

(*see **Propagation**, page 4)*

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*(**Trout Lily –** continued from page 2)*

From seed to blooming takes 4-7 years, and a mature plant may not bloom every year. The corm gets larger and goes deeper into the soil the older it gets, sometimes going down well over a foot. Until the corm reaches flowering size, it produces only a single, ground-level leaf per season. Flowering plants bear two basal leaves. The species spreads not only by seeds but also by offshoot runners from the corms, forming extensive clonal colonies, carpeting the forest. Most plants in any given colony are single-leaved, not yet reproductively mature. In one study the colonies were found to *average* nearly 150 years in age and were as old as 1,300 years.

The yellow flowers track the sun and more or less close at night. The three sepals (outer whorl), which may be tinged with brownish red on the outside, and three petals (inner whorl), which may be spotted at the base inside, are otherwise similar. In bright sunlight all may recurve so strongly as to give the flower an almost spherical look

The yellow trout-lily grows in moist deciduous upland and especially bottomland woods and even in meadows almost throughout the eastern states and adjacent Canada. In Virginia it can be found in most counties, often in profusion. It blooms primarily in April.

Most of the 22 American species of Erythronium are western. A second yellow species, *E. umbilicatum*, has been recognized recently in the Southeast, which occurs less commonly in Virginia than *E. americanum*. The two are separated by small technical differences. The wide-range Midwestern white trout-lily, *E. albidum*, reaches Virginia only in the Washington, D.C., area along the Potomac River.

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*Stanwyn G. Shetler is Botanist Emeritus at the Smithsonian Institution*

(**Propagation –** *continued from page 3)*

Be aware that the key to good germination for many of these plants is to plant the seeds as soon as they ripen, while they are fresh. Unlike the seeds of some prairie natives, if woodland native plant seeds dry---even for a few days, suffer from lack of moisture or good contact with the soil, reproduction could be cancelled. By "helping" Mother Nature and hand planting properly ripe seeds you can, hopefully, increase your germination rate by 20 to 100 times! Have patience because woodland seeds often need a year to emerge, and some seeds may need two or three years to germinate; but all are worth the wait.

This article will focus on techniques for propagating woodland plants with seeds that mature in the spring.

*Hepatica americana*

*Hepatica acutiloba*

**Hepaticas (*H. actiloba or americana*)** are among the first to bloom. At first, they look like gray, fuzzy newborn chicks barely visible above their nest on the forest floor. Often the burgundy or brown crumpled foliage from the previous season is evident. Even before their new leaves appear, they flower in shades of white, pink, pale lavender or a bluish lavender. The new shiny leaves appear later when the seed is produced. Hepatica seeds form in the center area of the flower after the petal-like sepals have fallen. The three green sepal-like bracts remain behind the cluster of 1/8-inch long, pointed, slender seeds. These seeds are light, bright green at first and will remain green as they ripen. When they are fully ripe, their green color becomes duller and paler. Start watching the seeds closely a few weeks after the petals drop. Rub your thumb gently against the tiny pointed seeds. If they still adhere to the plant, wait a few days. If you see the color change, rub them again. If they fall off easily, they are ripe. Plant *Hepatica* seeds ¼-inch deep, cover with a layer of dirt, tamp gently, water and cover with leaf mulch. Next season you should see two-leafed seedlings emerge with green mottled veining like the parent plant. The following season they will have mature leaves and may even flower.

*Hepatica acutiloba* seedpod

There are two species of *Hepaticas*, according to some botanists. While some still follow that pattern and refer to the sharp-lobed one as *H. acutiloba* and the round-lobed one as *H. americana*, others now choose to lump them together as one species. I prefer the two separate names, since the two *Hepaticas* are almost never found growing together and need different soil conditions. The sharp-lobed variety prefers a somewhat neutral soil (pH 6-7). This *Hepatica* appreciates a little lime every other season or so, depending on the alkalinity of the soil. It can thrive on limestone outcroppings or can do well in neutral soil. The round-leafed variety, *H. americana*, is found in moderately acid soils (pH 4.5-6). The leathery leaves of the *Hepaticas* often last all summer even though the flowers are fleeting.

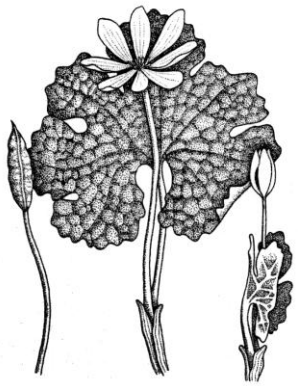
**Dutchman's Breeches (*Dicentra cucullaria*)**, also begins blooming in the very early spring. First visible are the delicate ferny leaves that push up through the leaf litter. The dainty, unusually shaped flowers are said to look like a Dutchman's knickers hanging on a clothesline with the yellow waistband at the bottom. Supposedly, only the long, strong tongue of the female bumblebee is able to reach up inside to pollinate this flower. Their flower has no fragrance. The bulblet or tuber color ranges from off-white to deep pink, but most often is pale pink. It can be broken into tiny sections, almost like dividing the scales of a lily bulb. To collect its seeds, watch the point where the petals have fallen away. This point is where small green capsules or seedpods will form all along the stem only in an ideal spring, with good blooming conditions. The capsules are curved like small green, dangling crescent moons and have a lengthwise seam. Pop a capsule open to check if the seeds have turned shiny and black. If they have, plant them immediately ¼-inch deep, tamp gently, water and cover with leaf mulch. These seeds have a fleshy white aril on the side and need to be planted while fresh.

Dutchman's Breeches

Squirrel corn

**Squirrel Corn (*Dicentra canadensis*)** flowers about a week later than its close relative, Dutchman's Breeches. In early spring, the young leaves of both plants are so similar it is difficult to tell them apart when flowers are not present. Their ferny leaves are very similar and they often grow in the same habitat. Once they are in bloom, the difference is quite evident. The leaf of the Squirrel Corn appears somewhat grayer and lacier than its relative. The white, heart-shaped flower (like Bleeding Heart), is fragrant and has a pink "waistband" at the bottom. Below ground it is easy to tell the two *Dicentras* apart, because the tubers of

Squirrel Corn look more like tiny, round, golden balls somewhat reminiscent of corn kernels. As both plants mature, their foliage finally differs. At this point the Dutchman's Breeches foliage grows taller, and becomes a yellowish green since it fades first. Squirrel Corn forms capsules very similar to its relative and can be planted in the same manner. Both *Dicentras* appreciate lime amendment every other year or so and like a pH of 6-7. In my Zone 5 Ohio garden, the *Dicentras* and *Hepaticas* flower in late March or early April and seeds are mature by early to late May.



Bloodroot

**Bloodroot (*Sanguinaria canadensis*)** is one of early spring's most cherished flowers. It first emerges as a 1-inch high dusky mauve, round-tipped bump. It slowly pushes upward to reveal a leaf clasped around the flower bud. On sunny days, bloodroot will surprise you with its bright white, daisy-like flowers. When the sun hides behind a cloud or at night, the flower closes up and the leaf stays wrapped around the stem. If there is not too much snow or rain, the flower and leaf will repeat this opening/closing cycle for a week or two. If the weather is harsh, the flowers will only last a few days. As the plant matures, the leaves enlarge and remain open. Bloodroot is an attractive, unusual groundcover and looks wonderful in large drifts. In moist areas, the large scalloped leaves can last until late summer.

Bloodroot is aptly named since its long, horizontal rhizomes are a bright orangish-red and all parts of the plant will drip red juices if scratched or broken. The Native American Indians used the root for face paint and dye. Bloodroot is easily divided. First cut the rhizomes in 3-inch sections, then bury them ½-inch to 1-inch deep in a horizontal position. Take care not to bury the rhizomes too deeply, as this will cause them to rot.

To propagate Bloodroot from seed, watch the area where the petals have faded. An upright, seedpod forms to look like a 1-inch to 2-inch slim, elongated green football. This seedpod grows and enlarges and develops tiny dark flecks and a more yellow-green color when mature. You may see bumps on the pod due to the seeds enlarging inside. Bloodroot seeds are tricky to catch before the pods break open. If they have, you have probably missed the opportunity to find viable seeds. Some authors provide tedious instructions explaining how to tie tiny cheesecloth bags around each seedpod to catch the falling seed. I find it easier to test a pod to check for the reddish brown color needed for best germination. Then, if one seedpod shows the correct coloration, pick all seedpods. Plant the seeds from the pods that pop open when gently pushed along the seam. To process the rest of the seedpods, simply allow them to sit on a paper towel inside an open plastic sandwich bag. Use several bags, if needed, because if the bag is closed or too crowded, the pods will mold. Watch the pods every day and plant those that begin to open. Bloodroot seeds also have a fleshy white aril attached to the side of the seed. These seeds should be planted immediately or they will not germinate. Simply scratch the earth, cover the seeds with ½- inch of soil, tamp gently, water and cover with leaf mulch.

Bloodroot seedlings will emerge as a miniature of the adult plant the following season and have small 1-inch round leaves. Plants may mature to blooming size by the second year. In my garden, the bloodroot flowers in early April and seeds are mature by late May to early June. That timetable could vary by up to six weeks (either way) depending on your state, zone and climate. Bloodroot prefers a pH of 6-7.

Spring-blooming plants such as Spring Beauty, Wild Geranium, Rue Anemone, Violets, Virginia Bluebells, or Trout Lilies all form fruits that are not described here. If you are fortunate to have one or more of these spring ephemerals in your garden, you could watch for their fruit and enjoy the pleasure of learning their seed-ripening process. In order to collect fully mature seeds, you have to be "in the right place at the right time". Even though many plants often self-seed, the germination rate increases dramatically if these seeds make good soil contact and are not allowed to dry. If you are seeking native plants, they are available through some nurseries (check to be see if the nursery sells propagated plants and not wild-collected plants). Otherwise, you could use the roadside, a friend's yard or private property to yield enough seeds to try these simple methods. It goes without saying that one should not gather seeds from private property without the owner's permission or from native populations in public places.

Once you see how successful these easy methods can be, you could quickly have drifts of these beautiful early spring flowers adorning your garden, even if their beauty is fleeting. Conserving such plants by propagation can be as close as your own backyard. Good luck!

For those of you with further interest, you may want to read the following good references:

Cullina, William. *Growing and Propagating Wildflowers of the U.S. and Canada*. Boston: Houghton Mifflin Company, 2000.

Phillips, Harry R. *Growing and Propagating Wildflowers*. Chapel Hill: The University of North Carolina Press, 1985.

*Jane Rogers, a wildflower enthusiast, speaks to garden clubs and conservation groups about wildflower propagation and conservation. She volunteers with a wildflower rescue and other related efforts.*

**Graham Nicholls. *Alpine Plants of North America*: *An encyclopedia of mountain flowers from the Rockies to Alaska*.**Timber Press, Portland, OR, 2002, 344 pp, ISBN 0-88192-548-9. Hardcover $49.95. http://www.timberpress.com

**by Loren Russell**

***Alpine Plants of North America*** covers a vast area from Alaska's Brooks Range to southern California and the southern Rockies. The author, who operates a small British nursery specializing in western American alpines, is familiar with many of the plants described both in the wild and in cultivation. He draws also on the experience of his collaborator Rick Lupp, who operates an alpine nursery near Tacoma, Washington.

Nicholls' book opens with a definition of "alpine plant" (he follows the horticultural convention of alpine: small perennial herbs and subshrubs, generally those of outcrop, scree, and meadow communities at or near timberline), and with a brief summary of the alpine mountains systems of western North America. The latter is generalized, and primarily addressed to European and eastern North American readers, for whom our mountains all merge together as "the Rockies." This topic is a book in itself; for a non-technical reader, I recommend *Land Above the Trees*, by Ann Zwinger and Beatrice Willard.

The heart of the book is its "encyclopedia" of alpines, in which about 650 species in 54 genera are described in alphabetical order; many distinctive subspecies and varieties, as well as a few horticultural selections and hybrids, are mentioned (Oregon, despite its limited area of alpine communities, is well represented, with about 200 species, third after California and Utah). Notes on propagation techniques and cultivation requirements are given for each genus. About half of the species are illustrated by small color photographs dispersed through the text. Most photos are of wild plants, but about one-third illustrate plants in cultivation; additionally, there are a number of habitat photos. Nicholls has excluded monocots, larger species of such genera as *Aquilegia* and *Delphinium,* and most of the small shrubs (shrubby penstemons and *Petrophytum* are included, however). He discusses most of the western species in the genera traditionally grown by rock gardeners *(Saxifraga, Primula, Phlox, Lewisia),* but reflects diversity in the showier western flora, including 56 species of *Penstemon, 45 Eriogonum, 21 Draba,* and 18 *Erigeron.* One of the great values of this book is its treatment of genera that are rarely cultivated and generally thought to be "difficult" (e.g., *Astragalus, Castilleja).* Some important alpine genera are omitted, such as *Heuchera, Romanzofjia,* and *Sedum.* The taxonomy used is generally current, though every horticulturalist's horror for generic novelties is shown in the preservation of *Zauschneria.*

The book concludes with a very brief section on cultivation; of greatest interest here are the descriptions of sand beds and raised scree beds. These, and the use of "hypertufa troughs" (cement planters, with peatmoss added to the cement mixture) are the best approaches to growing alpines in high winter-rainfall areas of western Oregon. Again, this chapter only skims the subject, and other texts on rock gardening should be consulted.

I find many of the recent books on "native plant gardening" to be repetitive, and nearly all emphasize the forest and prairie plants of the northeastern and north-central states. Few offer more than a nod to western American plants, and almost nothing on the alpine and subalpine plants, which I admire in the wild and grow in my garden. Nicholls' book covers new ground, and makes available a great trove of previously unpublished gardening knowledge. It is an excellent complement to Kruckeberg's classic *Gardening with native plants in the Pacific Northwest,* and should be an essential reference for gardeners and horticulturists interested in these plants. Though this is hardly a field guide or flora, it has much to offer anyone with a general interest in plants of the western mountains. In it we can compare our local flora with that of distant mountains, admire such oddities as the little "propeller plant" *(Draba stenopetala* of the Alaska Range), and marvel that such an extreme edaphic specialist as *Penstemon grahamii,* endemic to oozing oil shales in Utah's Green River formation, can settle down in cultivation.

*Reprinted from the* Bulletin of the Native Plant Society of Oregon*, December 2002.*

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## Deer-Resistant Spring-Flowering Bulbs

Are you tired of having your tulips nipped in the bud? Try planting bulbs that your deer don't find so interesting:

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|---|---|
| Narcissus (daffodils) | Muscari |
| Hyacinth | Scilla |
| Allium | Frittalara |
| | Snowdrops |

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## Catnip and Mosquitoes

Iowa State University entomologists Chris Peterson and Joel Coats have applied for a patent on an extract of catnip (*Nepeta cataria*) which they have found to be 10 times more effective than DEET (diethylmeta-toluamide) for repelling insects, including mosquitoes. The catnip oil, nepetalactone, is responsible for catnip's smell and attraction for cats.

*Botany 101 tenth in a series*

# Internal Anatomy of Plants – Growth in Girth

## by Dr. Rebecca Dolan and Dr. Katherine Schmid

The last column featured the dermal, vascular, and ground tissues produced by apical meristems. The apical meristems are involved mainly with growth in length, and the tissues they produce are known as primary tissues. However, some plants also have meristems specialized for growth in girth, or width. Tissues produced by these meristems are known as secondary tissues. Secondary growth is a requirement for all woody plants, and even occurs in some plants we consider herbaceous.

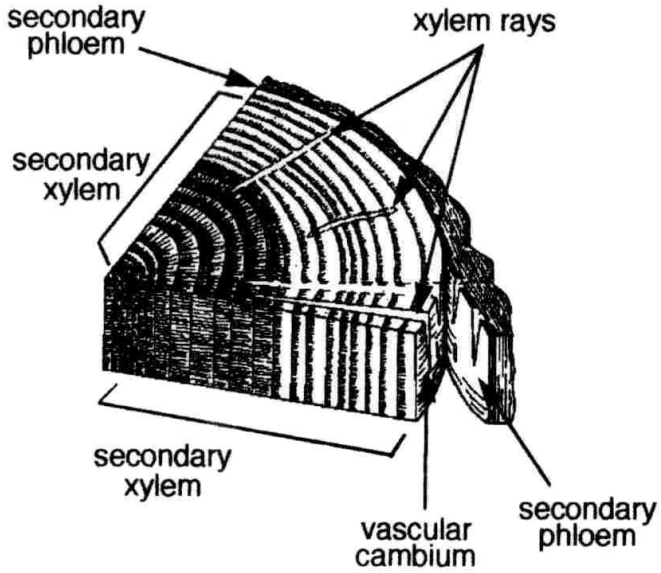
Plants whose stems have scattered vascular bundles perform only primary growth. However, in those with a ring of vascular bundles, each vein contains a narrow band of cells known as **vascular cambium** between its xylem and phloem. As the stem matures, these vascular cambia are connected to form a complete circle of vascular cambium only a few cells thick.

This cambium is a meristem that produces new xylem toward the inside and new phloem toward the outside. The new xylem is known as **secondary xylem**, or **wood**, while the **secondary phloem** becomes the **inner bark** of the plant. When bark is stripped from a tree, it is usually the delicate vascular cambium that gives way.

Every year, the vascular cambium adds a new ring of xylem to a tree. In temperate areas, annual rings are easily distinguished due to the contrast in density of large diameter water transport cells laid down in spring, and smaller diameter transport cells or fibers produced during the summer. The fact that xylem cells are dead at maturity explains how large old hollow beeches, sycamores, and other trees can survive. Only the more recent layers of xylem closer to the bark are needed for water transport Those at the heart of the tree have generally become clogged and function as support elements rather than for transport; as they rot away, the tree lives on without them.

The vascular cambium also adds new phloem every year. However, since phloem is part of the bark and the tree grows larger each year, older layers of phloem are ultimately outgrown and shed rather than accumulating as wood does. The newest phloem next to the cambium is the most important for sugar transport. It is the loss of phloem that most often kills trees that have been girdled either intentionally or by lightning.

The expansion of stems during secondary growth also means that the epidermis is rapidly outgrown. In stems and roots that have performed secondary growth, an outer bark made




of cork replaces epidermis as the dermal tissue. Cork cells, which are dead and relatively waterproof at maturity, are produced by a meristem called the cork cambium. Whereas a plant has only one vascular cambium throughout its life, a plant may have multiple cork cambia. In smooth-barked trees, a cork cambium may be a ring of cells resembling the vascular cambium. Other plants have many arc-shaped cork cambia. Each time old cork and cork cambia are outgrown and peel or flake from a tree, they are replaced from within. The lenticels you observed on woody twigs allow oxygen to penetrate the outer bark.

Woody stems and roots have annual rings of xylem, plus inner bark phloem, for a vascular system, and cork for a dermal tissue system, but lack a ground tissue system. However, they still require some living dry parenchyma cells for functions such as storage and transport between xylem and phloem. Most of the parenchyma in woody stems and roots is found in rays. In cross-section, these appear as rows of cells connecting the wood and inner bark, often widening as they cross the vascular cambium and enter the phloem.

*Becky Dolan is Director of the Friesner Herbarium at Butler University*

*Dr. Katherine Schmid is Associate Professor of Biological Sciences at Butler. Her specialty is plant physiology. Illustrations by Jan Glimn Lacy, botanical illustrator, from her book* Botany Illustrated.

# The Great Black Swamp

I grew up a witness to a Lake Erie that has been famous the world over as a shameful standard of what people can do to a large body of water if they really put their minds to it. My associations with Eric include masses of stinking dead fish along the shores, drinking water that carries a stench of pollution-caused July algae blooms, signs along the shoreline that warn against swimming in its dangerous waters, and alerts that eating her fish may constitute a death-defying act.

I have always subconsciously surmised that the Lake itself has been somehow partially to blame for her plight, being shallow compared to the other Laurentian Great Lakes, less able to defend herself from reasonable acts by the visitors to her shores compared to deep, crystal Lakes Superior or Michigan. But the more I have learned about this marvelous body of water the more I have realized that she is no more responsible for her plight than any other rape victim, beautiful and alluring though she might be.

Lake Erie as an ecological system does not stop at her shores; everything that interacts with the Lake is part of its ecology, including the air that moves overhead adding and removing heat, water, and pollutants. The rivers that flow into the Lake bring water, sediments, nutrients, and pollution; they also are critical in the life cycles of many Lake fish species, especially as spawning and nursery sites. The pollution, dredging, channelization, and sedimentation of the rivers in Lake Erie's watershed have had devastating effects on Lake fisheries. The shoreline of the Lake and its interaction with Lake energy and water movement define the character of the coastal habitats and thus of the coastal biota. The presence of islands, shoals, and barrier beaches in the Western Basin has contributed greatly to the productivity of this fisheries powerhouse by providing much and varied habitat for spawning and feeding. And one of the critical components of the Western Basin ecosystem has been the coastal marshes that once rimmed it from Huron to Detroit. These marshes were most luxuriant in a 30-mile deep area bounded by the Sandusky and Maumee Rivers known as the Great Black Swamp. The coastal area here is very flat and owes its character to forces that helped shape Lake Erie. 13,700 years ago a body of water dubbed Lake Maumee stood ponded at the foot of a retreating glacier. The water that collected there flowed southwestward to the Mississippi via the Maumee River. By 13,1 00 years before the present the ice sheet had melted northward enough so that the ponded water, now dubbed Lake Whittlesey, drained out northward to Lake Chicago (Lake Michigan in the making) and thence to the Mississippi; the present Maumee River drainage lay within the area covered by this very shallow lake. By 9,500 YBP the -lacier had melted away to the north far enough so that the Great Lakes could begin to drain to the northeast into the Atlantic Ocean and our ponded water, now named early Lake Erie, shifted to this direction and the Maumee watershed, now barely above water, began to drain the area again but this time *into* the Lake instead of away from it, and this is when the Great Black Swamp appeared, along this poorly-drained southwest coast of the Western Basin. About half a million acres of wetlands, including both swamp forest and coastal marshes, became part of the Lake's ecosystem, filtering watershed sediments, mediating wave and wind energy from the Lake along its shoreline, delivering nutrients to Lake waters, supporting the food web through plankton production, and providing sumptuous spawning and nursery habitat for the teeming fish communities that flashed through its waters.

Well, you know the story. The rivers became ditches with lobotomizing dams, the wetlands were diked and drained, the filtering functions were destroyed, the-waters loaded with crap and corruption of prodigious diversity and proportions, and the sickened ecosystem fabulously overexploited. By the 1870s much of the forest cover was gone, the great oak and elm and ash and maple that sometimes grew to 60 feet before the first limbs diverged from the massive 5-foot trunks. Some of the larger timber was hauled to market; horrid transportation made it easier to simply burn much of it.

The land was flat and soggy and flies and mosquitoes were a plague; even the Indians largely eschewed the area except as a hunting preserve, as the fur bearers, including bear, deer, otter, muskrat, mink, raccoon, skunk, opossum, bobcat, and beaver were of fabulous numbers. The region was also incredibly rich in fowl and fish.

But the intrepid European settlers, hungry for land and a place of their own, generally bore the scourge of insects (except for the occasional case of insanity or suicide), and labored ceaselessly to drain the timbered land. Transportation was generally over "corduroy" roads timbers placed side by side to provide a level if bumpy ride laid on mud that was so legendary that, when the road sunk and was refurbished with another course of logs and then another, when the sunken roads were finally dug up near the turn of the century to lay beds for modern road construction, layers of old logs up to twenty feet deep were excavated!

Eventually this clearing and draining activity paid off, for today the 900,000 acres of the former Great Black Swamp are some of Ohio's richest, most productive farmlands.

Unfortunately, the vision of conquered and productive nature completely overwhelmed the concept of healthy and productive habitat; none of the Great Black Swamp was conserved in its original condition. Even tiny vestiges of the woodlands that remained after drainage, such as the 320 acres at Goll Woods State Nature Preserve (Fulton Co.), are extremely rare.

As horribly as the Lake has been abused, it still can recover at least some of its former ecological health and productivity if given a fighting chance, There are many things that can be done relatively cheaply and painlessly to help the Lake make a dramatic comeback that would undoubtedly be to the astonishment, delight, and great credit of her human neighbors. One of these efforts should be to restore enough of the Western Basin's coastal marshes so that natural ecosystems could begin to operate again.

The fact that over 90% of these marshes are gone is only part of the problem; Lake Erie ecology is also suffering because almost all of those that remain have been cut off from the Lake. Originally these marshes between Port Clinton and Toledo were diked and drained by farmers; some of these areas were purchased by sportsmen and managed for waterfowl production, since duck habitat is in critical decline. In the last several decades both state (ODNR Division of Wildlife) and

federal (US Dept. of Interior Fish and Wildlife Service FWS) agencies have purchased some areas to hold in public trust. Working closely (especially ODNR) with such hunting groups as Ducks Unlimited (DU), these government agencies have had fairly good success as far as waterfowl management is concerned but have traditionally done so to the detriment of the other ecological interactions between the coastal marshes and the Lake. This attitude is beginning to change, and is currently being catalyzed by the situation in Metzger Marsh, one of the very last remaining coastal marshes that is still open to the Lake as far as water and nutrient exchange and fish access are concerned.

Because this interaction with the Lake has resulted in the decline of emergent vegetation and therefore in duck production in recent years, the management approach to this particular marsh recently faced a crisis. The natural tendency of the duck hunters and, apparently, ODNR, was simply to build a dike across Metzger Marsh and close it off to the Lake so that waterfowl production could be managed for without having to deal with those pesky old waves, naturally fluctuating water levels and sediment deposition (or lack of it) via longshore drift and other forces, and the incursion of carp, an ecologically highly problematic exotic species which moves into shallow areas to spawn by the thousands, uprooting aquatic plants, muddying the waters (which not only causes siltation problems but decreases light penetration and keeps sediments constantly suspended in the water), and squeezing out more desirable and native species. But there is enough sense in the FWS and ODNR (much of it coming from the Fisheries people there) to see that an effort must be made to protect the Marsh's links to the Lake. The agencies therefore came up with a plan to sustain limited articulation of Metzger Marsh to the Lake: they built a dike (with an internal cross-dike separating the state's 600 acres from the feds' 300 acres of the 900 total acres in the Marsh), but there was also a decision to build an area which would have gates open to the Lake except when high Lake levels would threaten waterfowl production. There has also been an attempt (not highly successful thus far) to exclude carp from the area.

But the effect of this management program at Metzger Marsh in itself will fall far short of what is possible for Lake Erie. A basic problem in the current situation is that we have left so little habitat that it cannot possibly hint at providing the ecological function it once did, and what function we do manage to wring out of it comes at great expense and intense, problematic manipulation and "management" of the few poor shreds of habitat that remain. It's like asking a Volkswagen to pull the load of a locomotive.

The only acceptable response to the problems of beleaguered Metzger Marsh and the Western Basin of Lake Erie in general is habitat and ecological restoration. The Marsh and other surviving vestiges of ecological resources must be put back into a physical context wherein natural ecological forces can reassert themselves and human management could be relaxed. This basically means that enough surrounding land must be acquired so that dikes and drainage systems could be taken out, canals removed and natural waterways reestablished, and water levels, sediment sources, and deposition regimes be left to their own devices as much as possible.

Such a major restoration effort, and we are talking of many thousands of acres here, would be expensive. Somewhere between $10 and 50 million would probably be needed for land acquisition, and millions more for removal of dikes, beach armoring, etc. It would also require a strong political commitment and support from the FWS and Army Corps of Engineers. Some businesses and homes might be purchased. Most of the area is currently productive farmland. The state had plans to purchase a farm of great restorative value near the Marsh but it was snapped up by a developer; in such cases the federal government should not hesitate to use eminent domain to protect such a project and the public good.

If a restoration project is to be undertaken in such areas it must be done now, for the traditional *H. "sapiens* " behavior is showing itself there. Developers are starting to put up condominiums behind the dikes, and once residential areas proliferate there, the difficulty of restoring some semblance of ecological sanity will jump at least one order of magnitude.

Although such concerns cannot be denied or taken lightly, the benefits to be reaped would outweigh them a hundredfold. The effect of such a restoration program on Lake Erie would be swift and profound; not only would it go a long way to support our flagging Lake fisheries, waterfowl production would receive a tremendous boost, our friends in Ducks Unlimited could lend a wholehearted support untroubled by concerns about leaving other important ecological considerations stranded on dry land. The economy of northern Ohio would be significantly aided by the recreational and other activities afforded by a coastal ecosystem whose rejuvenated quality it is now difficult even to imagine. We would earn the respect of Canada, which uses Lake Erie as a resource but lacks coastal marshes on such a scale. And the pride and satisfaction we would feel in the stewardship (which could at least pretend to a bit of wisdom) of what is arguably the greatest freshwater fishery in the world would be inestimable.

Such an effort as this should by no means be our only goal to the restoration of Lake Erie, but it would be a worthwhile and strategic decision. Hopefully, the obvious benefits of this relatively easy remedial step would whet the public's appetite to see how else we could serve our environment and provoke a much needed re-examination of how we need to protect the public good. You can support this effort by discussing it with friends and colleagues, and by writing to your federal legislators asking them to sponsor bills that would provide for the study and funding of the greater Metzger Marsh area.

There are several excellent sources of information on this subject, including:

Ashworth, William. 1987. *The Late, Great Lakes.* Detroit: Wayne State Univ. Press. 274 pp.

Burns, Noel M. 1985. *Erie: the Lake that Survived.* Toronto: Rowman and Allenheld Pub. 320 pp.

Herdendorf, Charles E. 1987. *The Ecology of the Coastal Marshes of Western Lake Erie: A Community Profile,* Washington, D.C.: US Fish and Wildlife Service. 171 pp,

US Fish and Wildlife Service. 1993. *Metzger Marsh Wetland Restoration Project,* Oak Harbor OH. ph: (419) 898-7895

*Reprinted from* FOWL Newsletter*, Friends of Wetlands, May 2002*

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# An Untamed Delicacy

## By Joni Blackburn

My introduction to ramps came on a cold, rainy late-April day by the side of a rural road in New York's Catskill Mountains. My husband, David, who had recently been taken on his first ramp forage with a lifelong native of the area, drove slowly along, peering through the bare trees on the hillsides that climbed steeply up either side of the road.

"I think I see some," he yelled, and pulled over. He jumped out of the car, navigated his way over a small stream, and clambered up the hill toward a patch of green poking up among the dead leaves. A couple of minutes later he was back, soaking wet and disappointed. Skunk-cabbage!

We drove another mile down the road and stopped again. "This is where Russell brought me last week," David said. "I'm pretty sure I can find them this time." Off he went, up another rocky incline. He soon came back, triumphantly carrying a grocery bag filled with pungent broad green leaves.

Back home, it was my turn. I gave the leaves a good wash, sautéed them in butter, and put them on the table. The bagful of ramps had shrunk in the cooking to a few delicately garlicky bites for each of us, but the fact that they had been gathered wild from nature made them the centerpiece of our meal.

Ramps, or wild leeks (*Allium tricoccum*), are native to eastern North America and can be found growing on hardwood-forested hillsides from Quebec down to North Carolina and west to the Great Lakes region. Their curling, lance-shaped leaves, which strongly resemble those of lily-of-the-valley, appear between mid-March and late April. The leaves grow as high as 12 inches and become veined with maroon as they taper down to the white bulb underground.

About the time the surrounding trees leaf out, the ramp's leaves die back, and a single slender flower stalk emerges. In late June or July, a small umbel of white flowers blooms and forms seeds. The seeds eventually drop and germinate near the mother plant, but the process is slow and it's several years before the new plants are harvest-ready.

Ramps grow in colonies, and when conditions are right–lots of consistently moist, organically rich leaf litter in sun-dappled shade–enough can grow to support a feast. In fact, in several Appalachian communities, ramp festivals are held to celebrate the onset of spring.

Harvesters bring bushels of ramps from secret and not-so-secret patches in the woods, and hundreds of recipes are entered and sampled in ramp-cooking contests.

The garlic-onion flavor of the leaves and bulbs is generally mild and goes well in most dishes calling for onions. The bulbs are often sliced thinly and used raw in salads, and the greens are wonderful in egg dishes. Native Americans and early European settlers considered the pungent green a tonic, and indeed, the plant is a good source of minerals and vitamins C and A.

In recent years, the plant's popularity has spread to urban centers, especially in the Northeast, and ramp harvesting has become a commercial venture in some areas. The demand created by chefs of multi-star restaurants and by popular food magazines has put a lot of pressure on wild ramps. Traditionally only a few bulbs per patch were gathered, but more and more colonies are being decimated by indiscriminate digging.

As with all types of wild-food gathering, it is important first to get permission from landowners before foraging on private land and second, not to abuse the privilege. Harvest sparingly, and gather mainly the leaves, whose mild flavor most folks find preferable to the bulbs anyway.

Some nurseries have made ramps available for home and commercial cultivation. Researchers at North Carolina State University recommend direct seeding or transplanting bulbs in conditions as close as possible to their natural woodland environment. Bear in mind that it will be anywhere from four to seven years before you'll be able to harvest the roots.

*Reprinted from* Plants & Garden News*, Brooklyn Botanic Garden, Spring 2002*

### Sautéed Ramps

1 to 2 lbs ramps
2 to 3 tbsp. unsalted butter
Salt and pepper to taste

Clean the ramps by picking out litter from the leaves and trimming the rootlets and papery skin from the bulbs. Rinse, then cut the bulbs from the leaves. Melt the butter in a skillet at medium heat, and sauté the bulbs first, cooking until they are almost translucent. Add the leaves and cook until they are wilted. Add salt and pepper to taste. Serves two to four as a side dish.

*INVASIVE PLANTS OF OHIO*

## Common Reed Grass

***Phragmites australis***

DESCRIPTION:
Common reed grass is tall, invasive perennial wetland grass ranging in height from 3 to 15 feet. The plant produces horizontal rhizomes that grow on or beneath the ground and produce roots and vertical stalks (culms). The rhizomes allow the plant to form large colonies. The stiff, hollow stalks support leaf blades which are smooth, broad and flat (1-1/2 to 2 inches wide). A large terminal inflorescence (panicle) is produced in late June and is purplish in flower and grayish in fruit. Large quantities of seed are produced, however, most or all of the seed may not be viable.

HABITAT:
Common reed grass is prevalent in open wetland habitats and favors alkaline and brackish waters. These areas include drier borders and elevated areas of brackish and freshwater marshes, along riverbanks and lake shores, and almost anywhere there are slight depressions that hold moisture. The species is particularly frequent in disturbed or polluted soils along roadsides, ditches, and dredged areas. It is also known to tolerate highly acidic conditions.

DISTRIBUTION:
Some populations of common reed grass are more invasive than others and may be non-native. It is suspected that the non-native, aggressive strain of common reed grass was introduced to North America in the early 20th century. It can now be found throughout the United States. In Ohio this strain is primarily found in the northern part of the state, however, it has recently progressed south.

PROBLEM:
Common reed grass can be considered a natural component of some undisturbed wetlands. However, the invasive strain grows aggressively in areas that are disturbed or stressed by pollution, dredging, or other alteration of the natural hydrologic regime. Invasive stands of common reed grass eliminate diverse wetland plant communities, providing little food or shelter for wildlife.

CONTROL:
**Mechanical**: Cutting, pulling or mowing can be done in late July and should be repeated for several years. All cut shoots should be carefully removed to prevent re-sprouting. The placement of black plastic over cut stems has had some success, and burning in combination with herbicide application has also been effective in some situations. Hydrologic controls such as flooding for an extended period during the growing season may also be successful.
**Chemical**: Herbicide control with Accord®, Rodeo®, or Glypro® is most effective in the early fall, after tasseling, and should be applied at least two years in a row. Fusilade®, a grass specific herbicide, can be applied in non-aquatic areas. Methods of application will depend on the associated plant community but may include aerial spraying, hand-held or backpack sprayers, and hand wicking.
**Biological:** No biological controls are known at this time.

ADDITIONAL INFORMATION SOURCES:
Marks, M., B. Lapin and J. Randall. 1994. *Phragmites australis (P. communis):* Threats, Management and Monitoring. Natural Areas Journal 14(4): 285-294.
Randall, J. 1993. Element Stewardship Abstract for *Phragmites australis.* The Nature Conservancy.

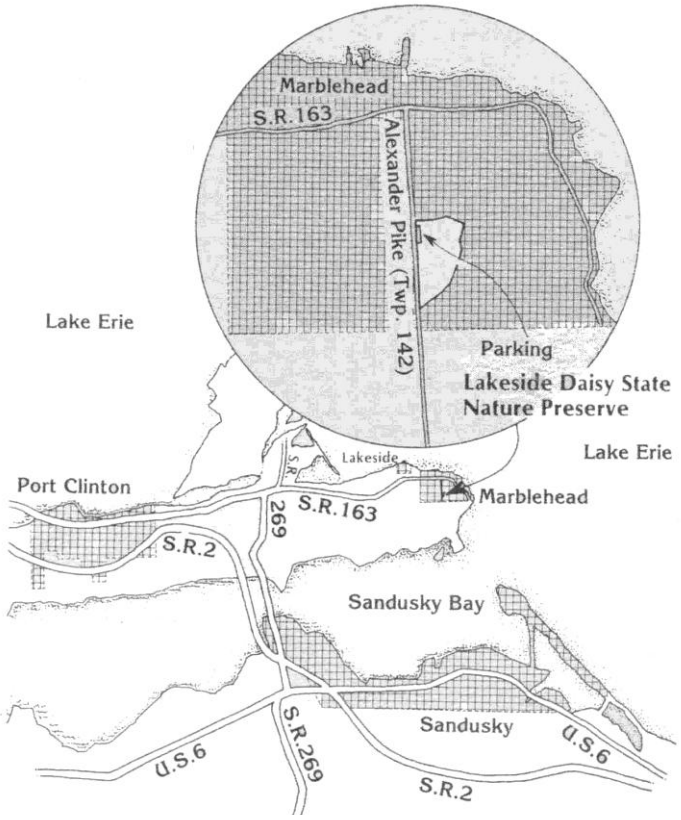


*Reprinted from ODNR Fact Sheet 5, May 2000*

FOR MORE INFORMATION:
Ohio Division of Natural Areas and Preserves
1889 Fountain Square Dr., Bldg. F-1
Columbus, Ohio 43224
(614) 265-6453
www.dnr.state.oh.us/odnr/dnap/dnap.html

# Lakeside Daisy

**Colleen "Casey" Taylor/Ruth E. Fiscus State Nature Preserve**




The Lakeside daisy (*Hymenoxys herbacea* (E.L.Greene) Cusick) is the rarest of more than 200 plants currently listed as endangered in Ohio. This distinction is due to its limited distribution both in Ohio and throughout its geographic range. The only natural population of Lakeside daisy in the United States grows on the Marblehead Peninsula in Ottawa County. There are reintroduced populations in Illinois, where the species formerly grew but later was destroyed. Other than Ohio, Lakeside daisy occurs only in two areas of Ontario, Canada: the Bruce Peninsula and Manitoulin Island in Lake Huron. In 1988 the Lakeside daisy was listed by the U.S. Fish and Wildlife Service as a Federally Threatened species. The species has been listed as Endangered in Ohio since 1980.

## Distribution and Habitat

Lakeside daisy is the only member of the genus *Hymenoxys* east of the Mississippi River. The dozen other species of *Hymenoxys*, which are often called rubberweeds due to their slightly poisonous, milky sap, grow in the Great Plains and Rocky Mountains south to Mexico and the mountains of South America. Lakeside daisy was first reported from Ohio in 1890 by Clarence M. Weed of the Ohio Experimental Station. He thought it was one of the western species of *Hymenoxys* and speculated that it had been a recent introduction to Marblehead. Some writers have even suggested that Lakeside daisy was introduced from the west by Native Americans in more recent times. However, genetic differences between the eastern and western populations clearly point to a much earlier introduction into eastern North America.

The ancestral plants of Lakeside daisy probably spread east about 8000 years ago during the Xerothermic interval. This was an extended period of hot, dry weather during which many drought-tolerant prairie plants spread from west to east. Cooler, more humid weather conditions developed in the Midwest about 4000 years ago. Lakeside daisy's ancestors became physically isolated from western populations of *Hymenoxys*. These eastern plants were also genetically isolated and have subsequently evolved into the species we today call *Hmnenoxys herbacea.*

Weed said that the daisy grew on "limestone plains." The botanist Moseley in 1899 described the habitat as a prairie. Much of Marblehead Peninsula at one time consisted of rocky, nearly barren openings with grasses and few trees. Photographs of the *Hymenoxys* habitat from the 1940's show a bare limestone pavement with virtually no flowering plants other than the Lakeside daisy. This natural rock surface, sadly, has been almost totally destroyed by quarrying. No trace of the original Marblehead prairie remains intact today.

## Natural History

Lakeside daisy is truly one of Ohio's most spectacular wildflowers. This long-lived perennial grows where few others can, on nearly barren limestone bedrock in full sunlight. In early to mid-May, the bright yellow flowers of the Lakeside daisy adorn the otherwise bleak, sun-baked landscape of the Marblehead Quarry. Each basal rosette of leaves usually produces a single 6-11" tall, leafless, erect stalk topped with a solitary flower. All individuals within a given population tend to bloom at approximately the same time, producing the spectacular effect of a golden blanket. All the flower heads track the sun across the sky in unison. After about a week, the double notched petals fade before falling. Seed dispersal takes place about a month later. Lakeside daisy also reproduces vegetatively by rhizomatous growth. The dense basal

tufts of somewhat fleshy, mostly linear leaves appear stemless; the stem, or rhizome, is at the surface or slightly underground. It is from this rhizome that new plants emerge.

### Quarries

The Marblehead Quarry began as numerous small, privately owned quarry operations in the mid 1800'S. Today, Standard Lafarge Corporation of Paris, France, maintains this site as the largest quarry operation in Ohio. Although many believed that quarrying would doom the Lakeside daisy, this has not been the case so far. Fortunately, the mining process has been slow enough so that although many original sites for the Lakeside daisy were obliterated, new sites within the quarry have been created over the years. Much of what we know about the Lakeside daisy's survival can be attributed to the thorough accounts of Ms. Ruth E. Fiscus of Cleveland Heights, Ohio. She has been observing this plant and diligently championing its protection for more than 40 years. She introduced thousands of nature lovers to this plant over the years through countless field trips and illustrated talks.

### Research

Prior to the destruction of the last natural site for the Lakeside daisy in Illinois in 1981, several plants were salvaged. Unfortunately, these plants could not produce seeds. The surviving Illinois plants represented a single incompatible group from a once larger population. In other words, too little was done too late. Marcella DeMauro studied the reproductive biology of Lakeside daisy during 1985-87 for her Master's degree at the University of Illinois at Chicago. Her research determined that Lakeside daisy is self-incompatible, meaning that self-crosses and crosses between closely related plants do not produce fruit.

DeMauro continued her work with the Lakeside daisy, crossing the remaining Illinois plants with Ohio plants and propagating plants in the greenhouse in Chicago for restoration. In 1988, she established Lakeside daisy at three protected sites in northeastern Illinois.

### The Preserve

In 1988, the Division of Natural Areas and Preserves acquired 19 acres of abandoned limestone quarry from Standard Slag Company (Lafarge Corporation purchased Standard Slag in 1989) using State Income Tax Checkoff Funds. Colleen (Casey) Taylor of Marblehead was instrumental in mobilizing statewide support for the acquisition and protection of this site. The Lakeside daisy site became Ohio's 84th state nature preserve.

The Division began a monitoring program for Lakeside daisy at the preserve in 1989. Data are regularly collected by staff of the Monitoring and Research Section to document the status of the population. As a part of the Federal Recovery Plan for this species, the Division introduced an experimental population of Lakeside daisy at Kelleys Island State Park in 1989 by transplanting plants and seeds from the Marblehead Quarry.

Lakeside Daisy State Nature Preserve is home for 11 other rare plant species as well as several more common prairie species such as spiked blazing-star *(Liatris spicata)* and stiff goldenrod *(Solidago rigida).* Some of the other rare plants which you may encounter at the preserve include rock sandwort *(Arenaria stricta),* balsam squaw-weed (*Senecio pauperculus),* and Great Plains Ladies'-tresses *(Spiranthes magnicamporum*). At the time Lakeside daisy blooms in May, most of these species are not evident although the small preserve is filled again with color during July and August when the blazing-star and goldenrods bloom. A few of the rare plants found in the quarries of the Marblehead Peninsula are not found anywhere else in the state. Access to this preserve requires a permit, except during the month of May. Additional information and/or a permit application can be obtained from:

Ohio Department of Natural Resources
Division of Natural Areas and Preserves
1889 Fountain Square Court
Columbus OH 43224
614-265-6453

**Lakeside Daisy State Nature Preserve Open House**

The Open House for Lakeside Daisy State Nature Preserve is going to be held on Saturday, May 10 from 10 a.m. to 3 p.m. The event will be staffed by preserve managers.

# American Ginseng

*Ponox quinquefolius,* Family: Araliaceae (Ginseng)

## By Janice Stiefel

**Other names:** Plant of life, Man's Health, Man Root, Root of Immortality, Tartar Root, Five-Finger, Red Berry, and Sang

**Range:** Minnesota to Quebec and south

**Habitat:** Humus-rich woodland soil, does not tolerate high-acid soil. Prefers a north-facing hillside with little or no sunlight.

**Description:** Rising from the center of three, large compound leaves, arranged in a circle, is an umbel of small, greenish-white or yellowish-green flowers that are scented like Lily-of-the-Valley (and almost camouflaged by the foliage). The flowers are about 1/12-inch wide, with five petals. The leaves are 5-12 inches long, each with five pointed, toothed leaflets. The two leaflets closest to the stem are smaller than the other three. A cluster of red berries forms the fruit after the plant blooms. Height: 8-24 inches. Flowering: May to August.

**Comments:** In 1704, a French explorer returned to Paris with a sample of what turned out to be Wild American Ginseng from southern Canada. Jesuits in France alerted their brethren in Canada to its enormous value in China. Some time later, Jesuits in Montreal shipped many boatloads to Canton, where other Jesuits sold it to the Chinese for what was then a king's ransom - $5-a pound. By the end of the 19th century, Ginseng was so heavily collected that today it is very rare in its natural wild habitat. Ginseng requires about seven years to develop roots to optimum potential for harvest.

**Medicinal use:** Because the root is shaped like a human, it has always been considered "good for the whole man" and revered for its medicinal value. Few wildflowers have been studied so extensively or searched for so diligently. It is said that Ginseng roots give "uncommon warmth and vigor to the blood; they frisk the spirits, cheer the heart even of a man who has a bad wife, and they help the memory. They will make a man live a great while and very well while he does live."

Early pioneers and Native Americans used the root to treat stomach and bronchial disorders, sore gums, asthma, neck pain, and much more. Of all the claims made for this gnarled root, probably the most interesting one is that it is said to help the brain retrieve a learned skill that hasn't been used for a long time. Besides improving memory, it increases concentration and hand coordination. Ginseng seems to act as a kind of shock absorber, protecting the body from stress and allowing the system to bounce back more quickly.

There is also evidence that it will steadily build the body's resistance to disease and enhance athletic performance. its medicinal uses are vast and worthy of further study. This column is only touching the tip-of-the-iceberg, because volumes have been written on Ginseng.

**Name origin:** The genus name, Panax (PAY-nacks), is taken from the Greek word, *panakas*, meaning "a panacea," in reference to the plant's remarkable medicinal properties. The species name, *quinquefolius* (kwin-kwe-FO-li-us), means "with five leaves." The family name, Araliaceae, is pronounced a-ray-li-AY-see-ee.

**Author's note:** The only place I have ever found Ginseng growing naturally, in the wild was along one of the trails in the Northern Kettle Moraine State Forest in Wisconsin.

One early July morning, my husband and I saw a robust specimen of a Wild American Ginseng in full bloom. We couldn't believe our eyes! I set up my tripod and camera and was able to photograph it.

I tried growing Ginseng plants on our north-facing hill along the valley of the Mullet River north of Plymouth, Wisconsin (Sheboygan County). They thrived for a time, but slugs relished the plants and would not allow them to survive. After the fourth year of sprouting, growing 1-2 inches and getting chewed off, the plants no longer came back, except for one.

When we moved to Door County, Wisconsin**,** I brought that one survivor with us. It flourished for two years but in 2001 did not return. In this case, I'm not sure if slugs killed it.



**Cultivation information:** According to William Cullina's *Growing and "Propagating Wildflowers of the United States and Canada*, "The roots require a moist but well-drained soil....The plant also needs the dappled shade of deciduous trees to flower and fruit."

Janice Stiefel is a naturalist, writer, and photographer who lives In Door County, Wisconsin. She is the editor of *Wisconsin Flora*, published by the !s Botanical Club of Wisconsin, and the Wisconsin Entomological Society Newsletter.

*Reprinted from The Blazing Star, newsletter of the North American Native Plant Society, Spring 2002*

## The Oak Openings of Northwest Ohio: Part 4 of 4

# Lou Campbell Prairie of Oak Openings Preserve

### By Kim High, Naturalist/Historical Interpreter, Metroparks of the Toledo Area

The Oak Openings Region of Northwest Ohio is home to more rare plants than anywhere else in the state. One particular site, located in the southeast section of Oak Openings Preserve Metropark and named in memory of the Toledo writer and naturalist, Lou Campbell, is a 'must see' for native plant enthusiasts. Lou Campbell Prairie supports over a dozen plant species that the Ohio Department of Natural Resources has designated as potentially threatened, threatened, or endangered. No matter when you visit during the prairie's growing season, you are sure to find some of these species in bloom. Here is a smorgasbord of rare botanical treats presented as they come into season at this special place.

#### Late Spring

It might seem like you're looking for a needle in a haystack, but finding lance-leaved violet (*Viola lanceolata*) among the larger prairie grasses and forbs is a worthwhile endeavor rewarded by a flower of remarkable beauty--white with fine, maroon accents that serve as pollinator guides. While searching for it, your eyes to the ground, you might notice two other small but beautiful flowers, one magenta and the other golden. These are racemed milkwort (*Polygala polygama*) and dwarf dandelion (*Krigia virginica*), respectively. While they both prefer the dry areas of Campbell Prairie, lance-leaved violet thrives where the ground water is close to the surface. A marked characteristic of Lou Campbell Prairie and the Oak Openings Region in general is that of a perched water table. Underground deposits of clay hold water close to the sandy surface, making the ground suitable habitat for both wet and dry loving plant species.

Larger and easier to spot are Wild lupine (*Lupinus perennis*) and plains puccoon (*Lithospermum caroliniense*), which both have healthy populations at Lou Campbell Prairie. In fact, the substantial amounts of wild lupine make this site a likely candidate for reintroduction of the federally endangered butterfly, Karner blue (*Lycaeides melissa samuelis*) in upcoming years. See wild lupine and plains puccoon featured in On The Fringe, Volume 20, numbers 3 & 4. Finally, one of my favorite native grasses, June grass (*Koeleria macrantha*) blooms here during this season. June grass has a silvery shimmer when it sways in the breeze on a warm, sunny day, and it is listed as endangered in Ohio.

An opportune time to see these state-listed species in bloom at Lou Campbell Prairie is the last weekend in May. With luck, all can be observed blooming in one visit!

#### Summer

Most naturalists would agree that one of the showiest rare flowers of Lou Campbell Prairie is the wood lily (*Lillium philadelphicum*). Blooming at the onset of summer, this delicate lily attracts a variety of nectaring butterflies, such as hairstreaks, blues and swallowtails. You might also find butterflies on blunt-leaved milkweed (*Asclepias amplexicaulis*), which blooms about the same time as wood lily. Blunt-leaved milkweed has large fluctuations in its numbers at this site from year to year, and Metroparks plant monitoring records suggest possible deer predation as a cause.

However, you will be sure to find a healthy population of scaly blazing star *(Liatris squarrosa*) here. Scaly blazing star, listed as potentially threatened in Ohio, is shorter and has fewer flower heads than its two more common relatives, dense blazing star (*L. spicata*) and rough blazing star (*L. aspera*). Since all three of these *Liatris* species occur at Lou Campbell Prairie, scaly blazing star is less likely to be overlooked if searched for the first two weeks of July, before the other two have begun to bloom. Finally, enjoy a pleasant aroma as you come upon the virtual 'sea of sweet fern' (*Comptonia peregrina*). Though listed as threatened in Ohio, this bayberry family member flourishes at this site.

Excellent viewing time for the plants listed in the section above would be the weekend around Independence Day.

#### Early Fall

Speaking of aromas, you haven't smelled mint until you have smelled hoary mountain mint (*Pycnanthemum verticillatum, var. pilosum*). Truly, the fragrances of all other mints wane in comparison. This is one of my personal favorites that I help to monitor every year, and doubly enjoy for the colorful insects that I observe reveling in its sweetness.

Also in flower at this time is Great Lakes goldenrod (*Euthamia remota*). This delicate, umbel-type goldenrod is appropriately named, being endemic to the Great Lakes Region. Less appropriately named but just as exciting to observe at Lou Campbell Prairie is the western sunflower (*Helianthus occidentalis*). Edward Voss points out that, "despite its name, this sunflower ranges less far west than many, and is in fact concentrated in Michigan and Wisconsin, being less common southward."

The Grand Finale of rare plants at this site is without a doubt the state endangered, soapwort gentian (*Gentiana saponaria*). The Oak Openings Region is the only place in Ohio where populations of this species are extant, according to the Ohio Department of Natural Resources, and Voss notes that it has not been observed in Michigan since 1867. Since it is known to prefer moist prairies and oak savannas, the perched water table existing at Lou Campbell Prairie is apparently a critical component, and Metroparks monitoring records suggest that prescribed burning is likely beneficial as well.

### Conclusion

How fortunate Ohioans are to have protected places that contain the essential combination of characteristics for the survival of these priceless jewels! To ensure their existence, rare species such as the ones named above often depend upon very specialized requirements—the right soil types, insect and fungi interactions, and microclimates, to name a few. In cases where transplants and plant 'rescues' are really nothing more than prolonged deaths, the only prudent alternative is protection of the entire natural community. This mission should be respected to its highest extent by all of us. Remember to tread lightly when you make a visit to Oak Openings Preserve's Lou Campbell Prairie.

Lou Campbell Prairie is a user-friendly site—not too large to demand a lot of walking, and with gentle terrain easily accessed from a paved all-purpose trail. It is a prairie, though, so expect full sunlight and remember your hat, water and sunscreen. With advance notice, the Metroparks naturalist staff would be able to set up a tour for you. But if you choose to visit on your own, give us a phone call first to get accurate directions and to be sure that the timing is just right for the plants you wish to observe (419-535-3050, extension 106). As we all know, plants don't always read the books about when they're supposed to bloom!

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## Guidelines for Rescuing Wildflowers

Based on guidelines compiled by the Cranbrook House and Gardens Auxiliary, Bloomfield Hills, Michigan. For the full text of the Auxiliary's guidelines, contact Cranbrook House and Gardens Auxiliary, 380 Lone Pine Road, P.O. Box 801, Bloomfield Hills, Michigan 48303-0801

**Site Selection and Access**

Watch for "For Sale" signs on wooded lots or other areas with native plants and call the owner or realtor to find out if the land is being developed and, if yes, if you can get permission to dig up and remove the native plants.

Follow up your call with a letter (if possible, written on the letterhead of your organization) asking for permission to dig; include a self-addressed stamped envelope. Include information about the group organizing the rescue and about what you plan to do with the rescued plants.

Find out the best place to park and how best to access the site.

**Before You Go**

Assign at advance team to scout out the location and determine specific plants to be saved.

Make sure you have an educated plant expert on your team who has knowledge of which native species can be transplanted easily.

Learn all you can about laws regarding protected, threatened and endangered species, and be able to identify them should you encounter them in your area. If there are any of these regulated species, you need to know the law, which varies from state to state and province to province. (For example, it may be necessary to obtain permits in order to legally relocate the plants.)

**On Site**

Be sure to bring along the letter granting you permission for the dig.

Allow plenty of time for the dig and for potting up plants.

Wear appropriate clothing - e.g., water-proof boots or sturdy shoes; gloves; layered clothing.

Bring plenty of water.

Bring enough tools for each person on the dig.

When digging, put like plants together Place them in a box or plastic bag. Waxed tomato boxes with hand-holds on either end work well. Small plants are best in boxes and large ferns are best in sturdy plastic bags.

Be sure to get all of the roots or tubers since many plants may grow deeper than you think.

Never dig more than you can transport in your vehicle.

Take all of your garbage (including extra boxes and bags) away with you.

If possible, label plants immediately.

Make sure you have an, appropriate holding area for plants after the rescue – somewhere with potting facilities and access to water.

NANPS has recently formed a Plant Rescue committee; see details on their website, www.nanps.org.

*Reprinted from* The Blazing Star*, newsletter of the North American Native Plant Society, Spring 2002.*

# Oxbow Lagoon: Its Plants, Invertebrates, Habitat Quality and Habitat Values

## By Paul Grubach

### Introduction

In order to fulfill the requirements for Dr. Ferencz de Szalay's Wetlands Ecology course at Kent State University, from the beginning of September until the end of November 2001 I undertook a study of Oxbow Lagoon, a wetland in northeast Ohio. The purpose of the inquiry was to provide a scientific classification of the wetland according to Cowardin et. al. (1979), take an inventory of the plants and invertebrates in a circumscribed study area, complete a US Army Corps of Engineers Wetland Delineation Form, and discuss the quality and value of the area along with the stressors that affect it.

### I. Study Site Description

Oxbow Lagoon is a series of three disjunct oxbow parcels of wetlands that are adjacent to Chagrin River Road, Route 174, in Lake County, Ohio, about .6 miles (10 km) from the intersection of Route 6 and Route 174. The lagoon is located in North Chagrin Reservation, a public park that is under the jurisdiction of the Cleveland Metropark system. The entire wetland, a former meander of Chagrin River, now encompasses approximately 15 to 20 acres, and is in a valley on the floodplain of Chagrin River.

The three oxbow parcels lie within a drainage basin that accepts surface runoff from all directions. To the west lies the elevated area of Squires Castle Picnic Grounds. To the north is an elevated rural residential area. To the east is Chagrin River. The "dividing line" between Oxbow Lagoon and the adjacent terrestrial environment is usually quite abrupt; the terrestrial environment usually begins on the surrounding hillsides that encompass the wetlands.

The watershed draining into the wetland is large enough to provide adequate runoff or groundwater inflow. Oxbow Lagoon is underlain by Tioga loam, a well-drained soil type that was formed from recent alluvial material (Soil Survey of Lake County, Ohio, 1979). In the wetland itself, a layer of decomposing plant material from the productivity of the vegetation overlies the organic soil that is homogenous muck (with iron oxide concretions) for at least 16 inches down.

Flooding appears to be controlled by seasonal changes in local rainfall, subsequent runoff, river overflow, and evapotranspiration. There are seasonal changes in the water level. Areas that were mudflats in September were inundated in October.

According to Dan Petit, the Manager of Natural Resources Research for the Cleveland Metroparks, the area is managed for the benefit of wildlife. Waterfowl is an important component of management concerns. An inventory of the area has never been taken, nor has the wetland been mapped and classified. This report will provide baseline information for future management and monitoring efforts.

The particular study area, approximately one acre in extent, was chosen so as to reflect the three types of microhabitats that were observed in the Lagoon. It encompassed a "transition zone"– small "wet meadow" parcels that experience infrequent flooding and gradually blend with the terrestrial environment. This zone is home to *Eupatorium perfoliatum* (Boneset) and woody plants such as *Platanus occidentalis* (Sycamore). The "emergent plant zone"--an area that has waterlogged soil and/or shallow water from one to six inches for more than 12.5% of the Growing Season (about 26 days)—is characterized by herbaceous vegetation such as *Sparganium* sp. (Bur-reed) and *Typha* sp.(Cattail). And finally, there was the "open water" zone, a pond-like area that has continuous standing water less than 2m deep and is dominated by *Nuphar advena* (Spatterdock), *Lemna minor* (Duckweed) and *Potamogeton* sp. Directly north and northwest of the study area are two storm drains that directly dump their contents into the Lagoon.

In order to understand the scientific classification of the study area, let us walk through Cowardin's et. al. (1979) classification scheme.

The area is inland, not affected by wave action, less than 20 acres, and the water depth in the deepest part of the basin is less than 2m at low water. Thus, the area is clearly PALUSTRINE.

Since vegetation covers more than 30% of the substrate, the Class will be distinguished on the basis of the plants that constitute the uppermost layer of vegetation and that possess an areal coverage 30% or greater. Furthermore, since the trees and shrubs cover less than 30% of the area but the total cover of vegetation is greater than 30%, the study area will be assigned to the appropriate Class for the predominant life form below the shrub layer—the herb layer. In a word, this is an Emergent Wetland, dominated by erect, rooted, herbaceous hydrophytes.

As for the Subclass and Dominance Type, the area is characterized by species that normally remain standing until the next growing season (persistent vegetation), such as *Typha* spp. (cattails), smartweeds (*Polygonum)* and *Sparganium* spp. (Bur reed). Ergo, the study area is a PALUSTRINE-PERSISTENT EMERGENT WETLAND.

It is important to note that this classification applies to the study area, and not necessarily the entire Oxbow Lagoon. The northeastern and southeastern portions of the Lagoon contain a significant amount of open water-pond area, with much submergent, and some floating-leaved and floating vegetation. Therefore, a classification of the entire Oxbow Lagoon may be PALUSTRINE-AQUATIC BED.

### II. Sampling Methods

The study site was an accurate reflection of the different types of microenvironments that Oxbow Lagoon includes. In this particular area, all of the different plant species that I

observed were collected (from the beginning of September to the end of October of 2001), dried in a plant press, and then mounted according to the methodology as described in Bridson and Foreman (1992). Most were identified to species, a few to genus, using plant identification manuals (Chadde, 1998; Strausbaugh and Core, 1977).

The macroinvertebrate community was sampled (at various dates from the middle of September to the end of November of 2001) by scraping a dip net along the bottom and passing it through vegetation in water. Soil and decaying organic matter were collected in the net. The organic material and soil were then dumped into a pan, the invertebrates picked out, and placed immediately into a 70% ethyl alcohol solution.

In order to sample different microhabitats within Oxbow lagoon, the dip net was also employed to collect *Lemna minor* (duckweed) and *Potamogeton.* The latter was then dumped into a white pan, and the macroinvertebrates were collected.

The macroinvertebrates were identified using the following source (Pennak, 1978).

For the wetland delineation, an auger and Munsel Soil Color Charts (1998) were employed. The delineation was done using the U. S. Army Corps of Engineers manual (1987) as a guide. An auger was put into the earth and drawn up, and then the soil core was examined. A small amount of soil was taken from the core, and compared to the Munsel chart for appropriate classification.

### III. Discussion: The Quality and Values of Oxbow Lagoon

What resource values does Oxbow Lagoon provide? The wetland is clearly a habitat for numerous different species of wildlife. Throughout the study period, I observed beaver (and evidence of beaver activity, such as beaver-chewed trees), snakes, at least three different species of waterfowl, in addition to the various invertebrates that were collected. It clearly has aesthetic value, as it is a pleasure for humans to observe and enjoy, and I observed many wildlife watchers during the course of this study.

Oxbow Lagoon clearly aids in flood prevention, as the wetland accepts much surface runoff that otherwise would flood the surrounding area. If Oxbow Lagoon were not there, all of the excess runoff (especially in the spring and autumn) would inundate the surrounding area. Considering all the surface runoff the area accepts, it is safe to conclude that the area helps mitigate the effects of flash floods.

It is also safe to assume that Oxbow Lagoon aids in the maintenance of good water quality for the area. Adjacent to the wetland is Squires Castle Picnic Ground where the lawn is well kept and virtually weed free. Dan Petit informed me that it is fertilized and sprayed with some type of weed control agent. Oxbow Lagoon is also adjacent to Route 174, which is salted during the winter. From both these sources there is a significant amount of surface runoff.

In addition, the area is in the floodplain of Chagrin River. Upriver are rural residential areas and small towns and cities. This must result in some type of pollutants reaching Oxbow Lagoon via river overflow. The wetland is helping to maintain good water quality by taking up the excess nutrients provided by all the runoff.

The area also accepts sediment inputs from the surface runoff, as I observed sediment deposits on leaves. This could present a future problem. Increased sedimentation rates into wetlands from numerous anthropogenic activities may affect wetland insects indirectly by damaging wetland vegetation (Jurik, Wang and van der Valk, 1994). There are no known endangered species in Oxbow Lagoon. Yet, considering its protected status, it could serve as a refuge for endangered species.

Oxbow Lagoon appears to be a habitat that is in good ecological condition. It certainly is not degraded, as indicated by the plant and macroinvertebrate species present. There are potentially invasive species present (*Typha* spp.). However, at the present time these do not appear to be causing problems.

The sampled plant community appeared to be very diverse, as indicated by the "Routine Wetland Delineation Form" that was completed for this study. Seventeen different species are among the dominant plant species of the community, in addition to the twelve other "non-dominant" plant species. The macroinvertebrates captured include insect Coleopterids, Hemipterids, dragonfly larvae, representatives of three different families of Gastropods, Amphipods, and representatives of the family Sphaeridae (fingernail clams).

Human interference was a key stressor in the area. When the aerial photographs of Oxbow Lagoon were taken (Soil Survey of Lake County, Ohio, 1979), there was a road leading back into the northeastern lip of the lagoon. Park officials informed me this road was removed to cut down on human encroachment, as park visitors would drive their cars and trucks back into the far reaches of the emergent marsh. Not only would this disturb wildlife, but the cars and trucks were a source of pollution (eg. Leaking gas and oil).

The large, Squires Castle Picnic area lawn has very few weeds on it, as it is treated with fertilizer and weed killers. These do run off into the lagoon and could adversely affect the plant life, and ultimately, the whole habitat. The herbicides could kill wetland plants and the fertilizers could push the habitat toward eutrophication. But at the present time, this does not appear to be a problem, as the amount of fertilizers and herbicides employed are kept to a minimum (personal communication, Dan Petit).

Upriver from the point where Oxbow Lagoon meets Chagrin River are rural residential areas and small towns. Undoubtedly, these do provide pollutants to Chagrin River that ultimately make their way to Oxbow Lagoon. Any increase in the amount of such pollutants could create problems in the future. If these stressors—road salt, pollutants from Chagrin River, fertilizers and herbicides—were somehow reduced, I would assume that Oxbow Lagoon would stay in good ecological condition for a longer period of time.

One of Oxbow Lagoon's functions and values is that it provides a habitat for beaver. Yet, beaver activity could change the hydrology, and ultimately the entire habitat into an open water area. In the future, this could be a problematic.

Suppose beaver activity changes the hydrology, and ultimately transforms the area from an emergent marsh into a submergent or open water marsh; this is not the most optimum wildlife habitat. Weller and Spatcher (1965) found that marshes characterized by emergent vegetation interspersed with open water (called hemi-marsh) attracted more species and large numbers of breeding birds. Voigts (1976) found that the greatest number and greatest diversity of aquatic invertebrates seem to be produced when open habitats are interspersed with the emergent marsh phase.

Thus, if Oxbow Lagoon were ever transformed into a permanently flooded, submergent or open water marsh, this may not be the most optimum type of habitat for the waterfowl and other types of wildlife that presently reside there.

### Oxbow Lake Plant List

[The list of plant species has been condensed and Latin names omitted due to space constraints of the Journal. Also, there was a list of invertebrates that has been omitted.]

Plants found in the Oxbow study: Sweet flag, water plantain, speckled alder, button bush, water-hemlock, silky dogwood, umbrella sedge, horsetail rush, boneset, jewel weed, duckweed, rice cut grass, spatterdock, sycamore, water smartweed, ribbonleaf pondweed, yellow cress, swamp rose, water-dock, arrowhead, marsh willow, common elder, night shade, burr-weed, cattail hybrid, broad leafed cattail.

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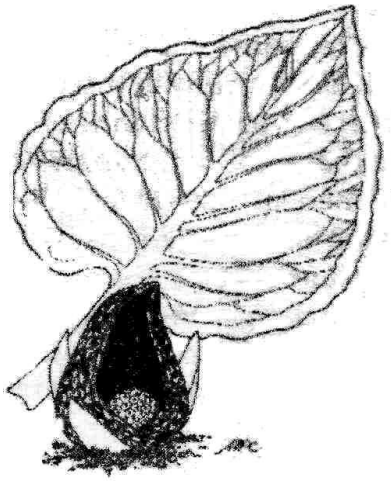
## Skunk cabbage ranks at the top of nature's curiosities

### Elwood Fisher

One of the most curious, unique, and unusual plants in nature is the skunk cabbage. It starts its reproductive cycle in autumn, has a thermostat to regulate temperatures of its flower that appears in late winter, makes its food for the following year with leaves that have no stem and goes dormant in the summer. Furthermore, it does not have what we consider a typical flower, but rather a spadix shielded by a spathe.

Skunk cabbage has accumulated many common names. Most American Indian tribes called the plant *Skota*. The white settlers added Indian cabbage, meadow cabbage, clumpfoot cabbage, swamp cabbage, stink cabbage, Irish cabbage, collard or colewort (suggesting a cabbage), cow-collard, skunkweed, polecat-weed, bear's-foot, bear's-leaf, bear's-root, Byron-blad, Byron Ritter, dracontium, fetid-hellebore, Midas-ears, and parson-in-the-pillory.

This plant is known scientifically as *Symplocarpus foetidus* and belongs to the arum family, Araceae. Araceae is a cosmopolitan family of 105 genera and about 2,950 species. Most are tropical, such as *Anthurium*, *Caladium*, *Calla*, *Dieffenbachia*, *Philodendron*, and others. *Symplocarpus* has several local relatives, *Acorus calamus* (sweet flag), *Arisaema dracontium* (green dragon), Arisaema stewardsonii (Jack-in-the-pulpit) and *Orontium aquaticum* (golden club).

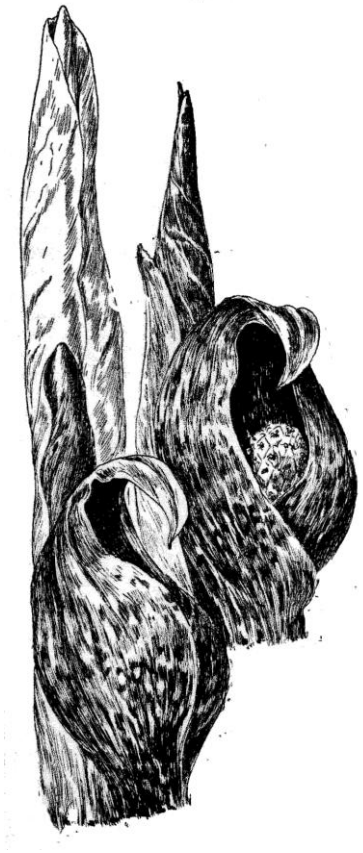


*(continued on page 20)*

*(continued from page 19)*

*Symplocarpus* has a relative in the western United States, *Lysichitum americanum*, which is also called skunk cabbage. This example calls attention to a weakness of using common names for organisms, two different genera within the same plant family, Araceae, commonly bearing the same name. Which one is THE REAL Skunk Cabbage, *Symplocarpus* or *Lysichitum*?

If you find it disturbing that two different plants share the same common name, skunk cabbage, what about a third one? Yes, skunk cabbage is the common name for *Veratrum califomicum* of the northwestern United States! This is reason enough to learn the generic name *Symplocarpus* (*symploke*, "connection," and *karpos, "*fruit," referring to the joined ovaries that form a fused fruit) and the specific name, *foetidus*, meaning "evil smelling." There is no other organism in the world called *Symplocarpus foetidus*!



The *S. foetidus* leaf releases a skunk-like odor ONLY when it is bruised. The flower radiates an odor offensive enough to deserve adjectives such as stinking, fetid, rancid, putrid, noisome, rank, fusty, or malodorous. To me, the flower has an odor not like a skunk, but rather like a blend of decaying meat mixed with garlic and burning rubber tires. The phrase, "Take time to smell the flowers," definitely was not coined with the skunk cabbage in mind. You do have to get fairly close to detect the odor it releases.

With its odoriferous handicaps, one would not expect it to be highly recommended as a suitable subject for a home garden, but it is. Helen S. Hull, a Vassar College graduate, author, and scientist, in her *Wild Flowers for Your Garden*, recommends it for moist locations in a garden. Hull also cites Mrs. B. F. Mills, then the president of the Garden Club Federation of Indiana, as using columbines, larkspurs, trilliums, and skunk cabbage in a wildflower garden along the north side of her house. However, most home gardens do not have the habitat suitable for the requirements of this plant.

I have fond memories from boyhood of a large patch of skunk cabbage in a bog near the road I traveled in my one-mile walk each way to the one-room elementary school that I attended during the first six years of my formal education.

I was very impressed by "the little hermits of the bog" as they were always the very first wild plants to flower. Their humble beginnings first appeared in autumn, each plant represented by two types of buds beneath the duff of decaying vegetative matter that covered the mucky bog.

The flower bud develops first. It is constructed of a rounded, cowl-like sheath called a spathe with a camouflaged surface pattern of pale green that is mottled with purple, reddish-brown, and rusty-yellow. This spathe, shaped like cupped hands, envelops the centrally-located spadix, a spherical inflorescence covered with pistils and stamens that are purplish in color. The spathe will grow to 8-15 centimeters (3-6 inches) by pollination time.

The leaf bud likewise forms in the fall and arises near the spathe from the top of a short stalk (or underground stem) attached to the root. It is about the size of the spathe, pale green in color and sharply pointed. It unfolds in a cabbage-like manner, giving rise to that part of its name.

In late winter, usually by February, the flower bud enlarges, its unique wall thickens and becomes more sponge-like (structurally similar to styrofoam) and the spadix gradually begins to generate heat. Roger M. Knutson, in his article, "Plants in Heat," has determined that the large rootstock, 30 centimeters (1 foot) long by 5 centimeters (2 inches) wide, is filled with starch that is gradually oxidized to generate heat as a byproduct of increased metabolism.

The thermal regulation within the spathe is astonishing. The spadix acts like a thermostat. With ambient air well below freezing, the internal heat remains near 70 degrees F. constantly.

These unique thermal traits appear to have several functions. The soil is thawed, allowing the contracted lateral roots to extend and thereby push the spathe upward into a position more favorable for pollination. The increased heat promotes development of sex organs. Heat also increases the release of volatile odors that will attract insect pollinators. Lastly, the flower will be prevented from freezing.

Many animals die from starvation and/or freezing during winter. During spring thaws, their carcasses decompose, releasing heat and a strong stench that attracts flesh flies, carrion beetles, and other insects. Skunk cabbage flowers emulate the heat, odor, and appearance of decaying meat and thereby draw insects that will pollinate the flowers on the spadix.

After pollination has been completed, the spadix forms the seeds and gradually bends toward the earth as the spathe decomposes. Seeds need prolonged cold-moist stratification to germinate. Exposed seeds are sometimes eaten by rodents, such as squirrels, and by certain birds, especially grouse, quail and pheasants.

While the spadix is completing its development, and the spathe is withering, the leaf bud is developing rapidly as spring days lengthen and the sun gives its warmth. The leaves are vivid green, usually 1-2 feet long, but can reach 3 feet. Thoreau was impressed by this plant and entered it 39

times in his journals. Regarding the plant's leaf, he said it "...makes the best vessel to drink out of at a spring..." He also noted that it grows nearby, it is dish-shaped, and the odor is offensive but does not flavor the water.

Bears often eat the leaves, especially as their first meal after coming out of hibernation. They also will eat the large rootstalk (underground stem) that bears numerous, long feeder roots that are up to an inch in diameter and go deep into the soil. Bears hibernate on a full stomach and require a large mass of vegetable matter to flush the "food-plug" from their gastrointestinal tract when they cease hibernation. A patch of skunk cabbage is a timely answer.

Some naturalists think this plant has a very long life span with estimates up to 1,000 years. It is often called the Methuselah of the plant kingdom. However, I have not found any documented literature to support its longevity.

It is often considered a good indicator plant since it will not grow in a polluted habitat. Too many sites in its endemic range are now becoming polluted, or destroyed, as our wetlands are being drained for various reasons.

Its geographic distribution includes bogs, marshes, and other seasonally damp sites, both open and wooded, from Nova Scotia westward through Ontario then southward to Iowa and eastward through the Carolinas and points within.

*Illustrations by Anita Cooper*

*Reprinted from the Bulletin of the Virginia Native Plant Society, April 2002*

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## Web Sites of Interest

**Native Plant Conservation Campaign** (NPCC). The NPCC is a project of the Center for Biological Diversity and the California Native Plant Society. The mission of the NPCC is to promote appreciation and conservation of native plant species and communities through collaboration, education, law, policy, land use and management. The Northeast Ohio Native Plant Society has joined this campaign. Read about it here.

http://www.biologicaldiversity.org and
http://www.cnps.org/npcc.htm

**Discussions about native plants**: Q&A, advice, etc. Other gardening forums are available here, too.
http://forums.gardenweb.com/forums/natives

**Connecticut Botanical Society.** News, field trips, photographs of wildflowers and ferns, and an illustrated guide to gardening with native plants.
http://www.ct-botanical-society.org

**Phenology of the wildflowers of NE Ohio**. An ongoing project that depends on contributions from the public. List your wildflower sightings here!
http://www.data2action.com/wildflowers/

## Cut Leaf Toothwort

### By Barry Glick

Now those taxonomists have gone toooo far! Do you believe that they want to call my beloved harbinger of Spring, *Dentaria laciniata* by the name *Cardamine concatenata*! Besides the fact that the worst weed in my life is a Cardamine, better known as "Bittercress", I can't find any rational reason for this name change.

*Dentaria laciniata* is one of the first plants to emerge in the Spring and grace the woods with their pure white flowers. The dark green filigreed foliage lasts well into early summer. The common name of the genus is "Toothwort". It acquired this moniker and the scientific name, *Dentaria* (which means teeth in Latin) because of the irregular angular ribs, or "teeth", which are actually leaf scars from the previous seasons growth. This is more apparent on the related species *Dentaria diphylla*, as *Dentaria laciniata* grows from a more tuberlike rootstock. As far as the common name for the genus, "Pepper Root" goes, it's said that Native Americans enjoyed the peppery taste of the root. They also use the root medicinally, although I haven't been able to find the exact medicinal attributes.

This is an extremely effortless plant to grow when given the rich woodland conditions that it seeks in its natural habitat, and are pretty easy to replicate in the garden. Before you know it, you'll have a great colony of bright white flowers in early Spring. Propagation is easy and automatic by seed. By the way, the brown seed pods are called silique and contain dark brown seeds that mature about 4 - 5 weeks after flowering. The seeds can be collected and sown in pots or you can just let Mother Nature do her thing and save a bunch of work for yourself

Family - Brassicaceae
Genus - *Dentaria*
Species - *laciniata*
Common name - genus - "Toothwort", "Pepper Root"
Common name - species - "Cutleaf Toothwort"
Synonyms - *Cardamine concatenata* probably the correct name
Native of - Eastern US
USDA Hardiness Zone - zone 5, maybe 4?
Light preference - Full shade to light shade
Soil preference - Rich in organic matter
Moisture preference - Moist to average
Bloom time - Early Spring
Bloom color - White
Foliage - Medium green, laciniated
Spread - Groundcover
Height - 6" - 12"
Landscape uses - Groundcover in a shady or woodland garden

*Reprinted from GLICK PICK, 15 May 2002, http://www.sunfarm.com/picks*

## Is Wildflower Gardening Subversive?

### By James Hodgins

How could such a genteel, peaceful pastime as wildflower gardening, a.k.a.: native plant gardening, naturalistic landscaping or gardening with Nature, be subversive? Believe me, it is!

The dictionary gives one meaning as, "to undermine the allegiance of...." When you realize that enormous areas of natural ecosystems have been destroyed by human habitation and materialistic demands and our numbers are out of control, many decide to help Nature recover a bit by eliminating lawns and traditional flower beds, and replanting with native species which originally grew on the site.

However, such a rational act is still viewed by some homeowners as an irrational, even hostile act toward the collective standard of the community. You may be perceived to have radically severed your allegiance to the front yard standard.

However, many municipalities encourage front yard gardens including those specializing in native plants–but many do not. To actively plant your property with native trees, shrubs, ferns and wildflowers is still viewed by many, especially in the more affluent neighborhoods, as a subversive act. Yes, you have openly severed your allegiance to the front yard Nature, rather than to real or imagined real estate values.

To avoid or minimize the possible ire of uptight, busybody neighbors who may demonstrate hostility towards your gardening efforts to harmonize with Nature, try the following:

1) Start small. The first year introduce an island, pocket or corner of natives to your garden or lawn. Expand the size of these sites as your knowledge, time, interest and plants multiply.

2) Offer surplus plants and seeds to your neighbors. If they accept, use this opportunity to give them a fact sheet, book or subscription to ***Wildflower*** to feed their interest.

3) Erect a small, rustic sign, visible to passersby, proclaiming your garden to be a chemical-free native plant ecosystem.

4) Offer a tour of your garden to the public. This is most effective if you can schedule it as part of an annual tour of the established garden clubs.

5) Call your local press and television. They're usually eager to cover anything different.

6) Emphasize the environmentally sound nature of your garden, e.g:, no synthetic chemicals; recycled rainwater, leaves and twigs; the connections to local history and ecosystems. Free of noise and air pollution.

7) Emphasize organic details such as insects, fungi, fern spores, early and late bloomers.

8) Subvert, but have fun too.

*Reprinted from* Wildflower*, Autumn 2001*

## Cranberry Bog Lottery

**VISITOR LOTTERY**
for Cranberry Bog Open House
Saturday, June 21, 2003
8 a.m. to 4 p.m.

Enter the Cranberry Bog Open House Lottery and you may be one of the 480 visitors who will visit one of Ohio's most unique places.

Cranberry Bog State Nature Preserve is located in Licking County, about 30 miles east of Columbus. Registered as a National Natural Landmark in 1968, the island dates from 1830 when Buckeye Lake was created. Because the original 50-acre island has eroded to 11 acres, it is a fragile site and visitation is limited to permit access only.

Located about 25 yards off the north shore of Buckeye Lake, the island contains unusual northern bog species, including grass-pink orchid (Calopogon tuberosus), large cranberry (Vaccinium macrocarpon) and pitcher plant (Sarracenia purpurea).

Boat transportation to and from the island is available, courtesy of the Greater Buckeye Lake Historical Society, for a donation of $5 per person.

If you're interested in attending this year's event, please submit a post card (one per family) to the Division of Natural Areas and Preserves, 1889 Fountain Square Court, F-1, Columbus, OH 43224. Only postcards will be accepted and they must be postmarked between May 1-31.
Cards postmarked earlier or later will not be accepted.

Please print legibly the following:

Contact name
Street Address
City, State, Zip
Daytime phone number
Total in your party (not to exceed 4)

Successful lottery participants will be notified by mail in early June. Tours will be filled in the order of the cards drawn. In the event of cancellations, additional names may be drawn and contacted before the event. Also, in the case of additional cancellations, walk-ins will be accepted on the day of the event.

For more information, please contact (614) 265-6453.
Heidi Hetzel-Evans
ODNR- Natural Areas & Preserves
1889 Fountain Square Court, F-1
Columbus, OH 43224
(614) 265-6520

## Chapters of the Ohio Native Plant Society

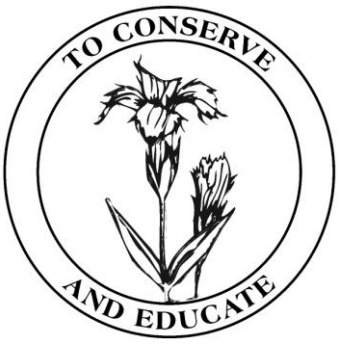
Cincinnati Wildflower Preservation Society
Dr. Vic Soukup
338 Compton Road
Wyoming OH 45215
513-761-2568

Central Ohio Native Plant Society
Susan Ramser
1411 Cambridge Road
Columbus OH 43212
614-488-3671

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

The Botanizers
The Wilderness Center
Stan Watson
4134 Shelby Circle
Wooster OH 44691

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**6 Louise Drive**
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Book Review: *Alpine Plants of North America*
Botany 101: Internal Anatomy of Plants – Growth in Girth
Ohio Natural Areas and Preserves: Lakeside Daisy SNP
Invasive Plants of Ohio: Common Reed Grass
Web Sites of Interest

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