



# On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

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**We are deeply grateful for the generous support of the members of the Akron Garden Club who have made possible the printing of this journal.**

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## Wild Plant Weekend

June 22 to June 25, 2001

Dear Members of the Native Plant Society of Northeastern Ohio,

The Members the Board of Directors of the Native Plant Society of Northeastern Ohio and their guests from the Rhode Island Wild Plant Society (RIWPS) cordially invite you to join us in June 2001 to explore some of unique wild plant habitats in our area.

DAY	SITE HIGHLIGHTS	TRIP LEADER
<b>Friday June 22<sup>nd</sup></b> Afternoon	<b>White Pine Bog Forest</b> – <i>the last old-growth white pine boreal swamp forest in Ohio</i> <b>Lake Kelso</b> – <i>a glacial bog lake (canoes will be available)</i>	RICK GARDNER, Ecologist, The Nature Conservancy, Ohio Chapter JUDY BARNHART, Geauga Park District Naturalist and Society Board member
<b>Saturday June 23<sup>rd</sup></b>	<b>Grand River Terraces</b> – <i>one of the best mesophytic forests in Ohio</i> <b>Pymatuning Creek Fen</b> – <i>one of the most significant fens in Ohio</i> <b>Walden II</b> – <i>escarpment along Grand River, rich mixed upland forest</i>	JIM BISSELL, Curator of Botany and Coordinator of Natural Areas for the Cleveland Museum of Natural History
<b>Sunday June 24<sup>th</sup></b>	<b>Pickerel Creek State Wildlife Area</b> – <i>home of eastern prairie fringed orchid; aerial show by many raptors</i> <b>Resthaven State Wildlife Area</b> – <i>alkaline prairie, seasonally wet; bald eagles</i> <b>Erie Sand Barrens</b> – <i>postglacial beach ridges with original vegetation</i>	TIM WALTERS, floristic botanist and consultant, Ph.D. candidate at University of Toledo and TOM SAMPLINER, Society Past President and Board member
<b>Monday June 25<sup>th</sup></b> Morning	<b>Holden Arboretum</b> – <i>one of North America's finest arboreta; excellent examples of beech-maple forest types</i>	TOM YATES, Lantern Court Supervisor, Holden Arboretum

### Board

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**FIELD TRIP RESERVATIONS:** Because access to some of the sites we are planning to visit is limited, **RESERVATIONS ARE REQUIRED FOR EACH FIELD TRIP.** Reservations must be made with Brian Gilbert (see below) **by June 15<sup>th</sup>**. Registrants will be provided a complete itinerary.

**ACCOMMODATIONS:** We have been very fortunate to secure the use of four small buildings at Walden II, a private, local nature preserve in Lake County. There may be a limited number of beds available that will not be needed to house our guests from Rhode Island. While the facilities are spartan, the setting is exquisite. There are 20 single beds, varying from one bed per room to four beds per building. There is a range of privacy. Only two of the four buildings have bathrooms. Guests will need to supply their own bed linen or sleeping bags and towels. But these facilities, which include a small, well-equipped kitchen, will be available at **NO COST**. If you would like to stay with our Rhode Island guests at Walden II for the weekend, please call Brian Gilbert to make reservations. They will be accepted on a first come, first served basis, and you will be notified of bed availability one week before the trip.

**MEALS:** Members of the NPSNEO will prepare evening meals at Walden II for Rhode Island and Northeast Ohio participants. Help-yourself continental breakfasts of fruit and pastries will be available Saturday through Monday. The NPSNEO will provide materials for preparation of each day's field trip lunch. The cost for meals for the entire weekend will be \$35.00 per person; individual dinners are \$6.00 each. Individuals with dietary restrictions will have to make their own arrangements. To reserve a meal ticket for the entire weekend or for individual supper meal

tickets, please send your check to Brian Gilbert **before June 15, 2001**.

**TRANSPORTATION TO WILD PLANT SITES:** Members of the NPSNEO will be responsible for their own travel arrangements to sites. Members of the RIWPS will have the option of driving their own cars to sites or riding in vans provided and driven by NPSNEO members.

**OHIO RENDEVOUS POINT:** All participants will meet at **1:00 PM on Friday, June 22<sup>nd</sup>**, at the **Marina at Punderson State Park in Newbury, Ohio**. Punderson is located on Ohio Route 87 about three miles west of Ohio Route 44.

**Please address all questions and reservation requests to**

Brian D. Gilbert  
8212 Landseer Road  
Cleveland, OH 44119  
(216) 486-8765  
e-mail: [trillium3@ameritech.net](mailto:trillium3@ameritech.net)



### Mark Your Calendars!

November 16<sup>th</sup> will be the date of our annual dinner and the end of the Society's 20<sup>th</sup> year. Our speaker will be Michael Homoya, author of *Orchids of Indiana*. We are co-sponsoring his presentation with the Cleveland Museum of Natural History as part of the Explorer Series. More details later.

## Other Spring and Summer Programs

**Thursday, March 22, 7:00pm. MEMBERS' SLIDE SHOW. Chagrin Falls Library, 100 East Orange St.** Arranged by George Wilder. Please call George, 216-687-2395, or Jean Roche, 330-562-4053, if you have slides to share or if you would like further information.

**Saturday, April 7, 4:00pm. BUTTERFLY GARDENING.** Donald Meyer Center, Big Creek Park, Chardon, Ohio. With the Spring planting season upon us, why not add several butterfly nectar sources to your home gardens. Join Ohio Lepidopterist member Mark Rzeszutarski for a colorful slide presentation highlighting butterflies and how they select certain plant species as well as the preferred nectar sources for numerous species of butterflies. Plant lists will be available. Sponsored in conjunction with the Geauga Park District. **DIRECTIONS:** From I-90 take Rt 44 south about 2 miles to Clark Road. Turn left (east) on Clark about 2 miles to Robinson Road. Turn right on Robinson about 2 miles to park entrance on right. Bear left at the split to the first parking area on right. Call the Geauga Park District for further information, 440-285-2222, ext 5420

**June 22<sup>nd</sup> – 25<sup>th</sup>:** Wild Plant Weekend with the Rhode Island Native Plant Society. See full description at the beginning of this issue.

**July: Old Woman's Creek and Erie Sand Barrens** with Gary Obermiller. In the morning canoe and see water lotus, egrets, and herons. In the afternoon go to a closed scientific preserve to see prairie plants

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## Winter Botany at the Rookery

The NPSNEO and the Geauga Park District sponsored a tree and shrub identification walk through The Rookery, one of the Park Districts newest preserves. Judy Barnhart, in her dual capacity as Geauga Park Naturalist and NPSNEO treasurer led the program with proficiency and enthusiasm.

The Rookery is at the western edge of Geauga County in a wetland at the headwaters of the main branch of the Chagrin River. An abandoned interurban railway track runs through it, crossing the Chagrin River by way of a restored covered bridge. The Great Blue Heron rookery is located west of the roadbed in a

wilderness preserve. There are walking trails along the railway and on the land to the east.

About thirty people met at 1 pm Sunday, Feb 4, in the large, barn-sized shelter house. Our president, Jean Roche, and Journal editor Jane McCullam were there to represent the Society along with Judy. Judy began by asking if anyone had seen the pair of bald eagles that have been sighted frequently, soaring over the rookery, giving us all something to keep watch for in addition to the trees. She then gave us an introduction to ways of identifying leafless woody plants, focusing on twigs, buds, bark, color, and overall shape. She passed around examples of twigs we might see later. She offered us the mnemonic device, MADBEV, to help us remember which species have opposite branching twigs, as opposed to the usual alternate. M=maple, A=ash, D=dogwood, B=buckeye, E=elder, V=viburnum.

We set out soon to test our skills. There was a snow base of over a foot, but there had been enough foot traffic on the trails to make walking easy. We found smooth, gray-barked specimens of shadbush, beech, and ironwood; speckled-barked young cherry and buckthorn; and the striped ash and tulip poplar. We examined live twigs and smelled the wintergreen scent of yellow and black birch. We found the seeds of the ash and the bladdernut, the former scattered over the snow, and the latter firmly attached to the bush, rattling in the breeze. The deep snow made it difficult to find leaves and seeds under the trees which often give good clues to identity.

Towards the end of the walk we passed a newly impounded shallow lake that is home to a number of beavers, and many of the trees nearby had been harvested or stripped of bark near the ground. Out on the ice of the lake, heading for open water were two large opossums who seemed more surprised than pleased to encounter each other.

## Wildflower Magazine

North America's Magazine of Wild Flora, is published in Ontario, but is devoted to the flora of all North America. It is issued four times a year by editor James L. Hodgins, who is well-known for his erudition in the field of botany. Subscriptions are \$35 (US funds) and may be sent to: Subscriptions - Wildflower, Box 335, Postal Station F, Toronto, Ontario Canada M4Y 2L7. No credit cards accepted.  
<http://www.wildflowermag.com>

## LAKESIDE DAISY IN OHIO

**Jennifer L. Windus,**  
Research & Monitoring Administrator  
Division of Natural Areas & Preserves

In the December 2000 issue of *On The Fringe*, Perry Peskin wrote about one of the six federally-listed plants in Ohio. Plants listed by the U.S. Fish & Wildlife Service are rare throughout their range. Ohio has a small number of these federally-listed plants. Most state-listed (listed by the Division of Natural Areas & Preserves) plants in Ohio are more common in other states or regions. The six plants in Ohio that are also rare throughout the U.S. are running buffalo clover (*Trifolium stoloniferum*), Eastern prairie fringed orchid (*Platanthera leucophaea*), Virginia spiraea (*Spiraea virginiana*), Northern monkshood (*Aconitum noveboracense*), small whorled pogonia (*Isotria medeoloides*), and of course my favorite - Lakeside daisy.

Lakeside daisy (*Hymenoxys herbacea*) is a state endangered and federally threatened plant growing naturally at only three sites in North America: the Marblehead Peninsula in Ottawa County, Ohio, and the Bruce Peninsula and Manitoulin Island in Ontario, Canada. A fourth, small population was discovered in the Upper Peninsula of Michigan in 1996, however it may have been introduced. Lakeside daisy forms basal rosettes each of which usually produces a 15-28cm tall leafless, erect stalk topped with a solitary yellow inflorescence. If you have ever been to the Marblehead Peninsula in mid-May, the abandoned limestone quarry areas are carpeted with the yellow of hundreds of Lakeside daisies.

The natural habitat of the Lakeside daisy is a plant community known as an alvar. Natural alvars were once glaciated and are composed of horizontal limestone or dolomite bedrock maintained in an open state by drought, wave action, and/or ice formation. Most alvars are found in Ontario along lake shores. These areas are typically inhabited by drought-resistant and calcium-loving plants. Much of the Marblehead Peninsula was believed to have been a grassland alvar prior to extensive quarry operations. As a result of limestone quarrying for more than a hundred years on the peninsula, the natural alvar or limestone prairie has been destroyed.

Fortunately, the quarrying process has been slow, only impacting portions of the alvar during a given

time period which has allowed plants to colonize the abandoned quarry areas. Today, the 2,500-acre Lafarge Marblehead Quarry is home to over one million Lakeside daisies and more than 20 other state-listed rare plant species. Part of the quarry population was protected in 1988 when the Division of Natural Areas & Preserves purchased 19 acres from Lafarge (Standard Slag at the time). The Lakeside Daisy - Colleen "Casey" Taylor and Ruth E. Fiscus State Nature Preserve is open to the public in May when the daisies are in bloom; a written permit from the Division is required at other times of the year.

Although the 19-acre state nature preserve protects hundreds of plants, it is only a small portion of the entire Marblehead Peninsula population. In order to protect as much of the population and its genetic diversity as possible, the Division is interested in purchasing more land from Lafarge, working with Lafarge to protect Lakeside daisies within the quarry, and establishing new populations in appropriate habitat. In 1989, the Division began an introduction program at Kelleys Island State Park by transplanting plants and seeds from the Lafarge quarry. Although Lakeside daisy has never been recorded from Kelleys Island historically, the habitat is similar in geology and plant species' associations to Marblehead Peninsula. Other areas were surveyed in the late 1980s, but Kelleys Island was the only site found with appropriate, protected habitat.

Since 1989, more than 1,000 plants (on four separate transplant days in 1989, 1990, 1992, and 1994) and thousands of seeds have been introduced to two areas within Kelleys Island State Park by Division staff and volunteers. The Division of Natural Areas & Preserves annually monitors 24 marked plots (17 planted, 7 seeded) to evaluate survival, flowering, and seedling establishment in the introduced population. As of mid-June 2000, we estimate that 80% of the transplants have survived and that more than 18,000 plants now occur from seeding and natural recruitment. We hope that Lakeside daisy will become a permanent part of the Kelleys Island flora. Lakeside daisies can be seen at Kelleys Island State Park in the central quarry area and north of the glacial grooves. A new display about this project should be completed in the park visitor center this Spring. If you have never seen this rare native plant in Ohio, I hope you will make a visit to the preserve or to Kelleys Island this May.

## Record Number Of Rare Plant Species Found In Ohio This Year

An unusually large number of new and rare wild plant species were spotted in Ohio this year, according to the Ohio Department of Natural Resources (ODNR).

In a typical year, Ohio might record the discovery of one wild plant species new to the state. During 2000, no less than three new species - all previously unknown in the state - were verified by ODNR. In addition, another five species thought to have died out more than 20 years ago were rediscovered. These extirpated plant finds were especially encouraging to biologists because the discoveries mean habitats necessary for the plants to thrive still exist in Ohio.

New plant species discovered in 2000 were the **Missouri rock-cress**, the **cuspidate dodder** - both found in northwestern Ohio, and the **Robbin's spikerush** found in the northeastern part of the state. Rediscovered extirpated species included the **creeping aster** and **villous panic-grass** in southern Ohio, **bearberry** in northeastern Ohio, the **long-bearded hawkweed** in northwestern Ohio and **Gattinger's foxglove** in central Ohio.

Ohio botanists worked with Dr. Tony Reznicek, a nationally renowned botanist at the University of Michigan, to verify the more difficult identifications. Reznicek said Ohio's record year was a singular achievement that he did not see duplicated in other midwestern states.

Jim McCormac, an ODNR botanist who participated in many of this year's finds, believes ideal growing conditions enjoyed in Ohio this year might be a factor in the resurgence of species. However, Reznicek thinks climate has little to do with the botanical bonanza.

"This year's discoveries mean Ohio's botanists are pretty darn good," Reznicek said. "Finding unusual plants requires good field work."

Adams County resident Barb Lund and her friend Dan Boone, a Kentucky botanist, rediscovered the **creeping aster**, a 12-inch tall plant that produces lavender flowers in the Fall, along a roadside in Shawnee State Forest in Scioto County. It was last spotted in Ohio in 1954. Lund said the secret to finding rare plants lies in familiarity with common species. "Then when something new comes along, it stands out," she explained.

Lund was also responsible for discovering **villous panic-grass**, a prairie plant that blooms in various forms from June to September and bears distinctive round fruits. She discovered it in Adams County on a

preserve owned by The Nature Conservancy (TNC). It had not been reported in the state for 65 years.

The **Missouri rock-cress** and the **long-bearded hawkweed** were found growing in the botanically rich Oak Openings area of northwest Ohio, a place McCormac calls a "treasure trove" of rare species. The **rock-cress** is a showy, 18-inch high member of the mustard family and produces conspicuous white flowers in May. It was spotted in TNC's Kitty Todd Preserve in western Lucas County by Gary Haase, a TNC employee.

Another Lucas County find was the **long-bearded hawkweed**, discovered by professional botanist Tim Walters. It is a member of the sunflower family and can grow to 3 feet high, producing a yellow bloom in late Summer. The only previously recorded Ohio sighting was in Fulton County in 1979.

Another of McCormac's intriguing finds in northwest Ohio was a patch of rare **alkaline water-nymph** found growing at the bottom of Mud Lake, a state nature preserve in Williams County. This sea weed-like plant can be native or non-native in Ohio. Whether or not the Mud Lake population is a relic from the past (or was simply introduced into the lake in modern times) is uncertain. The Ohio Rare Plants Advisory Committee, a group of prominent botanists who convene every two years, will likely discuss this discovery at their next meeting in February 2002.

McCormac and professional biologist Marshal Moser of Lima located the **cuspidate dodder** growing on a wild aster in Paulding County. The parasitic morning glory saps juices from its host plant and features an orange-colored stem and white flowers. The nearest known sites to Ohio are in extreme southwestern Indiana.

A glacial lake in Portage County turned up a specimen of the rare **Robbin's spikerush**, a conspicuous member of the sedge family. TNC employee Rick Gardner found this slender, grass-like plant, which grows to 2 1/2 feet high in standing water. Its hard, bony fruit may remain dormant and viable in the soil for decades.

McCormac found a colony of **Gattinger's foxglove** growing near Hoover Reservoir in Delaware County. The plant was recorded growing one other time in Ohio - in 1929. It stands about 8-inches tall and sports bright pink flowers during late Summer or early Fall.

A Lake Erie sand dune in Ashtabula County produced the first wild **bearberry** recorded in the state since 1939. **Bearberry** is in the heath family and is sometimes sold domestically in garden stores as a ground cover. However, this discovery almost certainly represents a surviving native population, said Jim Bissell, a noted botanist with the Cleveland Museum of Natural History. Bissell described the **bearberry's** dune as the "best in the state" for beachfront botany since several other rare and endangered plant species have been recorded there. Bissell now wants to approach the dune's owner to implement a management strategy.

Donations to the Ohio income tax checkoff program and revenues from sales of the Scenic Rivers license plates help the Division of Natural Areas & Preserves protect rare and endangered species. Some of these monies are spent to acquire high-quality habitats, like the areas where these rare plants were found. Checking the refund box for "nature preserves, scenic rivers, and endangered species protection" helps to protect Ohio's biodiversity. This is line 17 on the IT-1040 EZ form, and line 25 on the IT-1040 return. (See xxx for more information.)

Reprinted from information on the ODNR website:  
<http://www.dnr.state.oh.us/rareplants00/>

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## **Synthesis of the North American Flora, a CD-ROM database**

The North Carolina Botanical Garden is pleased to announce the publication of the *Synthesis of the North American Flora* by John T. Kartesz and Christopher A. Meacham, a much expanded and updated, digital version of Kartesz' A Synonymized Checklist of the Vascular Flora of the United States, Canada, and Greenland, Second Edition (Timber Press, 1994).

The *Synthesis* is the most authoritative, complete reference to the vascular plants of North America ever produced, containing a checklist with synonymy of all 28,033 species, subspecies and varieties. A distribution map for any one of the 34,842 families, genera, species, and infraspecific taxa can be displayed at the click of a mouse button. The *Synthesis* is a universal checklist for any state or province in North America. A single click on the query map shows only those taxa

found in the selected state or province. A citation is provided for every one of the occurrences of a species or infraspecific taxon in a state or province, a total of 234,789 references. The location of a voucher specimen is given for nearly half of these occurrences. Logical "boolean" calculations can compare state/province floras at a click. A list of 174 biological attributes can be clicked to produce subsets with desired characteristics -- for example, weedy exotic trees of Florida (a total of 46 species). This query by click technique allows nearly instantaneous access to floristic information. Scientific names with authorship can be inserted in an open text document with a single click.

The *Synthesis* is a Windows program and database that installs from a CD-ROM onto your hard drive and requires less than 25 megabytes of disk space.

Dr. John T. Kartesz, the author of all scientific data in the *Synthesis*, is Director of the Biota of North America Program (BONAP) of the North Carolina Botanical Garden.

This CD-ROM can be ordered from the North Carolina Botanical Garden online at  
<http://www.unc.edu/depts/ncbg/synsis.htm>

The cost is \$495.00

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Prairie Restoration Seed Source

The Prairie Moon Nursery prints a comprehensive catalog of seeds and plants for creation and restoration of prairies, from back yards to the back forty.

The catalog is available on line at [www.prairiemoonnursery.com](http://www.prairiemoonnursery.com), but without the 4-page center section of color photographs, which are in the print copy.

The nursery is located within the Wiscoy Valley Land Cooperative in Minnesota. The land co-op members hold the land in common, but own their own homes. The nursery is open to the public for only two scheduled tours a year.

Included in the catalog are detailed instructions on how to establish and maintain your prairie, books of interest, a guide to scientific plant names, and lists of butterfly and hummingbird favorites.

Write to them at Route 3 Box 163, Winona MN 55987, or phone (507) 452-5238

## Conkle's Hollow A Bit Of Ohio's Winter Beauty

**Paul Knoop**

Whoever said Ohio is a boring state hasn't taken the time to explore its rich natural heritage. The present slogan for the state of Ohio, "Ohio, the Heart of It All", seems an appropriate description for our state. Between Lake Erie and the Ohio River are fertile croplands, rolling hills, beautiful rivers, forests and wildlife. Much of the land has been altered by human activity but fortunately we have had the wisdom to preserve areas that have high aesthetic, geological or biological value.

During a recent visit to the Hocking Hills just south of Lancaster, I was reminded of the very special nature of Ohio's land. Here in a region of rugged hills and deeply cut valleys are a series of several well-known scenic features: Ash Cave, Old Man's Cave, Rock House, Cedar Falls, Cantwell Cliffs and Conkle's Hollow. All of these remarkable areas are the result of water eroding the sandstone, grain by grain, over many thousands of years. In some areas, such as Conkle's Hollow, the eternal work of moving water has carved a magnificent gorge with 210-foot-high vertical walls of Blackhand sandstone. This sandstone, the prominent bedrock throughout the region, was deposited about 350 million years ago in a vast inland sea that covered that part of Ohio. Rivers flowing into this ancient sea carried coarse and fine-grained sands, depositing them on large deltas much like the present day delta at the mouth of the Mississippi River. Over many millions of years these deep sands were compressed and cemented together to form the hard sandstones. As time passed great internal earth forces caused the land of eastern North America to gradually rise, forming the present Appalachian Mountains. As the land rose, the ocean waters drained away. This exposed the land to the effects of flowing water and climatic extremes. These forces alone carved the deep gorges of the Hocking Hills region.

Conkle's Hollow is a delightful little place. Pulling off of Ohio 374 into the parking lot one is struck by the simple beauty and silence of the place. Plants dominate the rolling hills here and their presence softens the deeply dissected landscape. During the Winter season the dark green of Virginia pine, pitch pine and hemlock trees contrasts sharply with the stark grays and browns of hardwood trees. Plant communities in the deep, cool recesses of Conkle's Hollow are relics from a time when the great Wisconsin glacier lay just six miles north of the preserve. Even today, after thousands of

years, within the gorge itself one finds plants such as Canada yew, wintergreen and partridge berry, all of which are generally associated with more northern climates.

On this day we follow the trail from the parking lot as it enters the mouth of the gorge. Crossing Big Pine Creek we notice the curly, pinkish-tan bark of the river birch, a beautiful little tree of streamside and floodplain. We elect to take the two mile rim trail which traverses the top of the gorge. Here one can see the tops of giant hemlock trees growing up from the valley floor and sheer vertical walls of Blackhand sandstone. In some areas large blocks of sandstone have broken loose and seem balanced precariously along the gorge walls. From the sandstone grow hemlock, Virginia pine, black birch and chestnut oak trees with roots that wind around and hug the rocks. Low growing plants such as trailing arbutus, wintergreen and partridge berry cover the ground with their evergreen leaves. I lean down, pick a leaf of wintergreen and smell it. The odor reminds me of Teaberry gum that I chewed as a boy. In some areas it is called "mountain tea" and it is said to make a good drink.

In numerous areas we notice golden-crowned kinglets searching for food among the branches of hemlock trees. These small birds are summertime residents of Canada and I am sure they feel at home in the cool recesses of Conkle's Hollow.

Passing the halfway point at the head of the gorge we can hear the water falling to the valley below. Even as we pass, the power of moving water is carrying away a few sand grains and increasing the size of the gorge. In this way, over many thousands of years, the small stream has carved the magnificent gorge.

Returning to the east rim trail, we notice that the vegetation is very different from the west rim trail. This east side receives more sunlight, is warmer and therefore conditions are more conducive to the growth of Virginia pine and oak trees. The hemlock trees here are smaller and lighter in color. This is a classic example of how plant growth is affected by slight changes in light, heat and moisture.

We follow the winding trail downhill to the valley floor and are back where we started. In our two-hour walk we witnessed giant hemlock trees, miniature partridge berry plants and ancient sandstone cliffs. We felt refreshed as we left the parking lot and drove down the highway toward home.

**IT-1040 EZ**

**2000**

**OHIO Income Tax Return** For Full Year Ohio Residents

**Wildlife and Natural Areas Donations (These will REDUCE your refund.)**

16. Amount of line 14 you wish to donate for conservation of endangered species and wildlife diversity: \$3  \$5  \$10  other  ..... 16.   .
17. Amount of line 14 you wish to donate to nature preserves, scenic rivers and endangered species protection: \$3  \$5  \$10  other  ..... 17.   .

Do not complete lines 16 and 17 unless you want to donate all or part of your refund on line 14 to Natural Areas and Wildlife. Your refund will be automatically reduced by the amount donated.

**About the Division of Natural Areas and Preserves**

**Heidi Hetzel-Evans, DNAP publicist**

Established in 1975, the Ohio Department of Natural Resources Division of Natural Areas and Preserves is authorized to acquire, dedicate and accept donations of public and privately-owned lands as nature preserves. Today, the division administers a statewide system of 123 nature preserves and wild, scenic and recreational rivers.

The division has the legal authority to manage and protect these lands and waters for education, scientific use and public visitation. Preserving Ohio's unique natural areas helps improve the biodiversity of the state's plant and animal populations.

State nature preserves are not parks. Rather, they are sanctuaries for rare plants and animals. Preserves vary in size from less than one acre to thousands of acres, and are best suited for research, education and low-impact activities, such as nature study, photography, bird watching and hiking.

The division coordinates the Scenic Rivers Program which is dedicated to protecting Ohio's remaining high-quality streams for future generations. Scenic rivers retain most of their natural characteristics at a time when many rivers reflect the negative impacts of human activities. The protection and preservation of a designated stream depends upon local input and community involvement. Currently, Ohio has 20 state scenic river segments.

The division maintains Ohio's Natural Heritage Data Base which provides data on rare plants and animals, geologic features and significant natural communities. The division is also responsible for maintaining a status list for rare native Ohio plants which is updated every two years.

A combination of monitoring and management helps ensure the preservation of the features for which preserves are established. Examples of management activities include prescribed burning, manual cutting,

selective chemical application and non-native species removal.

Each year, the division presents a variety of interpretive programs at preserves across the state. A schedule of events can be obtained by contacting the division.

Additionally, the division publishes a free quarterly newsletter, *Natural Ohio*, and other informative publications for the public.

**Support the preservation of Ohio's natural heritage through the Natural Areas Income Tax Checkoff program.**

Taxpayers may donate any portion of their Ohio state income tax refund to support natural areas acquisitions, education programs, scientific research and protection of threatened and endangered plants and animals.

In the past year, the state has acquired additional acreage at Lake Katharine State Nature Preserve in Jackson County, two parcels along Big Darby Creek National and State Scenic River and a conservation easement on land near Miller Nature Sanctuary in Highland County. Facility development projects include completing a boardwalk at North Pond State Nature Preserve on Kelleys Island and adding a new section of boardwalk at Rockbridge State Nature Preserve in Hocking County.

The division continues to face challenges, such as the ongoing threat of invading plant species to native species and the impact of urbanization. Protecting and preserving Ohio's rich natural history will continue to provide a foundation for future division activities.

To learn more, the Division of Natural Areas and Preserves at (614) 265-6453 or log on to their web site at: [www.dnr.state.oh.us/odnr/dnap](http://www.dnr.state.oh.us/odnr/dnap).



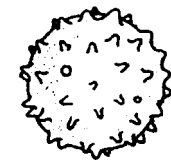
## Botany 101, #2: Basic Reproductive Biology of Flowering Plants

By Dr. Rebecca Dolan

Recall, from the first article in this series, in the Winter issue, volume 18 number 4, that the stamen is the male reproductive organ in plants. It is made up of the anther that produces pollen, and the filament, that elevates the anther above the base of the flower. Anthers dehisce, or open, in elaborate ways to release pollen. Some anthers have pores that open like flip-tops; some open all along their sides like mature green beans.

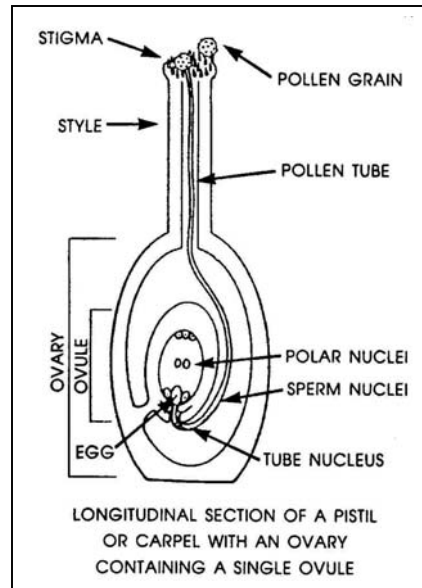
Pollen produced is released in search of an egg to fertilize, but first **pollination** must occur. Pollination occurs when a pollen grain lands on the surface of the stigma of a carpel, the female organ of a flower. Pollination may be facilitated by insects, such as bees and butterflies, or other animals. Some other plants rely on wind to carry pollen from flower to flower. These are the notorious allergy causers like grasses, ragweed, and forest trees. The copious pollen needed by plants that rely on chance winds to carry out pollination

means some of that pollen ends up triggering hay fever in sensitive noses.



EXTERIOR OF A POLLEN GRAIN

A pollen grain is a microscopic two-celled structure surrounded by a thick wall to prevent desiccation. These thick, tough walls are some of the most enduring structures made by plants. Fossil pollen from thousands of years ago remains and is used to reconstruct ancient floras. Characteristics of the pollen walls can be used to identify genera and sometimes species.



The cells within each grain are the **tube cell** and the **generative cell**. Both have half the normal chromosome complement of mature plant cells. Like sperm in mammals, these cells are the products of the type of cell division called **meiosis**. The generative cell will divide to form two **sperm**. The tube cell will direct the growth of the **pollen tube** through which the sperm will reach the egg (more on this later).

Once pollination has occurred, the tube cell produces a pollen tube that grows through the style of the flower and deposits the two sperm into an ovule within the ovary. One-seeded fruits have one ovule per ovary, many-seeded fruits have many ovules. Each seed produced is the result of the successful growth of a pollen tube and successful fertilization. It's fairly easy to imagine the path of a pollen tube through the style of a cherry flower toward the single ovule within the ovary. But imagine the congested style of a watermelon flower!

As in humans, plant ovaries produce **eggs** by meiosis, and these also have half the number of chromosomes as adult cells. Thus, when the egg and sperm join during **fertilization**, the resulting embryo has a complete set of chromosomes, half from each parent. Events associated with fertilization in flowering plants are somewhat more complex than in humans, however.

In addition to the egg, plant ovaries produce some accessory cells that help in seed development. You may have wondered, why produce two sperm from each pollen grain? One sperm joins with the egg to form the embryo. The other joins with two **polar nuclei** to form an unusual tissue called **endosperm**. Endosperm provides nutrients to the embryo as it develops within the seed. Endosperm has not one, or two, but three chromosome sets (one from each polar nucleus, one from the sperm). The two-step union of the egg and sperm along with the union of the sperm with the polar nuclei is unique to plants. It is referred to as **double fertilization**.

Next time we'll look at the anatomy of a seed.

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

Illustrations by Jan Glimn Lacy

*Reprinted with permission from the Indiana Native Plant and Wildflower Society News, Summer 1999*

## Growing and Propagating Wildflowers

**Ted Scott, Shenandoah Chapter, Virginia Native Plant Society**

Anyone interested in either growing and/or propagating our native wildflowers should take a look at a new book just published in March by Houghton Mifflin Co. It is *The New England Wild Flower Society Guide to Growing and Propagating Wildflowers of the United States and Canada*, by William Cullina, the chief propagator for the New England Wild Flower Society.

The book is divided into four principal sections: an introduction of some 30 pages, the wild flower encyclopedia of 200 pages, a section on propagation of some 33 pages, and an appendix of 30 pages. I found the introduction especially interesting and informative in a way unusual for an introduction. Such subjects as "What is a Native Plant," "Latin Names," "Hardiness Range," "Light," and "Soil," plus others, are treated in considerable detail to help the reader understand, for example, the difference in the light requirements for a plant in Quebec and the same plant in Mississippi.

The wildflower encyclopedia provides information on each genus followed by detailed information on one or two species to half a dozen species in the genus. For each species the information is divided into statements specific to hardiness zones and levels of light, soil moisture, texture and level of acidity, areas in which the plant is native, size in height and width, and closes with comments on the plant. One element included on every species that impressed me was the information on soil requirements including comments on the acidity level or specific pH preferred by a plant, something I have frequently sought in vain in other volumes.

Cullina is a successful grower of a number of difficult-to-grow plants and readily explains for us essential information for growing those plants. Lewisias and cypripediums come to mind as examples.

The section on propagation is likewise especially informative with careful attention paid to the requirements for success in propagating those species included in the book, whether it be from seed or by vegetative reproduction. For those plants requiring tissue culture, Cullina says he prefers to purchase the young plants from growers specializing in that form of propagation and then grow them on before planting in the garden. The information in this section is not only up-to-date but the most informative I've ever seen in a single volume. This part of the book is a special delight. The appendix provides the reader with a ready reference to information that would otherwise require

considerable effort to accumulate in such a convenient form. It provides a list of wildflowers for different types of sites, sources for propagated plants and seeds, and a list of selected native plant societies in the U.S. and Canada.

Another aspect of the book that will please most readers is the photographs. They are sharp, show details and are a delight to view. While a number of photographs are his own, Cullina was in a position to draw from the enormous library of top quality slides at the New England Wild Flower Society. They enhance the level of excellence found in his book.

Finally, I found Cullina's writing refreshing, humorous at times, and possessing an easy, flowing style. This, coupled with the wealth of information included, makes the book most entertaining to read if you have any interest in wildflowers. While all readers will probably not agree with some of Cullina's philosophical views, I can't imagine anyone interested in either growing or propagating native plants failing to get more than his/her money's worth from this book. It lists for \$40.

Reprinted with permission from the Virginia Native Plant Society



**The 2001 Ohio Prairie Conference**, "Adams County Prairies - In the Footsteps of E. Lucy Braun" will take place in Adams County August 17-19. It will be held in one of Ohio's most exciting eco-regions - the Bluegrass of southern Adams County. Here in a geologically and botanically rich area one can experience the same remote and wild prairie openings that the late E. Lucy Braun, and her sister Annette, experienced in the early part of the last century.

Our meeting place will be Woodland Altars, a Church of the Brethren camp retreat and education center on several hundred acres of diverse natural land. There are dining lodge and meeting room accommodations as well as adequate dorm and canoeing facilities

Call John Klein at Hamilton County Park District - 513 -728-3551, Ext. 227 or Paul E. Knoop, Jr. at 740-385-6638 for additional information and/or application.

## Invasive Plants of Ohio

### Fact Sheet 3

#### Garlic Mustard (*Alliaria petiolata*)

##### DESCRIPTION:

Garlic mustard is a non-native, biennial herb that grows 5-46 inches tall. The first-year plant is in the form of a rosette with kidney-shaped leaves that remain green throughout the Winter. The second year, a flowering stem is produced with triangular-shaped leaves that are sharply toothed. Crushed leaves emit a garlic-like odor. The flowers bloom in a cluster at the end of the stem. Each small flower has four white petals and blooms from May to June. The fruits are long, green capsules that become brown as the seeds mature, making it easy to identify.

##### HABITAT:

Garlic mustard generally prefers some shade and can be found in upland and flood plain forests, savannas, yards, along roadsides, and occasionally in full sun. This plant invades forests first at the edge, then progresses to the interior along streams and trails.

##### DISTRIBUTION:

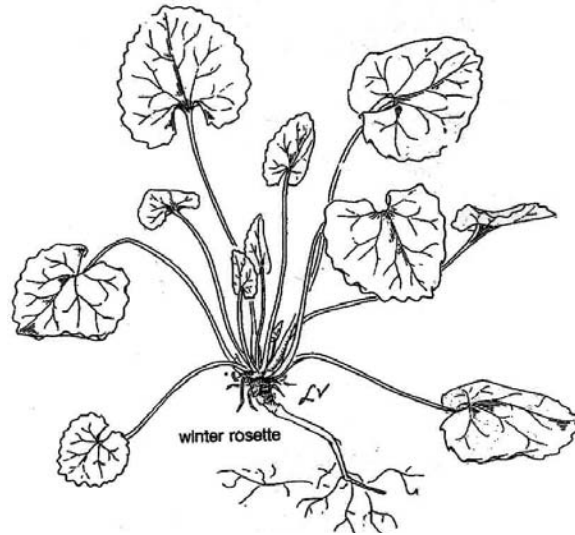
Garlic mustard originated in Europe and was introduced to the United States for herbal and medicinal purposes. It was first recorded in the United States in 1868 in Long Island, New York. By 1991, garlic mustard had invaded 28 Midwestern and northeastern states. Garlic mustard can be found throughout the state of Ohio.

##### PROBLEM:

Garlic mustard aggressively out-competes native species in the understory of forests and woodlands. This plant begins growth in early Spring and ends growth later in the season than most native species. As a result, garlic mustard shades out native wildflowers and out-competes native seedlings. Garlic mustard grows in dense clusters and can displace most herbaceous native plants within 10 years. Large quantities of seed are produced and can remain viable in the soil for up to 7 years. The seeds are dispersed by wind, water and transported by animals and humans.

##### CONTROL:

**Mechanical:** Mechanical controls of garlic mustard include hand-pulling and cutting, and are most effective on smaller infestations. Hand-pulling of plants can be very effective, although labor intensive.



Care must be taken to insure that the entire plant is removed and that all plant materials are bagged and moved off-site. A plant can continue to mature and produce seeds even if it has been pulled up. Hand-pulling and removal must continue until the seed bank is exhausted (at least 7 years). Cutting populations of garlic mustard is effective for medium to large concentrations of plants. Stems may be cut by mowing, brush-cutting, or by hand when the plants are in flower. This can result in total mortality of the plants, however it does not affect the seed bank. Cutting must continue every year until the seed bank is exhausted. Prescribed fire can be an effective control agent in controlling garlic mustard given the proper location and fire intensity. However, repeated, effective burns over several years may be needed.

**Chemical:** Foliar spray application of herbicide can be used to control populations of garlic mustard where mechanical methods may not be effective, such as large infestations. Roundup® or Glypro® are effective herbicides to use, however, they are not selective so non-target species in the vicinity of the application may be affected. Garlon 4® has also been used during the growing season to control rosettes. Herbicide should be applied during the late Fall and early Spring months while non-target species are dormant.

**Biological:** Currently there are no programs in use, however research is being done to find a potential biological control agent.

## ADDITIONAL INFORMATION SOURCES:

Bartlow, J., K. Johnson, M. Kertis, T. Remaley, S. Ross, E. Simet, T. Smith, D. Soehn and G. Taylor. 1996. Tennessee Exotic Plant Management Manual. Tennessee Exotic Pest Plant Council.

Nuzzo, V. 1994. Element Stewardship Abstract for *Alliaria petiolata*, Garlic Mustard. The Nature Conservancy.

Wisconsin Bureau of Endangered Resources. 1992. Invasive Species Control Manual. Garlic Mustard, *Alliaria petiolata*.

Illustrations reprinted with permission from *The Illustrated Companion to Gleason and Cronquist's Manual: Illustrations of Vascular Plants of The Eastern United States and Adjacent Canada*, © 1998. The New York Botanical Garden.

May 2000

**Ohio Division of Natural Areas and Preserves**  
[www.dnr.state.oh.us/odnr/dnap/dnap.html](http://www.dnr.state.oh.us/odnr/dnap/dnap.html)



## Not in My Backyard

**Bonnie Harper-Lore**

It was a warm and sunny late spring weekend in my backyard. As I walked along the woodland trail, I smiled at the violets, the meadowrue, the bloodroots, hepaticas, the bellworts, and the jack in the pulpit ... all there naturally. Then I spotted a new white bloom not associated with spring ephemerals ... garlic mustard! \*#?! I had heard of its existence, but did not expect it in my suburban backyard. It is such an inconspicuous weed, unlike purple loosestrife or other nationally-known invasives. After confirming the identification I found many large clumps of the silent invader!

So I spent the rest of my spring day spot-spraying garlic mustard because this invader requires heavy-hitting. Of course there were some other perennial pests: a spreading European bellflower, the various thistles, creeping Charlie, and the occasional dandelion. As for the bellflower, few people in my region think of it as invasive and so it will continue to go uncontrolled in neighboring yards. Four species of

thistles are on the State noxious weed list, and most homeowners control them. As for creeping Charlie, I think most suburbs gave up on it years ago. But no one sent me the memo on letting dandelions roam free! And no one seems to be aware of garlic mustard.

After working up a sweat, I photographed the invasives in my backyard, in hope that next years photos would be weed-free. With a few shots remaining, I decided to take a walk through my neighborhood. A block away, creeping Charlie had taken over my neighbors front yard, appearing as a blue carpet. Across the street at the Middle school, it was obvious that the grounds personnel had taken vacation when the students departed. Approximately two acres of school grounds are now blanketed with dandelions in all stages of growth, but mostly in seed head stage. Rain was predicted and arrived that night. And no one else seemed to care that all those seed heads would be blown in the wind and watered into any bare soil around.

So why should you, the reader, care? Spring will come soon to your neighborhood. Your backyard might also be under silent siege. Some of these invasive plants are or will be on your State noxious weed list. When that happens, you will be legally responsible for their removal. If you know they are there, you can control them before they become large costly populations. Furthermore, if you work with vegetation management on the landscape level, be it a county roadside, a school yard, a State park, or a Bureau of Land Management grazing land, local control of weeds in our backyards will affect your work load over time. Remember invasive plants do not respect political boundaries. Weeds are everyone's problems and not just in my backyard.

Reprinted from *Greener Roadsides*, Winter 2001, a quarterly publication of the Federal Highway Administration Office of Natural Environment



This is your Journal, and it will continue to prosper only if you send us articles, suggestions, and information of events that would be of interest to our membership.

## What's So Special about Wetland Plants?

One of the characteristics of a wetland besides its hydrology and its soil is the vegetation characteristic of swamps, marshes, bogs, fens, and other wetland areas. Anyone who has kicked about in the outdoors has probably learned to recognize that cattails, reeds, and sedges promise wet feet for She-or-He-Who-Walks-Among-Them. Casual observation discloses that willows, cottonwoods, alders, and box elders are usually found at the edges of wet places. And of course plants such as duckweeds, coontail, pondweeds, and water lilies grow on and/or under the surface of shallow, permanent bodies of water. Why do these plants grow in wet places, while others do not? Are there plants that can grow both in wet and drier conditions? In this article we will look at designations for wetland plants, the conditions to which wetland plants must adapt, and some of the adaptations that allow these plants to live in these inundated or saturated conditions.

The US Fish and Wildlife Service (FWS) published a *National List of Plant Species that Occur in Wetlands: 1988 National Survey* that classifies wetland plants into the following categories:

- **Obligate Wetland (OBL)**, under natural conditions, these plants occur at least 99% of the time in wetlands.
- **Facultative Wetland (FACW)**: occur in wetlands at least two-thirds of the time.
- **Facultative (FAC)**: equally likely to occur in wetlands or non-wetlands (found in wetlands from one-third to two-thirds of the time).
- **Facultative Upland (FACU)**: occur in drier areas (uplands) at least the-thirds of the time
- **Obligate Upland (UPL)**: occur in drier areas at least 99% of the time.

When a wetland delineator examines an area, the species found there are identified and classified according to this FWS publication. If more than half of the plant cover belongs to species that are classified as OBL, FACW, or FAC, then the area is declared to be characterized by wetland plants that is, it has hydrophytic (*hydro* = water, *phyte* = plant) vegetation. There is some controversy over the adequacy of this delineation method; developers, of course, would like

to see the criteria restricted to eliminate what they consider "marginal" wetlands. Also, human disturbance of natural conditions has resulted in the appearance of some species in the "wrong" habitat more than "should" occur. For example, silver and red maples, both categorized as at least FACW, are commonly found in drier disturbed areas. Conservationists argue that given enough time, such occurrences would probably not usually persist; what occurs under natural conditions (to the best of our knowledge) should not be ignored in favor of what occurs under disturbed conditions. This whole argument leads to a discussion about the existence and identification of what are sometimes called "climax" conditions or communities.

Some examples in our area of some plants for the two most hydric categories are:

**OBL: trees and shrubs** - hazel alder, buttonbush, bog and sandbar willows, mountain-holly, swamp rose. **herbaceous plants** - skunk cabbage, all cattails, water milfoils, hornworts, Elodea, pondweeds, rice cut-grass, and duckweeds; most rushes, spikerushes, bulrushes, and many sedges; water lilies, water lotus, and water shield; arrowheads, water pickerel, duck corn; some beggar ticks, smartweeds, goldenrods, and buttercups; royal fern, and sphagnum mosses.

**FACW: trees and shrubs** - elderberry, spicebush, red and silver maples, box elder, many willows, pin and swamp white oaks, cottonwood and balsam poplar, river birch black, green, and red ash, American elm, sycamore. **herbaceous plants** - canary reed and bluejoint grasses, bluebells, Phragmites and purple loosestrife (both very problematic invasive species), Cinna grass, touch-me-not, sensitive and marsh ferns, most horsetails.

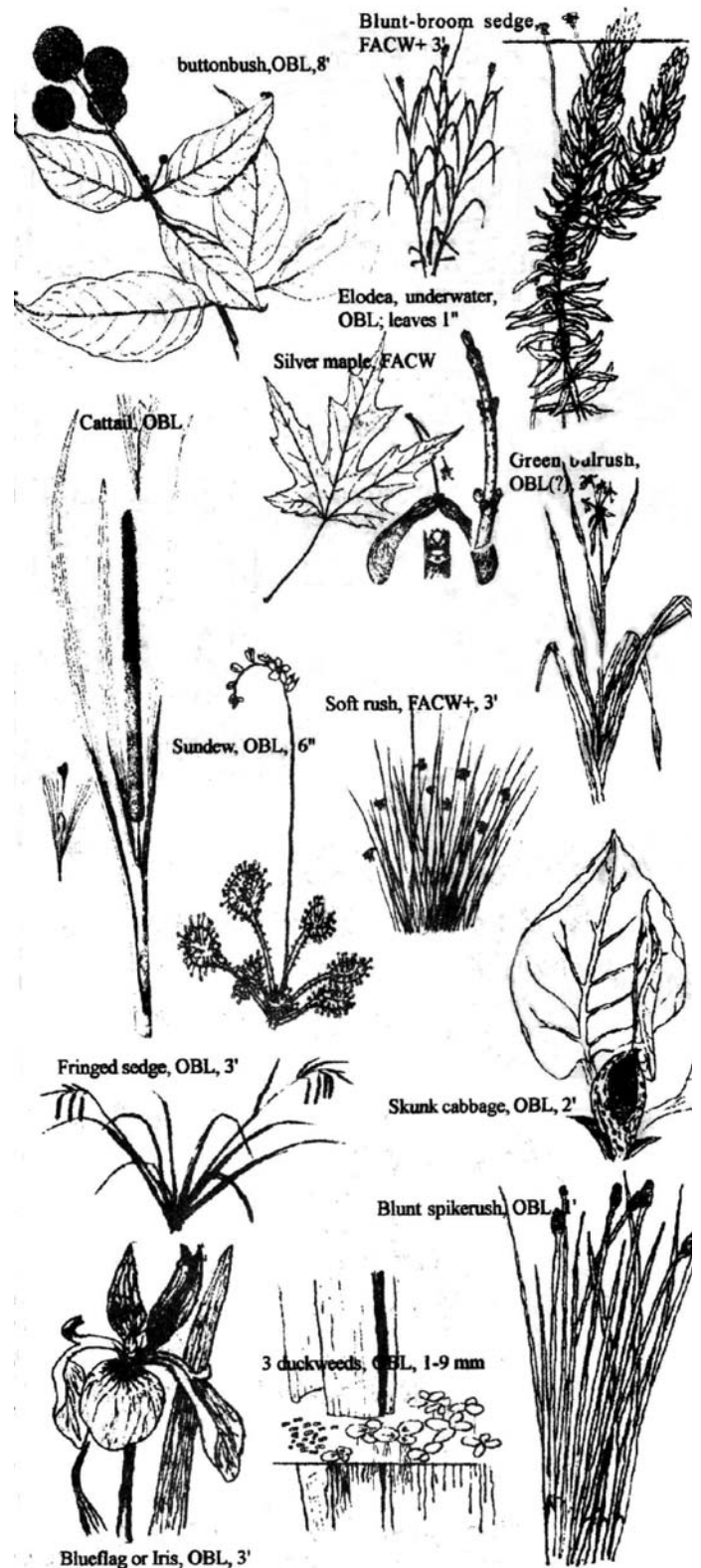
Probably the best non-technical field guide for wildflowers and shrubs, for those interested in identifying plants, is Lawrence Newcomb's *Wildflower Guide* (Little, Brown and Co., Boston, 1977) for about \$16. A complete key (very technical, with no pictures) is Clara Weishaupt's *Vascular Plants of Ohio* (Kendall/Hunt Publ., DuBuque, 1971) about \$20. Two fine but expensive works on Ohio flora, both by E. Lucy Braun, are her *Monocotyledonae* (OSU Press, 1967), which contains all of the state's grasses, sedges, orchids, the lily family, and so on, and *The Woody Plants of Ohio* (Hafner Press-Macmillan Publ., NY, 1961). A good fern book is the Peterson *Field Guide to*

*the Ferns* by Boughton Cobb (Houghton Mifflin, Boston, 1963).

All of the OBL wetland plants mentioned here (indeed, all hydric vegetation except algae) originally came from ancestors which lived on land. Their terrestrial origins are suggested by a number of structural features. For example, although the vegetative parts (stems, leaves, and roots) of such plants as water milfoil, eel-grass, pondweeds, and bladderworts are normally mostly or entirely under water, their flowers are all borne on aerial stems to facilitate fertilization by ancestral vectors - wind and insects. Though some submergent plants still retain traces of the pores, called stomata, on the underside surfaces of their leaves that once allowed for gas ( $O_2$  and  $CO_2$ ) exchange, these remains are often vestigial and non-functional. Thus it is apparent that aquatic and wetland plants have evolved adaptations which allow them to live in saturated conditions.

One of the problems faced by submerged plant tissues is the need for enough oxygen to carry out their metabolic functions. If you have ever squeezed or cut the bottoms of cattail stems or roots you probably noticed that they felt or looked spongy; this sponginess is due to a number of air ducts, called aerenchyma, which conduct oxygen within the plant from the aerial photosynthetic tissues, where it is being produced, down to the parts of the plant living in anaerobic conditions where oxygen is constantly being used up, thereby creating a gradient of oxygen concentrations (high in upper parts, lower in the submerged tissues). The roots of such plants often actually leak small amounts of oxygen into the anoxic soils, as evidenced by the reddish zones around the roots where leaking oxygen has oxidized the iron within the gray wetland soil or muck. This situation may help the plant absorb minerals from the "reduced" soil conditions by raising the "redox potential." It also provides microhabitats in this anaerobic environment to which some invertebrates have adapted (another story). Some FACW plants lack aerenchyma under drier conditions but produce them during times of flood or saturation. Some wetland trees, such as bald cypress and mangrove trees, grow "knees" in their roots which stick up above the water and have openings called pneumatophores which can conduct gases to and from their submerged roots.

Another way of dealing with anaerobic conditions is through evolution of alternate metabolic pathways. Buttonbush is a mostly emergent plant except for the



roots, which are almost always under water. These tissues eke out an energy source not through the usual pathway of the citric acid cycle, which requires plenty of oxygen, but through fermentation, which releases less energy but can take place in anoxic conditions. To deal with the toxicity problem from alcohol, the usual end-product of fermentation - buttonbush's roots produce simple, organic acids as end-products of fermentation instead, which then move to the aerial parts of the plants where they can be broken down further to release more energy by entering the citric acid cycle that is enabled there.

For completely submerged photosynthetic tissues, the presence of functional stomata (leaf pores) would cause problems of CO<sub>2</sub> leakage, so these structures are lacking or nonfunctional. These plants absorb dissolved CO<sub>2</sub> right through their leaves and stems, which lack the thick or waxy cuticle present in aerial parts. Again, the using up of CO<sub>2</sub> during photosynthesis and O<sub>2</sub> during respiration causes gases to move in the direction of lower concentrations within the plant tissues.

Ironically, there are several wetland situations where the vegetation is not adapted to wet conditions, but rather to **dry** ones! Namely, plants living in marine wetlands and in acid bogs have difficulty in absorbing water from their environments because of high salt concentrations in the former case and high acidity in the latter. Since there are no local salt marshes that topic will not be dealt with here, but there are bogs in our area, and they are among our most intriguing and exotic habitats. The stories of their formation, their ecology, and their plant and animal communities are all remarkable

For further discussion of these and other plant adaptations to wetland conditions, see ch. 6 in Mitsch and Gosselink's *Wetlands* (Van Nostrand Reinhold, NY, 1986).

*Reprinted with permission from the June 1999 Friends of Wetlands (Elyria OH) newsletter*

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## Wetland News

There have been several important recent developments impacting wetlands on both the national and local levels. Wetlands are an issue in which our chapter takes a special interest, especially in Ohio where we suffer from the second-worst record in the

nation for destruction of our original wetlands, having lost more than 90% of original wetland habitat.

**First, The Good News.** The U.S. Fish and Wildlife Service is charged by The Emergency Wetlands Resources Act of 1986 to report to Congress each decade on the status of the nation's wetland inventory. The service will report that the estimated wetland loss rate is now 58,500 acres annually. This represents an 80% reduction in annual wetland loss from the last decade. Forested wetlands (the wetlands at our Novak Sanctuary are an example of this type) experienced the greatest decline of all wetland types, with a loss of 1.2 million acres (2.4% change) For the first time in the nation's history, there are fewer than 50 million acres of forested wetlands in the conterminous United States. Freshwater emergent wetlands declined by 1 million acres (4.6% change). On the other hand, freshwater ponds increased by nearly 13% in the last decade. Estuarine emergent wetlands declined by 14,450 acres, most of them lost to urban development in coastal areas.

The analysis attributed causes of wetland loss nationally to: Urban Development (30%), Agriculture (26%), Silviculture (23%), and Rural Development (21%).

While the nation has not met the stated goal of no net loss of wetlands, substantial progress has been made in reducing the rate of loss.

Wetlands are an invaluable part of ecosystems, filtering and cleansing the nation's waters, helping to retain flood waters, harboring emerging fish and shellfish populations and supporting the greatest diversity of wildlife of any habitat type. Their destruction increases flooding and runoff potential, harms neighboring properties, causes stream and river pollution and destroys critical habitat.

Reprinted with permission from *The House Wren*, Bulletin of the Audubon Society of Greater Cleveland, February 2001

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## Local Wetlands Endangered

Heritage Development Co. is well on its way to putting a huge shopping center across from Geauga Lake Park (now Six flags) in Bainbridge Township at the Aurora line. Changes in federal laws have made it difficult to prevent this major destruction of over 30 acres of wetlands. Only swift emergency intervention by the Ohio EPA can forestall development.

## Ohio Natural Area and Preserves: Little Beaver Creek

457 acres. Significant Features: Large beech, maple, oak and hemlock trees; narrow sandstone gorge with waterfalls; spectacular Spring wildflowers.



### Sheepskin Hollow

**Emliss Ricks, DNAP Preserve Manager**

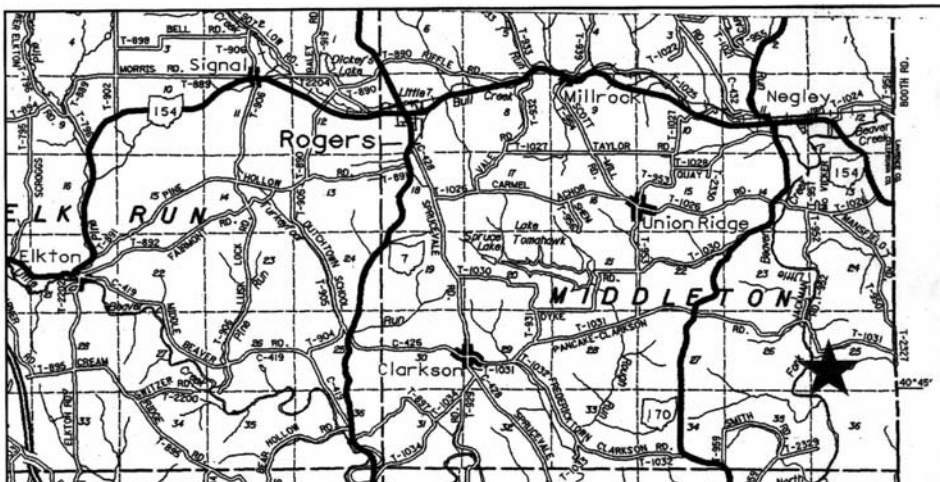
Little Beaver Creek Nature Preserve lies on the western edge of the Appalachian plateau and straddles the north fork of the Little Beaver State Park and National Wild and Scenic River. Characterized by hardwood forests of beech-maple and upland oaks, the preserve has a beautiful ravine on the east side of the river with outcrops of Pennsylvanian age sandstone and shale overlooking a tumbling, rock-strewn stream. Yellow birch and eastern hemlock line the streambed throughout its half-mile length and Spring wildflowers include large-flowered trillium, trout-lily, wild stonecrop, false Solomon's seal, and waterleaf. Some of the more significant species include speckled wood-lily, pipsissewa, Bicknell's panic-grass, pink lady's-slipper orchid, and Canada fly honeysuckle. While most of the surrounding upland forest is second or third growth, the hollow itself maintains a highly pristine character. This area is adjacent to the Pennsylvania border, sparsely populated, and is as wild as anywhere in Ohio, with black bears and bobcats occasionally spotted in the region. The hollow is a wonderful place to bird where one can see any number of colorful warblers and other migrants during the early days of May. Waterthrushes can be seen and heard along the small

stream and the loud call of the pileated woodpecker echoes from the hollow to the bluffs above. Several small waterfalls are found in the hollow and sandstone overhangs loom high on the hillsides. Access to the hollow is from the abandoned roadbed of the former Youngstown and Southern Railway, a construction project of the depression era. In fact, the railroad embankment actually filled the valley mouth and a concrete culvert built to allow the streamflow is visible today with the date 1933 clearly visible. A small natural sandstone arch can be found just off the trail north of Pancake-Clarkson Road. The hollow is a small part of a much larger area that is being protected either through state purchase or conservation easements. The hope is to permanently protect several thousand wooded acres and ensure the health of the north and middle forks of Little Beaver Creek for future generations.

There are no access facilities or improved trails in the preserve at this time. Located three miles south of Negley in Columbiana County, take State Route 170 and then proceed one and one-half miles east on Pancake-Clarkson Road across the stream to the old railroad bridge. Park in the pull-off area and proceed south along the old right-of-way approximately a quarter of a mile or so and the hollow will be on your left. Carefully negotiate the trail down into the hollow and be aware of the fact that there are copperheads in this region. There are a

number of alternative walks in and around the preserve in this beautiful valley.

LOCATED 3 miles south of Negley on State Route 170; proceed 1½ miles east on Pancake-Clarkson Road to the railroad overpass. No parking area, sign, or trail system are present. Park near the railroad overpass and walk along the railroad to access Sheepskin Hollow.





## Taking A Closer Look

**Guy L. Denny**

It is all a matter of perspective! Of course, many things are, but in this case I am referring to how we visualize the world around us, and more specifically, how we view the wealth of Spring wildflowers which blanket our Ohio woodlands. For most of us, it is rewarding enough to simply gaze upon a beautiful trillium, violet or orchid, and revel at its obvious beauty in color and form. And, that is where it typically ends. Not that such a perspective is less than adequate, but rather, I would challenge you to go one step beyond by taking with you, and using, a good hand lens in the field this coming Spring. View, close up, the intricate beauty of color, design, and flower structure which is not readily noticeable without the aid of a hand lens. As you will see, a new fascinating world of discovery awaits you.

A very good example of evasive beauty that comes to mind is that of the Miterwort (*Mitella diphylla*), a fairly common Spring woodland wildflower found throughout the state. Like most Spring wildflowers, it is quite lovely as is. Yet, the incredible intricacies of its tiny, delicately fringed, white flowers which look strikingly like beautifully sculptured snow flakes, go unnoticed without the aid of a close-up lens. The tiny flowers of Foamflower (*Tiarella cordifolia*), a close relative to Miterwort, are likewise just as intriguing and beautiful in form upon closer examination. Each looks like a miniature crown or tiara. By the way, if you don't have a good 10X or 15X hand lens, you can use a pair of binoculars in a pinch to serve the same purpose. Simply reverse the glasses by placing the flower right next to one of the lenses where you would normally place your eye. Then view the flower by looking through the larger, opposite end of the binocular lens.

In addition to delicate design, we often miss, without the aid of a lens, the beautiful intricacies of color patterns on many of our Spring wildflowers. For example, when examined under a lens, the individual tiny flowers of most mints appear strikingly similar in appearance to the most beautiful orchids. A forest floor or a lawn at the edge of a woods, blanketed with a profusion of Spring-Beauty (*Claytonia virginica*), is a grand sight to behold. Nevertheless, by closely examining the tiny petals of this species, you will see that its really beauty is not

that conspicuous. Upon close examination, the petals, which come in white as well as in shades of pink, have an intricate design of very lovely pink veins that typically go unnoticed. The same is true for Grass-Of-Parnassus (*Parnassia glauca*), a relatively uncommon fen species in Ohio. Without examining the five white petals close up, one can easily miss the strikingly beautiful delicate green veins lining each petal accented by five bright yellow anthers. Such veins are often referred to as "honey guides" and are generally thought to guide pollinators to the nectaries, the source of nectar. Insect pollinators perceive colors in a different way than do humans. For the most part, insects can distinguish colors but are also sensitive to the ultraviolet spectrum. Consequently, honey guides may not even be visible to us as they are to pollinators.

In addition to design and colors, the functional structure of flowers is another aspect afforded us by the use of a good hand lens. Such floral structures are usually a function for guaranteeing cross-pollination or outcrossing. Although most flowers contain both male (stamen with pollen producing anthers) and female (pistil on which is mounted the stigma) parts and can therefore self pollinate, it is far more advantageous to the species for a plant to outcross with another of its own kind. Such mixing of genetic material through cross-pollination achieves the maximum possible genetic variation in the offspring giving a greater capacity for evolution and survival as a species. Plants have evolved several interesting strategies for achieving cross-pollination which, although not always visible with the naked eye, are visible with a hand lens. Some of these strategies involve having separate male and female flowers on different plants, or having male and female parts in the same flower mature at different times so the flower can not self. The process whereby the anthers shed their pollen before the stigma is receptive is known as protandry. A strong lens will usually enable you to see whether or not pollen grains are being shed. The reverse situation, where the stigma mature before the anthers, is known as protogyny. You probably won't be able to determine this with only a hand lens. Other species such as primroses and our common Bluets or Quaker Ladies (*Houstonia caerulea*) have a slightly different method of guaranteeing outcrossing. There are two distinctive types of flowers, known as pins and thrums, which are only discernible under magnification. Thrum flowers

have a ring of stamens at the mouth of the corolla tube, and a short stigma well below. Pin flowers, on the other hand, have a very long-styled stigma which reaches, or slightly extends beyond, the top of the tube. A ring of much shorter stamens is hidden within the corolla below. Flowers of one plant are either all pins or all thrums and can only outcross with flowers of the opposite type of a separate plant. Take the time to closely examine the first clump of Bluets you come across this Spring to see if you can distinguish the pins from the thrums!

We, indeed, live in a very fascinating and beautiful world. But, as if that weren't enough for those of us who truly revel in the beauty and mysteries of the natural world, mother nature has seemingly given us additional layers to unravel, explore and appreciate. One of those often overlooked layers can be accessed with nothing more than a simple hand lens and an inquisitive mind. Make sure you take both into the field with you this Spring.

Guy Denny is the former chief of the Ohio Division of Natural Areas and Preserves



## Wildflowers In The Spotlight The Dastardly Dandelion

by Betty Langston-Macon

A weed is a plant growing where it is not wanted, and no perennial weed, wildflower, or herb to some, is more persistent or prolific with its seeds than the dandelion. How many times have small hands lovingly picked and presented us with the cheerful, bright yellow blossoms. Remember how much fun it was to blow the fluffy seedheads into the wind scattering seeds everywhere?

It's a fact dandelions, botanical name *Taraxacum officinale*, are prolific with their seeds. Seeds can remain viable for years regardless of Winter's cold, and dandelions are not produced through pollination, so even if the flowerhead does not open, it will still produce seeds. Any piece of the long taproot left behind when digging up a plant will produce another dandelion.

Despite its faults, how many other plants can you name where the entire plant (leaves, roots, and flowers) can be used. All parts of the dandelion are

edible and considered useful for healing. It is one of the oldest of the healing herbs with the root being the part most often used for medicinal purposes. European herbalists still use it to treat diabetes and liver disease and consider it one of the best herbs for building up the blood and curing anemic conditions. It is considered to be a diuretic and to be of some help with digestive disorders.

You don't have to be a rabbit to enjoy dandelion leaves. Young tender leaves, called greens, taste somewhat like chicory. They are used in salads and sandwiches, or chopped up into soups, vegetables, egg, cheese, pasta dishes, and sauces. Older leaves are steamed or sautéed like spinach, but they're more nutritious than spinach. Dandelions are a very rich source of vitamin A, vitamin C, and calcium.

Cultivated varieties of the greens have a milder flavor than the weed and are found in catalogs of large seed companies. If picked early in Spring, before they flower or the stalks get long, the leaves will not be so bitter.

When dandelion roots are dried, roasted, and ground they can be used as a coffee substitute or an addition to coffee much like chicory root. Many coffee substitutes produced commercially use dandelion or chicory root as a base. Dried or fresh leaves can be used to make Dandelion Tea. As a medicinal tea larger amounts of leaves are used and steeped longer.

The dainty flowers are edible and can be used as garnishes and in salads, or added to butters, spreads and herb vinegars for color. Dandelion wine can be made from the blossoms. It is reputed to be an excellent tonic for the blood.

Some gardeners let dandelions grow near their fruit trees because the flowers have such a long blooming season, providing food for pollinating bees. Many orchards now have both dandelions and beehives in them. When the flowers go to seed they provide food or seeds for the birds. Butterflies benefit from them, too, as they flower earlier in the Spring than many flowers.

Another use for the dandelion is as a dye, especially for wool or yarn. The flowers can be boiled to make a yellow dye, the roots a magenta one.

How can a plant so useful be hated so much?

Reprinted with permission from the Northern Nevada Native Plant Society Newsletter, Vol. 26, No.4, May 2000

## Are There Carnivorous Plants All Around Us?

**Peter Lesica, Missoula MT 59802.**

Carnivorous plants seem to hold a fascination for many people. After all, it's the Plant Kingdom turning the tables on the Animal Kingdom, and we all like to cheer for the underdog. The fact that most of our carnivorous plants are rare or occur in unusual habitats adds to the mystique (see *Kelsey* 8: [4]). However, recent research suggests that carnivorous plants may be more common than we think. George Spommer at the University of Idaho believes that many of our common grassland forbs may have the rudiments of true carnivory. However, in order to understand Spommer's findings, we have to know a little more about the evolution of "true carnivory." True carnivorous plants have specialized anatomical structures that allow them to capture and digest animals, ultimately obtaining nutrients such as nitrogen from their prey. Carnivorous plants usually occur in sunny, wet, nutrient-poor habitats. Evolutionary biologists believe this is because there are three essentials that limit plant growth: water, light, and nutrients. Investing effort to capture insects for nutrients will only make sense in habitats where nutrients are severely limiting growth but water and light are not.

In Montana we have true carnivorous plants in only three genera (*Drosera*, *Pinguicula*, *Utricularia*) in two families (Droseraceae, Lentibulariaceae), but true carnivory has arisen at least eight times and occurs in 72 families. Carnivorous traps are of two types: sticky traps like sundews and pitcher- or bladder-traps like bladderworts. It was Darwin who first suggested that true carnivorous plants with specialized sticky traps must have evolved from "protocarnivores," plants with sticky hairs and the ability to digest that insects that got entangled on their leaves and stems. True carnivorous plants are famous, but are there protocarnivorous plants as Darwin envisioned?

People frequently ask why some plants are so sticky. Most botanists have assumed that sticky hairs are a defense against herbivorous insects that become entangled and die. Certainly this does happen, but George Spommer thought there might be more to it. He examined a number of our common grassland species including sticky geranium (*Geranium viscosissimum*), tall cinquefoil (*Potentilla argutai*), red monkeyflower (*Mimulus*

*lewisii* and alumroot (*Heuchera cylindrical*). He placed a thin protein film against the leaves and found that the film was digested in a manner identical to that obtained from leaves of sundew. He then used radioactive tracers to show that the digested protein was indeed absorbed by the plants.

Spommer's findings suggest that many common plants with sticky hairs have the ability to ingest the insects that become caught on their leaves and stems. They appear to be protocarnivores as Darwin suggested. If true, it is possible that they have not evolved truly carnivorous species with specialized traps because water, not nutrients, is usually more limiting in prairie habitats. However, other questions must be asked before we can assume that sticky geranium and tall cinquefoil are carnivores. Do these plants actually ingest insects in the field? Are the insect-derived proteins incorporated into the plant tissue? How important is this carnivory to the growth of these plants? These questions notwithstanding, Spommer's findings will make me look at the sticky geranium differently, and it is intriguing to think that our grasslands may be "little shops of horror."

### Further reading

Albert, V. A. et al. 1992. Carnivorous plants: phylogeny and structural evolution. *Science* 257: 1491-1494.

Spommer, G. G. 1999. Evidence of protocarnivorous capabilities in *Geranium viscosissimum* and *Potentilla arguta* and other sticky plants. *International Journal of Plant Sciences* 160: 98-101.

Reprinted with permissions from *Chinquapin*, the Newsletter of the Southern Appalachian Botanical Society, Winter 2000. Original appearance: in *Kelsey*, Newsletter of Montana Native Plant Society)



### NPSNEO Web Sites

Please visit us at

<http://communities.msn.com/NativePlantSocietyofNortheastOhio>

or

<http://community.cleveland.com/cc/nativeplants>

## The 68th Annual Series of Bird Walks, 2001

**April 15, 22, 29; May 6, 13, 20**

Sponsored by the **Audubon Society of Greater Cleveland** and others  
Call Lois Wallin, Coordinator, for further information (440-526-8640)

Bird walks at 7:30 A.M. begin April 15 and will continue each Sunday through May 20 at the following locations:

### LOCATIONS

#### **Cleveland Metroparks**

Huntington	Beach Parking Area
Rocky River	Frostville Museum Parking Lot, Cedar Pt. Rd. S. of Valley Pkwy.
Big Creek	Lake Isaac on Big Creek Parkway
Brecksville	Parking Area at Station Rd. Bridge trailhead: entrance just S of Rte. 82 on Riverview Rd. entry to park
Hinckley	Bridge on Medina Rte. 44 at south end of Hinckley Lake
Bedford	Hemlock Creek Picnic Area
South Chagrin	Jackson Field Parking Lot on Chagrin River Rd. N. of Miles
North Chagrin	Sunset Pond at Sanctuary Marsh
Canal Way Park	Parking Lot off E. 49th St. S. of Grant St.

### MEETING PLACES

#### **Audubon Society of Greater Cleveland**

Aurora Sanctuary	Parking lot east of Page Rd. on E. Pioneer Tr. (east of Rte. 43)
Blanche K. Novak Sanctuary	Parking lot 0.8 mi. N of Rte 82 on Town Line Rd.

#### **Holden Arboretum**

	Main Parking Lot off Sperry Rd.
Lantern Court	Special Walks - Call Arboretum (216 946-4400)

#### **Shaker Lakes**

The Nature Center at Shaker Lakes, 2600 S. Park Blvd.

#### **Mentor Marsh**

Parking area on Headlands Rd. at East end of Marsh

#### **Lake County Metroparks**

Penitentiary Glen	Parking lot on Kirtland-Chardon Rd.
Lake Shore Reservation	Parking lot on Lockwood Rd. off Antioch Rd. in Perry

#### **Geauga Park District** Various Locations Call 440 286-9504

**Gates Mills** Call Charles Poutasse (440 286-6977) or Tom Whitehouse (440 951-4332) for directions

**Portage County** Camp Asbury Parking lot on Asbury Rd. 1 mi. S. of Pioneer Tr.

## Garlic Mustard Lasagna

Brown 2 pounds ground beef, Italian sausage, or a blend of the two, in a heavy skillet and spoon off excess fat. Add 1 minced garlic clove, 1 tablespoon dried basil, 1 teaspoon of salt, one 1-pound can of tomatoes, two 6-ounce cans of tomato paste, and one-half cup of dry red wine. Simmer uncovered for 30 minutes, stirring frequently.

Cook a 1-pound package of lasagna noodles according to package instructions and drain.

Beat 2 eggs, then add 3 cups ricotta or cottage cheese, 1/2 cup grated Parmesan cheese, 2 tablespoons parsley flakes, 1 tsp. salt and 1/8 tsp. black pepper. Blend well.

Into a 9x13x2 buttered baking dish lay half the lasagna noodles. Spread with half the ricotta mixture, 1/2 pound thinly sliced mozzarella cheese, about 10 oz. steamed garlic mustard leaves, and half the meat sauce. Place the remainder of noodles in position, then cover with the remainder of the meat sauce, ricotta mixture, and another 1/2 pound sliced mozzarella. Bake in a 375 °F oven for 30 minutes or until bubbly. *Bon appétit!*

Reprinted with permission from the Indiana Native Plant and Wildflower Society News, Spring 2000

## Garden Catalog Profiles

### A CD-ROM Mail-Order Nursery Guide

This disk supplies a database of 380 garden catalog sources. It is indexed on over 1127 plant and product specialties, U.S. and Canadian growing zones, nursery names and locations. No installation is required. The program can be run directly from the CD-ROM.

We searched for "native communities" and found 8 nurseries, including several specializing in prairie restoration; "wildflowers, native." produced only one nursery. By each name there is a box to click on for details about the nursery, and these are quite complete: full description of catalog price, frequency, size, etc.; services offered by the nursery; a description of the nursery itself, written by the nursery; and a list of the plants, seeds, and products offered.

The retail price of the CD-Rom is \$35.00, but members of the NPSNEO can get it for half-price, \$17.50, plus \$3.50 postage.

Order from Norell Software, Inc., 36940 Fremont Rd., Caliente CA 93518. Or order on the web at [www.norellsoftware.com](http://www.norellsoftware.com).

## Think of plant *communities*, not plant *collections*

Michael Sawyer

Early Saturday morning, the Virginia Living Museum in Hampton is a beehive of activity on the day of the Annual Native Plant Sale. Members of the museum staff and members of the John Clayton Chapter are busy hauling and arranging plants for the sale. Already a line of eager customers is forming, planning shopping strategies. People like to get there early to get first choice of plant material, although we have learned long ago not to bring all of our best plant material out at once. Still the selection is generally greatest first thing on Saturday morning.

It is encouraging to see such enthusiasm and interest in native plants. This is, after all, what we have been working for, right? Maybe not. For the past few years I have seen people happily leaving the plant sale, their arms and shopping carts full of native plants. One of this, two of that, a complete array of plants from ferns, to perennials, to woody shrubs and I thought how wonderful it is that people have learned to appreciate the subtle beauty of native plants. Still, something bothered me about this retail scenario.

Looking to my own garden, there is a low lying shady area where, over the past two years I created a native fern garden with plants rescued from construction sites in James City and York Counties. In this small swale, I have Christmas fern, rattlesnake fern, sensitive fern, adder's tongue fern and more, all mixed in with a collection of showy orchis and bloodroot. I was proud that I could say that I had over seven different species of fern, all in an area approximately eight feet square. The scene was attractive enough, still something felt wrong. Though the plants grew and had survived, it was not as it would have been in nature. Never before, on any of our field trips, had I seen such variety in a small space. It was more common to find colonies of plants, one species gradually giving way to another over a larger area. Variation in terrain creates different moisture levels and soil composition; varying amounts of light and proximity to other plants also play a role. Whether in an old growth situation or on the edge of a field or hillside, the possibilities of shadows and light, soil and water are innumerable, giving rise to variation in plant population and creating unique communities of plants.

Reflecting on this I began to wonder what was going on back at the plant sale? The fern garden just

described owes more to the concept of an English border garden or botanical garden rather than anything found in nature. How subtle the way in which the human obsession, to acquire and control, creeps into the psyche, even among those of us who believe we are educated in ecology and are doing the right thing. I wonder how many people are going home from the plant sale laden with wildflowers to plant Jack-in-the-Pulpit, next to Rudbeckia, next to Christmas fern, next to butterfly weed, next to.... I think you get the picture. At a certain point one might as well go out to the garden center, buy hostas, daylilies, iris and zinnias or whatever else one fancies to plant in the yard; it would make as much sense! What might make sense, when one is going native, is to perhaps buy a small selection of native plants after spending time analyzing your site. Touch and feel the texture of the soil, observe the way water runs through or onto the site during a rain, watch the patterns of shadow and light that form as the sun passes overhead. Prepared with this information you can begin to make an educated guess as to what might fill the environmental niche in your yard that is to become your garden.

Working with your chosen selection of plants see what actually does well in your situation and build on the success. In my case, I had another area in my yard where I tried a small variety of plants, Rudbeckia, Stokes aster, and golden ragwort. The Rudbeckia didn't make it, the Stokes aster survived though not much more, but the golden ragwort absolutely thrived. Not only did the original plants survive but they multiplied. So thinking back to one of our field trips, where I had seen golden ragwort growing in the wild, I thought about the overall situation, a wet area, partially shaded, in a climax forest. What was growing with the golden ragwort? What other herbaceous plants, woody shrubs and trees were to be found?

This is going to become my guide for helping me to build a community of native plants and not just a native plant collection. In this case, I remember an understory of dogwoods and redbuds with scattered clumps of *Juncus* grass and meadow rue all forming a rich tapestry of color and texture more subtle and sophisticated than anything I could design. So this year, when I go to the native plant sale, you will see me buying not in ones and twos, of this or that, but in entire flats of *Juncus*, golden ragwort and perhaps a few meadow-rue, to build and complement what is becoming a plant community and not just a collection of native plants.

Reprinted with permission from the Bulletin of the Virginia Native Plant Society, August 1999

## Web Sites of Interest

<http://www.epa.gov/greenacres/>

Greenscaping with native plants in the Great Lakes basin area. Practical and simple advice for the novice. There is a link to a wonderful article about weed laws, published in the John Marshall Law Review, 1993.

<http://www.epa.gov/glnpo/greenacres/wildones/>

**Wild Ones Handbook** is a guide to establishing a natural ecosystem in your own yard. Topics include forest, prairie, and wetland environments, and encouraging the re-establishment of natural flora and fauna. Wild Ones Handbook "Online" is a cooperative effort by: Wild Ones - - Natural Landscapers, Ltd. And GLNPO Great Lakes National Program Office, a division of the US EPA

<http://www.dnr.state.oh.us/>

### Ohio Department of Natural Resources.

Includes the latest news reports, as well as descriptions of ODNR activities.

<http://www.inhs.uiuc.edu/~kenr/tallgrass.html>

A comprehensive overview of **prairies**: their formation, location, classification, biodiversity and restoration. Lots of pictures under "Prairie Plants."

<http://www.ag.ohio-state.edu/~ohioline/b865/index.html>

**The Native Plants of Ohio.** Bulletin 865. OSU, 1998. The goal of this bulletin is to provide a comprehensive list of plants for those who wish to include native plants in the landscape. About half of the text of the bulletin is on line, lacking illustrations and diagrams. A print copy of the bulletin is available from your county agricultural extension agent.

<http://www.mobot.org/CPC/welcome.html>

**The Center for Plant Conservation** is a coalition of 30 conservation-minded institutions from across the United States that understands the importance of saving plants from extinction. The work of botanical gardens and arboreta in partnership with land management agencies, universities, and other conservation organizations offers tremendous promise that we will secure America's botanical heritage for our children, conserving and restoring the native plants of the U.S. The Holden Arboretum is a member of this group. The heart of the program is the National Collection of Endangered Plants. This collection of over 570 of America's rarest native plants is one of the largest living collections of rare plants in the world. These rare plants are collected, grown, and maintained by the participating institutions.

<http://www-obs.biosci.ohio-state.edu>

**The Ohio Biological Survey** was founded to collect information about the biota of Ohio, and larger areas of which Ohio is an integral part, and to disseminate that information. Since 1913, the Survey has produced a variety of professional publications for academic and public use. Currently these publications include several series (Bulletins, Miscellaneous Contributions, In Ohio's Backyard, Notes, and Informative Publications), in addition to posters, audio tapes, and other media. There is a listing of Ohio's officially rare plants to be found under "BIODIVERSITY," along with an explanation of the five categories they fall in to.

<http://www.botany.net/IDB/index.html>.

(Suggested by Brian Gilbert, NEONPS member.)

If you're looking for a portal to all the interesting botany related web sites you need to check out **The Internet Directory for Botany**. It has got to be the most comprehensive, world-wide listing of botanical web sites and links ever created. It can be found

The site is currently an alphabetical listing of botanical web sites. You can find anything including arboreta, botanical gardens and museums, biologists' names and addresses, botanical societies, books, bryophytes, checklists, conservation, floras, fungi, herbaria, herbal medicines, international botanical organizations, journals, literature databases, maps, natural history museums, paleobotany, plant pathologies, publishers, rare plant lists, software, taxonomic databases, university departments and other botanical institutions, and vascular plant family nomenclature.

<http://www.invasivespecies.gov>

The Nation's Invasive Species Information System. A comprehensive, online information system that facilitates access to and exchange of invasive species data and resources by researchers, scientists, land and resource managers, public and private sector agencies, and concerned citizens. Developed in accordance with Executive Order 13112 on Invasive Species, the site is guided by the **Invasive Species Council**, a federal, inter-agency, executive committee that is coordinating efforts to minimize the economic, ecological, and human impacts of invasive plant and animal species in the United States.

<http://www.easywildflowers.com>

A commercial source for native perennial wildflower seed. Info on growing and controlling native plants. Pictures, book lists, distributions.

**Seeds for the Future**

A national native wildflower and grass seed production conference will be held in Orlando on April 19-20, 2001. For registration information please call Nancy at 850.922.7206

The demand for regionally adapted native wildflower and grass seeds exceeds the supply, a gap that will widen given the growing interest in restoration of natural habitats, use of native plants, conservation, ecotourism, and recent policy directives at federal, state, and local levels.

This conference will highlight the status and needs of the native seed industry as well as those of consumers in the private and public sectors. Issues to be addressed will be of interest to: those involved or interested in producing native seed, farmers seeking alternative crops, agencies at all levels affected by native plant policies, those involved with restoration or mitigation, and commercial and residential developers seeking natural aesthetic solutions.

Topics will include: technical information, seed certification and standards, market research, and networking potential for producers/consumers in this emerging market



**Chapters of  
the Ohio Native Plant Society**

Cincinnati Wildflower Preservation Society  
338 Compton Road  
Wyoming OH 45215

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

Dayton Native Plant Society  
Nancy Bain  
444 Acorn Drive  
Dayton OH 45419  
937-698-6426

Mansfield Native Plant Society  
PO Box 268  
Gambier OH 43022

The Botanizers  
The Wilderness Center  
Luke Easter  
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Massillon OH 44647-7307  
<http://www.wildernesscenter.org>

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Support proper ethics and methods of native landscaping  
Encourage surveys and research on native plants and publication of the information  
Promote cooperation with other programs and organizations concerned with the conservation of natural resources

# On The Fringe

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Taking a Closer Look – G. Denny

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