



# On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

## Annual Meeting 2009

**Save the Date!**

THE CLEVELAND MUSEUM OF NATURAL HISTORY  
2009-2010 EXPLORER SERIES

### **Wild Ohio: The Best of Our Natural Heritage**

Jim McCormac, author, and President of the Ohio Ornithological Society

**Friday, September 25, 7:30 pm**

Co-sponsored by the Native Plant Society of Northeastern Ohio

This program is a photographic journey through the best remaining places in the Buckeye State. From southern haunts bordering the Ohio River to lakeshore habitats buffering Lake Erie, Ohio is filled with wild landscapes. We'll look at some of the creatures and plants that make these sites so special, and the global role Ohio plays in conservation.

Watch for more information in the next issue. There is a review of Jim's new book *Wild Ohio* later in this issue.

Join us for the beginning of the 2009-2010 season of the Explorer Series. The evening begins at 5:30 pm with live music, museum exhibitions, shopping, and raffle (sign-up in the Museum Store). Food and beverages for purchase in The Blue Planet café and museum lobby. Jim will be signing three of his recent publications

## Grant Announcement

The Native Plant Society of Northeastern Ohio hereby announces that it will consider applications and nominations for an Annual Grant to be awarded to a person or persons working in the field of botany or conservation that demonstrates excellence in research, conservation or education, including land trusts, organizations and causes that clearly support the Mission of the Native Plant Society of Northeastern Ohio.

The mission includes:

- Conservation of all native plants and natural plant communities through habitat protection and other means
- Public education and appreciation of native plants
- Proper ethics and methods of natural landscaping
- Surveys and research on native plants and publication of the information
- Cooperation with other programs and organizations concerned with the conservation of natural resources.

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

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

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

**Board**

President	Judy Barnhart
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Co-editors	Ann Malmquist

*The Journal of the Native Plant Society of Northeastern Ohio* is published 4 times a year at Novelty, Ohio. ISSN 8756-6087. Questions or comments are welcome and may be addressed to Jane McCullam, 9880 Fairmount Rd., Newbury, OH 44065; 440-338-3253, cattermole@windstream.net; or to Ann Malmquist, 6 Louise Drive, Chagrin Falls, Ohio 44022; 440-338-6622, inky5@juno.com

**Summer 2009 Program Schedule**

**Saturday, June 13, 9:00 a.m. – Plant Survey of Stracola Preserve, Ashtabula.** Join us for our annual plant survey for the Western Reserve Land Conservancy as we explore the Stracola property, with mixed hardwood and swamp forests, button bush marshes and 30 acres of high quality wetlands containing a variety of sedges. Be sure to bring your boots! Potential wildlife encounters include otter, beaver, snowshoe hare, blue heron, and black bear. Directions: Take Rt. 322 east to Orwell. Turn left (north) on Rt. 45. Travel 1.9 miles to Montgomery Rd. Turn left (west) 1.3 miles. There are two 90 degree curves; once you pass them, go beyond the next house (brown ranch) on the North to the parking area in the gas well drive. Carpooling recommended. Call Judy to register: (W) 440-286-9516 ext 2011 (H) 440-564-9151

**Saturday, June 27, 9:00 a.m. – The Aliens Have Landed: Invasive Plant Workshop, Geauga County, The West Woods Nature Center.** Jennifer Hilmer works battling invasive plants in northeast Ohio. Learn some of the common species she deals with along with new species lurking on the fringes. Indoor talk with plant samples followed by a hike to see the impact of invasives on the forest landscape. Joint program with Geauga Park District. Directions: Take Rt. 87 east from Rt. 306 in Russell Township 2 miles to the park entrance on south side of the road. 9465 Kinsman Rd. (Rt 87).

**July 25, 10:00 a.m. Herbarium; 1:00 p.m. bog hike. – KSU Herbarium & Glasshouse. Triangle**

**Lake Bog, Portage County.** A behind the scenes tour of the herbarium and glass house at Kent State University. Stop for lunch at one of many local restaurants, then reconvene at Triangle Lake Bog, one of the best examples of a kettle lake bog in Ohio. A floating sphagnum mat with swamp loosestrife, leatherleaf and tamaracks surrounds the dark acidic waters of the bog lake. Carnivorous northern pitcher-plant and round-leaved sundew, along with highbush blueberry, large cranberry, poison sumac and catberry also grow here. Triangle Lake Bog is 1.5 miles northwest of the intersection of Rt. 44 and I-76 on the south side of Sandy Lake Rd. Parking and boardwalk trail. Call Tom by July 20 to register and to get parking directions for Kent State: 216-371-4454

**Sunday, August 30, 2:00 p.m. Insect Pollinators – Cleveland Metroparks, North Chagrin Nature Center.** Join Judy Semroc, Cleveland Museum of Natural History Natural Areas staff, as she introduces the variety of creatures which pollinate our plants, from birds to butterflies, moths, bees and flies, and their physical structures for the job at hand. Discover which plant species make the best dining and why night time pollination, while very important, can be easily overlooked. Indoor talk followed by outdoor look at pollinators. Joint program with Wild Ones. located off Buttermilk Falls Parkway, off the Sunset Lane entrance of North Chagrin Reservation, SOM Center Road/Rt. 91 in Mayfield Village. Call Diane to register: (H) 216-691-1929 (Cell) 440-666-487



## The Green Triangle Project

The Green Triangle Project is an exciting new initiative to create sustainable and ecologically sound permaculture gardens in Cleveland. Largely through the efforts of Hank Haberman and a small team of dedicated volunteers the Green Triangle opened their first garden, Vel Scott's Purple Oasis Garden, on May 9<sup>th</sup> of this year. The Purple Oasis Garden is a three-acre urban site adjacent to University Circle on Frank Avenue and Louis Stokes Blvd. (Fairhill Rd.) The garden will be converted from grass to permaculture, including many native plant species.

Permaculture lays out principles and foundations for sustainable permanent agriculture and ecological design. The word "permaculture" was coined in 1978 by Bill Mollison, an Australian ecologist, and one of his students, David Holmgren. It is a contraction of "permanent agriculture" or "permanent culture."

Permaculture is about designing ecological human habitats and food production systems. It is a land use and community building movement which strives for the harmonious integration of human dwellings, microclimate, annual and perennial plants, animals, soils, and water into stable, productive communities. The focus is not on these elements themselves, but rather on the relationships created among them by the way we place them in the landscape. This synergy is further enhanced by mimicking patterns found in nature.

The Green Triangle is a social-profit (nonprofit) education organization whose mission is to create social, economic, and ecological sustainability through permaculture design principles. They propose a holistic revisioning of urban and suburban land use strategies that will respect and uphold our rich natural systems. This will require not only education, but also implementation and demonstration of a vast new toolset of best practices from sustainable building and renovation, home energy reduction, edible forest gardening, xeriscaping, native plant restoration, bioremediation, storm water management, and more.

Their focus is Cleveland's urban core and its greater metropolitan area. The small and dedicated team of initial founders and early board members have been meeting for over a year both in private and with local homeowners, farmers, market gardeners, block clubs, other nonprofit organizations, government leaders, and

city planners with the goal of pushing a practical agenda for change NOW.

That agenda currently includes forest gardening as the primary solution to many of our present challenges here in the Cleveland area.

Cleveland presently has an approximately 14,000 vacant and abandoned properties. That is over 3,000 acres of land currently held in limbo and requiring over 3 million dollars per year just on the labor to mow. It is a serious issue, not only for the municipal budget, but also for public safety and community pride.

Once set in motion, a wide network of low-to-no-maintenance forest gardens would put that land back in use, providing community resources, green jobs, cleaner air and water, increased biodiversity, and perhaps most importantly, fresh and healthy food on the table.

Permaculture guru Geoff Lawton once said, "All the world's problems can be solved in the garden."

The Green Triangle also maintains an excellent blog at: [rhizome.greentri.org](http://rhizome.greentri.org)

This features numerous articles of interest to members of the Native Plant Society; including *Better Backyards*, offering planting alternatives for lawns, and *Plant List for Shade*.

The site also links to another group, NatureHood, whose main page is at:

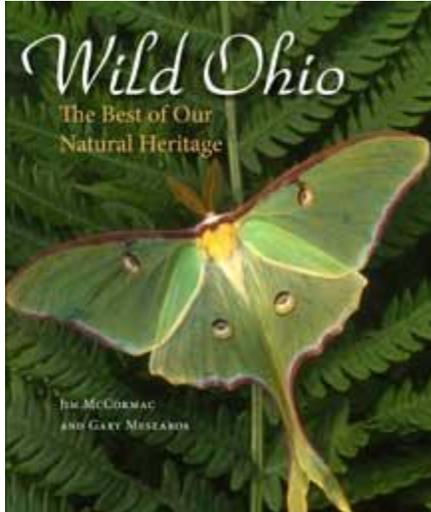
[http://www.earthdaycoalition.org/naturehood\\_main.php](http://www.earthdaycoalition.org/naturehood_main.php)

This features an inspiring article on salvaging native plants from urban sites. Thanks to the Akron Garden Club and Garrett Ormiston of the Cleveland Museum of Natural History, scores of native Ohio plants including Solomon's seal, ramps, mayapple, wild geranium, trillium, yellow trout lily, hepatica, and others were rescued and installed at the Holmden Avenue site on Cleveland's West Side on April 21, 2009.

NatureHood's Environmental Benefits:

- Native plants provide habitat for a variety of animals, including butterflies, hummingbirds, songbirds and other small animals.
- The increased biodiversity above and below the soil will help support local gardeners and urban farmers in their fight against pests and plant diseases.

- The root systems of native plants help soil absorb water, which helps to reduce erosion and runoff and improves local water quality.
- Native plants help clean the air and water by absorbing and processing pollutants.
- Urban green-space helps counteract the urban heat-island effect.
- Native plants require little maintenance, reducing the amount of pesticides, herbicides and fertilizer released into the environment; mowing native plants is also unnecessary, reducing gasoline use and engine emissions.



### Book Review

## Wild Ohio The Best of Our Natural Heritage

by **Jim McCormac and Gary Meszaros**

Foreword by Dr. James K. Bissell, Director of Conservation,  
Curator of Botany, Cleveland Museum of Natural History

2008, 208 pp

ISBN 978-0-87338-985-3

Cloth, \$49.95

A photographic documentation of the most outstanding natural habitats in Ohio

“We hope this book never becomes an epitaph for what once was. Ohio is incredibly rich in biodiversity, possibly more so than any other midwestern state. . . . We encourage you to visit these places and view the greatest natural resources that Ohio has to offer.”—  
from the Preface

While Ohio has lost much of its pre-settlement landscape, many nearly pristine habitats remain. These relics are populated by a fascinating array of flora and fauna. *Wild Ohio* singles out the best of Ohio’s natural lands and documents their importance in words and photographs. Because the state has lost over 90 percent of its wetlands and over 99 percent of its original prairie, *Wild Ohio* focuses especially on rare and declining animals and plants with the intention of inspiring a love of nature and an interest in conservation.

The authors feature approximately forty sites, encompassing nearly every type of habitat found in the state and representing all regions of Ohio. Naturalist

Jim McCormac’s descriptive text provides an overview of each site and tips for visitors. Gary Meszaros’s stunning photographs highlight the visual beauty of each area’s flora, fauna, and landscape. Every section includes a description of the physiographic province and a map of the sites.

A celebration of what still remains and a reminder of what has been lost, *Wild Ohio* will be appreciated by anyone with an interest in Ohio’s natural history and landscape.

**Jim McCormac** is the author of *Birds of Ohio* (2004). He writes a nature column for the Columbus Dispatch and has been widely published in popular nature periodicals, including *Bird Watcher’s Digest*. He is an avian education specialist with the Ohio Division of Wildlife.

**Gary Meszaros**, a retired schoolteacher, has been a dedicated nature photographer for more than twenty-five years. His photographs have appeared in many publications, including *Smithsonian*, *National Wildlife*, *National Parks Magazine*, *Natural History*, and *Timeline*.

Reprinted from the Kent State University Press catalog.

## The Ice Age in Ohio – Part 2 of 2

By Michael C. Hansen

### Glacial Deposits

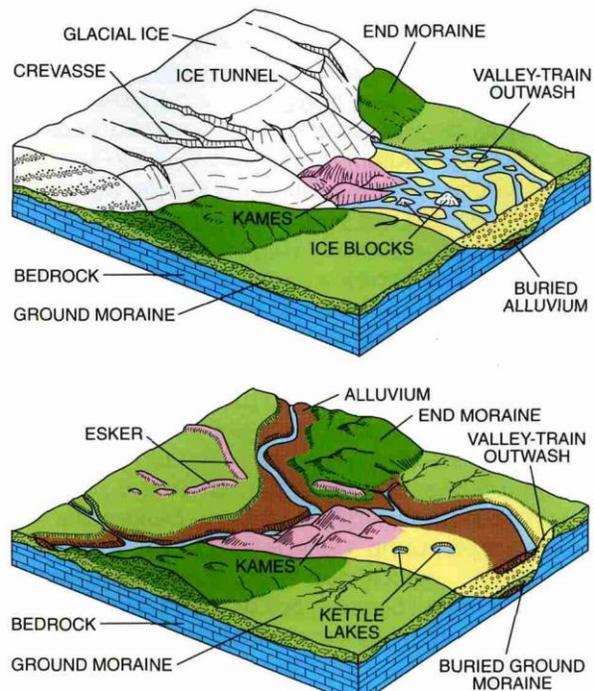
The sediments left behind by ice sheets and melt-water are referred to as glacial drift and consist of boulders, cobbles, sand, silt, and clay that had been gouged and scraped from the landscapes across which the ice moved. Drift deposits can be classified according to their mode of origin, the materials of which they are composed, or the landforms which they created.

An unsorted glacial sediment composed of materials ranging in size from boulders to clay and deposited directly by ice is called **till**. Till is deposited directly at the bottom of the advancing ice or by the melting of stagnant ice. Till that forms a fairly flat blanket over bedrock or older sediments is called **ground moraine**. Where the ice-sheet margin halted for a period of time a thick, linear ridge of till was deposited along the ice edge. Such ridges are called **end moraines**. The wide distribution of end-moraine belts in Ohio is evident on the map of glacial deposits. Morainic deposits commonly contain boulders, some weighing many tons, that were carried by the ice from as far away as Canada. These boulders of crystalline igneous and metamorphic rocks, called erratics, are a familiar sight in the glaciated portion of Ohio.

Exposure of till, an unsorted glacial sediment that is a mixture of rock fragments ranging from clay size to boulders. Till represents material scraped up by the ice during its southward advance and deposited beneath advancing ice or as a sediment blanket when the ice melted. Multiple Wisconsinan-age till beds, representing several ice advances and retreats, are visible in this exposure along Rocky Fork Creek, near Gahanna, Franklin County. Glacial erratics, many of Canadian origin, have been eroded from the till and litter the stream bed.

**Kames** and **eskers**, another major group of glacial deposits, are formed in contact with ice and running water. Kames are hummocky mounds of stratified (layered) sand and gravel deposited by meltwater flowing across the ice and pouring its sediment load into holes and crevasses along the ice margin or in stagnant ice. Kames are numerous in some portions of Ohio.

Eskers are ridges of stratified sand and gravel deposited on, within, or beneath the ice by melt-water rivers flowing on the ice surface or under hydrostatic pressure in pipe-like tunnels. When the ice melted, the



long linear or sinuous deposits were left behind, marking the courses of the former channels or tunnels. Eskers, which are commonly oriented parallel to the direction of last ice movement, may be found in several areas of Ohio.

As the huge ice sheets melted, great volumes of meltwater flowed in the river valleys, carrying with it, far beyond the glacial border, large amounts of sediment that had been scraped up by the glacier on its long journey from Canada. This sediment, termed **outwash**, consists mostly of sand and gravel and filled the valleys of such rivers as the Hocking, Great and Little Miami, Muskingum, Ohio, and Scioto. These sand and gravel deposits are an important economic resource for the construction industry and benefit areas of the state that are beyond the southern limit of glaciation. Outwash deposits also are a major source of ground water.

Deposits of layered silt and clay accumulated in lakes in basins or in valleys whose outlets were dammed by glacial ice or glacial deposits. Lake deposits commonly are preserved as terraces along valley walls where the modern stream has eroded the lake deposits in the center of the valley. Other lake deposits are found in shallow basins between moraines, which acted as barriers to drainage. Small ponds and lakes, known as kettles, formed in association with moraines when

blocks of ice became detached from the glacier and were buried by sediment. When the ice melted, a water-filled depression was formed. Commonly, kettles contain deposits of calcareous marl which are overlain by peat. Many of these kettles have become filled with sediment and peat and today are represented by swampy depressions.

Lake Erie is one of Ohio's most important resources that was formed as a direct result of the Pleistocene glaciers. The initiation of lakes in the Erie basin began after ice had retreated north of Ohio about 14,000 years ago. A complex series of lakes, some of which were up to 230 feet deeper than the present lake, occupied the Erie basin during the last phases of the Pleistocene. Some of these lakes drained into the Mississippi River via the Wabash River when the modern drainage outlet into the St. Lawrence River was blocked by ice. Northern Ohio, particularly north-western Ohio, has abundant lake deposits that formed in these early, more extensive lake stages. Several sets of sandy ridges, each set of which is at a similar elevation, mark beaches formed along the shorelines of these lake stages. Modern Lake Erie reached its present form only about 4,000 years ago. At many places in the state, bedrock surfaces show scratches and grooves cut by pebbles, cobbles, and boulders frozen in the base of moving ice. These scratches (striations) are useful to geologists because they indicate the direction of movement of the glacier. The exceptionally large world-famous glacial grooves on Kelleys Island in Lake Erie, however, may have been formed by a complex process involving gouging ice and running, sand-charged water under hydrostatic pressure beneath the ice.

### **Pleistocene Life**

Northern species of plants that today occur in Canada were common in Ohio during the Pleistocene. These plants include trees such as spruce, fir, tamarack, cedar, hemlock, and larch. Owing to unique environmental conditions, several places in Ohio retain this glacial vegetation as relict species. Cedar Bog in Champaign County is one example. This northern or glacial vegetation persisted in Ohio until about 10,000 years ago when the climate warmed and the coniferous forest was replaced in a comparatively short time by oak-dominated deciduous forests such as are now found growing in Ohio.

Many, although not all, animals that roamed Ohio during the Pleistocene were quite different from those found here today. Species which are either extinct or are no longer present in Ohio include mammoth, mastodon, muskox, caribou, peccary, short-faced bear, elk-moose,

ground sloth, and giant beaver. Skeletal remains of these animals commonly are found in clay, marl, and peat that was deposited in former glacial lakes, in sand and gravel deposited by glacial meltwater, and in caves and sinkholes. Sabertooth cats and dire wolves have not been found in Ohio as yet, but it is probable that they lived here because their remains have been found in nearby states. The cause of extinction of many of these animals about 10,000 years ago is uncertain, but it may be related to the rapid climatic and vegetational changes that occurred at this time.

The first human migrants into North America, a culture known collectively as Paleo-Indian, lived in Ohio during the last phase of the Wisconsinan glaciation. They were nomadic hunters and gatherers who followed the great herds of Pleistocene animals across Bering Strait from Asia into North America. Although no skeletal remains of Paleo-Indians have been found in Ohio, several mastodon skeletons found in the state show evidence that the animal was butchered. Exquisitely crafted flint spear points, known as fluted points because of the groove or flute on each side, are unique to the Paleo-Indian culture and are widely distributed in the state.

### **Legacy of the Ice Age**

All Ohioans benefit on a daily basis from the legacy of the Pleistocene Ice Age. The rich agricultural soils formed on glacial deposits across two-thirds of the state produce a bounty of vegetable and animal products that are consumed by Ohioans and constitute a valuable export. Waterways formed in association with the ice sheets, such as Lake Erie and the Ohio River, are avenues for transport of these and other products. These bodies of surface water as well as abundant supplies of ground water stored in some glacial sediments provide a nearly limitless supply of this vital commodity for both domestic and industrial use.

Mineral commodities formed in association with the glaciers include sand and gravel, peat, and clay. Sand and gravel deposits, in addition to being aquifers, are an integral commodity for the construction industry. More than 50 million tons of sand and gravel are produced annually from about 300 mining operations in more than 60 Ohio counties for use in road construction, building, concrete, and asphalt.

Traditionally, Ohio ranks in the top five states in the production of sand and gravel. This low-cost-per-unit resource is available inexpensively at construction sites because it is so widely distributed that transportation costs are low. Glacial clays are mined in several Ohio counties for manufacture of common clay products such

as brick and for use as liners in landfills. Peat is mined in several Ohio counties for use as mulch and as a soil conditioner. Numerous streams in the glaciated portion of the state produce a few small flakes of gold of presumed Canadian origin. Panning for this placer gold is an enjoyable hobby for many people. In addition to gold, six diamonds have been reported from glacial deposits in Ohio.

Environmentally, glacial deposits are important. Thick, uniformly impermeable deposits of clay-rich till and lake clays may be good sites for landfills because the clays prevent landfill fluids from leaching into ground-water supplies. Glacial deposits of sand and gravel provide excellent, well-drained sites for homes, businesses, and other structures.

A few of the many types of glacial deposits in Ohio have the potential to create environmental problems. Some lake clays, particularly where they are associated with sloping ground, are prone to landsliding. Notable for landslide problems are clays in the Cuyahoga Valley of northern Ohio, valleys filled with Minford clay in southern Ohio, and some deposits of glacial clay in the Cincinnati region of southwestern Ohio. Some glacial silts and sands are of concern if a large earthquake would strike Ohio because they are prone to liquefaction, a phenomenon in which strong shaking causes a sediment to lose its bearing strength and collapse. These glacial sediments may also magnify ground motion during an earthquake, thus making some buildings built upon them more susceptible to damage.

An intangible, but nonetheless important benefit to Ohioans from the glaciers are the scenic vistas and pastoral views throughout the state. Flat till plains stretching to the horizon, hilly moraines, and broad valleys would not be here if the glaciers had not reached Ohio.

### Further Reading

- Feldmann, R. M., and Hackathorn, Merriane, eds., 1996, *Fossils of Ohio: Ohio Division of Geological Survey Bulletin 70*, 577 p.
- Goldthwait, R. R., 1959, Scenes in Ohio during the last Ice Age: *Ohio Journal of Science*, v. 59, p. 193-216.
- \_\_\_\_\_ 1979, Ice over Ohio, in Lafferty, M. B., ed., *Ohio's natural heritage: Ohio Academy of Science*, p. 32-47.
- Hansen, M. C., 1995, Gold in Ohio: Ohio Division of Geological Survey *GeoFacts* 9, 2 p.
- \_\_\_\_\_ 1995, The Teays River: Ohio Division of Geological Survey *GeoFacts* 10, 2 p.
- Hough, J., L., 1958, *Geology of the Great Lakes*: Urbana, University of Illinois Press, 313 p.
- White, G. W., 1982, *Glacial geology of northeastern Ohio* (including a chapter on Pleistocene beaches and strandlines by S. M. Totten): Ohio Division of Geological Survey Bulletin 68, 75 p.
- Ohio Department of Natural Resources, Division of Geological Survey, Educational Leaflet No. 7, 1997. Part 1 of this article appeared in *On The Fringe*, March 2009.

## New Website

Visit us online at our new website. It is still under construction, but you will be able to see the outlines and check out the scheduled events. More pages will be added in the near future, so keep coming back to see more.

[www.NativePlantSocietyNEO.org](http://www.NativePlantSocietyNEO.org)

## Editors Needed!

On The Fringe will be without an editor after the December 2009 issue. We hope that among our members there are some who would like to take over the job. If you are interested or would like to talk about this opportunity further, Please call or email Judy Barnhart at (W) 440-286-9516 ext 2011 (H) 440-564-9151, [bunchberry1@windstream.net](mailto:bunchberry1@windstream.net), or Jane McCullam at 440-338-3253, [cattermole@windstream.net](mailto:cattermole@windstream.net).

## Doug Tallamy Is Featured On NPR

On May 22 Doug Tallamy was a guest lecturer on Ira Flatow's Science Friday. He gave a wonderful presentation on the value of native plants in landscaping for providing the foundation for a thriving ecosystem. The talk was recorded and can be heard online at Science Friday's website:

[www.sciencefriday.com/program/archives/200905225](http://www.sciencefriday.com/program/archives/200905225)

Dr. Tallamy was the speaker at our Annual Dinner in 2007, and the author of *Bringing Nature Home*, a book which explains in some detail why native plants are superior in many ways to the traditional plant materials used in residential landscaping.

## Appalachian Forest School

**The Arc of Appalachia Preserve System** is an educational non-profit organization that operates 12 preserves and stewards a total of 3000 acres in rural southern Ohio for the purpose of forest biodiversity preservation. The headquarters is located at 7629 Cave Road, Bainbridge, OH 45612; 937-365-0101; [www.arcofappalachia.org](http://www.arcofappalachia.org)

Those of us living east of the Mississippi River live within the primeval boundaries of what was once North America's great temperate broadleaf forest. Only a few hundred years ago, this nearly unbroken forest cloaked the entire eastern third of the continent. Despite its size, for most citizens our native biome has become an "invisible forest," fragmented from its original unified grandeur, and unrecognized as a living force in our daily lives.

To advance forest literacy among citizens, the non-profit Arc of Appalachia Preserve System of southern Ohio is sponsoring the new Appalachian Forest School, an institute offering 3-7 day long courses to be held at various locations within the historic range of the Eastern Forest. Each course includes an emphasis on global and national perspectives, and invites a cross-disciplinary understanding of the temperate forest biome in which the majority of U.S. citizens work and live. Instructors have been carefully selected from professors, field researchers, land managers, and naturalists, combining talents and specialties to present a broad and integrated view of the Eastern Forest. Even as disturbed as America's Eastern forest is today, the second growth forest that remains in Eastern United States is the largest remnant temperate forest in the northern hemisphere, offering significant potential for ecological study and restoration.

The 2009 Course Schedule includes:

### **Trees of the Temperate Forest July 12-17th.**

Learn how to recognize 45 species of primary temperate forest trees, learn forest succession principles, and apply skills in interpreting the health and history of any single woodlot. This course will prepare you to recognize approximately 90% of the standing trees in forests located throughout the forest heartland, from Maine to Tennessee.

### **Forest Waterways, Lifeblood of the Eastern Forest, August 16-21st.**

An integrated view of the richest aquatic systems to be found anywhere in the temperate world -- the streams and rivers of Eastern United States. Learn the global significance of our rivers' fresh-water fish, mussels, salamanders, crayfish, and other aquatic wildlife; and their ecological inter-relationships.

### **Private Forest Landowners Course – Managing for Biodiversity, Sept 18-20th**

Learn how to clarify the management goals you hold for your privately-owned forest. Unlike most courses which teach owners how to make financial profit from the timber assets of their forest, this course teaches interested owners how to sustainably manage a forest for the primary purpose of restoring high biodiversity of native plants and wildlife.

### **2010 and beyond:**

Forests of the Far South – Exploring the Wilderness of Florida's Panhandle

Forests of the Far North – Forests of the Boundary Waters of Minnesota

Forests of the Heartland – The Mother Forest of the Southern Appalachians

Spring Ephemerals – Wildflowers of the Eastern Forest

Interpreting our Eastern Forest Heritage - Training for Teacher Naturalists

Contact: Nancy Stranahan, Director;  
director@highlandssanctuary.org;  
For more information on the School:  
[www.highlandssanctuary.org/WE/AFS.htm](http://www.highlandssanctuary.org/WE/AFS.htm)



## Redbud — *Cercis canadensis* Linnaeus

By Robert Tener

The Redbud is one of those flowering trees rivaled only by the Dogwood for its spring beauty bloom in late April. Because it became my sister's favorite tree, I sometimes refer to it as the Dawn-Spring. When I first saw it in bloom I did not know what it was called. One day in late April when I was driving through Stow, Ohio, on my way to work at Kent State University, I saw on a front lawn a small tree filled with rich mauve-pink, breath-taking blossoms over its flat crown. That afternoon I stopped at a nursery and asked about it, but my description was so vague that the clerk could not identify it. After several fruitless attempts elsewhere I reached an old nursery in Stow and tried to describe the tree to the owner. He said it was probably a Judas Tree. "Fine," I said, "thanks." But he said that he didn't have any. I stopped the next day at a Kent, Ohio, nursery and found one, but the nursery man said it was called a Redbud. Later I learned why it was sometimes referred to as Judas Tree.

The Redbud is also called Red Judas Tree, Salad Tree, Judas Tree, American Redbud Tree, Eastern Redbud, and Wild Pea. In Greece and Asia Minor the *Cercis* Tree was called the Shuttletree because its fruit resembled the weaver's shuttle. *Cercis* is the classical name for the oriental Judas Tree; *canadensis* means associated with Canada. The term *Cercis* is from a Greek word for shuttle and was applied to the Judas Tree probably by Theophrastus because its fruit resembles a weaver's shuttle. The common name comes from the pink flowers and the deep-red calyx. Of the 7 or 8 species in this genus, two are in America, our *C. canadensis* and *C. occidentalis* in the Southwest. The rest are in Europe and western Asia. There is a white variety called *C. alba* and several cultivars such as "Wither's Pink Charm," "Forest Pansy," "Pink Bud," "Royal White," "Silver Cloud," and several others.

This is a small fruit-tree-sized deciduous tree or shrub ranging from 25 to 40 feet, though it may hit 50 feet, with a trunk diameter from 6 to 18 inches. About 10 or 12 feet above the ground the trunk separates into stout branches and usually starts to develop a flat, wide but open crown. Its bark is black and slightly brown with an orange cambium. It is a leguminous tree, native to the United States. Its leaves are alternate, simple, 3

to 5 inches long, broad, and heart-shaped with smooth entire margins, palmately veined, dark lustrous green above, paler beneath, turning a bright yellow in the fall. They emerge a reddish purple and turn a dark green in summer. The flowers are usually perfect, rose purple pink, butterfly shaped, 1/2 inch long, hanging in groups 4 to 8 in a cluster. They appear only on the twigs of the previous year's growth in April or May when the leaves start to emerge.

The fruits are thin, papery, flat, oblong pods, 2 to 4 inches long with 6 to 10 1/4 inch seeds. At first the pods are a pale green, but as the seeds ripen, the pods

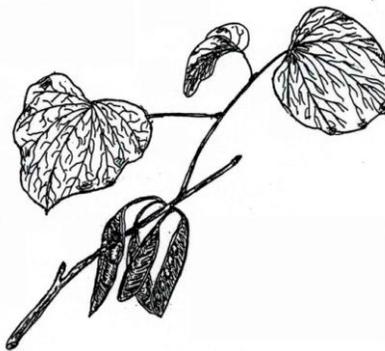
change to a rosy hue and then to a purple in September and October. During the winter the pods tend to persist on the tree. Its immature seed pods may be breaded and fried, though they have a slightly sour taste; the colorful flowers and buds are edible in salad. Its new bark dyes cloth red while its new plant shoots are often woven into baskets. It is relatively free from diseases though it can get cankers and verticillium wilt. Its

wood is heavy, hard, not strong, red brown, close grained, of no commercial value.

The Redbud thrives best in sandy loam, growing under taller trees along streams, borders of fields, hillsides, and valleys. It is abundant on the lime stone soils of southwestern Ohio. Roaming from Pennsylvania south to Florida and west to Nebraska, it then works its way south to Texas. It reaches its largest size in Arkansas. In Ohio it grows in all the counties except for a narrow band from Ashtabula west to Henry and south to Mahoning then west to Van Wert. One year my wife and I were driving south to Portsmouth, Ohio, in April and along the way I noticed scores of flowering Redbuds growing wild in the hilly berm beside the highway. I asked myself where had I been all my life not to have noticed that before. The Redbud makes a fine ornamental tree for lawns and parks. On my nursery farm I have four of them and each year I anxiously wait their blossoming.

The tree is clearly of ornamental value to human beings just as its seeds are nutritional to Bob Whites.

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



## Phylogenetic patterns of species loss in Thoreau's woods are driven by climate change

Charles G. Willis, Brad Ruhfel, Richard B. Primack, Abraham J. Miller-Rushing, and Charles C. Davis

### Abstract

Climate change has led to major changes in the phenology (the timing of seasonal activities, such as flowering) of some species but not others. The extent to which flowering-time response to temperature is shared among closely related species might have important consequences for community-wide patterns of species loss under rapid climate change. Henry David Thoreau initiated a dataset of the Concord, Massachusetts, flora that spans  $\approx 150$  years and provides information on changes in species abundance and flowering time. When these data are analyzed in a phylogenetic context, they indicate that change in abundance is strongly correlated with flowering-time response. Species that do not respond to temperature have decreased greatly in abundance, and include among others anemones and buttercups [Ranunculaceae *pro parte* (*p.p.*)], asters and campanulas (Asterales), bluets (Rubiaceae *p.p.*), bladderworts (Lentibulariaceae), dogwoods (Cornaceae), lilies (Liliales), mints (Lamiaceae *p.p.*), orchids (Orchidaceae), roses (Rosaceae *p.p.*), saxifrages (Saxifragales), and violets (Malpighiales). Because flowering-time response traits are shared among closely related species, our findings suggest that climate change has affected and will likely continue to shape the phylogenetically biased pattern of species loss in Thoreau's woods.

Reprinted from the *Proceedings of the National Academy of Sciences*, November 4, 2008, vol. 105, no. 44, 17029-17033

For the full article, please go to <http://www.pnas.org/content/105/44/17029.full>

## Phenology Primer: Growing Degree Days

As many a botanizer has discovered, the calendar is not always a reliable indicator of when a particular wildflower will bloom. Phenologists all over the U.S. are gathering data on such aspects as leafing out, bud break, and bloom time of various plants to track changes in weather patterns from year to year—a potential indicator of climate change—but I'm intrigued by the potential of "degree days" to help us predict these occurrences. The concept of growing degree days (GDD), borrowed from the heating/cooling degree days used in the home heating industry, has been especially useful in Integrated Pest Management, for it enables growers to monitor for plant pests and accurately time the application of controls.

The principle behind GDD is this: Insects, being cold-blooded, depend upon the warmth of their surroundings to stimulate their growth and development. As the weather warms in the spring, growing degrees accumulate until there have been enough warm days for larvae to emerge from the soil, for cocoons to hatch, etc. The same accumulation of growing degrees coincidentally stimulates the growth of the host plants that will feed the emerging insects.

Here is how a gardener might use this information: at 205 GDD, signaled by forsythia being in full bloom (usually late April), you could scout for leafrollers feeding on fruit trees and Colorado potato beetles emerging to feast on potato plants. At 345 GDD, when redbuds are in full bloom, you could look for cucumber beetles, which spread bacterial wilt. At 1565 GDD (sometime in July), you would expect to see second-generation pine needle scale crawlers emerging, and so on. Imagine the possibilities if you were to track phenological events in your own back yard using GDD! (Ohio residents can look up GDD information for their zip code at <http://www.oardc.ohio-state.edu/gdd/>)

The determination of GDD begins with a "base temperature" of 50° F. This is an estimate of the physiological threshold of an organism. For example, we know that woody plants start growing at a temperature between 45° and 55° F, and entomologists are determining threshold temperatures for specific insects through lab and field research. Temperatures above the threshold support growth and development.

For each day that the average temperature is one degree above the base temperature, one degree day accumulates.

Growing degrees for a 24-hour period (GDD) are calculated by this formula:

$$\text{Average temperature} - \text{Base temperature}$$

where

$$\text{Average temperature} = \text{Maximum temperature} + \text{Minimum temperature} / 2$$

$$\text{Base temperature} = 50^\circ \text{ F}$$

So, if on Monday the maximum temperature is 75° F and the minimum temperature is 45° F, the GDD for Monday is 10, calculated as follows:

$$(75 + 45) / 2 = 120 / 2 = 60$$

$$60 - 50 = 10$$

If the average temperature is equal to or less than the base temperature, no degree days are accumulated.

For this system to work, the maximum and minimum temperatures need to be recorded every day

from March 1 to September 30. Early in the season, the growing degree days will accumulate slowly. As temperatures rise they accumulate faster.

Growing degree information courtesy of Michigan State University Extension and Washtenaw Cooperative Extension Service *The Gardener's Timetable*.

See also

[http://www.maes.msu.edu/nwmihort/gdd\\_calculations.pdf](http://www.maes.msu.edu/nwmihort/gdd_calculations.pdf).

Find a list of phenological indicators and emergence of insect pests at <http://wihort.uwex.edu/Phenology.html>.

Reprinted from INPAWS Journal, News and Views from the Indiana Native Plant Society, Spring 2009

## Garden of Controversy A Tall Grass Prairie Memorial Garden

Douglas Counter challenges our basic ideas about what a garden should be with his bit of naturalized Eden in Etobicoke, Ontario. To him, the naturalized garden he planted at his Etobicoke home as a memorial to his mother represents a meditation space of natural beauty. It is also a unique and inexpensive approach to filtering pollutants from streams that run through his community. Douglas challenged the City's by-laws to protect not only his environmentally important sanctuary from nuisance complaints, but the rights of all gardeners to heal the environment.

Douglas Counter began his garden as a memorial to his mother in 1997. A tall grass prairie garden, some plants reach heights of 1.4 to 3.5 metres in late summer. The prairie garden covers most of the front of the property, with much shorter, site-specific species in the drainage ditch on the city-owned boulevard. A shady woodland garden has been planted in the back garden.

The property features over 100 species of plants native to the area including nine rare species (including sideoats grama and grey-headed coneflower) and two endangered species (eastern prickly pear cactus and wood poppy). Most of the wildflower and grass species in his front garden

are native to the tall grass prairie habitat of southwestern Ontario.

Indigenous birds, butterflies, and insects have evolved with this vegetation and depend upon it for their survival. Counter's garden is an attempt at recreating a landscape that may have existed thousands of years ago. Many of the plants are naturally drought-tolerant and so the garden requires very little watering.

According to Douglas, one of the most important reasons why he planted the wetland plants in the city ditch in front of his property was to filter pollutants -- including pesticides, road salt, and pet waste -- from the stormwater runoff that travels through ditches, then local streams, before entering Lake Ontario. The ditch garden is a reflection of Douglas' belief that citizens can empower themselves to make positive contributions to the health of their own communities.

Douglas' garden has been nominated for two City of Toronto garden awards.

On October 29, 2002 Douglas Counter, an organic gardener, won the Charter-protected right to grow a controversial natural garden on the city-owned boulevard in front of his house, thereby setting a legal precedent. The City of Toronto had

threatened to remove the garden, citing it as an unauthorized encroachment onto city property and alleging it to be a safety hazard.

Counter argued that the city's bylaws infringed on his freedom of expression and freedom of religion and conscience as stated in the Canadian Charter of Rights and Freedoms. The judge recognized that the natural garden planted on city property was a form of expression protected by the Charter.

Douglas, a graphic designer by trade, is an active environmentalist who has done extensive

community volunteer work. He considers his naturalized memorial garden to be a small part of his efforts to heal the environment. He is also considered to be a local expert on native long-grass prairie gardens

From *Recreating Eden*, Season 1, Episode 6, 2004. *Recreating Eden* is a Canadian television series about gardens and gardening  
<http://www.recreatingeden.com/index.php?pid=8&season=01&episode=6>

## Davis Memorial State Nature Preserve

### Ohio Department of Natural Resources, Division of Natural Areas and Preserves

This significant natural area was first protected through the generosity of Davon Stone, Inc., which donated the land to the Ohio Historical Society in 1961 to be used as a nature preserve in honor of the former chairman of the board, the late Edwin H. Davis. In 1993 the Historical Society dedicated the area as a State Nature Preserve and transferred all management responsibilities for this site to the Division of Natural Areas and Preserves.

Davis Memorial State Nature Preserve consists of 88 acres of diverse plant communities and unique geological formations. The ecological and geological diversity found in this region of Adams County is almost incomparable to anywhere else in Ohio.

Davis Memorial State Nature Preserve sits astride the boundary between two of the five physiographic (or landform) regions found in Ohio. Located on the western edge of the Unglaciaded Appalachian Plateau and the northeastern edge of the Interior Low Plateau or Bluegrass Region, Davis Memorial provides habitat for plant species far removed from their home ranges in the western prairie states, Appalachian Mountains, and Canada.

Hiking at Davis Memorial allows the visitor to see a variety of bedrock types as well as the diverse plant communities produced by each. Walking the Sullivantia Loop Trail one can observe impressive cliffs of Peebles Dolomite, a type of limestone high in magnesium. This bedrock weathers rapidly when first exposed but hardens on contact with the air, producing impressive cliff overhangs. Along this cool, shaded stream valley, these cliffs support populations of the

uncommon *Arbor vitae* or "white cedar," which migrated into Ohio in front of the advancing glaciers thousands of years ago. These rare trees stayed behind after the retreat of the glaciers, surviving in areas most like their cool Canadian homes. Just below the *Arbor vitae* grow the rare and delicate *Sullivantia*, which produce sprays of tiny white flowers in early June.

Above the Peebles Dolomite is the Greenfield Dolomite, weathering not in the gentle curves as does the Peebles, but rather in blocky layers. Both of these strata are Silurian in origin and are estimated to be 440 million years old. Small caves and sinkholes form readily in these alkaline rock strata providing habitat for bats, salamanders, and a variety of invertebrates. The thin soil found on top of the dolomites produces many openings in the sparse woods which are inhabited by prairie vegetation such as Limestone Adder's-tongue, Tall larkspur, and Hairy wing-stem, all of which are considered rare in Ohio. The late E. Lucy Braun, a famous Ohio botanist, studied some of these prairie openings in the 1920's including one area she dubbed Agave Ridge for the number of *Agave virginica* or False aloe. Tree growth on these dry cliff tops can be unbelievably slow. Many of the larger trees along the edges of cliffs and prairie openings are in excess of 200 years old.

The tops of the low ridges at Davis Memorial are capped with a thin layer of Ohio Black Shale, a highly acidic, thinly bedded stratum having its origins in Devonian times, approximately 375 million years ago. The shale layer is very weathered at the surface and the most obvious indicator of its presence can be seen in

plant distribution. Good exposures of this bedrock can be seen along Davis Memorial Road northeast of the preserve. Acidic soils derived from Ohio Black Shale produce a forest of mixed oak, hickory, blueberry, and Virginia pine. This forest also has a lower wildflower diversity. Here you will find Common cinquefoil, Downy rattlesnake plantain, and hawkweeds, all typical of hilly southeast Ohio.

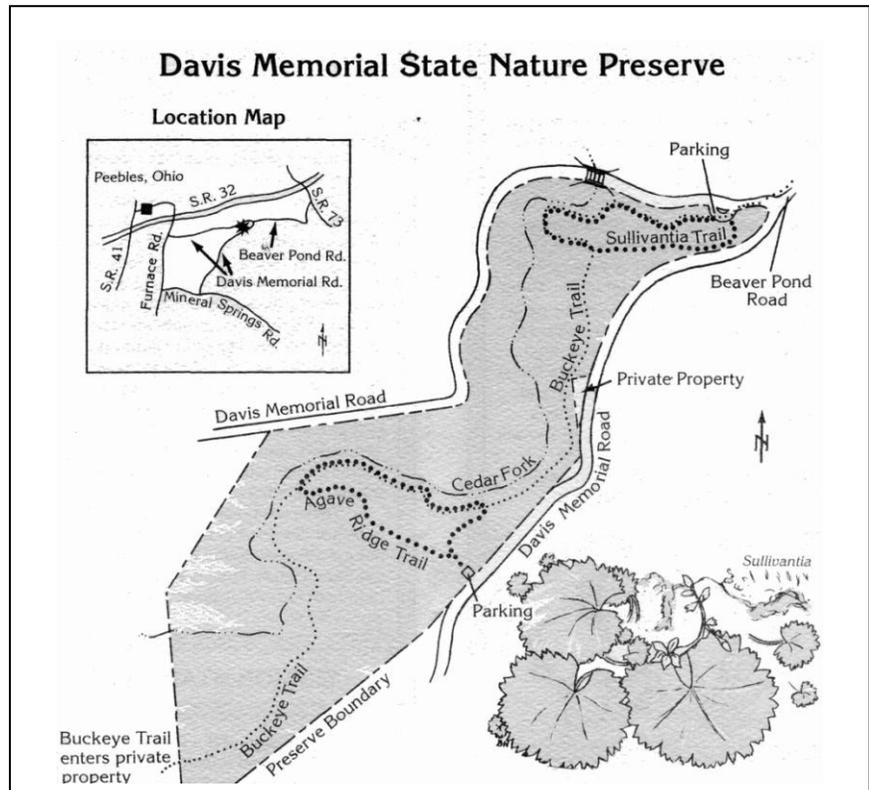
Resource management at Davis Memorial is divided into two categories. The first of these is the control of invasive alien species. Non-natives such as Garlic mustard, Japanese honeysuckle, and Bush honeysuckle, if left unchecked, could dominate and reduce or even eliminate some populations of native wildflowers and shrubs. Methods of controlling these aliens include manual removal by cutting or pulling for some species while others require the carefully controlled use of herbicides.

The second type of resource management being conducted at Davis Memorial is the restoration of several small cedar barren prairies. Many of the 16 rare plant species found at Davis Memorial survive in this unusual habitat. Changes in climate and land use patterns, as well as fire suppression over the past few decades have led to a decline in cedar barren prairies. Without prescribed burning as well as the selective removal of woody vegetation, many rare prairie plants,

such as False aloë and Tall larkspur, would be shaded out.

These land management practices are designed to insure that the natural diversity found at Davis Memorial State Nature Preserve will continue to benefit today's visitors, and those who will follow.

Reprinted from a brochure prepared by the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, 1997. Text by Martin McAllister and map by Becky Hughes.



## Japanese Barberry and Ticks

Scott C. Williams a researcher at the Connecticut Agricultural Experiment Station together with Jeffery S. Ward, Thomas E. Worthley, and Kirby C. Stafford from the University of Connecticut reported that the management of the invasive plant, Japanese barberry (*Berberis thunbergii*) reduces blacklegged tick (*Ixodes scapularis*) abundance and could have human health ramifications. The native white-footed mouse (*Peromyscus leucopus*) is a primary host for larval and nymphal blacklegged tick. The researchers found that tick abundances were greatest in dense barberry. These ticks are a major vector for agents that cause Lyme disease, human granulocytic anaplasmosis, and human babesiosis.

The researchers found that questing adult ticks were most abundant in areas dominated by Japanese barberry, and that about 44% of the ticks found in barberry were infected with *Borrelia burgdorferi*, the spirochete causative agent of human Lyme disease. However, only 10% of the less abundant ticks from non-barberry areas were infected. These findings suggest a great probability of humans becoming infected with Lyme disease in barberry dominated areas.

Reprinted from *Potowmack News*, newsletter of the Potowmack chapter of the Virginia Native Plant Society, January/February 2009. [www.vnps.org/chapters/potowmack/PotowmackNewsjanfeb2009.doc](http://www.vnps.org/chapters/potowmack/PotowmackNewsjanfeb2009.doc)

## Butterfly Gardening

### Attracting butterflies to gardens in the Great Lakes watershed

To attract the greatest number and variety of butterflies and have them as residents in your yard, you will need to have plants that serve the needs of all life stages of the butterfly. They need specific plant species on which to lay eggs, food plants for the larvae, plants on which to form a chrysalis and nectar sources as food for the adult.

#### Larval Host Plants

In their larval stage, butterflies require very specific host plants on which to feed. For example, the monarch butterfly in its larval stage feeds only on plants in the milkweed family (Asclepiadaceae) such as common milkweed, butterfly weed, and swamp milkweed. Don't worry if butterfly caterpillars are munching on the leaves—remember, this is their food. They rarely defoliate plants.

#### Larval Host Plant

**wild lupine** *Lupinus perennis*,  
**poplar** *Populus*, ash *Fraxinus*,  
**elm** *Ulmus*, willow *Salix*;  
**turtlehead** *Chelone glabra*,  
**spice bush** *Lindera benzoin*,  
**sassafras** *Sassafras albidum*,  
**violet** *Viola* spp.,  
**dogwood** *Cornus*, **sumac** *Rhus*;  
**aster** *Aster* spp.,  
**New Jersey tea** *Ceanothus americanus*,  
**showy tick trefoil** *Desmodium canadense*,  
**blue vervain** *Verbena hastata*,  
**milkweed** *Asclepias*,

#### Butterfly Species

Karner blue, frosted elfin  
 mourning cloak  
 mourning cloak  
 Baltimore butterfly  
 spice-bush swallowtail  
 spice-bush swallowtail  
 fritillaries  
 spring azure  
 pearl crescent  
 spring azure, mottled duskywing  
 eastern tailed blue, hoary edge  
 buckeye  
 monarch

To create butterfly habitat in your garden successfully, do not use synthetic pesticides (which include herbicides, fungicides, etc.) as these are toxic to butterflies.

#### Attracting Adult Butterflies: The Search for Nectar

Adults searching for nectar are most attracted to orange, purple, yellow or red blossoms that are flat-topped or clustered and have short flower tubes that allow the butterfly to reach the nectar with its proboscis. Nectar-producing plants should be grown in open, sunny areas, as adults rarely feed on plants in the shade,

#### Native Perennials To Attract Nectar-Seeking Adult Butterflies

**Bergamot** *Monarda fistulosa*: Tubular lavender flowers from July to August. Grows 90-120 cm in most soil types. Full sun.

**Black-eyed Susan** *Rudbeckia hirta*: Bright yellow blooms from June until frost. Grows 60-90 cm in most soil types. Full sun to light shade.

**Blazing star** *Liatris* spp.: Distinctive flower spike covered in purple flowers from July to August. Grows 30-150 cm in most soil types. Full sun.

**Butterfly weed** *Asclepias tuberosa*: Brilliant orange flower clusters from July to September. Grows 30-90 cm and thrives in dry sandy soil with good drainage. Full sun

**Cup plant** *Silphium perfoliatum*: Prolific yellow flowers from July to October. Grows 120-240 cm in most soil types. Full sun.

**Culver's root** *Veronicastrum virginicum*: White flower spikes bloom from July to August. Grows 60-180 cm, prefers moist soil but will also do well in average conditions. Full sun.

**Evening primrose** *Oenothera biennis*: Yellow flowers bloom up and down the tall wand from July to

September. Grows 30-180 cm in most soil types. Full sun to light shade, biennial.

**Grey-headed coneflower** *Ratibida pinnata*: Yellow flowers droop around a distinctive, tall centre cone from June to August. Grows 90-150 cm in most soil types. Full sun.

**Ironweed** *Vernonia altissima*: Vivid purple flower clusters from July to September. Grows 90-180 cm, prefers moist soil but will also do well in average conditions. Full sun.

**Joe-pye weed** *Eupatorium maculatum*: Dense clusters of pinky purple flowers from July to August. Grows 120-180 cm, prefers moist soil but will also do well in average conditions. Full sun.

**Lance-leaved coreopsis** *Coreopsis lanceolata*: Prolific gold flowers from July to September. Grows 30-60 cm in most soil types. Full sun.

**New England aster** *Aster novae-angliae*: Prolific violet-purple flowers with yellow centers in late summer through fall. Grows 120-150 cm, prefers moist soil but will also do well in average conditions. Full sun to light shade.

**Ox-eye *Helianthus helianthoides*:** Showy yellow flowers from July to September. Grows 90-150 cm in most soil types. Full sun.

**Stiff goldenrod *Solidago rigida*:** Large, flat yellow flower clusters in mid- to late summer. Grows 30-120 cm in a wide range of soils, from wet to dry, rich to nutrient-poor. Full sun.

**Swamp milkweed *Asclepias incarnata*:** Purple-pink, fragrant flower clusters from June to August. Grows to 120 cm, prefers moist soil but will also do well in average conditions. Full sun.

**Turtlehead *Chelone glabra*:** Intriguing white flowers, which look like open-mouthed turtles in profile, bloom from August to October. Grows to 90 cm, prefers moist soil. Full sun to partial shade

**Wild lupine *Lupinus perennis*:** Spikes of blue pea-like blossoms from May to July. Grows 30-60 cm in well-drained, sandy soil. Full sun to part shade.

### Recommended References

*The Butterflies of Canada* Ross Layberry, Peter Hall, and Donald Lafontaine. Toronto: University of Toronto Press, 1998.

*Butterfly Gardeners Quarterly* P.O. Box 30931, Seattle, Washington 98103.

*Butterfly Gardening* L. Gunnarson and F. Haselsteiner, eds. San Francisco: The Xerces Society / Smithsonian Institution, Sierra Club, 1990.

*Eastern Butterflies* P. Opler and V. Malikul. Boston: Houghton Mifflin, 1998.

*The Ontario Butterfly Atlas* Anthony Holmes, Ronald Tasker, Quimby Hess, and Alan Hanks. Toronto: Toronto Entomologists' Association, 1991.

Reprinted from Fact Sheet 3, 1999. *Wildflower*: North America's Magazine of Wild Flora. Published quarterly by the Canadian Wildflower Society P.O. Box 336, Station F, Toronto, Ontario M4Y 2L7; (416) 924-6807.

## SASSAFRAS TEA

### Gordon Mitchell

Before modern medicine the Native Americans and the early European settlers had to rely on getting their medicines from various plants to treat their illnesses. Some of these medicinal plants were native to this country and some of them were imported from other parts of the world. One native plant used as a panacea, or "cure-all", for many ailments was the sassafras tree.

Depending upon which reference book you use, the scientific names for Sassafras are *Sassafras albidum* (Nuttall) Nees, *Sassafras officinale* T. Nees and Ebermaier, *Sassafras variifolium* (Salisb.) Kuntze, *Sassafras sassafras* (L.) H. Karst, *Laurus sassafras* L., and *Laurus variifolia* Salisb.

Depending upon in which part of the country you resided, some of the common (and not-so-common) names for Sassafras are Ague Tree, Black Ash, Chewing Stick, Cinnamon Wood, Common Sassafras, Fenchelholzbaum, Fennel Wood, Fiewerbaum, Golden Elm, Green Stick Tree, Gumbo File, Mitten Plant, Pauame, Red Sassafras, Salop, Saloop, Sassafrac, Sasafra, Sassafrasso, Saxifras, Saxifrax, Silky Sassafras, Smelling Stick, Tea Tree, Wah-en-nah-kas, White Sassafras, Wild Cinnamon, and Winauk.

There were many uses for the sassafras tree. Its wood was used for making barrels, boxes, buckets, crates, cross ties, fence posts and rails, furniture, oxen yokes, pallets, and for fuel. The wood's fragrance made



it useful in repelling insects. (Many early beds were made of sassafras wood to repel any bedbugs.) Depending upon the dosage, an extract from the bark made a pink, orange, brown or yellow dye. Chewing on the bark has satisfied cravings for tobacco. The mucilaginous pith was used for treating eye ailments. The twigs made pleasant-tasting toothbrushes for anyone using them.

Sassafras oil, a major industry at one time, was made by chipping the sassafras roots and stumps, and then by distilling these chips. The chips yielded about 1 to 9% oil. The oil, was used to flavor candy, perfume, and soap. (When making lye soap, it was stirred with a sassafras stick, which was believed to give the soap qualities that give the skin a youthful appearance.) If

rubbed over the body, sassafras oil was also effective as a mosquito repellent.

By far, the biggest use of sassafras was for making sassafras tea. Although many parts of the tree were used to make the tea, the root's bark was the most commonly used part. Some claimed that the younger root bark was better than the older bark and others claimed differently.

Digging or grubbing out the roots is the best way to remove them. The root's bark is thick and spongy. The freshly dug bark is initially light in color, but will shortly turn red after its exposure to the air.

The digging is usually done when the roots are dormant. If the roots are dug when they are actively growing, they have a bitter taste. Because sassafras is such a prolific root sprouter, removing a few roots will not harm the tree.

The root bark is then scrubbed, dried, and cut into small strips. These dried strips are then boiled in water. According to the different references, the amount of bark that is used and the amount of water that is boiled varies greatly. The tea is usually ready when the boiled water turns a reddish color. Some consumers add ingredients from other plants to give the tea a distinctive flavor.

It was the Native Americans who first introduced sassafras to the Europeans. Sassafras tea was used as a beverage and as a medicine by nearly every Native American tribe in the present-day eastern United States, including the Iroquois Nation of western New York (Cayuga, Mohawk, Oneida, Onandaga, Seneca, and Tuscarora) and the Five Civilized Tribes of the South (Cherokee, Chickasaw, Choctaw, Creek, and Seminole). These tribes used sassafras for seasoning their foods and for religious purposes.

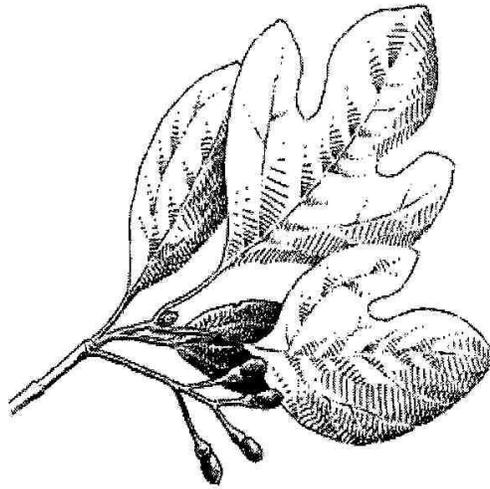
Explorers, traders, and missionaries who visited these tribes often observed and recorded tribal uses of sassafras. Some early European visitors drank sassafras tea as a source of vitamin C in order to prevent scurvy.

Historians differ on when the Europeans first discovered sassafras. Some sources claim that Christopher Columbus and his crew first discovered Sassafras in 1492. It was said that the crew could smell its windborne fragrance while still out at sea. Its fragrance would have meant that land was nearby. This

fragrance may have saved Columbus' voyage by persuading his restless crew not to mutiny.

Other sources claim that the Spanish explorer, Juan Ponce de Leon, first discovered sassafras in present-day Florida in 1513, while searching for the legendary "Fountain of Youth". Instead of finding his fountain, Ponce de Leon may have found something nearly as valuable. Initially, Ponce de Leon mistook sassafras for cinnamon.

Still other sources claim that the Spanish did not discover sassafras until 1538. However, it was the Spanish who first gave the plant its name, sassafras. The name is either a variation of the name, Saxifrage, or a variation of the name, Salsafra.



The Spanish, who later colonized present-day Florida in the 16th century, first exported sassafras to Spain in 1560. There it became very popular as a tea for medicines and for beverages. In either 1569 or 1574 (depending upon the reference), the famed Spanish botanist and physician, Dr. Nicholas Monardes, wrote about the virtues of sassafras in his publication, *Joyfull Newes Out Of The Newe Found Worlde*.

Shortly after the Spanish began exporting sassafras to Spain, the English began to export sassafras to England from their colonies along the Atlantic Coast. Sir Walter Raleigh initially tried to get a monopoly on the sassafras trade from the colonies. This may have been America's first trade cartel. In 1584, Raleigh sent Captains Philip Amadas and Arthur Barlowe to explore the coast of present-day North Carolina. Sassafras was one item they were seeking.

In 1586, Sir Francis Drake, while rescuing a small colony on the Carolina coast, transported sassafras on his return trip to England. Unfortunately, this same colony, commonly referred to as the "Lost Colony", disappeared without a trace in 1587.

After 1606, the sassafras trade became one of the main reasons for setting up charter colonial companies along the Atlantic Coast. Many of the early settlements even used the sassafras wood in building their forts.

Captain John Smith, who founded Jamestown in 1607, was also interested in the sassafras trade. One of the first exports from the Jamestown Colony to England was sassafras. In 1610, the colony's physician,

Dr. Lawrence Bohun, studied the sassafras tea as a possible treatment during a local yellow fever outbreak.

The Virginia colonists considered sassafras to be a major cash crop. By 1610, the English required exports of sassafras from the colonies as a condition for them to retain their charters. Both the wood and the roots were in high demand. In the Virginia Colony, sassafras rivaled tobacco as the main export to England.

Sassafras was popular in the New England Colonies as well. John Brereton first observed sassafras while exploring the New England coast and the adjacent islands while traveling on Bartholomew Gosnold's exploratory expedition in 1602. The Pilgrims of the Plymouth Bay Colony became interested in the sassafras trade shortly after their arrival in 1620. When the Mayflower returned to England in 1621, it transported some sassafras as part of its cargo.

Much of the sassafras that was exported to England originated from the New England colonies. The English botanist John Josselyn described the sassafras tree in his 1672 book *New England's Rarities Discovered*.

Before it became popular as a beverage, sassafras tea was initially sold as a medicinal herbal tea in England. By 1618 it was listed in the British Pharmacopoeia.

Sassafras tea had become so popular in England as both a beverage and as a medicine that many street stands were set up in the cities. The English also liked to mix the sassafras tea with milk and sugar to make another popular drink, saloop. Saloop was a very popular in England until about 1900.

The French had an interest in the sassafras trade, too. During the mid-1500s, a French Huguenot colony in what is now Florida first learned about sassafras from the local Native American tribes. (The Spanish colonies in Florida may have learned about sassafras from the Huguenots, instead of the Native Americans.) Unfortunately, this colony failed because they did not grow their own food. Instead, they had relied on the local tribes for food.

Samuel de Champlain, founder of the New France colony in present-day Quebec tried to promote the sassafras trade in his new colony. He did not succeed because New France was too far north for sassafras trees and because of the competition from the fur trade.

Similarly, the French settlers of Acadia (modern-day New Brunswick and Nova Scotia) had no use for sassafras tea, either. However, when the British expelled them from Acadia in 1755, many of these Acadians settled in Louisiana. From the local Native American tribes, the newly settled Acadians (now called Cajuns) learned of another use for sassafras. The

Cajuns (and the Creoles) dried the sassafras leaves, ground them up into powder, and then used it as "file gumbo" for flavoring and thickening sauces, soups, and stews. This is still used in Cajun cooking. It is usually the older leaves that are ground into powder. The younger leaves can also be eaten cooked or uncooked. The younger leaves have a lemony taste and a mucilaginous texture.

The Germans had use for sassafras as well. They used it to flavor their beer. Because it smelled and tasted like fennel, they called it fenchelholzbaum or fennelwood. The Pennsylvania Germans also called the tree fiewerbaum because a tea made from the flowers was used for treating fevers.

Sassafras is truly the only spice that is native to North America. All of our other spices came from other parts of the world, especially from the East Indies.

Many Europeans also used imported sassafras tea to fight the bubonic plague. Ever since the Middle Ages, the plague had been taking a heavy toll on Europe's population.

It was later learned that sassafras tea could be used to treat venereal diseases. Afterwards, consumption of the tea declined in the European social classes because possession or the consumption of it might imply affliction by the disease.

Sassafras tea became popular with the colonists after the 1773 Boston Tea Party and during the American Revolutionary War. Most of the English tea importations were controlled by the British, and it was very difficult to obtain. As a result, the colonists turned to native plants, including sassafras, for making their teas. Any American tea that was made from native plants at that time was called "Liberty Tea."

After the United States obtained independence and expanded westward, sassafras tea continued to be important as a medicine and as a beverage. Because doctors were few and far-between, the early settlers had to rely on themselves for their medicinal needs.

Sassafras tea was frequently used as a spring tonic to purify and to thin the blood. It was especially popular among the settlers of the Appalachian and the Ozark Mountains.

Aside from purifying the blood, sassafras teas had other uses as well. It used as eyewash, as cough medicine, to induce sweating or urination, for skin ailments like eczema or psoriasis, for gastrointestinal ailments, for hypertension, for relief of arthritis and rheumatism, for gallstones, and for kidney stones. Some even claimed that teas made from different parts of the tree could cure different ailments. However, excessive consumption of sassafras tea had a narcotic

effect. Sassafras was even listed in the U.S. Pharmacopoeia (1820-1926) and in the National Formulary (1926-1965)

During the 19<sup>th</sup> century, sassafras still continued to be a major American export to Europe. It was mainly the wood and the root bark that was exported. The chief American port of that time for sassafras exports was Baltimore.

Sassafras tea enjoyed another surge in popularity in the South during the American Civil War. During the war, the Union Navy had imposed a naval blockade on all of the major southern ports. Because of this blockade, Asian teas could not be imported. Soldiers and civilians of the Confederacy had to resort to sassafras tea as a substitute.

Shortly before World War I, scientists discovered that people who drank sassafras tea were more resistant to common colds and to throat infections than those who did not. Unfortunately, the war delayed continued research for several years. It was later discovered that sassafras had antiseptic qualities and that it also removed toxins from the liver. Sassafras tea was probably used during the worldwide 1918 influenza pandemic.

During Prohibition, a "root" beer was made by boiling the roots of the sassafras, along with sugar (or molasses) and other plants, and by mixing it with yeast for fermentation. After fermentation, this "root" beer became a substitute for regular beer and was sold commercially. The alcohol content of this drink varied from 2 to 10%. (Sassafras was once used in flavoring the nonalcoholic root beer soft drink.)

Sassafras teas and other products were probably consumed during the Depression, when money was scarce, and during World War II, when many food items were scarce. The popularity of sassafras tea started to decline in post-World War II, when old beliefs lost their hold and when better beverages and medicines appeared on the market.

In 1960, the Food and Drug Administration banned sassafras as an additive after testing safrole, a major chemical constituent of sassafras, on laboratory rats. It was discovered that large amounts of safrole caused liver cancer in these rats.

In 1976, the FDA banned the sale of any sassafras containing safrole. File powder from the leaves is still available because the leaves do not have safrole.

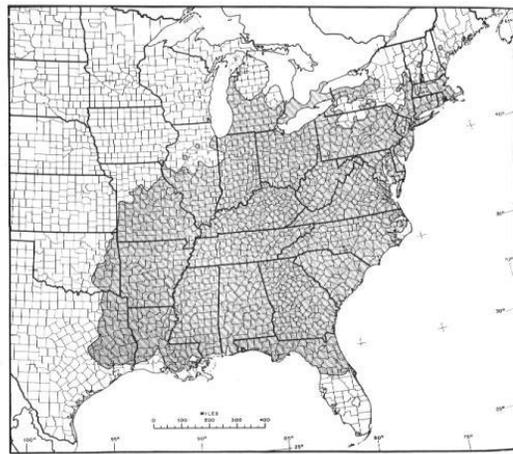
There are some sassafras teas available that are made commercially and are safrole-free (it is not possible to make safrole-free tea at home), but may not have the same taste. It was the safrole that gave the sassafras its distinct flavor. Safrole, a carcinogen, is

clear and colorless. Excessive consumption of safrole may lead to fat degeneration of the vital organs (heart, kidneys, liver), decreased blood flow, respiratory paralysis, and narcotic poisoning.

The sassafras oil that is found in the root bark is volatile, cyclic ether and may contain up to 80-90% safrole (oils from the sassafras leaves may have about 45% safrole).

There are some who think that the dangers of safrole are overrated. One would probably have to consume a very large quantity of safrole to get their harmful effects. A given quantity of safrole is far less carcinogenic than an equal quantity of alcohol. Despite the health risks, there are still people who make and consume sassafras tea. They believe that it is not harmful if it is consumed in moderation. However, I would not recommend drinking it!

So the next time you see a sassafras tree, think of how your ancestors may have benefited from it.



The range of sassafras.

### Description of Sassafras

Sassafras is a member of the Laurel Family (*Lauracea*). Fossils of this tree species go as far back as the Cretaceous Period of the Mesozoic Era (65 to 135 million years ago).

**Range:** From Ontario to Maine in the north and from Texas to Florida in the South. Also found on some of the Caribbean Islands.

**Habitat:** Acid soils. Open areas, woods' edges, fence rows. Considered a pioneer tree.

**Crown:** Irregular and flat-topped. Height: 10-100 feet. Usually seen as a shrub in the North and as a tree in the South.

**Diameter:** Varies from 2 inches to 6 feet.

**Leaves:** Deciduous. Simple. Alternately arranged on stem. Its size is 2-9 inches long and 1½-4 inches wide.

All four shapes (oval, bilobate [right- or left-handed mitten], and trilobate [like a trident]) can be found on the same tree. (Very few tree species have different shaped leaves on a single tree.) It is dark green, waxy, and shiny on the top and lighter green and velvety on the bottom. Deeply and pinnately veined. Margins are smooth. Has a citrus-like aroma when crushed. Petioles are thick and reddish. Leaf turns red, orange, or yellow in the fall.

**Twigs:** Green, slender, brittle, shiny, and rough or warty. May be hairy. Has true end buds. Leaf scars are elevated and semicircular in shape. Each leaf scar has only one vascular bundle scar. Has a citrus-like aroma when broken. Eaten by cottontail rabbits and white-tailed deer.

**Buds:** Green and about ¼-inch long. Each bud has four overlapping bud scales.

**Bark:** Mature bark is gray- or red-brown, thick, scaly, and has deep vertical furrows. Young bark is green and thin. Inner bark is pinkish and has root beer-like aroma when scratched.

**Flowers:**-. Dioecious. Clustered. Greenish-yellow. ¾ inches long. Is radially symmetrical. Buds terminal. Male flowers have nine fertile stamens. Female flowers have six sterile stamens and a light green pistil with long style. Arranged in 2-inch-long, drooping racemes. Blooms March-June.

**Fruits:** ½-½ inch long. Is a dark, black-blue, and fleshy drupe. Has only one shiny seed per fruit. Located atop an elongated thick, orange or red stalk with an enlarged

cup on top (resembles a golf tee). Borne in clusters. Matures August-October. Eaten by numerous bird species.

**Wood:** Soft, light, brittle, weak, but is durable. Heartwood is light to orange-brown. Sapwood is yellow-white. Wood grain is coarse and straight.

## REFERENCES

- Bradford Angier *Field Guide To Edible Wild Plants*  
 C. Frank Brockman and Rebecca Merrilees *Trees of North America*  
 Nelson Coon *Using Plants For Healing*  
 Nelson Coon *Using Wayside Plants*  
 Francois Couplan *The Encyclopedia of Edible Plants of North America*  
 Thomas S. Elias and Peter A. Dykeman *Edible Wild Plants: A North American Field Guide*  
 Steven Foster and James Duke *Medicinal Plants and Herbs*  
 Euell Gibbons *Stalking The Wild Asparagus*  
 Thomas A. Naegele *Edible and Medicinal Plants of the Great Lakes Region*  
 Donald Culross Peattie *A Natural History of Trees of Eastern and Central North America*  
 Lee Allen Peterson *Edible Wild Plants*

Reprinted from *The Catchfly*, newsletter of the Central Ohio Native Plant Society, Vol. 17, No. 2, 2002.  
 Gordon Mitchell works for the Columbus OH Metroparks and is a member of the Columbus Native Plant Society.

## Invasive Species

### AMERICAN BITTERSWEET *Celastrus scandens* L. Plant Symbol = CESC

#### Uses

The climbing growth habit of American bittersweet makes it a valuable ornamental plant both outdoors and indoors. It is easily trained to climb walls, trellises, and fences. When added to existing shrub plantings, this twining vine produces excellent wildlife cover and aids in erosion control as well. The berry-like fruit provides winter food for wildlife species such as grouse, pheasant, quail, rabbit, and squirrel.



#### Description

Bittersweet is a twining vine that, if permitted to ascend trees or poles, may reach heights of 20 feet, although it generally grows close to the ground. The leaves are alternate, dark green, oval shaped, and turn yellow before dropping in the fall. It is often confused with oriental bittersweet, which is a weedy pest. Oriental bittersweet (*Celastrus orbiculatus*) can reach much greater heights than American bittersweet and produces much more seed. As a result it tends to dominate

woody vegetation and should not be used. American bittersweet has been aggressive on some sites, and should be used with caution. Oriental bittersweet is distinguished from American bittersweet by leaves that are rounded at the tip, whereas those of the native species are pointed. Also, fruit of oriental bittersweet are few per stalk and close to the stem. American has several seeds on stalks that extend out beyond the leaves; flowers and fruits in clusters at the ends of twigs.

**Adaptation and Distribution**

American bittersweet tolerates diverse climatic conditions, but prefers a neutral soil and a sunny location. It occurs throughout the Northeast and Mid-Atlantic region.

**Establishment**

Two year old nursery seedlings should be used for planting banks and other large areas. Container-grown

plants are ideal for ornamental plantings. Clear at least a one square foot area around the newly established plant to reduce competition.

**Management**

Because of its aggressive nature, do not plant in areas where it may easily climb favorable trees. Bittersweet can be controlled by allowing deer and rabbits to browse the plants (this only works for young plants) and by herbicides and hand removal.

Reprinted from the Plants Database of the Natural Resources Conservation Council, US Department of Agriculture. USDA, NRCS. 2008. The PLANTS Database (<http://plants.usda.gov>, 13 November 2008). National Plant Data Center, Baton Rouge, LA 70874-4490 USA. Contributed by: USDA NRCS Plant Materials Program



American



Oriental



American



Oriental



American



Oriental

Two kinds of bittersweet, *Celastrus Scandens* (American) and *C. orbiculata* (Oriental)

[Ed note: We apologize for including a non-native plant, but the stinging nettle is so interesting and so relevant to the current home-grown food movement that we couldn't resist.]

**Singing the Praises of Stinging Nettle**

by Jennifer Tucker

Eaters today are becoming more interested in learning about and enjoying the nutrient riches of locally grown foods. In a country of long-distance, year-round supermarket foods, the true pleasures of the season, "spring vegetables," are literally in our own backyards. Spring vegetables to most people are asparagus, peas, spinach, and sorrel – crops that require the dedication of a gardener, and I'm not one. So I rely

on hardy, wild volunteer "weed" vegetables, free for the effort of foraging, gathering, and washing. These wild weed plants are from gardens around the world and volunteer every spring in cultivated soils where they are often despised as weeds and disposed of; a mistake, as these plants are truly more nutrient-rich and add a variety of tastes to the dinner bowl.

With renewed interest in discovering our heritage diet, wild vegetables are more disease-resistant and hardy to the climate they are adapting to. It is likely several generations of your family were eating these weeds now growing on the farm. Or they might have bought them at the local farmers' market in Italy, France, England, India, South America, etc! We can bring this great tradition back to our local markets, farms, and restaurants as we widen our search for a nutrient-rich diversity of vegetables to tempt the palate, challenge the cook, and re-inherit our "folk foods and folk medicines."

One spring weed vegetable now available is stinging nettles (*Urtica dioica*) and slender nettle (*Urtica gracilis*). If you haven't already met this amazing plant, you will never forget the stinging handshake if you do try to harvest it without fully paying attention! A formality of wearing garden gloves, long-sleeved shirt and pants to prepare for meeting in a nettle patch is wise for most people. Nettles have a very well-developed protection system, and unfortunately for many people the sting of nettle has prejudiced them against this plant.

My antidote for the "sting" is to be brave and crush several nettle leaves with my bare hands to release the green juice and apply to neutralize the reaction. Other plants (often found growing near nettles) to antidote the rash are Jewel-weed leaf juice, or the juice of crushed Dock or Plantain leaves. When harvesting quantities of mature plants intended for drying, or when washing them to prepare for cooking, use tongs or wear gloves. Cooking nettles before eating deactivates the sting.

### Nettles, a gourmet's green!

My herbal mentor and friend, Evelyn Snook, used to say a plate of nettles had "more easily assimilated protein than a steak!" The high concentrations of vitamins and minerals provide a wealth of easily assimilated nutrients for our bodies, such as vitamin K, A, calcium and iron, and Steve Brill's research found nettles had 10 percent more protein than any other vegetable. For a delicious and successful eating venture, tender nettle tops, like peas, asparagus and



*Urtica dioica*, Stinging Nettle

many other garden vegetables, are harvested when young for best eating, before the tiny male/female flowers appear on the stalk. (The nettle changes chemistry with the summer season, and even if cut back, the new growth will be gritty as a vegetable, and not palatable.) Lightly steam the tender young nettle tops, and follow any cooked spinach recipe. Nettle quiche, nettle pasta noodles, steamed nettle chopped and tossed with hot potato salad, nettle stir-fried, added to soups, rice, and nettle with cheese sandwiches are just a few out of hundreds of ways to eat nettles. In addition to more whole foods in the diet, regular use of nettles as fresh seasonal "wild" vegetable food, as dried herb, or in tea (infusions) will normalize weight gain or loss, stabilize blood sugar, reduce fatigue, stimulate hair growth, and bring a healthy glow and vitality to skin. For winter use, blanch and freeze nettles, save the cooking broth for soups, and dry nettle stems and leaves.

### Where does this miraculous, wholesome plant we call stinging nettle grow?

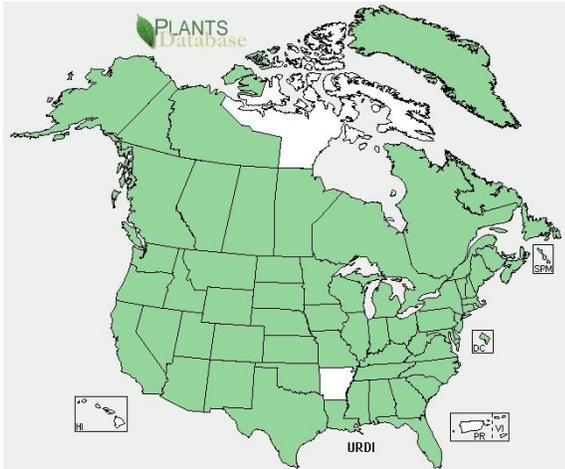
Look for them in rich soils, cultivated ground, along streams and rivers, partially shaded trails, and moist woodlands. On farms they love to grow near the barn foundations or fences in the manure-rich run-off soils of pastured areas, and they offer fly-repellant services in return for a place to grow.

We aren't the only eaters of nettle plants. They are the *exclusive* food of several species of butterfly and moth caterpillars!

Welcome stinging nettle into your garden or orchard as a companion plant. It is a hardy plant that harbors no important pest or pathogen of common vegetables. Got extra? Use some as compost or mulch, as fresh nettles are a nitrogen-rich "green manure" for soil health. At Tait Farm (Centre County) stinging nettle is the guardian of the compost pile, and harvested as an early spring vegetable, to my delight, for Tait Farm CSA members! Everyone should be proud to have a nettle patch! And if you have too many, want to give them away or don't want to take the time to harvest them, please call me at Nettle Rescue Sting-Line 814-422-8257!

**Practice ethical harvesting**

Know when to gather the, plant for optimum food use. Know what parts of the plant are used (root, flowers, leaves, seeds) and how to prepare the plant (raw, cooked, or dried). Allow plants to mature and re-seed, sustaining plant communities.

**Gather plants from healthy soils**

Never use plants for food from sprayed soils, golf courses, or parks that might have spray schedules. Check for ground water run-off source.

Introduce the wild eatables in small amounts, as you learn how your body responds. All the plants in this article can be safely used as directed as "cooked greens" and successfully mixed with other mild greens from the market and garden!

**Books for resources, recipes, and research:**

*Healing Wise*, by Susan S. Weed

*Stalking the Healthful Herbs and Stalking the Wild*

*Asparagus*, by Euell Gibbons

*The Green Pharmacy*, by James A. Duke, Ph.D

*The Wild Vegetarian Cookbook*, by "Wildman" Steve Brill

*Eat the Weeds*, by Ben Charles Harris

Reprinted from *Notes of the Pennsylvania Native Plant Society*, Apr-Jun 2008

**Two More Reasons Not To Mow**

It's a well-known fact that gasoline-powered lawn mowers emit pollutants into the atmosphere. But according to an Australian study examining the volatile chemicals released by clipped grass, even if you use an old-fashioned person-powered push mower or a newfangled solar-powered mower to cut your lawn, you'll still be producing pollutants. Some of these sweet-smelling chemicals, it turns out, can aid in the generation of ozone and smog. By not mowing your lawn, therefore, you will tie up these worrisome chemicals, or at least slow their release into the air. (Alternative solutions would be to replace your turf lawn altogether with a low-maintenance groundcover or reduce its size by widening your shrub borders and planting beds.)

Another reason not to mow, or at least not to mow at low heights, is that it may lead to an increase in pest problems. Both tall fescue and perennial ryegrass usually harbor fungi that produce chemicals toxic to various pest insects and nematodes. Researchers at Ohio State University report that the concentrations of some of these chemicals can vary with mowing height.

More specifically, the toxin concentrations tend to go up as mowing height is increased. (This effect was more pronounced for the fescue than it was for the ryegrass, at least over the range of mowing heights included in the OSU trials—one to three inches, clipped each week). Quantitative connections between mowing height and pest damage remain to be established, but the implication is clear: Close mowing could reduce the natural resistance of these grasses to pest attacks.

**Sources:**

M. Welterlen, "Cut-Grass Smell Polluting Air,"

*Grounds Maintenance* 38(5), May 2003, 8

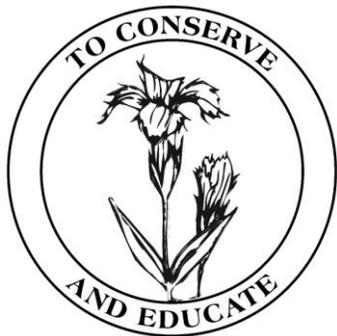
(Primedia Business, 9800 Metcalf Ave., Overland Park, KS 66212)

S.O. Salminen, P.S. Grewal, and M.F. Quigley, "Does

Mowing Height Influence Alkaloid Production in Endophytic Tall Fescue and Perennial Ryegrass?"

*Journal of Chemical Ecology* 29(6), June 2003, 1319-28

Reprinted from *Plants & Gardens News*, Brooklyn Botanic Garden, Spring 2004



## Chapters of the Ohio Native Plant Society

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

Central Ohio Native Plant Society  
Virginia Wagner  
4897 East Walnut Street  
Westerville, Ohio 43081

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

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

Native Plant Society of Northeastern Ohio  
J. Bradt-Barnhart, President  
10761 Pekin Road  
Newbury OH 44065  
440-564-9151  
bunchberry1@windstream.net

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Phenology Primer: Growing Degree Days  
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