

On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

Program Schedule – Spring 2014

Saturday, March 22, 9:00am-Noon – Naturehood. Naturehood is an urban restoration program which restores native landscapes to some of the approximately 3,000 acres of vacant land in the city of Cleveland. Naturehood improves our city's ecological footprint, facilitates the city's economic recovery, improves quality of life, and helps to make Cleveland a healthier, more sustainable city. See how it creates a network of native plant naturoscapes on the city's vacant and abandoned properties. Weather permitting. Josh Koppen and Elaine Barnes will be leading this program. Due to unknown weather conditions, location and directions will be provided closer to program date. Call Josh to register at 216-281-6468.

Saturday, April 26, 9:00am-Noon – Spokane Swamp Forest, Bristol Township, Trumbull County. Jim Bissell, Curator of Botany at Cleveland Museum of Natural History, leads this joint trip with NEON. Spokane Swamp, just purchased by the museum last year, is a swamp forest with many peat-based ponds along the east side of the Greenway Trail east of Rt 45 in Trumbull County. Rose shell azalea is quite common in portions of the swamp, and the state-threatened Walter's St. Johnswort, *Triadenum walteri*, is found there, formerly known only from southern Ohio. **Directions:** take I-90 east to Rt 45. Head south on Rt 45 past Rt 88 a little over a mile and turn left on to Hyde-Shaffer Rd. Follow Hyde-Shaffer Rd. until you pass the Western Reserve Greenway Trail, a bike trail running across Hyde-Shaffer Rd. Park on the south side of the road just beyond the Greenway Trail. Call Judy to register at 440-564-9151 (H).

The Native Plant Society Has a New Web Site

If you have not already visited nativeplantsocietyneo.org, you are in for a treat. Our new web site is up-to-date, easy to use, and full of information about us and our mission. You will find the latest information about our field trips and programs, reports of past programs, and news of things happening in the world of interest to Society members. Our photo gallery is still unfolding, so visit the site often to see how we are progressing.

Our new website address is

www.nativeplantsocietyneo.org

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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 Diane B. Christensen, 8400 Top Rail Lane, Novelty, OH 44072; 440-666-4870, dbpolice@roadrunner.com; or Bill Oberdick, 986 Bushwood Ln., Columbus, Ohio 43235-5016; 216-392-7027, bandbober@wowway.com.

The Mission of the Native Plant Society of Northeastern Ohio is to promote the study, appreciation and conservation of the native plants and plant communities of Ohio.

Spring Weekly Wildflower Walks – Wednesdays at 6:30 pm

No registration is required for these walks. All walks will take place rain or shine.

April 2 – Jackson Rd Field Parking area, South Chagrin Reservation. Led by a Cleveland Metroparks naturalist. Skunk cabbage and other early flowers will be the highlight of this walk along the Chagrin River. **Directions:** Jackson Rd field is located on the east side of Chagrin River Rd between Miles Rd and Rt 87.

April 9 – Thompson Ledges. Led by vice president, Judy Barnhart. We'll search for the early blooming trailing arbutus and see the other unique flora found on the Sharon Conglomerate sandstone ledges.

Directions: Take I-90 east to Rt 528. Head south approximately 5 miles to Thompson Square. Continue $\frac{3}{4}$ way around the square and head east on Thompson Road approximately $\frac{1}{4}$ mile to park entrance on right. 16713 Thompson Rd, Thompson, OH.

April 16 – Sagamore Creek, Bedford Reservation. Explore the ridges above and the floodplain along Sagamore Creek with Fred Losi to enjoy botanical treasures such as Twinleaf, Trailing Arbutus, Trout Lily and Bloodroot. Terrain: Moderate; one hill; 2 miles. **Meet at:** Alexander Bike Lot & Trail Head.

April 23 – Tinker's Creek, Bedford Reservation. Explore the floodplains around Tinkers Creek with Fred Losi targeting beautiful, ephemeral flora such as Greek Valerian, Goldenseal, Virginia Bluebell, Wild Blue Phlox, Bishop's Cap and Foamflower. Terrain: flat; easy; 2 miles. **Meet at:** Hemlock Creek Picnic Area & Trail Head.

April 30 – Big Creek Park - Chardon, Geauga Park District. Known for its diversity of Spring flora. Led by vice president Judy Barnhart, as a joint program with Geauga Park District. **Directions:** Take I-90 east to Rt 44. Travel south 3.2 miles to Clark Road. Turn east onto Clark Road 2 miles. Turn right onto Robinson Road. Travel 0.8 mile to park entrance. Bear left and continue to end at Deep Woods Shelter.

May 7 – Indian Point, Lake Metroparks. Search for spring ephemerals and the colorful pink and blue Virginia Bluebells with Naturalist Kathy Terrell on this Joint program with Lake Metroparks.

Directions: Take I-90 to Vrooman Road and go north. Turn right (east) onto Seeley Road. Proceed east on Seeley Road for just over ½ mile to the lower lot located on the left.

May 14 – Dix Park, Ravenna Township, Portage Park District. Dix Park is a beautiful mix of forest, wetlands, and active farmland in Ravenna Township. Christine Craycroft, Executive Director of the Portage Park District, will be our walk host and guide. We will explore the mature mixed hardwood forest with its springs, wetlands, and small streams as we seek out the spring wildflowers. Please wear appropriate footwear for potentially wet conditions. Rain or shine. **Location:** 7318 SR 44, Ravenna Township, Ohio 44266.

Monday, May 21 – North Chagrin Reservation. This walk will be led by a Cleveland Metroparks Naturalist. The Scenic Loop Trail is known as a favorite wildflower trail. **Directions:** From I-90 take Rt 91 south to the main entrance of North Chagrin. Take Sunset Lane to Buttermilk Parkway. Turn left and proceed north to the Strawberry Lane parking lot. Optional entrance off Rt 6.

May 28 – Indian Point, lower parking area. Retired Lake Metroparks Naturalist Kent Scott leads this trip to one of his favorite wildflower areas to look for late season wildflowers. **Directions:** Take I-90 to Vrooman Road and go north. Turn right (east) onto Seeley Road. Proceed east on Seeley Road for just over ½ mile to the lower lot located on the left.

Saturday, May 17, 10:00am – Sherwin Preserve, Waite Hill. Board member Doug Yates leads this special trip to Western Reserve Land Conservancy property. **Directions:** from Rt 306 in Kirtland take Eagle Rd west to Smith Rd. Turn right/north on Smith Rd. Parking in large open field on East side of road. Call Judy to register at 440-564-9151 (H).

Sunday, June 1, 2pm – Cleveland Lakefront Nature Preserve. Formerly known as Dike 14, this 88-acre preserve is owned by the Cuyahoga County Port Authority. During the years of 1979 to 1999 the material dredged from the bottom of the Cuyahoga River was dumped on this site. Since then, nature has been allowed to reign. Along with Wendy Weirich, see what plants have made their way here via wind, animal, or in the dredging from the river. This is a fascinating site to see up close. **Directions:** Located where Martin Luther King Jr. drive meets I-90. Follow the signs to the Cleveland Lakefront Office. We will meet in the parking lot of the Lakefront Office. Registration limited and required. Call Diane to Register at 440-666-4870.

Contribute Articles, photos, ideas for

On The Fringe

On The Fringe Journal of the Native Plant Society of Northeastern Ohio is published quarterly by the Society. We welcome short articles about particular native or invasive plants of botanical interest. Please send your article for possible publication to co-editor Diane B. Christensen, 8400 Top Rail Lane, Novelty, Ohio 44072 or to dbpolice@roadrunner.com.

What's Up With The Butternut?

By Alice Waldhauer

If you were strolling through a glen, you might not recognize this tree. The butternut is slightly smaller than its close relative, the black walnut. It is round topped, deciduous, and reaches a height of about 60', with branches that spread 50' or so. The trees are best known for the nuts they produce, which have been an important food source for humans and other forest inhabitants. Native Americans boiled the sap to make syrup and sugar, as is done with sap from maple trees, and they used the bark for various medicinal purposes. Butternut wood was once a popular choice for carved altars, church pews, and carriages—because it was light in weight. The bark and the husks contain a brown pigment that stains the fingers and can be used to dye material used for clothing. The rust-colored husks were used to dye the Confederate uniforms during the American Civil War, resulting in their nickname *The Butternuts*.

Optimum conditions for the butternut include full sun and deep well-drained soils, particularly moist bottomlands and ravines. The butternut (*Juglans cinerea*), also known as the white walnut, lemon walnut, or oilnut tree, has a range that generally overlaps that of the black walnut (*Juglans nigra*) and encompasses most of the Upper Midwest. However, the butternut is more tolerant of cold climates, so its range tends lie farther north. Butternuts have experienced a startling decline in numbers in recent decades. The culprit is the butternut canker (a fungus with the challenging moniker *Sirococcus clavigignenti-juglandacearum*) first described in 1979. The fungus causes sunken oval-shaped areas on the branches, trunk, and stems that develop into black lesions which continue to grow. Butternut canker is deadly to the host tree, and there is no known remedy. Researchers believe it may be spread by insects and rain splash. Since the canker was first observed in 1967, 80% of butternut trees have succumbed across its range. It is currently listed as a threatened species by the United States Forest Service, and some scientists believe that the species will be extirpated if no action is taken.

Overall, butternut trees are similar in appearance to the black walnut, with subtle differences that are apparent mainly to tree experts and enthusiasts. Some tree identification guides use a side-by-side comparison of the two species because the differences are easier to

comprehend when presented this way. According to the Ohio Champion Big Tree Program (Ohio Department of Natural Resources), the largest butternut tree in Ohio lives in Kent (Portage County), boasting a height of 78' feet and a trunk circumference of 19'.



The male flowers are in yellowish-green catkins
dendrologysurvivor.wikispaces.com

The leaves of the butternut are alternate and pinnately compound, with nine to nineteen leaflets. When disturbed, the leaves give off a pungent odor, and the petioles (or stems) of each leaflet are downy and sticky. The tree is not known for its fall color, as the leaves tend to drop off during periods of dry weather in late summer. The nuts, which are lemon-shaped with two ridges running from end to end, mature in drooping clusters of three to five nuts. The wood of the butternut is prized by carvers and furniture makers because it is light in weight, with a pinkish creamy tan color and little of the dark brown coloration of black walnut wood. The bark of young butternut trees is light gray and smooth, and grows in mature trees into flat-topped ridges forming a diamond pattern that has a shiny, silvery color.

Butternut trees are not likely to form large single-species groves or make up the predominant species in a forest, and this may have to do with their characteristics as a species. Solitary examples of the tree are found across its range, which includes all of Ohio, but they are reported to be more common in the eastern portion of the state. It is a relatively short-lived tree, usually

with a lifespan of 60-70 years. About 20 years of growth are required before the tree produces nuts, which ripen in September or October and are prized for candy making and baking. Good crops are typically produced only every two to three years.



Bark of a larger tree
www.carolinanature.com

Like the black walnut tree, butternut trees produce juglone, a substance that suppresses growth in the soil surrounding the base of the tree, even of butternut sprouts. Butternut trees are shade intolerant and will not survive in the forest understory. The butternut tree is monoecious, meaning there are male catkins and female "flowers" on the same tree. However, the catkins and flowers don't usually appear at the same time, ensuring that viable seeds are the cross of more than one individual tree. (In light of all of these characteristics, it's a wonder that the butternut tree ever flourished.)

Where does the supermarket walnut, with its easily cracked shells, fit into this picture? They are varieties of the Persian walnut, and almost all of them are grown in California. According to the Diamond Foods Website, there is a species of black walnut native to California (*Juglans californica*), but growers at various California missions in the late 18th century planted trees native to Asia Minor. The species was then known as the English walnut, because the nuts were carried on British trading ships to locations around the world. Today, "Persian walnut" is accepted as a more accurate description of the supermarket walnut. In Ohio, some people still harvest black walnuts, but cracking the nuts and picking out the nutmeats is a labor of love. Butternuts are said to be somewhat easier to crack and clean and have a more buttery flavor and a higher oil

content in the kernel. Butternut oil was once used to finish wood, and it was said that oil from one nut was sufficient to finish a walking stick.

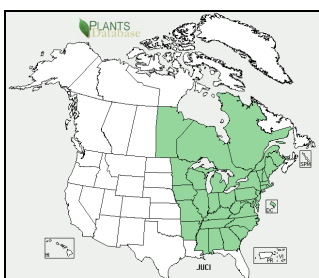
The continued viability of the butternut tree species is threatened by the butternut canker. Other species have been nearly wiped out by the introduction of exotic fungi. Perhaps the best example is the American chestnut (*Castanea dentata*), which is still on the brink of extinction after a fungus (*Cryphonectria parasitica*) that caused the chestnut blight was inadvertently introduced around 1904. Problems were said to have begun when exotic Japanese chestnut trees that harbored the blight fungus were planted in New York. Although the exotic chestnut had some resistance to the blight, the American chestnut had none. The tree was a towering favorite of lumbermen, because it was very fast growing and had a long straight trunk. The trees would grow to 100 feet, with trunks up to ten feet in diameter. The wood resisted rot, making it suitable for ships' masts, railroad ties, and building materials. At the turn of the last century, the American chestnut accounted for nearly a quarter of the trees growing in Appalachian forests. By 1950, four billion trees had succumbed to the blight, and conservation efforts to coax this species back into the forest environment continue today.



Stem canker with black center and white margin.
www.na.fs.fed.us

One way this is being accomplished is by a horticultural method called backcrossing. In the case of the American chestnut, resistant specimens are hybridized with a Chinese chestnut that carries the blight-resistant characteristics; the resulting hybrid is then successively bred back with American chestnuts

until the resulting tree has the desired characteristics of the American chestnut while retaining the resistance to the chestnut blight. The backcrossed American chestnut is almost indistinguishable from its blight-susceptible ancestors, although biologists rightly protest that the backcrossed trees are not the real deal. They are currently being introduced in many states, including southern Ohio's reclaimed strip-mined areas in the Wayne National Forest. Sixteen hundred backcrossed American chestnuts were planted during 2008 and 2009 with the help of the U.S. Forest Service, the American Chestnut Foundation, Ohio University, the Watershed Restoration Group, and the Boy Scouts. If the experiment works, it would be one way to rehabilitate strip mining sites while helping bring the towering American chestnut back from the brink of extinction. A research project to identify disease-resistant trees is currently under way at the University of Vermont, however, no plan to introduce a backcross hybrid butternut tree has yet emerged.



USDA Plant Database Range for *Jugans nigra*.

The butternut tree may not be the optimum plant for small urban yards, jugalone inhibits growth beneath the spreading branches, and they lack brilliant fall color. However, the nuts are quite attractive to squirrels

and other mammals. Even grackles, the black birds with the clownish antics, are known to love butternuts.



Typical cankers with bark removed, revealing the elliptical areas of killed cambium.
www.na.fs.fed.us

These creatures, in turn, are attractive to birds of prey, whose numbers are increasing in central Ohio. The perfect site for a butternut tree may be along a river's edge where there is plenty of open space, sunshine, and moist fertile soil. And residents of Clintonville can now see butternut trees in Glen Echo Park, where the City of Columbus planted 18 butternut saplings in the fall of 2009. Although the trees are now little more than stout-branched saplings, it is hoped that they will grow to maturity and provide park creatures and visitors with butternuts in the decades to come.

Reprinted from *Ravinia*, An Advocate for Community Resources, Fall 2010/Winter 2011. Published by Friends of the Ravines (FOR), Columbus, Ohio. Website: <http://www.friendsoftheravines.org/>

Making Locally Adapted Butternut Available to Landowners

The mission of the Hardwood Tree Improvement and Regeneration Center (HTIRC) with respect to butternut is to make locally adapted, canker-resistant butternut trees available to landowners and forest managers in the Central Hardwood region of the United States. The most likely way for us to accomplish our mission will be by breeding disease-resistant (or disease-tolerant) butternuts, and deploying them as grafted clones in seed orchards. Ideally, these seed orchards will be regional or even state-wide. Thus, each state or region would have a butternut seed orchard—a group of adapted trees that cross with each other to produce seeds that could be planted directly or planted into a nursery for the production of seedlings.

The seed orchards might be maintained by a public agency (such as your state's Division of Forestry), by a nonprofit, or by a private nursery. Our goal is to have select, disease resistant or disease-tolerant planting stock for butternut available as widely and as inexpensively as possible. We also want to make sure that once seeds or

planting stock are available, there will be clear and effective guidelines for planting and managing young trees. This is the kind of research that is our focus at HTIRC. HTIRC is ready with expert advice and support for agencies or other groups that need help collecting or propagating butternut.

HTIRC researchers, staff and students have been working with landowners and other scientists on butternut almost since its establishment in 1999. Ongoing or recently completed research at HTIRC related to butternut includes:

- Studies of the growth of butternut and hybrids in mixed hardwood plantations.
- Studies of the efficiency of photosynthesis and water use of butternuts and hybrids, with a focus on stress tolerance and site preference.
- Studies of the disease process and mechanisms of disease resistance in butternut and hybrids.
- Studies of the ecology and genetic diversity of butternut in Great Smoky Mountains National Park.
- Development of genetic tools for identifying butternut hybrids and for understanding the extent of hybridization between butternut and Japanese walnut.
- Results from inoculation trials investigating the resistance of butternuts and hybrids and the effects of fungal strain on canker disease development.



Butternut seedlings in a nursery bed.

We are a long way from achieving our goals for butternut, but I want to emphasize the importance of private landowners to butternut's future. Although the management of butternut on public lands in the U.S. is vitally important, most butternuts grow on private land, and most of those who care about sustaining butternut are private landowners.

To serve private landowners, HTIRC has tried to emphasize the practical, even as its researchers have tackled important basic science questions about butternut and butternut canker disease.

Those of you who live in the U.S. may not be aware that butternut has been listed as an endangered species in Canada for several years. As a consequence, scientists in the U.S. and Canada have been working together to try to solve the most important practical questions related to butternut, butternut canker, and butternut recovery. I have included a link to the Canadian website (<http://www.rvcf.ca/butternut/index.html>).

What can each of us do to help? Here are several suggestions:

1. Learn more about forest management, reforestation and tree planting. Consider contacting interest groups such as the International Walnut Council (<http://www.walnutcouncil.org>).
2. If you have butternuts on your forested property, consider managing them to encourage regeneration. Best practices for butternut management still involve a lot of guesswork, but there are a few publications that should help (<http://extension.purdue.edu/extmedia/FNR/FNR-421-W.pdf>).
3. Contact your state's division of forestry to see if your state has any programs for identifying and sustaining butternut.
4. Eat butternuts—and tell others about them, too. It may sound surprising, but one important way to help butternut is to get people excited about how good they are. If you send me butternut recipes, I will post them on my website. A lively market for butternuts would result in a lot of butternut trees being planted. Please be aware that if you live in Canada, harvesting butternuts is likely restricted under the recovery program. Consult before you gather. Here is a link concerning the use of butternut wood (<http://www.extension.purdue.edu/extmedia/FNR/FNR-280-W.pdf>).

Over the past 10 years, HTIRC has received thousands of butternut seeds from hundreds of landowners access to a large sample of the genetic diversity for butternut, and HTIRC invests considerable resources each year in their maintenance. Sources of some of the donated seeds can be found on this map (<http://www.agriculture.purdue.edu/fnr/HTIRC/woeste/2008%20Butternuts.htm>).

Please be patient if you want to look at the map, it can take a few moments to load. The map is interactive (you can zoom in) but the exact location of each source has been altered to protect people's privacy and to protect the trees. Many of the seeds you sent produced seedlings that spent a year at the Indiana State Tree Nursery in Vallonia and were then transplanted to study sites around the Midwest. We keep records related to the origins of these seeds so that we and future scientists can learn about how seed source affects tree growth and development.

Article submitted by Hardwood Tree Improvement and Regeneration Center, Northern Research Station, USDA Forest Service, Dept. of Forestry and Natural Resources and Purdue University.

Reprinted from *Native Plant News*, the North Carolina Native Plant Society newsletter, February 2012. The Editors of the Journal have done some substantive editing of this article.

Bloodroot Reproduction Plan: Hurry Up and Wait, and Then Hedge Your Bets

By John Hayden

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

But flowering in very early spring can be risky. Some days will be fair and pleasant, but just as surely other days will be cool and drizzly, making successful pollination by insect visitors uncertain. In general terms, plant ecologists have proposed that self-pollination (autogamy) should be common in plants that bloom under unpredictably variable conditions. In fact, some ecological studies have concluded that bloodroot is

autogamous (e.g., Schemske 1978). Bloodroots are, or can be, autogamous, but the full story is a bit more complicated.

Notably, bloodroot flowers are protogynous, meaning that the stigmas are receptive to pollen as soon as the flowers open, but the anthers do not shed pollen until sometime later. Literally, protogynous means a first phase female. Studies by D.L. Lyon (1992) show that the female phase can last from one to three days, which coincides with the open-period of any given flower. On day one, petals and stamens spread perpendicular to the pistil, forming a shallow bowl-like configuration. Only a few anthers open on day one. As daylight fades, petals and stamens re-orient upward, closing the flower for the night. Little self-pollination takes place as the flowers close because the anthers do not normally contact the stigma at this point. On day two, if conditions are favorable, flowers re-open and re-assume their bowl-like shape. More anthers dehisce, rendering



Bloodroot, *Sanguinaria canadensis*

their pollen available for transfer. As before, flowers close at the end of day two. The events of day three are subtly different: petals reflex, but stamens remain upright. Moreover, as day three progresses, stamens bend inward, bringing their anthers and pollen into direct contact with the stigma. Thus, autogamy certainly can occur. A few stray pollen grains may reach the stigma on day one or two, but stamen action on day three assures abundant self-pollination. If,

however, autogamy is the basic reproductive mode, why wait until day three to consummate the process?

The protogynous character of bloodroot flowers and their undeniable showiness suggest that bloodroot has potential, at least, for outcrossing (xenogamy). The above-mentioned study by Lyon convincingly demonstrates a role for native bees in bloodroot pollination. This study involved careful observation of bloodroot flowers in all sorts of weather, following the fate of individual flowers over multiple days, and a series of controlled experiments involving all combinations of bagged and unbagged flowers, flowers with intact anthers and with anthers



Bloodroot, *Sanguinaria canadensis*

removed, and both hand-pollinated and open-pollinated flowers. The bottom line is that when weather conditions are sufficiently warm and dry to permit insect flight, *Andrena carlini* bees are effective pollinators of bloodroot. Upon approaching an open bloodroot flower, the bee lands directly on the stigma and forages for pollen among the anthers surrounding this central spot. Bees

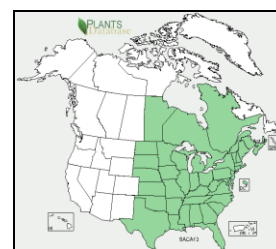
spend little time on recently opened flowers with few open anthers; these visits are, however, sufficient to transfer pollen from a previously-visited flower to the stigma. On older flowers, a bee might spend as much as two or three minutes foraging for pollen and, while doing so, it accumulates a load of pollen on the underside of its thorax and abdomen. The bees exhibit good flower constancy, so, upon visiting the next bloodroot flower, pollen from the bee's underside transfers readily to the stigma. Since bloodroot stigmas are receptive from the moment a flower opens, any floral visit by a bee is likely to deliver pollen from another flower and in this way outcrossing (xenogamy) can occur. But if weather conditions are cool and drizzly, if the bees are grounded, after a few days, bloodroot flowers can pollinate themselves, assuring seed production for the year. Genetically, self-pollination incurs some cost in terms of less genetic diversity among the offspring relative to outcrossed offspring. On average, two parents are likely to encompass more genetic diversity than one. For many reasons, genetic diversity is considered advantageous for the long term success of a species. For example, nature is often patchy; at any given location within a forest, some genetic types may function better than others. Also, the process of long-term adaptation to the environment involves the action of natural selection on genetically variable populations. Bloodroot pollination biology allows for the



Bloodroot, *Sanguinaria canadensis*

benefits of cross-pollination, but given the unreliability of the early spring weather and, consequently, the unreliability of its pollinator, self-pollination (autogamy) exists as a default or back-up system that assures production of offspring, though these offspring may be somewhat homogeneous in their genetic make-up.

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



USDA Plant Database Range for *Sanguinaria canadensis* L

Photos in this article were added by OTF editors and provided by Tracey Knierim, former NPSNEO Board member.

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

John Hayden is the Botany Chair of the Virginia Native Plant Society.

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

Interesting Factoid:**The Oval Flower Beds of Thomas Jefferson
at Monticello**

Thomas Jefferson described botany as "among the most useful of the sciences," and wrote that, "No country gentleman should be without what amuses every step he takes into his fields."

There are two elements to the Monticello flower garden: the twenty oval beds immediately around the house and the winding walk flower border that defines the West Lawn. Although there were earlier references to the flower "borders," it was not until 1807, when Jefferson began to anticipate his retirement from the presidency, that the flower gardens began to assume their ultimate shape. He then sketched a plan for the twenty oval-shaped flower beds in the four corners or "angles" of the house. Each bed was planted with a different flower.

Interesting Facts:

- Jefferson grew the rare and desirable native woodland perennial Twinleaf *Jeffersonia diphylla* in one of the oval flowerbeds in 1807. The attractive flowers last only a few days, often appearing about the time of Jefferson's April 13th birthday. The plant was named to honor Jefferson in 1792 by the "Father of American Botany," Benjamin Smith Barton. Barton's tribute was inspired by Jefferson's "knowledge of natural history... especially in botany and zoology [which] is equaled by that of few persons in the United States."
- Twenty-five percent of the flowers cultivated at Monticello were North American natives, and the gardens became, in part, a museum of New World botanical curiosities.
- Other North American natives planted in 1807 included the "Columbian lily" *Fritillaria pudica*, collected by the Jefferson-sponsored Lewis and Clark expedition, and the Cardinal Flower *Lobelia cardinalis*, which could have been found along the Rivanna River at the base of Monticello Mountain.
- The diversity of flower species represents the scope of his interests. Many of the flowers had been grown for centuries in Europe and were commonly cultivated in early American gardens, such as roses, the Sweet William *Dianthus barbatus*, and the double white-flowering poppy *Papaver*. Others were curiosities, such as the winter cherry *Prunus subhirtella* Miq with its lantern-like fruits and the blackberry lily *Belamcanda chinensis*.
- Philadelphia nurseryman Bernard McMahon has often been described as Jefferson's gardening mentor; and his classic work, *The American Gardener's Calendar* (1806), as Jefferson's horticultural "Bible." Although McMahon claimed to be growing some "25 species" in his own garden, at least as of 1812 only three were shipped to Monticello. Two of those were the *Ribes aureum* and the *Ribes odoratum*. The yellow currant, *Ribes aureum*, was labeled by McMahon as the "yellow currant of the river Jefferson," and it flourished in the South Orchard berry squares. McMahon described the other currant *Ribes odoratum*, as "an important shrub, the fruit very large, of a dark purple colour, the flowers yellow, showey, & extremely fragrant." Jefferson planted it in "boxes" and in the berry squares, where it also thrived. *Ribes odoratum* was sold as early as 1811 by the Landreth Nursery in Philadelphia when, curiously, as a plant obtained during the Lewis and Clark expedition, it was supposed to be quarantined in McMahon's garden. This sweet-scented currant, which, botanically, may be a variety of the yellow currant, was the most commonly sold Lewis and Clark woody plant in America before 1830.



This article was based on material taken from Wikipedia (www.wikipedia.org) and *The Jefferson Monticello* website (www.monticello.org). Picture taken from the USDA website.

Hach-Otis State Nature Preserve

Hach-Otis Sanctuary is an 81-acre forested tract overlooking the beautiful Chagrin State Scenic River valley. Located in Willoughby Hills and within 20 miles of downtown Cleveland, the preserve has been protected as a bird sanctuary since 1944.

The generosity of two local families preserved this beautiful bluff-top forest of native hardwoods and hemlocks. The woods were originally donated to the Cleveland Bird Club (a forerunner to the Audubon Society of Greater Cleveland) by Mr. and Mrs. Edward A. Hach and by Harold T. Clark, a philanthropist who bought 56 acres of choice forest from Harrison G. Otis. The sanctuary was dedicated as an interpretive nature preserve in 1977.



Primarily a beech-maple-oak mixed mesophytic forest with deep ravines of eastern hemlock, Hach-Otis is home to some unusual plants including trailing arbutus, pink moccasin flower and red trillium.

There are a few young American chestnut trees along the bluffs. Many of the ancient beech trees have completely hollow trunks and provide "apartments" for a number of different species of animals.

Squirrels can be heard barking among the treetops, and pileated woodpeckers, great horned and barred owls, white-tailed deer, foxes and raccoons are some of the other animals found within the preserve.

The steep eroding clay banks high above the Chagrin State Scenic River are ideal nesting spots for bank swallows and noisy kingfishers.

Bluffs overlook the Chagrin State Scenic River recutting an old valley that was completely filled with glacial drift during the last ice age. The ridges stand more than 150 feet above the streambed of the ever-changing river.

The unstable hillsides of glacial clays and sands perched above shale are constantly being eroded by the meandering arm of the river.

Local directions

Located in Lake County 1 mile east of Willoughby Hills on U.S. Route 6, 200 yards north on SR 174, then east on Skyline Drive to the dead-end and preserve parking lot.

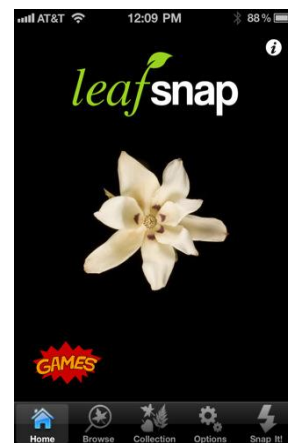
Special Features

Scenic view of the Chagrin State Scenic River and excellent spring wildflowers.

Leafsnap: An Electronic Field Guide to Trees

Columbia University, the University of Maryland, and the Smithsonian Institution are working on visual recognition software to help identify species from photographs. Leafsnap is the first in a series of electronic field guides being developed to demonstrate this new technology. This free mobile app helps identify tree species from photographs of their leaves and contains beautiful high-resolution images of their flowers, fruit, petiole, seeds, and bark created by the conservation organization Finding Species. Leafsnap currently includes the trees of the Northeast and will soon grow to cover the trees of the entire continental United States.

Leafsnap, automatically shares their images, species identifications and the tree's location with a community of scientists. These scientists will use the information to map and monitor population growth and decline of trees nationwide. For more information go to leafsnap.com. Though the app is



currently available for the iPhone, it is not yet available for android or other devices.

Flowering Dogwood (*Cornus florida* L.)

By Guy L. Denny

As Ohio woodlands begin greening-up each spring, one of the grandest sights in nature is that of the spectacular display of flowering dogwoods (*Cornus florida*) in full bloom brightly accenting our woodland understories and open hillsides. This show of color is especially breathtaking when it coincides with the blooming of Eastern Redbud (*Cercis canadensis*) with its lovely deep-pink flowers contrasting against a background of showy white dogwoods.



Eight species of dogwoods are native to Ohio. Although small in stature, flowering dogwood is the only tree among them. Six others are shrubs while the eighth species is a state endangered wildflower called dwarf cornel or bunchflower (*C. canadensis*).

Just about everyone recognizes a flowering dogwood in bloom. Yet there is much more to the dogwood than what may be immediately apparent to the eye. Most people are under the impression that dogwoods have large, one-inch-plus wide, four-petaled showy white flowers. And, at first glance, so it appears. However, a closer examination will reveal that these large white and rarely pink petal-like structures are not petals at all, but rather what botanists refer to as petal-like bracts. The actual flowers are in a tight cluster surrounded by the four showy bracts. Each of these inconspicuous flowers is only about 3/16" wide with four yellowish-green petals, four stamens and a single pistil. The four bracts are actually the flower bud scales which slowly open and turn white as the inflorescence

develops. Initially they serve to protect the delicate flower buds throughout winter. Upon being deployed to full size they serve to attract pollinators to the numerous small, inconspicuous flowers at their center. All six of Ohio's species of shrubby dogwoods have flat-topped clusters of small flowers lacking such showy bracts. Only bunchflower has a single showy white inflorescence similar in appearance to that of flowering dogwood.

Even when not in bloom, flowering dogwood is fairly easy to recognize. It is true that a dogwood can be identified by its "bark"—really! The rough bark is distinctly broken into small squarish plates in a checkerboard pattern like alligator hide. The leaves of dogwood are distinctively veined with each vein characteristically arching upward tending to parallel the margins of the leaf. Leaves are also arranged opposite one another as are the twigs.

Flowering dogwood trees do not grow very large; seldom more than 20-30' tall. Although trunks are typically too small in circumference for producing lumber, dogwood was once highly sought for its exceptionally dense, close-grained, tough wood. Flowering dogwood is one of the hardest and heaviest woods in North America. It used to be coveted for making weaving loom shuttles because of its strength and smoothness. It was also once used for making pulleys, tool handles, sled runners, mallet heads, jeweler's blocks, and golf club heads. The genus *cornus* comes from the Latin *cornu* meaning "horn." This is in reference to the smooth, tough hardness of the wood. The specific epithet *florida* is Latin for "flowering."



The origin of the common name “dogwood” is usually attributed to the European dogwood (*C. sanguinea*) which, owing to its hard, fine-textured wood, has been used historically for making butcher skewers. The Old English word “dagge” means a skewer or sharp-pointed instrument like a dagger. Dogwood therefore is reportedly a corruption of the term “dagwood.”

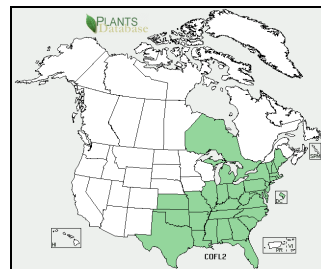
During the Civil War when the Union's blockade of southern ports prevented shipments of cinchona bark, the source of quinine from South America, from getting through, dogwood bark tea became a widely used substitute for treating malaria in the deep South. Woodland Indians of North America used flowering dogwood for treating illness long before. Preparations made from the astringent inner bark, as well as the root bark, containing the glucose cornin were used for treating fevers, diarrhea, colic, dysentery, worms, external ulcers, and aching muscles as well as for purifying the blood. Native Americans also used its root bark to produce a scarlet dye for decorating articles of clothing and items like baskets.

Both Native Americans as well as early French Canadians reportedly used the twigs as chewing sticks with which to brush their teeth. The tip of a twig was chewed briefly to split the fibers into a sort of fine soft “toothbrush.”

Flowering dogwood is widely cultivated as an ornamental and sold extensively in the nursery trade, especially pink color forms, which are extremely rare in nature but common in the trade as pink dogwood. Several other species of dogwoods such as those from Asia and Europe are also popular. Dogwoods' popularity in the nursery trade is not only because of the showy spring inflorescence but also because of its spectacular red foliage in autumn. By then the cluster of small flowers is replaced by a cluster of shiny, bright

red fruits or berry-like drupes. In addition to being colorful, these attractive fruits, although very bitter and unpalatable to humans, are an important source of food for long distance autumn migrating birds such as thrushes, brown thrashers, cedar waxwings and red-eyed vireos. They are 24% lipid by weight. Lipid is a high energy fat compound that has roughly twice the energy per unit by weight as do carbohydrates. Autumn migrants can therefore store a lot of fuel with relatively little weight as compared to more sugar laden fruits.

Flowering dogwoods are a significant component of our natural heritage in Ohio. They are common throughout the state in oak and beech-maple woodlands. Unfortunately, even these lovely trees are at risk. A disease devastating to flowering dogwood, dogwood anthracnose fungus (*Discula destructiva*), has reached Ohio. It has the potential for decimating our wild dogwood populations. So don't put off getting out into the beauty of spring to revel in the beauty of these lovely gifts of nature while they are still here in numbers to adorn our wild landscape.



USDA Plant Database Range for *Cornus florida*

Reprinted from the Ohio Department Of Natural Resources, Division of Natural Areas and Preserves Newsletter, Vol 21, No 2, Spring 1999.

Invasive Plant:

Japanese Stiltgrass, *Microstegium vimineum* (Trin.) Camus Grass family (Poaceae)

NATIVE RANGE

Japan, Korea, China, Malaysia and India.

DESCRIPTION

Japanese stiltgrass, or Nepalese browntop, is an annual grass with a sprawling habit. It germinates in spring and grows slowly through the summer months, ultimately reaching heights of 2 to 3½ ft. The leaves are pale green, lance-shaped, asymmetrical, 1 to 3 in. long, and have a distinctive shiny midrib. Slender stalks of tiny flowers are produced in late summer (August through September-early October) and dry fruits called achenes are produced soon afterwards.

ECOLOGICAL THREAT

Japanese stiltgrass is especially well adapted to low light conditions. It threatens native plants and natural habitats in open-to-shady and moist-to-dry locations. Stiltgrass spreads to form extensive patches, displacing native species that are not able to compete with it. Where white-tail deer are over-abundant, they may facilitate its invasion by feeding on native plant species and avoiding stiltgrass. Japanese stiltgrass may impact other plants by changing soil chemistry and shading other plants. Further investigation is needed to study the potential impacts of stiltgrass on insects that utilize stiltgrass as an alternative host plant.

HABITAT IN THE UNITED STATES

Stiltgrass occurs in a wide variety of habitats including moist ground of open woods, floodplain forests, wetlands, uplands, fields, thickets, paths, clearings, roadsides, ditches, utility corridors, and gardens. It readily invades areas subject to regular mowing, tilling, foot traffic, and other soil disturbing activities as well as natural disturbances such as the scouring associated with flooding. Stiltgrass appears to prefer moist, acidic-to-neutral soils that are high in nitrogen.

BACKGROUND

First documented in Tennessee around 1919, stiltgrass may have accidentally escaped as a result of its use as a packing material for porcelain.

BIOLOGY & SPREAD

Japanese stiltgrass is an annual grass, with all plants dying each fall. It is a colonial species that spreads during the summer and fall by rooting at stem nodes that touch the ground. Individual plants may produce 100 to 1,000 seeds that fall close to the parent plant from both self-fertilizing and cross-fertilizing flowers. Seed may be carried further by water currents during heavy rains or moved in contaminated hay, soil, or potted plants, and on footwear and vehicles. Stiltgrass seed remains viable in the soil for five or more years and germinates readily. Deer and other grazers reportedly do not browse it, though they have been found to spread the seeds. Stiltgrass leaves a thick layer of thatch after dieback each year in heavily invaded areas, and while leaves decompose quickly, stems do not. Like other invasive species, stiltgrass is physiologically adaptive. For example, it is able to withstand low light levels where nutrient levels are sufficient, and able to withstand low nutrient levels where light levels are sufficient. While stiltgrass can photosynthesize in low light conditions and respond quickly to the changing light conditions typically found on the forest floor, the very low light conditions found beneath a multilayered forest canopy will limit its growth.



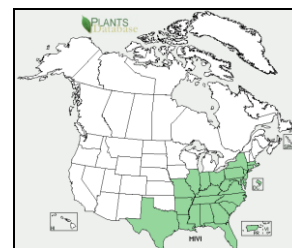
MANAGEMENT OPTIONS

A variety of control methods are available for stiltgrass, depending on the extent of the infestation, the type of habitat, and the availability of labor and other resources. Preventing the introduction of stiltgrass from infested to non-infested areas should be a priority. Early control of new infestations will also reduce the likelihood of establishment and expansion. Manual removal of plants results in unavoidable disturbance to the soil which can result in additional germination of stiltgrass seed. Using an herbicide leaves the plants and soil in place, thus minimizing that likelihood. For Biological, chemical, manual and mechanical controls go to <http://www.nps.gov/plants/alien/fact/mivi1.htm>.

Printed from the PCA, Plant Conservation Alliance, Alien Plant Working Group website: <http://www.nps.gov/plants/alien/fact.htm>

Photo from Wikipedia.org

USDA Plant Database Range for *Microstegium vimineum*



Kidney-Leaved Buttercup *Ranunculus abortivus* L

By Gordon Mitchell

Many of our spring wildflowers are yellow. Many of our spring wildflowers are also showy. However, there is one species of spring wildflowers that has yellow flowers but is not showy. That species is the Kidney-leaved Buttercup, *Ranunculus abortivus* L.

Kidney-leaved Buttercup is a member of the Order *Ranunculales*, the Family *Ranunculaceae*, the Subfamily *Ranunculoideae*, and the Tribe *Ranunculeae*.

The generic name, *Ranunculus*, is Latin for “little frog”; *Rana* is “frog”. This may refer to the fact that most plants in this genus thrive near water, like frogs. It may also refer to the fact that the seeds within some plants of this genus resemble small frogs.

The specific epithet, *abortivus*, is Latin for “abortive”, “imperfect”, or “missing”. This is because many of the flower parts are so small in size, they appear to have been removed or aborted.

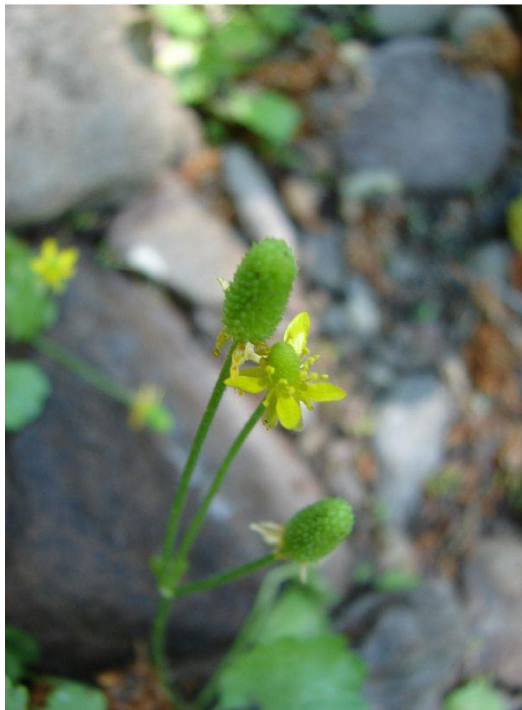
The common name, Buttercup, was given because these flowers were once believed to give butter its golden yellow color. The farmers rubbed these flowers upon the cows’ udders in hopes of giving their milk a rich golden cream color. (However, cows do not eat Buttercups because they are toxic to them.) Other common names for this species are Abortive Buttercup, Chicken Pepper, Crowfoot, Early Wood Buttercup, Kidney-leaved Crowfoot, Little-leaf Buttercup, Small Buttercup, Small-flowered Buttercup, Small-flowered Crowfoot, Smooth-leaved Crowfoot, and Woods Buttercup.

DESCRIPTION

Annual, Biennial, or Perennial

Height: Its height is 6-24 inches.

Stem: Its stem is erect, slender, branched, smooth, green, and hairless.



Leaves: Its basal and stem leaves are different in shape. Eastern Cottontail Rabbits eat these leaves.

Basal Leaves: Its basal leaves are simple; rounded; ovate, heart- or kidney-shaped; undivided; and about ½-2½ inches long and wide. It has scalloped, crenate, wavy, or rounded margins; and 3 inch long, thick petioles. They are arranged in a basal rosette during their first year.

Stem Leaves: Its stem leaves are simple, slender, alternate, and sessile. They are about 2 inches long and are deeply once- or twice-divided into 3-5 blunt, oblong or narrow, shallow, and crenate or dentate lobes or segments. They are palmately veined.

Flowers: Its flowers are arranged in open cymed clusters. Each flower is yellow, radially symmetrical, and about ¼ inch or less wide. Each flower has 5 green, reflexed, oval or elliptical sepals; 5 shorter, narrower, pointed, spreading, glossy petals; and numerous pistils and stamens. The stamens have bright yellow anthers and filaments. Flowering season is March to August. These flowers are in bloom for about a week. Unless there is rain, they open only in daytime.

Bees, butterflies, and flies pollinate these flowers. The nectar is easily accessible. There are nectaries at the bases of the petals. The flower pollen may cause respiratory irritation in humans.

Buttercup flowers have the simplest design along the evolutionary scale. These flowers began as

modified leaves. Their ancestry goes way back into the Cenozoic Era.

Fruit: Its fruit consists of an aggregate of nearly 50, dry, short-beaked, flattened, smooth or slightly roughened, yellow-brown nutlets or achenes. These fruits are arranged upon a short and oval or rounded receptacle. Birds, such as Wood Ducks and Wild Turkeys, and small mammals, such as Eastern Chipmunks and Meadow Voles, will eat these seeds. These seeds germinate in the fall or in the spring.



Roots: Its roots are fleshy, fibrous, and thread-like. They are toxic and can poison the surrounding soils. They may even kill the beneficial nitrogen-fixing bacteria.

Habitat: Its habitat consists of dry or moist open woodlands, thickets, meadows, pastures, fields, rights-of-ways, and disturbed waste areas. This plant is considered a weed in many places.

Range: Its range consists of the eastern and central U.S. and southeastern Canada.

Toxicity:

Like other Buttercups, the Kidney-leaved Buttercup is toxic to both humans and animals. Large doses can be fatal to the consumer. These toxins protect the plants from grazing animals.

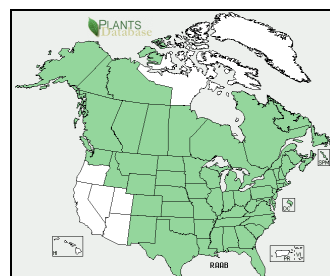
Its clear acrid, sap contains the yellow unstable glycoside, ranunculin. Ranunculin is most concentrated during flowering season.

Whenever the plant is damaged, enzyme actions change the ranunculin into glucose and into the toxin protoanemonin (a.k.a anemonol or ranuncolol). Depending upon the concentration and upon the sensitivity of the person, external contact with protoanemonin can cause skin itching, rashes, and blisters. The toxin may cause phytophotodermatitis if the injury is exposed to sunlight. If ingested it can cause burning of the mouth, severe inflammation of the digestive system, dizziness, spasms, and paralysis. If ingested by cows, it can produce bad-tasting and reddish-tinged milk.

If exposed to air while drying, protoanemonin becomes non-toxic anemonin. Dried Kidney-leaved Buttercups can be used in hay.

Medicinal Uses:

Despite the toxicity of the Kidney-leaved Buttercup, it did have some medicinal uses. Several Native American tribes used this plant as medicine. The roots were pulverized, soaked in water, and used as a poultice for treating cuts and wounds. The plant was also used externally to draw out pain and toxins from underlying tissues. The juice was used as a sedative. An infusion was used as a gargle for sore throats. A root decoction was used as an emetic and for treating epilepsy, smallpox, muscular aches, and nosebleeds. A root and leaf decoction was used as a wash for treating sore eyes and snakebites. The crushed leaf odor was used for treating headaches. The plant is also used as an astringent, a diuretic, and an expectorant.



USDA Plant Database Range for
Ranunculus abortivus L

Gordon Mitchell works for the Columbus, Ohio Metroparks and was a member of the Central Ohio Native Plant Society, which merged with the Columbus Historical Society in the Spring of 2010.

Photos from USDA website.

BOOK REVIEW

American Chestnut: The Life, Death, and Rebirth of a Perfect Tree

By Susan Freinkel

Reviewed by Tom Hohman

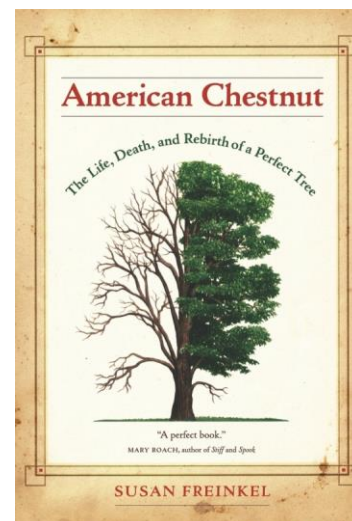
Publisher: University of California Press, April 1, 2009

Pages: 304 pages

ISBN-10: 0520259947

ISBN-13: 978-0520259942

Paperback and Kindle



I just finished reading a book called *American Chestnut: The Life, Death, and Rebirth of a Perfect Tree* by Susan Freinkel. It tells the history of the American chestnut, including its importance to both wildlife and people, its almost total elimination at the hands of the chestnut blight, and efforts to save it from extinction. The blight is a non-native fungus imported by people (of course). In addition to being enjoyable reading, the book raised some interesting questions, mostly related to efforts to bring the tree back.

For those who don't know the story, the blight was first noticed at the New York Zoological Park in 1904. In the next 40 years it spread across the entire natural range of the chestnut tree, which included portions of Indiana, and killed between three and four billion trees. In many of those areas the chestnut tree had been the single most important tree in the forest.

Scattered specimens of the tree are still living today, many located outside the tree's natural range. Some have sprouted from the roots of former trees only to be attacked eventually by the same fungus. Others survive but don't thrive, apparently having some minimal natural resistance to the fungus.

Many efforts to battle the fungus and prevent the demise of this once great tree have showed promise, but all failed. However, recent attempts are beginning to offer a glimmer of hope—and raise some interesting questions.

The most publicized recent effort involves crossing surviving American chestnut trees with the Chinese chestnut, which has good natural resistance to the fungus, and then backcrossing the hybrids with American chestnuts to get a tree that genetically is more than 90 percent native American. Obviously, this process is long and laborious, but it has resulted in developing trees that some believe can be reintroduced in North America. Others are bothered that this tree will not be a pure American chestnut, and question whether it should be reintroduced.

Another group is working strictly with surviving American chestnut trees, trying to magnify the natural resistance these survivors seem to have. This group thinks they will eventually be successful, but they are still a long way from having a tree that can be reintroduced.

A third group is trying to use modern biotechnology methods to transfer genes into the American chestnut tree that will make it immune to the blight. This approach makes a lot of people nervous, wondering if the transfer of totally unrelated genes into the trees will yield unexpected results. Given the tree's long lifespan, it will be many years before any unexpected results become known.

Although I understand the misgivings toward the 90 percent American chestnut, I am excited and supportive of its reintroduction. The irony is that, as a promoter of native plants, I am normally not thrilled by their cultivars and usually do not plant them in my home landscape. Am I being inconsistent? Possibly. But to me the benefits outweigh the negatives. Besides, the thought of a genetically engineered tree being reintroduced into nature really scares me. If the 90 percent American chestnut tree is viable, there will be no need for the bioengineered one.

Tom Hohman is the President of the Indiana Native Plant and Wildflower Society.

Reprinted from *INPAWS Journal*, Indiana Native Plant and Wildflower Society. Summer 2011, Vol 18, No 2.
Photos were added to article by OTF editors.

Folklore:**Common Blue Violet**
Viola papilionacea**By Marilyn Dufour**

The genus *Viola* probably gets its name from the Greek mythology surrounding Io, a lover of Zeus. The king of the gods turned Io into a heifer to protect her from his jealous wife. Then her tears at having to eat rough grass were turned into violets so that she would have a more suitable plant on which to graze. Indeed, violets have become so common in gardens and lawns that we have forgotten that they are flowers of open fields and forest floors. The Common Blue Violet is a member of the Violet family (Violaceae) and one of seventy-five species found in North America. The violets are generally divided into two groups: plants that have erect stems bearing leaves and flowers and plants whose leaves and flowers grow directly from underground rhizomes or stolons. The Common Blue Violet is a perennial in the latter group.

The purple flowers of this violet have five petals: two upper and two lateral petals for flagging down insect pollinators and one bottom petal which serves as a landing pad. The petals have veins of a color more visible to the ultraviolet-sensing bees which direct the insects to the spur of nectar at the base of the bottom petal. Long, slender hairs on the lateral petals give the insects a better grip as they push their heads inside. These hairs also protect the nectar from being diluted by dew or rain.



Photo from www.illinoiswildflowers.info

Violets use partially hidden anthers located in the top of the open flower to dust the backs of insect visitors with pollen. Successful transfer of pollen results in an elongated three part fruit which dries, compressing the seeds and shooting them out in all directions.

Perhaps the best known admirer of the violet was Napoleon Bonaparte. His wife Josephine wore them on



Photo from foragingpictures.com

her wedding day and grew them in her garden. Napoleon gave Josephine a bouquet of them each year on their anniversary and picked them from her grave after his defeat at Waterloo. But his best known tribute to them was his declaration following his banishment to Elba that he would return with the violets in the spring. And he did return to Paris on March 20, 1815.

The basal leaves of the Common Blue Violet are high in vitamins A and C. This fact combined with the high sugar content of the flowers has resulted in many culinary uses. The leaves have been used in salads, fritters, and broths and as soup thickeners. The flowers have been crystallized as candy and cake decorations, used to make syrups and marmalades and added to gelatins and salad dressings. They have also been used in candy-making to provide the color which bears their name.

The Greeks may have initiated a long history of medicinal uses, having used violets to induce sleep, to strengthen the heart and to calm anger. The Romans believed that banquet tables decorated with thousands of violets could prevent drunkenness and used wreaths of the flowers to relieve hangovers. Hopefully, they also exercised some restraint in drinking a favorite wine made from its blossoms!

Reprinted from the Ottawa Park Nature Education Center, City of Toledo Parks, Recreation & Forestry 2000 *Teachers' Resource Packet*.

Photos in this article were added by OTF editors and provided by Tracey Knierim, former NPSNEO Board member.



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Service, Dept. of Forestry and Natural Resources and Purdue University
Bloodroot Reproduction Plan: Hurry Up and Wait, and Then
Hedge Your Bets – John Hayden
Interesting Factoid: The Oval Beds of Thomas Jefferson at Monticello
Hach-Otis State Nature Preserve
Website: Leafsnap: An Electronic Field Guide to Trees
Flowering Dogwood – Guy L. Denny
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Folklore: Common Blue Violet – Marilyn Dufour

Journal
of
The Native Plant
Society of
Northeastern
Ohio

Volume 32, No. 1

March 2014