On The Fringe
Journal of the Native Plant Society of Northeastern Ohio

Request for Proposals for 2013 Annual Grant

The Native Plant Society of Northeastern Ohio is accepting applications for our 2013 Grant(s). We will consider projects that demonstrate excellence in research, conservation or education that clearly support the mission of the Native Plant Society of Northeastern Ohio. The amount of each grant will be up to $500. The number of grants available will be dependent on funding. Submissions must be received by 5:00 PM Monday, September 9, 2013. The grant(s) will be awarded at the Annual Meeting of the Society November 2, 2013. For more information on the grant and how to apply please see our website, www:NativePlantSocietyNEOhio.org, or contact Kathy Hanratty at nativeplantsocietyneo@gmail.com.

Program Schedule – Summer 2013

Saturday, June 8, 10:00am – Gott Fen, Portage County. Led by Rick Gardner, ODNR botanist, and preserve manager Adam Wohlever. Gott Fen harbors more than 20 state-listed species including the largest population of showy lady's-slipper in the state. The site, normally closed to the public, does not have a trail system. Visitors are asked to wear appropriate footwear for wet conditions; knee-high boots recommended. Directions: take St Rt 43 south through Streetsboro to St Rt 303, turn right, west. Situated between Stone Road and State Route 14. Limited parking along Rt 303, carpooling recommended. Registration required and limited due to fragile habitat. Call Judy to register at 440-564-9151 (H) or 440-279-0890(W).

Saturday, July 13, 10:00am – noon – Invasive Species at University Farm, Cuyahoga County. Visit Case Western Reserve University Farm to learn about invasive species research with Jean Burns, Assistant Professor at CWRU. Walk the farm; identify common invasive species, including learning to identify common invaders such as the bush honeysuckles, *Lonicera maackii* and *L. morrowii*. Discuss methods of prediction and prevention of biological invasions, including the use of population modeling tools to predict the future population growth of introduced species. Squire Valleevue and Valley Ridge Farms, 37125 Fairmount Blvd, Hunting Valley, OH 44040, between Rt. 91 and Rt. 174 (Chagrin River Road). Call Diane to register at 440-666-4870 (Cell).

Saturday, Aug. 17, 9am – noon – Jackson Bog. Adam Wohlever, District Preserve Manager, will lead us in search for pitcher plants, sundews, Grass of Parnassus, Queen of the Prairie, and much more. Although it is named as a Bog, it is actually a Fen and supports over 20 state listed rare plants. **Directions:** Take RT 8 South. Merge onto I-77 South. Take exit 118 for OH-241 toward OH-619/Massillon. Turn right onto OH-241S/Massillon Rd. At the traffic circle, continue straight to stay on OH-241S/Massillon Rd. Continue to follow OH-241 South. Turn right onto Fulton Rd NW. Park across the street at the Jackson Community Park. No registration required, but call Tracey for questions at 330.388.9279 after 5pm.

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.

Program Schedule – Summer 2013, con't.

Saturday, Sept. 7, 10am – Bradley Woods Reservation. Wendy Wierich, Director of Outdoor Education, Cleveland Metroparks will lead us in this last remaining swamp forest in Cuyahoga County. It is one of the best kept secrets of Cleveland Metroparks. This former blueberry farm is home to many tupelos, pin oaks, sassafras, and elms. If you have specific questions, please call Wendy at Garfield Park Nature Center, 216-341-9228. For reservations, call Diane at 440-666-4870 (Cell). For directions go to www.clevelandmetroparks.com. At the main page, click on Find a Place, Maps and Reservations. Click on Bradley Woods (on the left side of the map) and the directions will be in available in pdf format.

National Pollinator Week is being celebrated from June 17-23 this year, and this is a great time to think about creating a welcoming habitat for pollinators in your wildlife garden. National Pollinator Week is a celebration of the ecosystem services provided by animals such as bees, birds, butterflies, bats and beetles.

Pollinators Resources

The **Pollinator Partnership** is the largest organization in the world dedicated to the protection and promotion of pollinators and their ecosystems.

In the site www.pollinator.org there are links to planting guides, their shop, how-to-resources and a very useful tab called "Get Involved". The 'Useful Resources' tab has 13 sections, with extensive information related to nectar and host plants, projects, education and much more. Take a look the site and see what you can do to help our pollinators.

Pollinator Resources from the Xerces Society

The **Xerces Society** is a nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat. For forty years, the Society has been at the forefront of invertebrate protection worldwide, harnessing the knowledge of scientists and the enthusiasm of citizens to implement conservation programs.

For information about protecting pollinating insects and their habitat, go to www.xerces.org and link into its "Pollinator Conservation Resource Center". There you can click on the region encompassing OH to access plant lists, creating nest sites, etc. Once here you can down-load dozens of publications on these topics.
Additional books from the Xerces Society can be found on the website, and regional seed packets are available for purchase from their pollinator seed store. Both books and seeds can be ordered online.

Reprinted from the Wildflower Association of Michigan newsletter, *Wildflowers*, Spring 2012, Vol. 17, No. 2.

Gardening for Pollinators

By Leanne Heisler

As a prairie enthusiast, I envision a piece of the prairies in my own backyard, not only the plants and flowers, but also the sights and sounds of bees, butterflies, birds and squirrels going about their daily business. Their visits to flowers are rewarded by the mutual partnerships that have evolved between them – flowers provide nutrition, while animals provide opportunities to complete the plant's life cycle by dispersing their seeds or pollinating other flowers of the same species (cross-pollination).

Before angiosperms (flowering plants) evolved, cross-pollination was an affair left to winds and chance. This left a lot to be desired, mostly because cross-pollination is less likely to occur the farther away individuals of the same species are from each other. Thus, plants of the same species had to grow in large monotonous stands, and because there was no evolutionary advantage to being colourful or aromatic, the world was blanketed in a sea of green plants.

Photo by David Freeman

A pearl crescent (*Phyciodes tharos*) butterfly takes a break on a shining arnica (*Arnica fulgens*) flower.

However, once flowers evolved the race was on to develop these mutual partnerships between plants and animals, helping plant species disperse and mingle with each other, adding life and colour to the landscape.

Plants use a variety of reliable attractants to entice potential pollinators to visit their flowers. Bright colors and strong scents are used, while intricate patterns direct pollinators to what they are looking for. Flowers also produce nectar, extra pollen or other nutritious tissues to feed pollinators and lure them into the flower.

Some plants use these tools to encourage visits from everything whizzing by the flower, or they may use one or a few specific techniques to lure in a certain species. When a flower has adapted to attract a specific species of pollinator, the pollinator will also evolve search images for that species' flower and other structures to aid in collecting whatever it retrieves from those flowers.

By knowing what bees, butterflies and birds are searching for, a gardener can actually use their flowers to lure pollinators into their backyard.

Using plants native to your surroundings is a good way to attract the local wildlife, as most of these species evolved together.

For instance, bees prefer blues and violets, but will visit white, yellow and pink flowers if they discover an abundance of delicious nectar there. Some plant species preferred by bees and native to the Canadian prairies include giant hyssop (*Agastache foeniculum*), purple prairie clover (*Dalea purpurea*) and northern hedysarum (*Hedysarum boreale*). Butterflies will visit a variety of flowers, like black-eyed susan (*Rudbeckia hirta*), dotted blazingstar (*Liatris punctata*), gaillardia (*Gaillardia aristata*), smooth aster (*Aster laevis*), prairie coneflower (*Ratibida columnifera*), stiff goldenrod (*Solidago rigida*), yarrow (*Achillea millefolium*), wild blue flax (*Linum lewisii*) and yellow evening primrose (*Oenothera biennis*). Birds will be attracted to shrubs that produce nutritious berries (strategy for seed dispersal, rather than cross-pollination), such as saskatoon (*Amelanchier alnifolia*) or chokecherry (*Prunus virginiana*).

The best way to ensure a wide variety of pollinators visit your garden is by planting an equally wide variety of native shrubs and flowers – from large to small, tubular to flat and broad, scentless to aromatic, as well as an assortment of colours – ensuring that an array of wildlife will be attracted to your yard.

"In my garden right now it is high summer, the middle of July, and the place is so crowded with flowers, is so busy and multifarious, that it feels more like a city street than a quiet corner of the countryside."

- Michael Pollan, *Botany of Desire*

A bee searches for nectar on a smooth aster (*Aster laevis*) flower. Photo by David Freeman

Leanne Heisler is a member of the Native Plant Society of Saskatchewan.
Reprinted from *Native Plant News*, the newsletter of the Native Plant Society of Saskatchewan. Spring 2011, Vol. 16, No. 1.

Natural Mosquito Repellents

By Bob Krueger

I was surfing the web recently to find a way to cut down on blood loss to Michigan's most daunting "vampire" - the mosquito - and I found the following information on *chemistry.about.com*. Its information was compiled by Anne Marie Helmenstine, PhD.

Among the numerous mosquito attractants Dr. Helmenstine listed were the following: dark clothing, Carbon dioxide (also candles), Lactic acid (from exercise, it's in your sweat), floral/fruity fragrances (dryer sheets!), and moisture (from sweating).

Effective natural repellents that have proven effectiveness are numerous. They do need to be applied more frequently, however. Mixtures of multiple ingredients will often work best for the over 2 dozen different species of mosquitoes we host, literally, in our state. Those essential oils recommended included: citronella oil, lemon eucalyptus oil, cinnamon oil, castor oil, rosemary oil, lemon grass oil, cedar oil, peppermint oil, clove oil, and geranium oil.

A recipe was given, but remember to use these oils sparingly as they can irritate the skin, eyes, and mucus membranes. If you are pregnant or nursing do not use any natural or other repellent until having it cleared by your physician. Finally the essential oils you choose need to be mixed with a carrier oil or alcohol for use as they are not soluble in water. The recipe calls for 10-25 drops of essential oil (total of all types used) in two tablespoons of carrier oil or alcohol (vodka is recommended, rubbing alcohol is too drying). Carrier oils include olive, sun-flower, any cooking oil, almond oil, grapeseed oil but not cod liver oil! Simply mix your selections together and spray on skin or clothing avoiding the eye and other sensitive areas. Reapply as needed, especially after swimming or exercise.

Reprinted from *Wildflowers*, the newsletter of the Wildflower Association of Michigan. Fall 2011, Vol. 16, No. 3.

Wingstem
Verbesina alternifolia (L.) Britton ex Kearney

By Gordon Mitchell

Late summer and early fall are the best times to observe wildflowers that are members of the Composite, Aster, or Daisy Family. Many of us enjoy their attractiveness. However, there is one member of that family that is less attractive than others. That species is the Wingstem (*Verbesina alternifolia* [L.] Britton ex Kearney).

Wingstems are members of the Family *Asteraceae* or *Compositae*, the Subfamily *Asteroideae*, the Tribe *Heliantheae*, and the Subtribe *Verbesininae*. The generic name, *Verbesina*, is from its resemblance to the leaves of *Verbena*. It may also have been a printer's error for *Forbesina*. The specific epithet, *alternifolia*, is Latin for "alternately leaved".

Previous scientific names for this species were *Actinomeris alternifolia* (L.) DeCandolle, *Actinomeris squarrosa* Nuttall, *Coreopsis alternifolia* L., and *Ridan alternifolia* (L.) Britton. Other common names for this plant are Common Wingstem, Golden Honey Pot, Golden Ironweed, Winged Ironweed, Wingstem Crownbeard, Yellow Ironweed, and Yellow Wingstem.

DESCRIPTION

Perennial

Height: Its height is 2-13 feet.

Stems: Its stem is erect, rigid, and mostly unbranched. The stem has conspicuous, vertical winged ridges running down the side that extend from a leaf petiole to the base. These stems may have white hairs along the ridges. The younger and smaller plants may not have these ridges. These stems become woody when mature and often persist throughout the winter.

Leaves: Its leaves are simple and alternate. Some of the lower leaves may be opposite or whorled. Each leaf is narrowly elliptic, lanceolate, or ovate. It is about 3-12 inches long, about 1-3 inches wide, glabrous, tapers to the base and to the apex, and has slightly serrated or toothed margins. The leaf petioles flow onto the stem to become the winged ridges. These leaves are bitter tasting and are avoided by White-tailed Deer (*Odocoileus virginianus* Zimmermann), Eastern Cottontail Rabbits (*Sylvilagus floridanus* J.A. Allen), and other herbivores.

Flowers: The flower heads are about 1-3 inches wide and are arranged in panicled clusters at the terminal end of the stem. Each cluster may have 20-100 flower heads. The ½ inch wide, greenish-yellow disks of 5-toothed, tubular flowers are loosely spread, rounded, untidy, and mop-like. The 2-10 drooping, pale yellow ray flowers are reflexed backward and spread outward, are about ¾-1¼ inch long, have 3-toothed tips, and are widest in their middle. These rays are often of unequal lengths. Long-tongued Insects (Class *Insecta*), such as Bumblebees (Genus *Bombus*), pollinate these flowers. Its blooming period is 1-1½ months. Flowering season is August to October.

Fruits: Its fruits are achenes or nutlets. These fruits are wide, flattened, and most of them have 2 wings. Its pappus consists of 1-4 bristles.

Habitat: Its habitats consist of moist woodlands, woods' edges, clearings, thickets, fields, pastures, waste areas, bottomlands, streambanks, fencerows, roadsides, and utility rights-of-way. They are a good indicator of rich, alluvial soil.

Range: Its range covers most of the eastern U.S. as far west as the Great Plains, including Ontario and excluding New England

Verbesina alternifolia, Wingstem
USDA website

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

Tall Tree Tales: Farewell, For Now, To a Loyal Arboreal Friend

By Dr. Neil Pederson and Dr. Amy Hessl

Regular readers might note that the themes here generally revolve around new discoveries or insights into trees of the eastern United States. I assume most of you are aware of the changes going on in our environment – climate change, invasive species, non-native diseases and pests, etc. It is really heavy stuff if you pause and think about it. So, for this reason, I often strive to share a little silver streak in an otherwise dark environmental cloud. My head is not in the sand, though. I just like to give small bits of hope. But, in all honesty, it is hard to ignore or diminish the changes going on in our environment. And, it just isn't the right thing to do.

From an environmental history and dendrochronological perspective, perhaps one of the biggest threats from these dark clouds is the impending loss of hemlock (*Tsuga canadensis* and *Tsuga caroliniana*). Beyond its beauty and role as a foundation species, especially in mixed-mesophytic forests, many might not know that hemlock has been a stalwart and loyal compatriot to those of us studying long-term environmental change. Joining me in this column is Dr. Amy Hessl of West Virginia University. Together, we hope to generate a community-level project to preserve the untapped environmental history in hemlock ring patterns. We are doing this because, in eastern North America, hemlock might be the most important natural archive of high resolution environmental history. More than 100 references can be found in the Bibliography of Dendrochronology; there is little doubt there might be twice as much outside of this specific bibliography across the scientific literature. While we hope that future hemlock can be saved from the decimation wrought by hemlock woolly-adelgid, the writing is on the wall on saving tree species; we've not have much success as a culture. Thus, Amy and I are moved to create a scientific legacy for hemlock. In this column, we aim to honor and salute a great arboreal friend of tree-huggers, environmentalists, lovers of charismatic megaflora and environmental historians.

A dying eastern hemlock in the midst of a hemlock forest, Savage Gulf, TN

In many ecosystems, hemlock is a foundational species, which means that its structure or function strongly influences or defines the ecosystem in which it resides. Its role as a foundation species might be most vital in the southern portion of its range. These ecosystems are most often dominated by deciduous, broadleaf tree species, especially along streams. Inside the forest, hemlock modifies daily and annual temperature variations. This is especially important to terrestrial and aquatic fauna. Hemlock also strongly influences soil characteristics, for

example, through the deposition of its acidic needles onto the forest floor. Its dense canopy and the way it acidifies the soil generally governs the livable space to certain plants and animals. Some species are more commonly found within hemlock-dominated forests. The grip of canopy hemlock on ecosystem structure and function is strong and ecologically important.

Eastern hemlock lining Watts Creek in Blanton Forest, KY, January 2007

Setting aside the functional extinction of American chestnut, many old-growth southern forests are again being significantly altered through the rapid loss of hemlock. Hemlock is declining faster than expected in the south compared to observations in the north. The accelerated decline in the south might largely be the result of winter warming. Hemlock woolly-adelgid does not survive well when the temperature drops below -20 F. So, global warming, which in the eastern US has been mostly expressed in the winter, only helps hemlock woolly-adelgid…(head quickly goes back into the sandy, environmental cloud). Coincidently, or not, a severe drought occurred around the time of recent rapid decline of hemlock in the southern Appalachian Mountains. While the foundation of many forests is being severely disturbed over much of hemlock's range, it is the southern portion of the hemlock forest that is experiencing the brunt of this brutal pest.

Natural History and Life History Traits of Hemlock

Hemlock covers roughly 25 million acres, ranging from southeastern Canada to the southern Appalachians and from the eastern seaboard to the midwestern US. Interestingly, hemlock nearly went extinct roughly 5,000 years ago: pollen records show a nearly simultaneous decline across its range at that time. Early evidence suggested that this decline was triggered by an insect outbreak. Subsequent research, however, indicates that the decline and insect outbreak occurred around the time of a megadrought in eastern North America. This decline was so severe that it is often thought that hemlock never recovered to its mid-Holocene stature. Pollen evidence suggests that hemlock only reached its modern range about 1000-2000 years ago.

What makes hemlock a good friend to the climatic and ecological historians that seek its cellulose-based knowledge are its life-history traits. Hemlock might be one of the most shade tolerant species in eastern North America. That, combined with hemlock's slower growth rates, often relegates long-lived individuals to the forest understory; such suppression can make one sensitive to slight changes in the environment. Lacking vital sunlight and having to compete with greedy, canopy dominants for water and nutrients, understory hemlock responds well to any increases in these essential resources (*heck*, hemlock might even cheer if a neighboring giant falls and releases significant amounts of sunlight, moisture and nutrients to the level of the suppressed tree. No one knows for sure). While biding their time in the understory waiting for forest gaps, above and belowground, hemlocks record canopy disturbance events. When sunlight, moisture and nutrients become available in greater amounts following an opening in the canopy or the mortality of a neighboring tree, the ring widths of understory hemlock can suddenly double, if not triple, in width. These abrupt changes in ring widths, for ecological historians, are signals of past canopy disturbance (….when a tree falls in the woods and no one is there to hear it, hemlocks record it!). Luckily for the ecological historian, because it can be a slow grower, it might take 5, 6, 7 or more canopy disturbances for a hemlock to reach canopy height. This trait of hemlock was first published in 1927 by Dr. Robert Marshall, a great, early forest scientist who championed wilderness for the east. From hemlock's ability to persist in the shade, we have learned much about disturbance history in eastern North America. Thus, hemlock's shade tolerance and slower growth makes it a good ecological historian.

Dead hemlock in the Smoky Mountains. They appeared to give up the ghost overnight in 2007.
Will Blozan, photo used by permission.

The Humpty Dumpty Talus Slope in the Mohonk Preserve, NY. Unfortunately, the honorable and sacred hemlock trees on this site are on their last legs.

Funny enough, although hemlock typically grows in cool, moist environments, it is particularly sensitive to soil moisture. While a significant portion of this sensitivity can be attributed to its physiology, another portion might be attributed to the fact that hemlock lives in moist environments, such as swamps and areas with a relatively high water table. As oxygen might be the most important element for root survival, trees in wet areas have shallow root systems that are perched above the water table. When drought comes, as it always does and always will, the water table drops, leaving these trees high and dry (yes, pun intended). At the same time, hemlock is almost cosmopolitan – it can live virtually anywhere. The first real tree-ring based reconstruction of drought was based upon ancient hemlock living on a talus slope in the Mohonk Preserve. These thirsty trees allowed Dr. Ed Cook to reconstruct drought history for the New York City Watershed in 1977. Therefore, hemlock's acute drought sensitivity and flexible habitat tolerance also makes it a good climate historian. Hemlock's best overall trait in making it a good historian, however, might be its longevity. It is currently recognized as the fourth oldest species in eastern North America. Black tupelo (aka black gum to Yanques and *Nyssa sylvatica* to botanists) is the third oldest tree on this list. However, black tupelo appears to have no consistent sensitivity to drought. Thus, in one way, hemlock moves up on this list. Hemlock has been documented to live at least 555 years in the eastern US. And, hemlock trees of 400-500 years are not uncommon. While there is a record of a 900 year old hemlock in the eastern US in the scientific literature, this record is viewed with skepticism. Hemlock might be the most cored tree in eastern North America, with at least 1000 trees cored, we'd guess. The fact that 600 years, let alone 900 years, has not been bested casts doubt on this earlier claim. That being said, hemlock can live more than a millennium in western North America while in temperate Asia, *Tsuga* has been found to live 600-900 years - hemlock trees 500-750 years old are not un-usual in Bhutan, and a *Tsuga dummosa* near 900 years old was recently found in Nepal. Thus, the reference regarding a 900 year old hemlock in eastern North America might be real – it just seems like an outlier at this time. Most importantly and unlike some species, old hemlock can be found across all site types and over much of its range. Thus, hemlock's consistent longevity makes it a great overall environmental historian.

Hemlock is a Critical Paleo Species

These life-history traits make hemlock one of the most important natural archives of environmental information in eastern North America. Unlike many archives of environmental history, tree rings allow us to peer into specific years, like 1774, or events in specific seasons, like that in May 1774 (future column). Many environmental archives do not have such a precise window on history. On top of being one of the first trees giving us insight into how we could reconstruct ecological history, both eastern and Carolina hemlock comprise a significant portion of the North American Drought Atlas. The online drought atlas is a place where anyone with a computer can point and click to instantly download 350-2000 years of drought history. These two species provide nearly 1/3rd of the chronologies used in the eastern portion of the North American Drought Atlas. Therefore, its value as a paleoenvironmental historian cannot be overstated. It has been a long, true and silent partner that we go to often to learn about environmental history. It is truly a critical species.

For this reason, we will soon make a call for action to our fellow scientists, citizen and professional, to join forces in the recovery of samples from our ancient, noble friends before they likely, and sadly, succumb to a non-native pest. The environmental information they have provided in the past and the information currently inscribed in living trees will paint vibrant pictures of climatological and ecological history long after the dominant trees are gone from the landscape. This information is invaluable. While facing the reality, the inevitability that we will likely lose these wonderful beasts, we can at least recover some benefits for society and provide the historical legacy that hemlock so clearly deserves.

Kacie Tackett emerging from a newly-discovered patch of old-growth hemlock in Cane Creek Wildlife Management Area, KY.

Dr. Neil Pederson is with The Earth Institute of Columbia University. http://www.ldeo.columbia.edu/~adk/.
Dr. Amy Hessl is with the Department of Geology and Geography of West Virginia University.
Reprinted from *The Lady Slipper*, the publication of the Kentucky Native Plant Society. Winter 2011, No. 26:4.

Big Trees Disappearing on a Global Scale

Global problem: Many of the world's oldest and largest trees are dying at unprecedented rates in a trend that could endanger countless birds and other wildlife that depend upon them. A report by three leading researchers in the Journal Science warns that trees between 100 and 300 years old are being killed in vast numbers by pests, disease, logging and climate change.

To read the entire abstract go to www.sciencedaily.com/releases/2012/12/121206162519.htm

Invasive Plant:

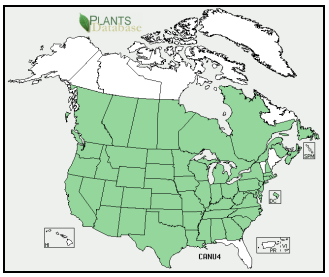
Nodding Thistle
Carduus nutans

DESCRIPTION
Nodding thistle has a taproot that can grow up to 2.5 m with one or more stems growing from the root crown. The leaves are waxy or hairy and dark green in color, with light green veins.
Flowers of the nodding thistle are found at the end of the stem. They are generally about 3-5 cm in diameter and are made up of numerous reddish-purple flowers. Bracts are found under each flower. Flower heads droop when they are mature, giving them the name "nodding thistle".

REASON FOR CONCERN:
Nodding thistle or musk thistle, as it is also known, is a biennial, meaning it blooms in its second year and then dies. This noxious weed is aggressive. One flower can produce up to 1,200 seeds, which means a single plant can produce up to 20,000 seeds at a given time. These seeds are dispersed by the wind and can stay viable for over 10 years. To make matters worse, these plants can produce seeds several times in a growing season.

Nodding thistle can produce an impenetrable thicket, and it is unpalatable to cattle and wildlife.

DISTRIBUTION/HABIT
Originally from Eurasia, nodding thistle is considered a pest in North America's rangelands. The seeds can invade healthy communities, though prefer disturbed areas, and can grow in both neutral and acidic soil. They are very tolerant of wet or shady conditions.



USDA Distribution Map

Thistle head weevil

CONTROL
Prevention is the key when it comes to controlling nodding thistle; this is done through preventing flowering. Hand pulling in small areas can be an effective treatment to stop spreading before the plant starts to seed. With larger affected areas, mowing and chemical controls can be effective if carried out over a sufficient period of time. The thistle head weevil (Rhinocyllus conicus) and the thistle crown weevil (Trichosirocalus horridus) have been used as a form of biological control.
After being in an infested area, it is important to check equipment and clothing and to remove any seeds that are found. Caution should also be taken when transporting manure.

Reprinted from the "*2012 Prairie Invasive Species*" calendar, a joint effort between The Native Plant Society of Saskatchewan and The Invasive Species Council of Manitoba (ISCM). It is intended to raise awareness and understanding of new invasive species that threaten their Prairie's natural environment, economy, and society. Photos in this article were added by OTF editors. Photo this page taken from www.proprofs.com and ksda.gov. For more information go to www.invasivespeciesmanitoba.com/site or info@npss.sk.ca.

Flora of Northeastern Ohio's Beaches, Dunes, Swales and other Palustrine Habitats

By Tom Sampliner

Vegetation of the shoreline habitats along Ohio's share of Lake Erie is due to a fascinating culmination of historical and geographical influences. To begin with, the size and configuration of the Great Lakes has ebbed and flowed like an accordion. At times lakes literally disappeared only to return as if on steroids. All of this is courtesy of our glacial history over the last two million years during Pleistocene times. As ice advanced from the north, mile high dams drastically altered the topography.

Ammophila breviligulata, American beach grass

During periods of retreat, lakes could reappear. Sometimes the lakes would be much larger than at present while other times they disappeared. Glacial features such as kames, eskers, moraines, fens, bogs, dunes and swales, and beaches became our modern day reminders of what had been. Prior to two million years ago, the eastern U.S. was drained by a mighty river system that flowed north and westward out of the mountains of the Carolinas and came up into what is now Ohio. It was called the Teays River. In southern Ohio there are silted-in valleys that establish the reach of this mighty river. About one million years ago, glacial ice dams changed this northward flow causing the Teays to head westward from south of Columbus to then empty into the predecessor of the modern day Mississippi. This change also established the Ohio River, which could now drain from points farther east into the Teays then to the Mississippi.

All along the south shore of Lake Erie, various modern roads contain the name "ridge." These occur in places where one of Lake Erie's predecessors had escarpment overlooking a much larger version of our great lake. Names like Lake Whittlesley, Maumee, or Warren are all former identities of our friend Erie. Below each ridge would have been sand dunes, low wet swales, and the entire cast of habitat characters. No wonder inland spots in northeast Ohio feature sand and gravel, limestone or other mineral excavation services. By the way, did you realize the green circle we call Wade Oval, in Cleveland's University Circle, is an ancient beach? The large black oaks like the sandy open well-drained soil.

Some plants on the Lake Erie shore also occur along the Atlantic coast. Plants that occur is such widely separated geographic areas are called disjuncts.

The sand dunes were built by grasses. Thick adventitious rhizomes trap particles, which

Triplasis purpurea, Purple Sand Grass

mound up and catch further material including organic material. These mounds, anchored by the sturdy tall grasses, become nursery beds for other beach and dune vegetation. Two of the most important grasses along our north coast are disjuncts from the East Coast, *Ammophila breviligulata*, American beach grass, and *Triplasis purpurea*,

Lathyrus japonica, beach pea

Lathyrus japonica, beach pea

Purple Sand Grass. The former is vase-like in configuration with tightly clustered brown feathery inflorescence at the top of flowering spikes. The latter has a much looser, scattered growth habit with distinctive purple color towards the base of each stalk or leaf.

On both the beach and in sandy dunes, a handsome member of the pea family puts on a summer bloomtime show: *Lathyrus japonica*, beach pea. Plants have compound leaves with ovate opposite leaflets, climbing or running with tendrils seeking support, and handsome deep-purple butterfly-shaped florets. Pods look exactly like our green beans.


Cakile edentula, Sea Rocket

A bloom mate in both places is the fuzzy gray-green of an artemesia. This member of the composite family has several species we plant in gardens or containers. The one with dissected leaves and small yellow composite flowers is beach wormwood, *Artemesia campestris.* Crawling prostrate along the sand is a Euphorbia that many would confuse with a common garden weed (common knotweed). However, this one, *Euphorbia polygonifolia*, seaside spurge, is quite fascinating when viewed up close. Typical of most euphorbia, the juice is milky, filled with powerful alkaloids, which we humans should avoid as it causes dermatitis similar to that induced by poison ivy. Each floret is a cyme with a colored set of bracts acting as saucer in which sit the actual florets, which are tiny and tubular. We even have a member of the mustard family present on our local beaches. Sea rocket, *Cakile edentula*, is yet another East Coast disjunct. This succulent plant has shallowly-toothed leaf margins and four-petaled flowers ranging from white to mauve. The typical mustard silique identifies the seedpod.

It should be mentioned that these places featuring natural beach vegetation are great places to watch birds and other wildlife. In late summer to early fall, weather conditions being just right, waves of monarchs can occasionally be encountered having dropped down to feed and rest up after having crossed the lake on their migration journey. I have seen the trees dripping with them.

Speaking of trees, one unusual one is the wafer ash, *Ptelea trifoliata.* In season notice the wide, flat wing surrounding each seed. One type of vegetation to avoid or at least view from a distance is rare for Ohio; it is commonly called either western or northern poison ivy. *Toxicodendron rydbergii* is a shrub and lacks aerial roots, which distinguishes it from our more common species. The habitat also helps to distinguish it because it requires sand or gravel substrate on or adjacent to the bluffs lining Lake Erie.

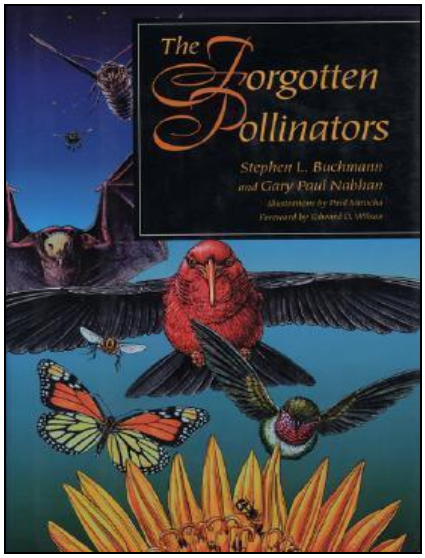

Toxicodendron rydbergii, poison ivy

I hope this journey has enlisted each of you as a friend and protector of what little natural habitat we have left along the southern shore of Lake Erie.


Euphorbia polygonifolia, seaside spurge

Tom Sampliner is a former Board member and president of The Native Plant Society of Northeastern Ohio.
Photos in this article were added by OTF editors.

Book Review:



The Forgotten Pollinators by Stephen L. Buchmann, Gary Paul Nabhan, Paul Mirocha (Illustrator)

Reviewed by Tom Small

Island Press
292 pages
ISBN-10: 1559633530
ISBN-13: 9781559633536
Paperback
32.50

Stephen Buchmann is the author of eight books, including two for young people, and over 150 scientific articles. His most popular book, *The Forgotten Pollinators,* co-authored with ethnobiologist Gary Nabhan, explores the vital relationships between plants and the animals they depend on for reproduction—bees, beetles, butterflies, moths, hummingbirds, and countless other animals, most of them usually "forgotten" in the struggle to conserve species and habitats.

Called a beautifully told "detective story" by Bill McKibben and a "stunning addition to conservation biology" by Robert Michael Pyle, *The Forgotten Pollinators* was a pioneer in its lively account of both ecological and cultural contexts of plant-pollinator relationships around the globe.

Buchmann is a Research Associate in Ecology and Evolutionary Biology at the University of Arizona. His research includes studies in conservation biology of native bees—especially carpenter, mason, and bumble bees and the vital importance of bees in restoration ecology.

He serves as the International Coordinator for the Pollinator Partnership and the North American Pollinator Protection Campaign (www.pollinator.org).

He's co-author of *The Bee Tree,* a beautifully illustrated book for children about Malaysian honey hunters, and there's a new paper-back edition for teenagers of his *Letters from the Hive* on the culture of honeybees. A forth-coming TV documentary, "Sacred Bees of the Maya," is based on his work with Mayan beekeepers in Mexico.

In 1999 Buchmann formed The Bee Works, an independent company creating educational materials and providing consultation on pollinator conservation for both agricultural and wild lands.

Although the central focus of Buchmann's research and writing is the biology of bees, his work covers virtually the entire range of ecological and cultural relationships between bees, the plants they pollinate, all the other creatures that serve as pollinators, and the human species, whose health and survival depend on knowledge and conservation of "the forgotten pollinators."

Reprinted from *Wildflowers*, the newsletter of the Wildflower Association of Michigan. Fall 2011, Vol. 16, No. 3.

Interesting Factoid:

Lycopersicon esculentum L., Garden Tomato

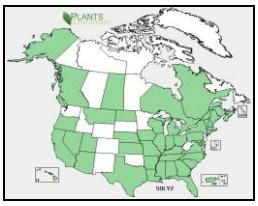
Alexander W. Livingston is regarded as the Father of the modern tomato. Alexander W. Livingston, a Reynoldsburg, Ohio seedsman, in 1870 developed the first commercially successful variety of tomato. He changed the tomato from an ugly duckling of horticulture (small, ribbed, hard cored, and almost hollow) into the uniform, smooth-skinned, juicy, flavor-packed, meaty beauty that is one of the world's favorite foods. Livingston and his seed company eventually introduced more than 30 varieties of tomatoes. By 1910, half the major varieties of tomatoes grown in the United States were Livingston products, and he won praise from the U.S. Department of Agriculture.

The tomato is native to the Americas, where the ancient Aztecs and Incas grew it more than 1,300 years ago. In the 16th century, Spanish Conquistadors took seeds back to Europe from Mexico and Central America. People in Spain, Italy, and other Mediterranean countries fell in love with it. The French thought tomatoes had special powers and called them "The Apple of Love." But the British believed tomatoes were poisonous, and the American colonists carried that myth with them to the New World.

Born in 1821 in Reynoldsburg, Livingston eventually moved to Columbus where he started the A.W. Livingston's Sons seed company. Today, life without *Lycopersicon esculentum* would be odd, indeed. Imagine spaghetti with no sauce, pizza with no rich red topping, and salsa would be lost without it.

Fun fact: Like many myths, the old idea that tomatoes are poisonous did have a basis in fact. Tomatoes are members of a plant group, the *Solanaceae* family, which includes poisonous members. Among them are highly toxic plants like henbane, mandrake and nightshade. Tobacco, potatoes and peppers are also members of the *Solanaceae* family.
Fun fact: Tomato juice is the official state beverage of Ohio, honoring the part A. W. Livingston of Reynoldsburg, Ohio, played in popularizing the tomato in the late 1800s.

Information taken from *Heartland Science, www.heartlandscience.org. March 2013.*


USDA Distribution Map

North Kingsville Sand Barrens

With its open sand barrens and dense swamp forest, North Kingsville Sand Barrens hosts an extraordinary variety of plant and animal life.

Fossil sand dunes have always been rare features of the northeast Ohio landscape.

Deposited more than 12,000 years ago along what once were beaches, these inland ridges made convenient sites for early roads and trails (U.S. Route 20 follows the Lake Warren beach Ridge, for example). As a consequence, nearly all of the dune habitats were lost to development. One outstanding fossil dune environment, however, was protected in 1990 as part of the Museum's preserve system. The North Kingsville Sand Barrens are

lapping at the edges of the ancient lake that laid down these sands.

The preserve supports two Endangered plants, several rare species of beetles and a rare moss. The rolling sandy ground here is an oak savannah habitat extremely uncommon in this region. Prairie plants—wild pea, lupine, and various goldenrods and asters—that require open, sunlit areas are restricted to this area. Admiring its profusion of balloon-like purple flowers, it would be difficult to guess that lupine is Potentially-Threatened in Ohio. An equally beautiful though less obvious plant is the racemed milkwort, which in mid-summer produces intensely violet blossoms. This milkwort is Threatened in Ohio, and the sand barrens is the only known local occurrence of it.

In 1997, an individual from Mansfield discovered and collected the first confirmed Ohio specimen of the moss bug-on-a-stick (Buxbaumia aphylla). Bug-on-a-stick is historically known in Ohio from four counties, all based on literature references. It is one of the ephemeral annual mosses, appearing late in the summer, persisting through the winter and shedding its spores in May.

Surveys of the area also have turned up two rare grasses, pale green panic grass and American panic grass. The survival of these prairie species could have been aided by fires set periodically to keep the railway clear for locomotives. The sandy openings at the barrens also host unusual bees, wasps and beetles. When the Museum asked its volunteer

Landscape of the “Spring seep area of the North Kingsville Sand Barrens“
Photo by Liz Russell

beetle expert, Harry Lee, a self-trained entomologist who has identified more than 320 Ohio species of ground beetles, to do an inventory of the natural area, he found a beetle that had never before been seen in Ohio. The mysterious, dry-adapted beetle (Cymindus cribicollis) is so rare that its discovery has made the spot where it was collected one of the most important sites on the preserve. This organism will be used to help gauge the impact of stewardship efforts at the barrens.

Unlike some of the Museum's other natural areas, the sand barrens are not harmed by extensive educational use. In fact, Director of Conservation, Jim Bissell, says foot traffic seems to maintain the sandy openings favored by rare species. Members of the North Kingsville Stewardship Committee frequently volunteer to lead school groups through the area.

Lupine, *Lupinus perennis*. Photo by Judy Semroc

In contrast to the open dunes, a swamp forest dense with hemlock and hardwoods occupies the north end of the parcel. Clear springs continually

moisten the rich, black soil in the primordial seeps here at the base of the dunes. This is where some of the rarest plants thrive. In May, the Endangered yellow clintonia, which has only two other known populations in Ohio, will show its bell-shaped lily flowers. The striped maple, an Endangered tree with distinctive bark, grows at the Sand Barrens, as well as at Cathedral Woods. In autumn, skunk cabbages poke their purplish heads up to the surface of the seeps, waiting for springtime to slowly unfurl their broad leaves.

Directions
Take I-90 to the Rt. 193 exit. Follow Rt. 193 north to US Rt. 20 east. Take U.S. Rt. 20 east to Poore Road. Travel north on Poore Road to the Conrail tracks. The preserve is on the west side of Poore Road, just north of the railroad tracks. A sign is located at its entrance.

Printed from the Cleveland Museum of Natural History website. *www.cmnh.org*
http://www.cmnh.org/site/Conservation/NaturalAreas/Map/NorthKingsvilleSandBarrens.aspx

racemed milkwort bud, *Polygala polygama*
Photo by Judy Semroc

Folklore:

THEY ARE NOT WEEDS!!!

By Glenna W. Sheaffer

For years I walked with the native plant societies that I belong to oohhing and aahhing over the beautiful native plants that we would see along the paths. Especially in the sun or part sun, I would see very familiar plants that also grew in my grass or garden at home. But sometimes the plant would not be familiar and I would ask the experts what that plant was. I often came up behind the group so I could look closely at a plant for a while and noticed that most of the group would walk right past these different plants without a glance. Astonishingly, when I got a reply, it was, "Those are WEEDS!! They are ALIENS!!"


Motherwort

It didn't take long to reference a plant field guide and find out the names of these poor alienated plants. I began to also set them in the part of my mind allocated for "WEEDS" and step by them with only a passing glance. But I also began to notice they had names like "heal-all", "crampbark", and "motherwort", or "Veronica 'officinalis'" and "Berberis 'vulgaris'". Because I work as an herb gardener, I knew these common names, word endings like "wort", and species names meant they were used as herbs.

As I researched their uses and the era that they came into our country, I began to add them to the herb garden and debate why I added them with the other gardeners so they could stay.

These plants were brought to this country by the colonists. They needed plants that had hardy seeds that germinated readily after a prolonged dry storage. Most of these plants could come from seed this way or were carried as a root in moist sand for the ship voyage across the Atlantic. They were the easiest thing to carry with you and were easy to find to collect.

They needed plants that were full of vitamins and minerals. Plants that would have leaves or roots in late winter when the colonists were suffering from a poor winter diet and desperate to improve their health quickly in the spring. These plants were dandelion, garlic mustard, red root or pigweed amaranth, yellow rocket, Shepherd's purse, lamb's quarters, chicory, dame's rocket, purple dead-nettle, purslane, sow-thistle, chick-weed, and red clover.

They needed plants that could treat coughs, colds,

asthma, tuberculosis, bronchitis, and fever. Coltsfoot, red clover, chickweed, dandelion, sow-thistle, plantain, heal-all or selfheal, ox-eye daisy, peppergrass, king devil hawkweed, burdock, and mullein were the plants of choice here.

Herb Rocket

They needed plants that aided digestion and gas, were laxatives or purgatives [if they ate spoiled meat]. These were burdock, yellow rocket, celandine, lamb's quarters, queen-anne's lace, chicory, ground ivy [mild enough for children], king devil hawkweed, purple dead-nettle and henbit, common flax, yellow or white sweet clover, peppermint, plantain [stool softener], sheep sorrel, patience dock [purgative], sow-thistle, dandelion, and white dutch clover.

Plants that were anti-bacterial, antifungal, anti-inflammatory, antiseptic, antihistamine, and antibiotic were highly prized. These are yarrow, garlic mustard, burdock, shepherd's purse, chicory, queen-anne's lace, peppergrass, common flax, bird's-foot trefoil, spearmint, peppermint, purslane, heal-all, sheep sorret, curled or broad dock, sow-thistle, chickweed, dandelion, field pennycress, and mullein.

They needed plants that helped the heart and veins and aided diabetes. Plants that were needed to build red blood cells, settle high blood pressure, blood clotting, lower cholesterol, were sedative and anti-spasmodic. Many contained coumarin so they thinned the blood. These plants are yarrow, field mustard, chicory, queen-anne's lace, teasel, motherwort, common flax, bird's-foot trefoil, sweet clover, purslane, heal-all, sow-thistle, red clover, mullein, and peppermint. Many also treated the brain and nervous system. Chicory, herb-robert, and dandelion lower blood sugar.

Astringent plants for dysentery and wounds that were also diuretic were yarrow, garlic mustard, red root amaranth, burdock, yellow rocket, shepherd's purse, celandine, lamb's quarters, chicory, queen-anne's lace, teasel, herb-robert, king devil hawkweed, motherwort, peppergrass, ox-eye daisy, flax, bird's-foot trefoil, sweet clover, peppermint, plantain, purslane, cinquefoil, heal-all, sheep sorrel, curled or broad dock, patience dock, bouncing bet soapwort, sow-thistle, chickweed, dandelion, field pennycress, goat's-beard, red clover, coltsfoot, and mullein.

Along with many already mentioned, cow vetch stimulated lactation, aided childbirth, aided menstruation, stopped excess bleeding, or improved menopause. Many were abortifacient and treated gonorrhea.

The colonists knew not to drink the water without treating it. The most common drinks were beer or wine to avoid this problem. The alcohol would kill just about anything. Plants like chicory and dandelion were used as coffee substitutes. Ground ivy cleared the cloudiness in beer and added flavor and a keeping quality. They made beer and wine of parsnip root.

Fragrant plants were used to stuff pillows and mattresses or to repel insects. Plants like herb-robert, dame's rocket, sweet clover, spearmint, or cinquefoil [dried root smells of roses]. Some seed parts that were light and fluffy were stuffed in pillows and mattresses, like sow-thistle.

Plants that removed heavy metals from the soil and the body were burdock and brown mustard. Many plants made good fertilizers or green manure. Any plant that was called chickweed, or sow-thistle, or pigweed, or cow vetch was used to feed the livestock.

Dye and fiber plants were needed to make clothing. Many of the plants listed above were dye plants. Flax made linen and linseed oil. Bouncing bet root was used as a mordant to fix the colors so they did not bleed, and also as a gentle soap. Teasel seedheads were used to tease the woolen fibers into yarn. A hairshirt was a scratchy warm shirt woven from nettle fiber. Thick soft mullein leaves were woven into clothing and shoes to keep out the cold.

I really want all of you reading this to look at these poor maligned plants in a different light. They were very important to the survival of our ancestors. Without them, they would have not survived.

Purple Deadnettle,
Lamium purpureum

Glenna W, Shaeffer is a gardener at Kingwood Center in Mansfield. She is one of the founders of the Mohican Native Plant Society and a past president of the group.

Reprinted from the Mohican Native Plant Society newsletter. Spring 2012, Vol. 12, No. 2.

I really want all of you reading this to look at these poor maligned plants in a different light. They were very important to the survival of our ancestors. Without them, they would have died.

Chapters of the Ohio Native Plant Society

Cincinnati Wildflower Preservation Society
Christine Hadley, President
445 Ward-Koebel Road
Oregonia OH 45054
513-850-9585
cncywildflower.org
http://www.CincyWildflower.org

The Mohican Native Plant Society
Joanne Wrasse
1633 St.Rt.603
Ashland OH 44805
419-281-3690
jwrasse@zoominternet.net

The Native Plant Society of Northeastern Ohio
Kathryn Hanratty
9059 Auburn Rd.
Chardon OH 44024-9639
oldefarm@windstream.net
http://www.NativePlantSocietyNEOhio.org

The Botanizers
The Wilderness Center
Gordon T. Maupin
P.O. Box 202
9877 Alabama Ave. SW
Wilmot OH 44689-0202
330-359-5235
http://www.wildernesscenter.org

MEMBERSHIP APPLICATION

Membership includes invitations to all field trips, programs, the Annual Meeting, and a subscription to the quarterly journal *On The Fringe.*
Membership runs from January 1 to December 31.

NAME: _____
ADDRESS: _____
CITY: _____
STATE: _____ ZIP:_____
PHONE: (____) _____
E-MAIL: _____

(We will not sell or distribute contact information.)

Membership Types (circle type chosen):
Individual $15; Family $20;
Sustaining $30; Patron $50
Trillium Society $100; Gentian Society $200
Corporate Level $250

☐ Check here if you wish to go green and get your copy of the Journal by email only
add $10 to have a Print edition of *On The Fringe* mailed to you.

Donations to the Endowment Fund to support the annual grant are always welcome.
The Annual Grant is offered for work in the field of botany or conservation that supports our mission and demonstrates excellence in research, conservation or education.

Make checks payable to:
The Native Plant Society of Northeastern Ohio
and mail to:

Jane McCullam
NPS Membership Chair
9880 Fairmount Rd.
Newbury, OH 44065-9712

The Native Plant Society of Northeastern Ohio is a 501(c)3 organization. Your donation is tax deductible to the extent allowed by law.

RENEW NOW
Don't miss an issue of
ON THE FRINGE

On The Fringe
8400 Top Rail Lane
Novelty, Ohio 44072

DATED MAIL – DO NOT DELAY
RETURN SERVICE REQUESTED

- Promote conservation of native plants and natural plant communities through habitat protection and other means
- Foster public knowledge and appreciation of native plants
- Support natural landscaping
- Raise awareness of the ethical issues regarding native plants
- Encourage surveys and research into native plant species and the publication of findings
- Promote cooperation with other programs and organizations concerned with the conservation of natural resources

On The Fringe

In this issue:

Journal of The Native Plant Society of Northeastern Ohio

Volume 31, No. 2 June 2013