On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

Program Schedule – Summer 2017

Saturday, June17, 9:00 am to Noon – West Woods Nature Center – Fern Identification Workshop. Discover the lush diversity of ferns found in northeast Ohio. An introductory session will be followed by a hike to observe species. **Directions:** take SR 87 east from SR 306 in Russell Township approx. 2 miles to the park entrance on south side of the road. 9465 Kinsman Road, Novelty, Ohio 44072.
Pre-Registration is required: Call Geauga Park District: 440-279-0880. **GPS:** N 41°27'29.5"W 81°18'13.9"

Saturday, July 22, 9:00 am to Noon – West Woods Nature Center – Invasive Species Workshop. Natural Resources Tech Joel Firem explains the different invasive species he deals with on park district property before heading out to locate a few. **Directions:** take SR 87 east from SR 306 in Russell Township approx. 2 miles to the park entrance on south side of the road. 9465 Kinsman Road, Novelty, Ohio 44072. **Pre-registration is required:** Call Geauga Park District: 440-279-0880. **GPS:** N 41°27'29.5"W 81°18'13.9"

Saturday, August 5, 10:00 am to Noon or 1:00 pm – North Kingsville Sand Barrens, Ashtabula County – Pollinator Program. Explore with Judy Semroc, Cleveland Museum of Natural History Conservation Specialist, Natural Areas Division, to learn about the pollinators that visit the various plant species. We will hike the trails and look for as many different types of pollinators including flies, butterflies, bees, wasps, and more. Weather dependent. **Directions:** Take I-90 East to exit 235 (OH-84/OH-193) and go north on 193 into the town of North Kingsville. Turn right onto E. Center St., go 2.5 miles, then turn left on Poore Rd. The preserve is on the left after the railroad tracks. **GPS:** N 41° 55'52.61"; W 80° 38'50.10"

Saturday, September 23, noon to 3:00 pm – North Kingsville Sand Barrens, Ashtabula County – Monarch tagging. Join Judy Semroc as we seek out, tag, and record monarch butterfly information at the Cleveland Museum of Natural History preserve. Weather dependent. **Directions:** (see above). **GPS:** N 41° 55'52.61"; W 80° 38'50.10"

National Pollinator Week is a Time to Celebrate Pollinators and Spread the Word About What You Can Do to Protect Them

Ten years ago, the U.S. Senate's unanimous approval and designation of a week in June as "National Pollinator Week" marked a necessary step toward addressing the urgent issue of declining pollinator populations. Pollinator Week has now grown into an international celebration of the valuable ecosystem services provided by bees, birds, butterflies, bats and beetles.

June 19-25, 2017 has been designated National Pollinator Week by the U.S. Department of Agriculture and the U.S. Department of the Interior.

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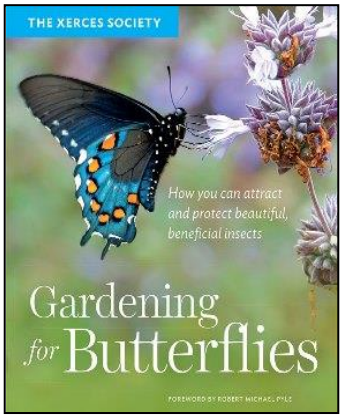
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On The Fringe

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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.

Website:



The Xerces Society has released a new book *Gardening for Butterflies.* Welcome the world's most exquisite visitors to your garden! *Gardening for Butterflies*, by the experts at the Xerces Society, introduces you to a variety of colorful garden guests who need our help, and shows you how to design a habitat where they will thrive. This optimistic call to arms is packed with everything you need to create a beautiful, beneficial, butterfly-filled garden. Gardeners will learn why butterflies matter, why they are in danger, and what simple steps we can take to make a difference. You'll learn how to choose the right plants, how to design a butterfly-friendly garden, and how to create a garden that flutters and flourishes with life.

Editorial Reviews

"Gardeners interested particularly in the ecological issues of pollinator conservation will want this book, which provides them with the rationale and tools for supporting and promoting pollinators." *—Library Journal*

"Save the butterflies, save the world is the motto of this book dedicated to an insect so flutteringly lovely that just a glimpse of one brings joy to the heart of a gardener. But how often do we think about planting for caterpillars as well as nectar? I've already copied the list of host and nectar plants for our climate to keep in the front of my gardening notebook." *—Pacific NW Magazine*

While you are in the website browse through their tabs, you will also find an article on the Rusty patched bumblebee. Go to www.Xerces.org for more information.

Native Plant Society

2017 Grant Announcement

The Native Plant Society of Northeastern Ohio is accepting applications for our 2017 Grant. We will consider projects that demonstrate excellence in research, conservation or education that clearly support the mission and goals of the Native Plant Society of Northeastern Ohio.

***Our mission*:**

To promote the study, appreciation and conservation of the native plants and native plant communities of Ohio.

The Native Plant Society Goals are:

- 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.

The amount of the grant is $500.00.

Deadline for submission is 5:00 pm September 15, 2017

Applications should include:

- Contact information: name, phone number, e-mail and postal address
- Summary of the project
- How the grant money will be used.

Grant applicants will be notified of the status of their application by Sunday, October 15, 2017. Public announcement of the grant award will take place at the 2017 annual meeting of the Native Plant Society on Saturday October 28, 2017.

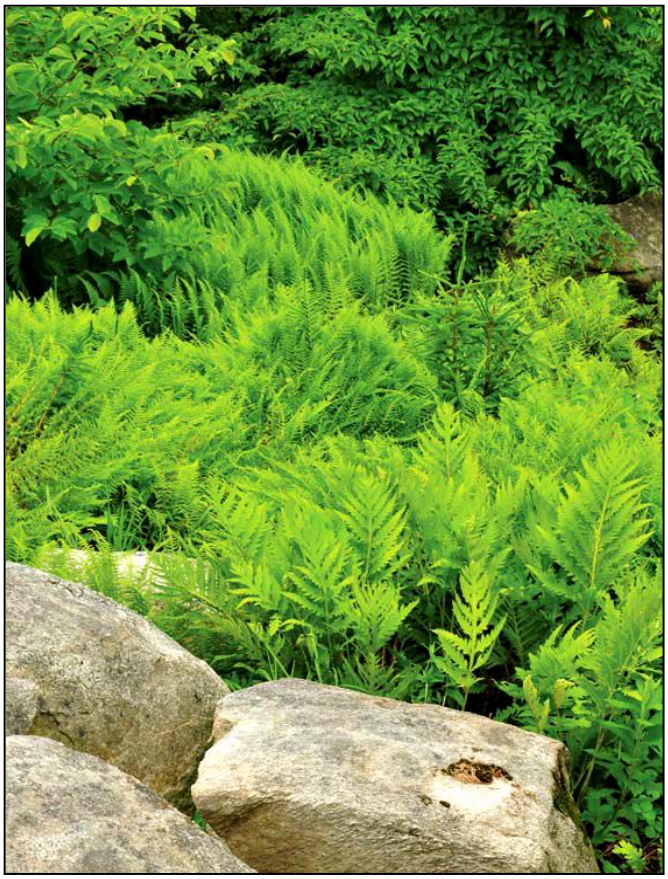
Those awarded a grant will be invited to attend the Native Plant Society's annual meeting to accept the award and asked to attend the annual meeting again the following year to give a brief presentation on the project.

Please e-mail your grant application to nativeplantsocietyneo@gmail.com or submit 3 copies to: Kathryn Hanratty, President, Native Plant Society of Northeastern Ohio, PO Box 1064, Chardon, Ohio 44024.

Ferns in the Garden

By William Cullina

In the late 1990's, a 200-million-year-old fossil fern was discovered in Antarctica that is nearly identical to the interrupted fern, *Osmunda claytoniana*, growing in my front yard. When you think about the hundreds of thousands, or perhaps even millions, of plants that have gone extinct since then, it is incredible to me that this uncomplicated species has survived virtually unchanged to witness 73 billion sunrises. Ferns are evolutionary survivors—spore-bearing plants that, unlike horsetails, *Equisetum* spp., and clubmosses, *Lycopodium* spp., have held their own through the sands of time. There are ferns native to every place in



Osmunda claytoniana, interrupted fern

North America save the driest deserts and coldest mountain tops but they reach their greatest diversity in the temperate forests of the eastern U.S. Here in Maine we are blessed with dozens of native species and I try to work ferns into every design here at Coastal Maine Botanical Gardens.

Ferns can be loosely divided into two groups based on their growth habit. Clumping species have wrist-thick, shaggy rhizomes that creep ever so slowly outward at about two inches (5 centimeters) per year. Other ferns have far more aggressive rhizomes that spread quickly. Clumping ferns are perfect for interplanting with wildflowers or other ferns, while the running or spreading types are best used as groundcovers under shrubs and trees or where large areas need covering.

Clumping species

Interrupted fern is one of three osmunda ferns native to the United States, and my personal favorite. The fronds emerge covered in dense wool, unfurl vertically and then arch over as the blades mature. The fronds are "interrupted" by a few ranks of fertile leaflets (pinnae) covered in small capsules containing dark green spores that appear black en masse. I find unfurling interrupted ferns to be one of the most beautiful sculptural elements in my spring garden. They are fairly sun-tolerant, at least here in New England, and we use them much like ornamental grasses in our sunnier perennial beds for their soft textural effect. Like its relatives, *Osmunda claytoniana* takes several seasons to mature and a few more to reach its ultimate size, so have patience and give it some breathing room to get established. When fully mature, clumps stand 26-40 inches (66-100 centimeters) tall and at least as wide. Interrupted fern thrives in moist to fairly wet, fertile soil in USDA hardiness zones 3-7.

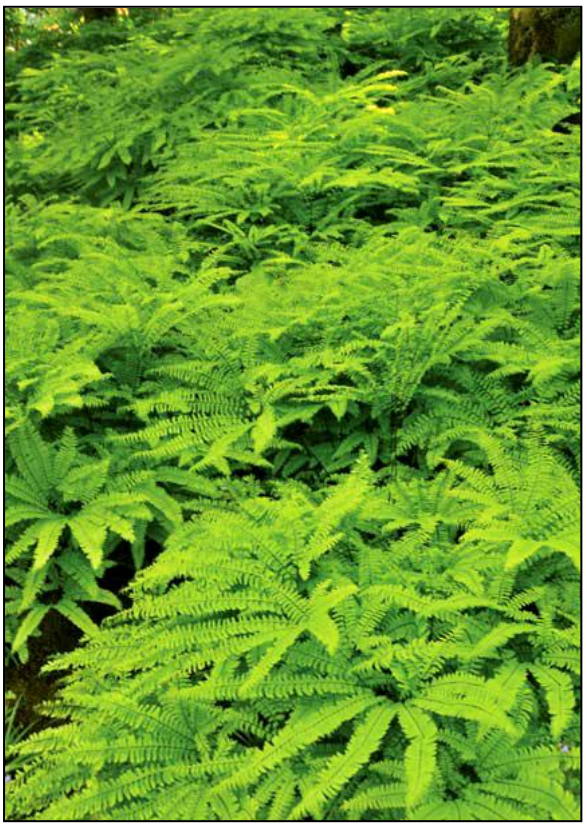
When Melissa and I got married, I grew 150 northern maidenhair ferns, *Adiantum pedatum* (zones 2-8) from spores to give as favors to our guests. Our wedding fern has been moved a few times, has waned and waxed, and is still growing in our front garden. Northern maidenhair and its close cousin, western maidenhair, *Adiantum aleuticum* (zones 3-8), are unlike any of our other ferns in appearance, with fronds that split and curve in a semicircle so the pinnae orient like spokes on a wheel. If grown in partial sun, the leaflets turn upward, giving the frond a ruffled appearance it does not have in shade. Since Melissa views our fern as a bellwether for our marriage, I have had a few tense transplanting moments. I've learned that this species needs some coddling to get established but once it becomes a clump of 20 stems, it is surprisingly resilient and easy to grow. The fronds of both northern and

western maidenhair grow 16-20 inches (40-50 centimeters) high and look wonderful when paired with coarser-leaved perennials. Plant maidenhair fern in moist, slightly acidic to neutral soil in partial sun to full shade.

Another delicate but easy-to-grow clumping species I would not be without is the widespread lady fern, *Athyrium filix-femina* (zones 2-10). It is a remarkably cosmopolitan fern found throughout the Americas and Eurasia, and within the U.S. it is recorded from every state except Nebraska. A soft, strongly clumping species, it will keep producing new fronds through the summer if moisture remains plentiful. I really appreciate the fresh spring green of these young fronds during the dog days of summer, when much of the shade garden begins to look tattered. There are four geographical varieties of lady fern in the U.S.; three are similar, with light green, triangular fronds growing 18-26 inches (45-66 centimeters) high. Western lady fern, *Athyrium filix-femina* var. *cyclosorum*, is the giant of the group, and mature specimens may grow as high as six feet (two meters) in the temperate rainforests of the Pacific Northwest. All varieties of lady fern prefer moist to wet soils and partial to full shade and are great companions for woodland wildflowers and groundcovers.

The genus *Dryopteris* includes a dozen strongly clumping native species that are found primarily in wooded habitats, hence their common name of wood fern. When several species grow in proximity, they frequently form natural hybrids, so field identification can be challenging. Some of these hybrids have made their way into gardens; one I particularly like is the Dixie wood fern, *Dryopteris* × *australis (*zones 4-9). Its parents are the stately, broadfronded Goldie's wood fern, *Dryopteris goldiana*, (zones 3-8) and the tall, stiffly upright wood fern, *Dryopteris ludoviciana* (zones 7-9). The hybrid combines winter hardiness with vigor and vertical carriage that makes it a great designer's subject. We grow this aristocratic 3 to 4-foot tall fern (1 meter to 1.2 meters) in partial sun and moist soil.

Though Dixie wood fern might be considered partially evergreen, the fronds look pretty brown and tattered in spring before it receives its vernal haircut (trimming of the dead or tattered fronds from the previous year). However, there is one hardy, widespread native that is completely evergreen here in Maine. Christmas fern, *Polystichum acrostichoides*, (zones 3-10) is so named for its past use as a holiday decoration. An adaptable plant, it can be found in a variety of wooded habitats throughout eastern North America. Christmas fern thrives in acidic as well as slightly alkaline soils and tolerates more shade than just about any other species. In cool-summer areas such as coastal Maine, we also grow it in partial sun. When grown thus, the fronds are more dense and strictly upright—much like a half-sized version of the giant western sword fern, *Polystichum muticum* (zones 5-8). I prefer to plant Christmas fern in large groups under shrubs or amid lower groundcovers as barren strawberry, *Waldesteinia fragarioides*, or creeping phlox, *Phlox stolonifera*. It tolerates more dryness than most of the ferns mentioned here but prolonged drought will prove harmful.



Adiantum aleuticum, Aleutian maidenhair

Spreading species

Before planting one of the spreading ferns, consider the location carefully, as they will quickly overtake less aggressive neighbors. That said, running ferns are useful in situations where there is much ground to cover and cost is an issue.

In 2008 and 2009, we planted about 100 ostrich ferns, *Matteuccia struthiopteris*, (zones 3-8) on a steep, shaded bank about a quarter acre (.1 hectare) in size. Within two years the patch had grown into a verdant swath of rich green that is a joy to behold. Taller

perennials such as wild spikenard, *Aralia racemose*, and pagoda dogwoods, *Swida alternifolia*, provide visual counterpoint amid this soft expanse. Of course, ostrich fern is also the source of edible fiddleheads, and a patch this large can support an abundant harvest with no diminution in size. Ostrich fern grows from 2 to 4 feet tall (.6 to 1.2 meters) in moist to wet, fertile soil and sun to shade. The tall, plume-like fronds are arrayed in vase-like whorls atop knobby vertical rhizomes. These rhizomes send out wire-like runners during the summer that form new plants several inches from the "parent."

Sensitive fern, *Onoclea sensibilis*, (zones 3-9) gets its name from its susceptibility to frost, not from a fragile constitution. Like lady fern, it will continue to produce lime green crosiers (fiddleheads) though the summer if moisture is available, and the coarse, 2 to 3-foot (1-metre) fronds have a texture and undulating quality that is ruggedly handsome. Sensitive fern will grow in shade, but it also thrives in moist to wet soils in full sun. In such situations, it grows so thickly that most weeds do not stand a chance. I am encouraging volunteers in a low, wet area unfit for lawn grass. Once a month, I snip back the competition with hedge shears to let the fern get a foothold; after two seasons, I have several patches 6 feet (2 meters) in circumference with others well on their way. Chunks of shallow rhizome can be easily transplanted in spring just as the first fronds appear.



Athyrium filix-femina, Commom lady fern

When I need a plant for dry, acidic soils of questionable fertility, I often turn to a fern that many would consider a thug. Hayscented fern, *Dennstaedtia punctilobula*, (zones 3-8) is a soft-textured, rapidly spreading species that grows from a rope-like, shallow rhizome. Individual fronds rise in series from the rhizomes as they creep, so a patch looks like an assembly of individuals rather than a series of clumps. I would not plant hayscented fern anywhere near my treasured rarities but, when I need to cover a piece of barren ground with little effort or expense, it never fails to please. Transplant sections of rhizome any time during the growing season and keep them well-watered until established. The plants reach heights of 14-18 inches (35-45 centimeters) in sun to shade and moist to rather dry soil. Hayscented fern is effective at smothering weeds and, once well-established, requires only an annual mowing in late autumn when the fronds turn from pale yellow to brown.

Though this is just a sampling of the well over 100 species of ferns native to North America, it gives a glimpse at diversity within this remarkable group of plants. Though they come with their own botanical terminology, ferns are still a small enough group to make field identification possible for the novice botanist once terms like pinnule, stipe and sori are mastered. Fortunately for those of us who garden in cold climates, many ferns are exceptionally winter hardy and thrive in the cool, damp conditions prevalent across much of Canada and the northern U.S. Whether in the field or in the garden, I hope you will give these incredible survivors a try.

William Cullina is the Executive Director of Coastal Maine Botanical Gardens–one of North America's newest and most exciting public gardens–in Boothbay, Maine. He is the author of six books, including *Native Ferns, Mosses and Grasses* (Houghton Mifflin, 2007).

Reprinted from the *Blazing Star*, a Newsletter of the North American Native Plant Society, Summer 2013, Vol 14, No 3.

Gap Dynamics in the Moist Forests of Eastern North America

By Paul E. Knoop, Jr.

There has been long and continuing debate about the effects of fire on the moist deciduous forests of eastern North America. Most research papers that I have read on this subject consider fire as a major factor in determining the structure and composition of the eastern forest community. Seldom in the research papers do the authors refer to the numerous other gap creating processes that contribute to the health and dynamics of the forests over long periods of time (400+ years). The following are examples of these "gap producers" and how they impact the forest over time:



Picture taken from www.nature.org.

- **Browsing/Grazing Animals -** Prior to European arrival elk, bison and deer roamed the eastern forests in sizable numbers. In Ohio, at the time of European settlement, bison numbers were estimated at three to four thousand animals. These ungulates impact the forest by grazing, browsing, wallowing and trampling vegetation (trees). As evidence of impact witness the devastated forests of Pennsylvania resulting from excess numbers of white-tailed deer.
- **Beavers -** Prior to and at the time of European settlement these rodents were abundant in all of eastern North America. It has been said that only humans excel the beaver in impact on the living landscape. These animals inhabited and dammed every creek, stream and river, flooding land and creating “beaver meadows”. The riparian/flood plain forest was heavily impacted by the behavior of these animals. Over the centuries forest communities evolved based on the action of beavers.
- **Insect Attack -** There is no need to elaborate on the impact that insects have on forest communities. As insect species and populations ebb and flow over the centuries, the makeup of forests is dramatically changed. The impact of these ubiquitous small creatures is so great that even forest succession can be affected.
- **Parasitic Fungi** - The living forest is a fungal garden consisting of both parasitic and saprophytic fungi. Trees are living organisms, and the parasitic fungi are able to invade the living tissue of trees, cutting off the supply of needed water and nutrients, and thereby killing the tree. These organisms impact trees in every type of forest community.

- **Live and Dead Tree Falls -** In any healthy forest, trees both living and dead, are falling on a regular basis. Large live trees often create a "domino effect" when they fall, leaving behind numerous large pits where the trees' roots are pulled from the ground. Over time and at a landscape scale, this process creates canopy gaps allowing sunlight to course in, giving sun-loving species forest habitat. Dead trees, standing or fallen, also create canopy gaps and are important in the ecology of the forest.
- **Wild grape** - Wild grapes occur in a variety of different species in all woodlands in the eastern United States. Foresters often advise land owners to eliminate wild grape from their woodlands because the climbing vines damage or kill trees. Grapevines climb by the aid of tendrils and often envelope and cover the leaves of young trees, killing them. Also, in a young woodland, the combined weight of these vines can often pull trees to the ground. The wild grape, being a native species, is a natural part of the eastern forest ecosystem, and their growth habits can be considered a disturbance factor; one that creates gaps in the forest canopy. This is especially true in young woodlands.
- **Wind Storms and Tornadoes** - As a disturbance factor these weather related events can often be catastrophic, affecting many hundreds or even thousands of acres of healthy forest. Large blowdowns completely change the character of the forest as pioneer species of both herbaceous and woody plants soon invade and recolonize the changed landscape. Decades will pass before a forest of different makeup returns.
- **Ice storms** - Ice storms are similar to wind storms and tornadoes as the forest is heavily impacted by tree fall and broken limbs. Ice-devastated areas can cover immense regions of the country resulting in loss of forest canopy and replacement by pioneer tree, shrub and herbaceous species. One recent ice storm in southern Ohio laid down several thousand acres of healthy forest. Ice storms rate high as a disturbance factor in eastern moist forests.
- **Natural Thinning** - This is another forest disturbance factor that occurs on a regular basis in all forests but primarily in those that have been completely lost by clear cutting or some other catastrophic event. These regrowth forests often have an excess number of stems (trees) either resprouting from cut stumps or germinating from seed. As these stems increase in size, competition comes into play, and the less vigorous trees lose the battle and die. This is a major controlling event in the evolution of forests everywhere.
- **Fire** - In the drier southern and western areas of our country, fire is a major disturbance factor in the forest. In these areas, numerous species of plants and animals depend on periodic fire to refresh the landscape, eliminate competition, and allow for reproduction. Here in the moist eastern forests, fire is not as important in the functioning of the woodland community. Fire does happen in these moist forests but at a much-reduced time frame; perhaps on the average of decades or centuries. There are fewer fire tolerant species in these moist forests, and when fire does happen, the structure of the forest is radically changed. As a disturbance factor, in moist eastern forests, naturally started fire doesn't seem to be as important as the sum of the preceding factors in the author's opinion.
- **Humans** - Humans are, of course, the ultimate disturbance factor in the eastern moist forest. The industrial clear-cut logging and/or development of immense areas of land is a major component in loss of natural habitat, and concurrent loss of species.

In conclusion, we recognize that specific forest communities are not forever. They are dynamic and ever changing based on a variety of disturbance factors as noted above. The combination of all these factors, over decades, centuries and millennia, assure a forest that is stable, healthy and genetically diverse.

Paul E. Knoop, Jr., is an environmental educator, natural areas consultant, and naturalist. He is a member of The Native Plant Society of Northeastern Ohio.

The Lazy Thrill of My Shade Garden

By Paul Sakren

For years, I have wanted to tell others about my shade garden in New Preston, Connecticut, which is planted with native perennials (and a few spectacular non-natives), including many spring ephemerals. For 20 years, this garden has taken care of itself, changing a little every year but always maintaining its character and balance with the least amount of work.

The backbone of my shade garden has become a mass of giant leopard's bane, *Doronicum pardalianches*, a non-native but one of my favourites. It glows with bunches of golden "daisies" three feet tall (one metre) for weeks on end and spreads by rhizomes at a quick but manageable rate. It is one of many groundcovers, including *Podophyllum peltatum*, the umbrellaleafed mayapple, the statuesque *Cimicifuga racemosea*, black cohosh, non-indigenous lungwort cultivars, *Pulmonaria* spp.; the pretty, blue-flowered, *Phlox divaricata*, wild sweet William, *Asarum canadense*, wild ginger, whose ant-pollinated burgundy flowers trail on the ground; *Trillium erectum*, known by many names including wake-robin and red or purple trillium; *Hydrophyllum virginianum*, the easy spreader, Virginia waterleaf, *Tiarella cordifolia*, foamflower, with flowers just as pretty as the name would imply, *Polemonium reptans*, abscess root—much more attractive than it sounds, and late-summer-flowering *Solidago flexicaulis*, zigzag goldenrod.

Planted within this tapestry of spreaders are small groups of lemonscented *Collinsonia Canadensis*, stoneroot, *Hydrastis Canadensis*, goldenseal of the deeply lobed leaves and solitary flower, *Sanguinaria Canadensis*, short-blooming but lovely bloodroot with its fantastic leaves, *Polygonatum canaliculatum*, giant Solomon's seal, *Caulophyllum thalictroides*, squaw root or blue cohosh, obviously used for women's health; *Mertensia virginica*, the hugely popular Virginia bluebells, *Dodecatheon meadia*, shooting star, a delightful pink spring bloomer, *Ageratina altissima*, the poisonous white snakeroot, *Aruncus dioicus*, frothy goatsbeard, and *Aralia racemosa*,



Trillium erectum, Virginia bluebells, mayapples and other glorious natives in Paul Sakren's shade garden

American spikenard. Ferns add a grace of their own to the garden including *Polystichum acrostichoides*, Christmas fern, which persists through the winter—only snow hides it from view, *Adiantum pedatum*, maidenhair fern of the feathery leaves, and royal fern, *Osmunda regalis*. A few small specimen trees add structure to the garden: the native burning bush, *Euonymus atropurpureus*, prickly ash, *Zanthoxylem americanum*, cramp bark or cranberry viburnum, *Viburnum trilobum*, and a Japanese maple, *Acer palmatum* which I couldn't resist.

A wonderful variety of volunteers spring up among these groundcovers: biennials and perennials, and even shrubs and trees. I do have to weed out or transplant some of them, such as wild cherry, *Prunus* spp.; ash, *Fraxinus* spp.; and the black walnuts, *Juglans nigra*, which the squirrels plant everywhere. *Phlox paniculata*, garden or perennial phlox; *Scutellaria ovata versicolor*, woodland skullcap; columbines, *Aquilegia* spp., much beloved of hummingbirds; *Echinacea purpurea*, purple coneflower; *Stylophorum diphyllum*, yellow-flowered celandine poppy; and *Thalictrum pubescens*, the aptly named tall meadow rue, need management once in a while.



Noteworthy points about this garden:

1. Most of these plants are growing under sugar maples, *Acer saccharum*, where it is considered difficult to grow things because of the dense summer shade and extensive spreading root system that tends to rob vital moisture and nutrients from the soil. But my plants seem comfortable with this arrangement, partly because so many of them are tough and resilient. No doubt it helps that I give them topdressings of a balanced organic fertilizer in spring and leave most of the leaf litter from the maples on them over winter. The mulch conserves moisture, stabilizes soil temperatures and protects them from our strong, cold north winds. I don't cut back any of the tops and dried stems until spring, which helps to keep the leaf litter from blowing away.
2. Few weeds invade this garden except at the margins where there is more light. I mainly have to weed out the plants themselves when they set seedlings or spread where I don't want them. But for the most part I let them spread into each other as long as they get along. This makes a wonderful woven tapestry punctuated with patches and clumps of an enormous variety throughout the season.
3. The mat of vigorous groundcover plants is so strong that it has managed to hold in check an invading army of *Aegopodium podagraria*, bishopsweed, which has weaseled its way in from the nearby roadside entirely covered by it.

Solomon's seal stands tall in the foreground near woodland skullcap while black cohosh, Virginia waterleaf, abscess root, wild ginger and others romp in the background.

4. I have a nine-month succession of blooming beauties, from the first, admittedly non-native *Adonis amurensis* in February to the last of the *Phlox paniculata* in early November.
5. I don't water except in summers of extreme drought. I have discovered that even marginal shady wetland plants like royal fern can survive and prosper from year to year on this site without supplemental watering if they have enough shade protecting them in summer.
6. Many of the plants in this shade garden have a history with me. I can remember when I first discovered local species of giant Solomon's seal, wild ginger and stoneroot growing by the roadside, or bloodroot and trillium growing by the brook where I grew up in the northwest hills of Connecticut. The celandine poppy was a gift from a former president of the Rock Garden Society. For me it has become a garden of history and old friends who perennially thank me for rescuing them and giving them a happy home. Some of the original stands are now gone from the roadsides, along with many wonderful denizens of hedgerows, thanks to the barbaric practices of town roadside maintenance crews.



A happy clump of bloodroots, *Sanguinaria Canadensis*

7. Although I have lost thousands of plants over 20 odd years (especially those that were planted in the sun and quickly became overrun by invasive weeds), this shady oasis has persisted in spite of everything—the droughts, the maples, the severest winters and hottest summers. No animals have eaten a leaf that I've noticed except for the voracious slug devils on the Solomon's seal and stoneroot. No pests have ravaged the garden except for the spider mites on the *Phlox paniculata* in extremely dry summers. No diseases have plagued my garden.

8. *Echinacea purpurea* persists longer at the edges of this shade garden—where it gets enough light, but not much sun—than it does in the open, where it gets strangled out by goldenrods, aggressive grasses and others. It also blooms much longer (although a bit paler in colour) in this situation. My observations of other gardens tell me *E. purpurea* is most successful on garden edges and in meadows where it has an even moisture regime (neither wet nor dry extremes). The slight shade on its roots at these edges provides the optimum conditions.

People talk about low maintenance. You can't get any lower than this. And it was not planned, it just happened, little by little. The work was done by the plants themselves, and they have spent their lives teaching me—whenever they can get me to pay attention. I thought I was pleasing myself by gathering together a wonderful assortment of species. But I was really pleasing them by allowing them to score a symphony that elaborates on its theme layer upon layer. It now pleases me in a way I could never have imagined. This is what I would call good garden design!

Paul Sakren became infatuated with the wild plants that grew in the gardens, meadows, wetland and woodlands of his parents' historic former tobacco farm in Northwest Connecticut when he was still a teenager. His landscape design business, Native Sun Natural Landscapes, focusses on the use of native plant species. With his wife, he designs, installs and maintains landscape gardens, and propagates an endless variety of plants, mostly native and medicinal species, to use in his design work and sell locally.

Reprinted from the *Blazing Star*, a Newsletter of the North American Native Plant Society, Spring 2013, Vol 14, No 2.

Folklore:

The Wild Columbine

By Gordon Mitchell

Did you know that many of our early spring wildflowers are actually buttercups? Several of those spring buttercups are also very attractive. However, some of them stand out more than others. One of the more attractive members of this group is the Wild Columbine, *Aquilegia canadensis* L.

The Wild Columbine is a member of the Buttercup or Crowfoot Family, *Ranunculaceae,* and of the *Helleboroideae* Subfamily. The generic name, *Aquilegia,* may have originated from the Latin word, *aquila,* which means "eagle". This is because the spurs on the petals, along with their curved tips, resemble the talons of an eagle. *Aquiliegia* may have also originated from the Latin words, *aqua,* which means "water", and *lego* or *legere,* which means '"to collect", or from *aquilegius,* which means '"water drawer". These words would refer to the nectar located within the petal spurs. The specific epithet, *canadensis,* was named for "Canada".

Various uses of the Wild Columbine



The Wild Columbine made a good ornamental garden plant. However, many people have tried transplanting the Wild Columbine from the woods to their gardens but discovered that they did not easily survive in their new environment. Most of the Columbines that are found in gardens are the European Columbine, *Aquilegia vulgaris* L. The 16th century English naturalist John Tradescant the Younger collected some of the Wild Columbines in Virginia and sent them to England's King Charles I. The King then planted his Wild Columbines in the Hampton Court Gardens.

There is some folklore behind the Wild Columbine but most of it involves the battle of the sexes, especially involving cuckoldry and unfaithful lovers. Giving this plant as a bouquet to a woman was a sign that her man was unfaithful to her. Therefore, this plant was considered to be an insult to women and to be bad luck to men.

The Native Americans used the crushed seeds as cologne, as an aphrodisiac, and as a love charm or a love potion. A man would rub his palms with the crushed seeds and then shake the hands of a woman that he desires. It was hoped that she would want him in return. It was also believed that rubbing the seeds on the palms allowed that person to be more persuasive at their tribal council meetings. The seed capsules were sometimes mixed with tobacco to improve the fragrance of the smoke.

The Native Americans and some early European settlers also used the Wild Columbine as an edible or as a medicinal plant. Different parts of the plant were used as an anodyne, an antiscorbutic, an antispasmodic, an astringent, a diaphoretic, a diuretic, an emmenagogue, a febrifuge, a laxative, a parasiticide, a resolvent, a salve, and a tonic.

A tea made from the leaves had some medicinal properties. It was used as a gargle for sore throats and for other mouth irritations. It was also consumed for treating stomach and intestinal ailments.

The Wild Columbine in poetry and literature

Some of America's famous writers and poets mentioned the Wild Columbine in their work. Poet Ralph Waldo Emerson mentioned the Wild Columbine in his 1847 poem *Musketaquid.* In this poem, he wrote:

A woodland walk,
A quest of river-grapes, a mocking thrush,
A wild rose, or rock-loving columbine,
Salve my worst wounds.

Poet Mary Frances Barber Butts wrote about the Wild Columbine in her poem, *A Little Lady.*

I met a little lady,
A stranger here, mayhap,
She wore a gown of green,
She wore a scarlet cap.
Graceful was her figure,
Her manners very fine;
A fairy airy creature,
Her name was Columbine.
The pasture was her parlor,
Very sweet the views;
The winds from every corner
Brought the latest news.



Insect enemies

There are a few insect species that will attack the Wild Columbine. The Columbine Borer has a larva that attacks the stem and travels down to the root system. Others are the two Columbine Leafminers, larva that tunnel under the leaf epidermis. Another is the Columbine Duskywing Skipper, which has a larva that chews through the leaves. Finally, there is the Columbine Aphid, which stunts the foliage. There are other insect species that will attack the Wild Columbine if their own host plant is not present.

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.

Photo taken from www.wikipedia.org and www.flickr.com.

Buzz Kill: Bumblebee Listed As Endangered For the First Time

By Doyle Rice

A bumblebee is now on the endangered species list for the first time, in a "race against extinction," the U.S. Fish and Wildlife Service announced in January 2017.

The agency placed the rusty patched bumblebee on the list because of a dramatic population decline over the past 20 years. Since the late 1990s, the population of the species has plummeted 87%.

Named because of the rust-colored marks on its back, the bee was once common and abundant across 28 states from Connecticut to South Dakota. Today, the bee is only found in small, scattered populations in 13 states.

"Our top priority is to act quickly to prevent extinction of the rusty patched bumblebee," wildlife service Midwest regional director Tom Melius said in a statement. "Listing the bee as endangered will help us mobilize partners and focus resources on finding ways right now to stop the decline."



Rusty patched bumblebee population has dropped by 87% since the late 1990's.

Bees are responsible for pollinating most of the plants that require insect pollination to produce fruits, seeds and nuts. Like other bees, rusty patched bumblebees pollinate important crops such as tomatoes, cranberries and peppers.

It's not just the rusty patched bumblebee that is struggling in the U.S. Other species have experienced dramatic declines in recent decades. The reduction is believed to be caused by a combination of habitat loss, disease, pesticide use, climate change and an extremely small population size.

The endangered designation is made by the U.S. Fish and Wildlife Service under the Endangered Species Act for species at risk of becoming extinct throughout all or a portion of their range.

Environmental groups praised the designation, including the group that originally petitioned for the listing in 2013, the Xerces Society for Invertebrate Conservation: "We are very pleased to see one of North America's most imperiled species receive the protection it needs," said Sarina Jepsen, director of endangered species for the group.

Environment America's Christy Leavitt said that "protecting the rusty patched bumblebee and all bees is essential for our ecosystem and our food supply. Like other bees, rusty patched bumblebees pollinate important crops such as tomatoes, cranberries and peppers."

"Today's Endangered Species listing is the best—and probably last—hope for the recovery of the rusty patched bumblebee," said Rebecca Riley, and attorney with the Natural Resources Defense Council. "Bumblebees are dying off, vanishing from our farms, gardens, and parks, where they were once found in great numbers."

People can help boost the rusty patched bumblebee population by growing a garden or adding a native flowering tree or shrub to yards and minimizing pesticide use, the U.S. Fish and Wildlife Service said. Leaving some areas of the yard unmowed in summer and unraked in fall can also help since bumblebees need a safe place to build their nests and overwinter. Additionally, try leaving some standing plant stems in gardens and flower beds in winter.

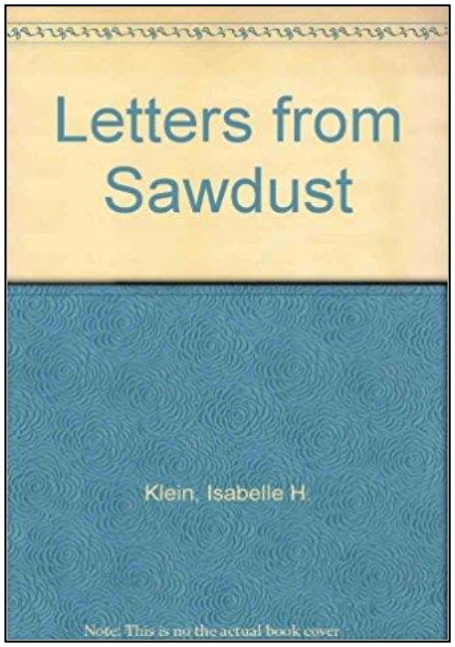
This is the first bee of any type in the continental U.S. to be placed on the list. In September, the Obama administration designated seven species of bees in Hawaii as endangered

This article appeared in the January 10, 2017 issue of the *USA Today*, newspaper.

Book Review:

Letters From Sawdust

By Isabelle H. Klein
Illustrations by William E. Scheele



Publisher: Cobham & Hatherton Press, 1988; Published for the Cleveland Museum of Natural History
Pages: 123 pages, 32 b&w illustrations
ISBN-10: 0944125042
ISBN-13: 978-0944125045
Hardback
Price: $14.99
Size: 8 x 5 x 0.3

Review by Jane McCullam

About 60 years ago, Isabelle Klein and her husband bought 500 acres in Ashtabula County, land that had been farmed to exhaustion and then heavily logged, leaving behind only nine enormous piles of sawdust. Today this is the Sawdust Tract Biological Survey Area and belongs to the Cleveland Museum of Natural History's Natural Areas division. The land has been allowed to recover on its own, with only a little help controlling invasive species.

These letters from Sawdust were originally published in the museum's magazine *The Explorer*. Twenty of them are gathered together here and illustrated by William Scheele, then the director of the Cleveland Museum of Natural History.

In them we get a close view of the progression of the seasons over five years, observed by a keen and knowledgeable naturalist, one who can patiently wait all night in the cold to observe one small spider. The book is made up of loving descriptions of hundreds of fascinating encounters Klein has had with all kinds of creatures and plants, from caddisfly larvae to kingfishers, chicory to wild dogs. Every season is full of life and interest.

Klein follows the path of the great mid-century natural history writers—Edwin Way Teale, Donald Culross Peattie, Henry Beston, Aldo Leopold—minutely observing not only the event at hand but the part that event plays in the greater scheme of life.

The book is sold by the Cleveland Museum of History and is available through Amazon.

The Native Plant Society had a field trip to the Sawdust Tract in April 2017.

Jane McCullam is co-editor for *On The Fringe* and is on the Board of the Native Plant Society of Northeastern Ohio.

Isabelle Henrietta Klein died Friday, March 25, 2011 at the age of 91. She was educated in Cleveland, receiving her B.S. from Flora Stone Mather, and her M.S. in Ornithology from Case Western Reserve University at the age of 21. She and her husband purchased parcels of land in Ashtabula County, OH, where they eventually moved. This beloved place, which they fondly called Sawdust Tract, was the focus of their many and varied studies of natural history. Isabelle researched and wrote about the flora and fauna of this Northeastern Ohio haven. Visit obits.cleveland.com/obituaries/cleveland/obituary to read about Iasabelle H. Klein life. ~ ***Editor's note***

Scioto River Flyway Corridor



The Appalachia Ohio Alliance purchased several parcels equaling approximately 140 acres from Howard and Mae Cossin as part of our Scioto River Flyway Corridor Initiative. The Cossin tract stretches along the Scioto River just south of the confluence with Scippo Creek, in Pickaway County. The high elevation on the eastern side of the property lies on the western edge of a large glacial moraine which slopes towards the Scioto River.

The property includes a mix of river and stream frontage, floodway, floodplain, wetland and adjacent terraces and upland areas that will help protect and conserve the riparian corridor and wetland areas along the Scioto River and Scippo Creek, a tributary of the Scioto. The site contains extensive riparian corridor including 5,100 linear feet of frontage on the east side of the Scioto River, 1,200 linear feet of frontage on each side of Scippo Creek (an OEPA designated Exceptional Warmwater Habitat) and 1,225 linear feet of frontage on an unnamed tributary of the Scioto.

Appalachia Ohio Alliance will undertake a variety of site restoration activities to re-establish native systems to the site. Approximately 55 acres of agricultural fields will be reforested and/or restored with native prairie grasses. Cut-over bottomland areas will be reforested through managed succession, which has already begun. Long-term, all riparian corridors and floodplain areas will be returned to native bottomland forest habitat to protect and improve water quality.

Conservation of the Cossin property will help to protect and buffer critically important habitat. The adjacent stretch of the Scioto River includes five fish and two mussel species considered rare, threatened or endangered by the State of Ohio. Fourteen additional mussel species of conservation concern are historically known from this reach, and 12 may be present or have the potential to be present with adequate protection and recovery of this stretch of river.

The Scioto River is an important migratory bird pathway in Ohio. Preserves such as the Cossin property provide valuable stopover habitats for migratory species as well as nesting and foraging habitat for many native birds and pollinators.

A flyway is a pathway used by migratory birds and insects. Birds tend to take predictable routes to get from the winter feeding grounds to the summer breeding grounds and back. Flyways usually occur along coastlines, major rivers and near mountains. Conservationists can help threatened bird and butterfly populations by protecting habitat along major migratory flyways.

The entry location for the Scioto River Flyway Corridor is 27689 River Drive Pickaway Township, Ohio.

Information for this article taken from www.appalachiaohioalliance.org/conservation/cossin-property.

Appalachia Ohio Alliance a non-profit regional land conservancy serving central and southeastern Ohio.

Invasive Plant:

Leafy Spurge, *Euphorbia esula* L.

COMMON NAMES: leafy spurge, wolf's milk

NATIVE ORIGIN
Caucasus region of western Asia; it is believed to have entered North America as a seed impurity in 1827.

DESCRIPTION
Leafy spurge is an erect, branching, perennial herb in the Spurge family, *Euphorbiaceae*, growing 2 to 3½ feet tall, with smooth stems and showy yellow flower bracts. Stems frequently occur in clusters from a vertical root that can extend many feet underground. Milky white, sticky sap seeps from plant when cut. The leaves are small, oval to lance-shaped, somewhat frosted and slightly wavy along the margin. The flowers are very small and are borne in greenish yellow structures surrounded by yellow bracts. Gray-brown oblong seeds are produced in three celled capsules. Leafy spurge reproduces readily by seeds that have a high germination rate and may remain viable in the soil for at least seven years, enhancing its chances of recovery over time. Seed capsules open explosively, dispersing seed up to 15 feet from the parent plant and may be carried further by water and wildlife. The complex root system forms tough woody networks can reach 15 or more feet into the ground, and may have numerous buds. Leafy spurge also spreads by seed and vegetatively at a rate of several feet per year.

HABITAT: Leafy spurge tolerates moist to dry soil conditions but is most aggressive under dry conditions where competition from native plants is reduced. It is capable of invading disturbed sites, including prairies, savannas, pastures, abandoned fields and roadside areas.

DISTRIBUTION: Leafy spurge occurs across much of the northern U.S., with the most extensive infestations reported for Montana, North Dakota, Nebraska, South Dakota, and Wyoming. It has been identified as a serious pest on a number of national parks and on preserves of The Nature Conservancy in eleven northern states.
This species is reported invasive in states CA, CO, CT, IA, ID, MI, MN, MT, NC, ND, NE, NJ, OH, OR, SD, UT, VA, WA, WI, and WY; taken from the states shaded on Plants Database map.

ECOLOGICAL IMPACTS: Leafy spurge displaces native vegetation in prairie habitats and fields through shading and by usurping available water and nutrients and through plant toxins that prevent the growth of other plants underneath it. Leafy spurge is an aggressive invader that can completely overtake large areas of open land.


Leafy Spurge Plants


Flowers


Fruit

Information for this article taken from the USDA Forest Service; www.na.fs.fed.us/fhp/invasive_plants/weeds/leafy-spurge.pdf**,** and plants.usda.gov.

Interesting Factoid:

How Sunflowers Follow the Sun's Path: A Circadian Clock Revealed

At dawn, whole fields of sunflowers stand at attention, all facing east, and begin their romance with the rising sun. As that special star appears to move across the sky, young flowers follow its light, looking up, then over and westward, catching one final glance as the sun disappears over the horizon.

However, the truly unique movement happens at night, as the flower and leaves return to facing eastward in anticipation of the rising sun. This behavior of the plants has been described as far back as 1898, but has never been associated with circadian rhythms before.

But just how sunflowers can do that has long been a mystery–until now. According to a new study published in the journal *Science*, the heliotropic sunflower uses both circadian rhythms and heliotropism (bending and turning toward the light) to enhance its performance in the natural world.

"Just like people, plants rely on the daily rhythms of day and night to function," Anne Sylvester, the director of the National Science Foundation's Plant Genome Research Program, which funded the study, said in a press release. "Sunflowers, like solar panel arrays, follow the sun from east to west. These researchers tap into information in the sunflower genome to understand how and why sunflowers track the sun."

Not all sunflowers continue to follow the sun, however. As sunflowers grow, their daily movement slows. When fully adult, all sunflowers face east: morning, noon, and night.



To get to the bottom of sunflowers' pursuit of the sun, Stacey Harmer and Hagop Atamian, plant biologists at the University of California, Davis, and their colleagues studied sunflowers in fields, pots and growth chambers. The following are the findings of their study:

- The fact that sunflowers switch directions at night to face east again, with no apparent cue, suggested an internal clock at work. The researchers put sunflower plants in a room with lights rigged to mimic the sun's path on different light and dark cycles. The plants behaved as expected on a 24-hour cycle. But during a 30-hour day, they were confused. And when plants that had learned a 24-hour cycle outdoors were placed under a fixed light indoors, they continued to bend from east to west for a few days, as if following the sun. This meant that a 24-hour circadian rhythm was guiding the sunflowers' movement. But without muscles, how did they move? The answer was in their stems. Like those of other plants, the stems of young sunflowers grow more at night—but only on their west side, which is what allows their heads to bend eastward. During the day, the stems' east side grows, and they bend west with the sun. Dr. Atamian collected samples of the opposite sides of stems from sunflowers periodically, and found that different genes, related to light detection and growth, appeared active on opposite sides of the stems.
- The reduction in visits from pollinators was also an important find. By studying the plants using infrared cameras, the researchers found the plants that started the day facing eastward would warm more quickly than those staked or moved to continue facing westward. The warmth attracted five times more insects responsible for pollinating the plants. When the plants that were forced to face westward were warmed with portable heaters, the number of pollinating insects increased to the same level found in the uninterrupted plants.

But many unknowns remain: For example, just how does the young sunflower weave together light signals, the circadian clock and growth rates to reorient its head every night? While the scientific inquiry continues, perhaps some space remains to imagine sunflowers and their romance with the sun.

Information for this article taken from*:* www.csmonitor.com› Science; www.nytimes.com*;* articles.mercola.com/sites/articles/archive/2016/08/20/sunflower. Picture taken from www.uswildflowers.com**.**

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