

On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

Ann Malmquist

Our founding president, Ann Ellen Kroening Malmquist, passed away August 16, 2015. She was 83.

Ann loved to garden and to show off her gardens. Later in life she embraced native and prairie gardening and enjoyed everything the great outdoors and nature had to offer.

Ann belonged to many organizations, and her ability to lead and get difficult tasks done was an asset. She led such organizations at the Friends of the Chagrin Falls Library and the Cleveland Museum of Natural History Women's Committee. She was of strong mind and opinion, and she was never at a loss for words on any subject.

In the 1980's Ann led the campaign to make the White Trillium the State of Ohio Wildflower and it was signed into law in 1986. She also was appointed by the Governor of Ohio to be a member of the Ohio Department of Natural Resources Council (ODNR).

Ann's greatest organizational achievement was the founding of the Ohio Native Plant Society. Her home chapter is the Native Plant Society of Northeastern Ohio. This organization combined her love of the natural environment and wildflowers. Other local Native Plant Societies were then started in other parts of Ohio.

Ann will be privately buried in a meadow setting surrounded by prairie wildflowers at the Foxfield Preserve, a natural preserve cemetery, in Wilmot OH. A celebration of life will be held at a later date.

Donations in Ann's memory can be made to the Cleveland Museum of Natural History Natural Areas Program Endowment Fund (<https://cmnh.org/join-support/donate>) or to the Native Plant Society of Northeastern Ohio (<http://www.nativeplantsocietyneo.org/>).

Ann lived and enjoyed life to the fullest, and was robbed of many things she loved doing in the past 15 years due to the Parkinson's Disease and corresponding dementia. She is now resting in a much better place.

To read the full article, please visit the NPSNEO facebook page.

Memories of Ann

I met Ann in 1996 through her interest in Beatrix Potter, but we found another bond in the Native Plant Society. She eventually persuaded me to become involved in *On The Fringe* and membership duties. We attended many field trips and programs, and I discovered a wealth of natural resources through her guidance.

She had a seemingly endless repertoire of fascinating accounts of her actions to preserve threatened natural areas, from driving along railroad tracks to catch well-drillers breaking environmental laws to long hours spent in Columbus at the Department of Natural Areas and Preserves promoting the protection of precious wildlife. She drove all over the state of Ohio gathering support for her dream of a network of groups who would be dedicated to preserving and protecting the native flora of the state. She made it her business to know everyone in Ohio working toward this end, and to recruit more advocates. She was knowledgeable and razor-smart, and her interests and influence enabled her to be very effective in getting things accomplished, from organizing regular Annual Dinners to moving legislation through the state government.

She has given the Native Plant Society a model to live up to in coming years.

~Jane McCullam

Program Schedule – Autumn 2015

Saturday, September 12, 10 am-Noon – Lake Erie Bluffs, Perry Twp. The 600-acre Lake Erie Bluffs is a nationally significant successful modern conservation project. It will permanently protect a significant amount of wetland, meadow and mostly undeveloped lakefront habitat used by rare and common plant and animal species. The property remains largely unspoiled by previous development. The mix of 40-foot-high beach bluffs and open sandy and cobble beach across 9,000 feet of shoreline are the site's dominant features. The beach area hosts trees,

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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.

shrubs, and small plants including the majority of the park's rare plants. Lake Metroparks Biologist John Pogacnik will lead us on a tour where we hope to see a number of rare and uncommon beach plants. We should also see some Fringed Gentian (the plant on our logo) in bloom. This walk is moderately difficult—walking on sand and uneven surfaces.

Directions: Take Rt. 2 east to where it ends and becomes Route 20. Follow Route 20 to Blackmore Rd. Turn left (north) and follow Blackmore Rd. until it ends. Turn right (east) onto Clark Rd. Entrance to the park will be on the left (north).

Saturday, October 10, 1 pm – Holden Arboretum Canopy Walk. See the new canopy walk and emergent tower that gives visitors a uniquely different perspective on trees, forests and birds. The 500 foot elevated walkway 65' above a tributary of Pierson Creek and includes four suspension bridges. Meet at the Corning Visitor Center. There is a \$7.00 per person fee payable at the visitor center. Call Judy to register at 440-564-9151 (H) or 440-409-1680 (C). **Limited to 15 persons.**

Sunday, October 25, 2 pm – Winter Wildflower Workshop. The West Woods Nature Center, Geauga Park District. After the colorful petals are gone, many of the summer wildflowers are still identifiable by their unusual seed pods. Learn how to tell many of these plants using a winter weed finder booklet, available at the gift shop before the program for \$5. An indoor session will be followed by an outdoor exploration in search of plants to identify. Registration required: call the Geauga Park District at 440-279-0880 or online registration available at geaugaparkdistrict.org.

Annual Meeting of the Native Plant Society of Northeastern Ohio

Saturday, November 14, 2015

5:30 pm to 8:30 pm

Annual Meeting of the Native Plant Society of Northeastern Ohio will be at the Pine Lake Trout Club 17021 Chillicothe Rd., Chagrin Falls, OH 44023. Our guest speaker this year will be Garrett Ormiston, the Stewardship Specialist in the Natural Areas Division at the Cleveland Museum of Natural History. He has worked at the Museum for twelve years. He is actively involved in the Museum's efforts to identify, purchase, and conserve rare plant habitats in Northeast Ohio and assists with grant-writing efforts to raise funds for local land acquisition projects for the Museum. He is also a native plant enthusiast and assists with the Museum's native plant education and outreach initiatives. He owns and operates a small landscaping company, Ormiston Landscaping, where he emphasizes the use of native plants in landscape installations.

The Potential Role of Epigenetics in the Origin of Regional Ecotypes

By Harold W. Gardner

For some time it has been known that seeds from various geographical areas show marked differences after growing into mature plants. For example, Little Bluestem, *Schizachyrium scoparium*, grass seeds, collected from Texas north to North Dakota, varied considerably when they grew together in one location (Cornelius 1947). Such differences in “ecotypes” referred to in this article might be more specifically defined as regional variants. Regional variations have compelled restoration organizations, such as the Illinois Nature Preserves Commission, to suggest seed collection in a 100- to 200-mile radius within the same Illinois Natural Division, particularly on an east-west orientation. I have observed striking differences in plantings of mainly Big Bluestem grass, *Andropogon gerardii*, mixed with less than 15% of Indian Grass, *Sorghastrum nutans*, when growing side by side. The illustrations (see below) show grass that grew in adjacent plots in Carlisle, Pennsylvania, from seed collected in central Illinois (Peoria area), compared with seed from Sherburne County, Minnesota (about 25 miles northwest of Minneapolis). What a surprising difference! The view of the non-flowering Illinois ecotype on the left is most definitely mainly *A. gerardii*, including less *S. nutans*, as confirmed by other knowledgeable persons. The regional variant from central Illinois flowers about two weeks later. In fact, tall-grass inflorescences from Minnesota can be seen in the far left background of that illustration. In addition, my Carlisle plantings of Wild Bergamot, *Monarda fistulosa*, flowered later if they grew from seed from central Illinois, *versus* northern Pennsylvania.



Central Illinois ecotype, July 10th

Southeastern Minnesota ecotype, July 10th

Interestingly, within about 300 years after Tall Goldenrod, *Solidago altissima*, and Giant Goldenrod, *Solidago gigantea*, were introduced into Europe, the plants transformed into regional ecotypes (Weber & Schmid 1993). That is, plants from the northern region flowered earlier and were smaller, compared with those from southern regions. Given the rate of spread of these two species of *Solidago*, the actual time would be certainly less than 300 years. It seems impossible for such specific genetic mutations to have occurred in such a short time, especially those specifically favorable to climatic conditions. Enter the new field of Epigenetics, whereby organisms adjust to new conditions in a relatively rapid fashion without altering the basic DNA sequence.

The first reports regarded human epigenetics, which found resistance from journal publishers (Cloud 2010). Now there is a plethora of reports and mini-review series in influential journals, *e.g.*, the *Journal of Biological Chemistry* (Gottesfeld 2011). Even bacteria possess epigenetic characteristics (Casadesus & Low 2013). Recently, reports of plant epigenetics have excited plant molecular biologists, not without resistance by some plant scientists (Pennisi 2013). Of course, one can argue the point of genetic variation within species, such as hair and eye color in humans, which is a legitimate concern. New scientific discoveries, like epigenetics, are not without detractors, such as Darwin's Theory of Evolution, and Watson and Crick's structure of DNA. Epigenetics effects its "magic" by methylating* or demethylating* specific cytosines* in DNA, causing changes in expression (Chen & Riggs 2011).

Additionally, chromatin histone proteins* are involved in changing DNA expression through biochemical modification, such as acetylation,* methylation,* phosphorylation,* or small peptide changes* (Zaidi *et al.* 2011; Wang & Patel 2011). Also implicated are small noncoding RNAs* (Zhang & Rossi 2011), as well as histone chaperones* (Winkler & Luger 2011). In the 2013 *Science (News)* article cited above, Pennisi reported results of research with the cultivated crucifer *Arabidopsis*, stating that "heritable changes in plant flowering time and other traits were the result of epigenetics alone, unaided by any (DNA) sequence changes." It is noted that plant flowering time is exactly the issue I have seen with tall-grass Big Bluestem and Indian Grass, as well as *Monarda fistulosa*. Others reported the same regional effect with *Solidago* species (Weber and Schmid 1993).

A good start has been made with *Arabidopsis* epigenetic research in explaining the origin of plant changes. If further research should conclusively demonstrate epigenetic control of regional variants, then collection of seeds from specific locales would become less important. Thus, some future seed from a misplaced plant may adapt to the new geographical conditions causing a stable epigenetic line. With one caveat, the use of local seed would be advantageous in obtaining relatively quick results from plants that already possess regional adaptation. In conclusion, plants may have far more "smarts," in a brainless epigenetic sense, than we give them credit for.

References Cited

- Casadesus, J., & Low, D. A. 2013. Programmed heterogeneity: Epigenetic mechanisms in bacteria. *J. Biol. Chem.* 288: 13929-13935.
- Chen, Z.-x., & A. D. Riggs. 2011. DNA methylation and demethylation in mammals. *J. Biol. Chem.* 286: 18347-18353.
- Cloud, J. 2010, Jan. 18. Why genes aren't destiny. *Time*: 48-53.
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- Gottesfeld, J. M. 2011. Introduction to the thematic mini-review series on epigenetics. *J. Biol. Chem.* 286: 18345-18346.
- Pennisi, E. 2013. Evolution heresy? Epigenetics underlies heritable plant traits. *Science (News)* 341: 1055.

***EDITOR'S NOTE:** Hal Gardner has provided a brief introduction to this interesting recent theme in genetics. Some readers may find unfamiliar terms (*among those identified above by the asterisks*). If so, please see "The Illustrated Guide to Epigenetics," by Joe Kloc, for further explanation: <http://www.motherjones.com/environment/2011/02/illustrated-guide-epigenetics>. Hal "would be pleased to answer any questions readers have about the topic." If readers have specific queries for him, please send them to the Editor.

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Wild Bergamot, *Monarda fistulosa*

Mosses: Under-appreciated and Under Threat

By Stephanie Stuber

"The last word in ignorance is the man who says of an animal or plant, 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering."

~ Aldo Leopold

Mosses are often overlooked and under-appreciated. As miniscule members of the plant kingdom they cannot compete for the same attention given to the larger, showy flowering plants. This disregard for mosses is reflected in our contemporary focus on the conservation of biodiversity; we seem concerned only with the charismatic mega-flora and fauna.



Atrichum Moss, *Atrichum crispum*

Mosses are as much at risk as any other plant for habitat loss and population depletion from increased urban expansion, environmental pollution, and over-harvesting. Mosses are very sensitive to the state of their immediate environment. They either lack or have a very thin waxy cuticle over their leaves. This poor barrier leaves them subject to toxic pollutants. Many mosses are also intolerant of extremely alkaline environments and heavy metals, such as you would find in urban areas. As the concrete jungles expand, moss diversity will retreat.

But why should we care about moss? What ecological services could such tiny plants possibly provide? Mosses play a vital role in nutrient and water cycling, animal life cycles and vegetative succession. Both vertebrates and invertebrates make use of all that a bed of moss can provide whether that is food, protection or other provisions.

Small mammals can depend on the temperature stability provided by a layer of moss for their overwintering periods. Their soft texture makes them ideal nesting material for wildlife. Many fly larvae rely on mosses to carry out their life cycles. Predatory animals are well aware that mosses conceal all kinds of good eats. It is common to find upturned chunks of moss; the aftermath of a hungry animal foraging for invertebrates. Believe it or not, some species are well known rock-builders. The formation of calcareous limestone is often facilitated by mosses. If it were not for them, you might not have the option to use travertine stone in your home.

Mosses are some of the first colonizers to a new area, and their establishment supports the subsequent succession of other plants. As with any indoor carpet, debris can easily get trapped inside moss. This is what makes them so fundamental in forest succession. Once mosses have established themselves they provide a warm, moist, suitable environment for the seeds of other pioneer species to germinate.

This intricate ecological dynamism is thrown off balance when a large moss-harvesting operation comes through. The mosses in the rainforests of the Pacific Northwest are regularly stripped from the trees, packaged and sold. When this happens, a large wound



Sphagnum, *Sphagnum capillifolium*



Drummond's plagiomnium moss, *Plagiomnium drummondii*

is inflicted on the landscape; it will be years, decades, or longer, before it can fully heal. Because mosses support the constituents of the base of the food chain, everything else that relies on them is adversely affected by their absence. It is common today to find dried mosses being used to decorate store windows and planting displays. They are often sold in craft stores and floral retailers, but unfortunately, in most cases, these mosses were unsustainably wild-harvested. Be aware of this when purchasing bryophytes, living or dead. Look

into the distributor's harvesting practices and judge their level of sustainability for yourself.

The notion that peat mosses, *Sphagnum* species, are a sustainable resource is simply preposterous. The accumulation of sphagnum and other dead plant matter in wetlands happens over countless centuries or millennia. Annually, millions of metric tons of carbon gasses (carbon dioxide and methane) are released from the decaying material when it is disturbed and removed, not even counting when it is being burned as fuel. It is thought that peat mosses hold about one third of the world's total carbon; we would do best to rely on alternative sources for fuel and our horticultural needs.

Mosses play a much larger role in the balance of our ecosystems than we generally give them credit for. This underestimation seems to justify their depletion to support industries like horticulture and crafting without a second thought to the long term effects. In reality their elimination does have a drastic effect on their environment. It is imperative that their part in conservation is recognized, for the sake of the environment as a whole. It is my hope that this information inspires you to advocate for these tiniest of plants, or at least encourages you take the time to stop and pet the mosses, and thank them for all that they do to keep our world in balance.

Stephanie Stuber is a Curatorial Fellow at the Arnold Arboretum of Harvard University and the author of *The Secret Lives of Mosses: A Comprehensive Guide for Gardens*.

Reprinted from *Marilandica*, a publication of the Maryland Native Plant Society, Fall–Winter 2012, Vol 3, No 3.

Spider Lily, A Late Summer Fascination

By Gene Bush

At the risk of getting up on my “natives soapbox” once too often, I find myself stepping up again for our own spider lily, *Hymenocallis occidentalis*. I see the tender foreign species in Dutch bulb catalogs, but never see our native listed. Here in the U.S. I have yet to see *H. occidentalis* listed in a wholesale catalog, and only rarely have I seen it listed in a garden catalog. I do not have a clue as to the why of it all. To the best of my knowledge, *occidentalis* is no more difficult to propagate and grow than the tender species.

In the wild, spider lily is usually found growing along creek and branch banks where it is flooded during the growing season, as well as in swampy bog and marsh areas. Usually they are in full sun. Native



Spider Lily, *Hymenocallis occidentalis*
Picture taken from www.munchkinnursery.com

The striking blooms of our native spider lily appear in late summer atop 30 inch stalks. According to Gene Bush, spider lily is no more difficult to grow than tender Dutch bulbs found in catalogs.

range is from Georgia, Alabama, on over and up to Indiana and Illinois. In spite of this range, hardiness is usually rated at USDA Zone 7 in literature. In my garden here in southern Indiana they have been through -30 degrees on one occasion and -20 on more than one occasion. They will also take some shade and do quite well, as mine do, where they receive only late afternoon sun. They also do not demand a pond or stream edge to do well. I dug in lots of peat and leaf mold, keeping my plants well mulched with chopped leaves, and they ride out our late summer droughts just fine.

This member of the amaryllis family has long strap-like leaves that form a fountain radiating up and then arching out and down. Individual leaves are about two and one-half inches wide by over two feet in length with a center rib forming a crease down the middle. Normally the foliage has mostly gone dormant by bloom time, but some years both foliage and blooms are present at the same time.

The ghostly blooms are at the top of a nude stalk that reaches thirty inches or more. Each bloom has its own display stand at the top of the stalk, and there will usually be five to six blooms per stalk. The common name of spider lily comes from how the blooms are constructed. Each bloom has six long, narrow, white petals widely spaced and in a shallow cup outline. At the center of the petals is a cup formed from “webbing” that goes from stamen to stamen.

There are six stamens about three inches long, and the web comes about two inches up each one, forming a rib for the web. The overall appearance is of a delicate white lace doily waving in the wind.

Blooms come on at a time when gardens could use a bit of color. In my garden spider lily begins blooming in mid-August and lasts well into September. Some native companion plants that bloom at the same period could be cardinal flower, *Lobelia Cardinalis*, the great blue lobelia, *L. siphilitica*, and turtle head in pink, *Chelone siphilitica*. You may also want to try some of the native asters.

Gene Bush is a nationally known garden writer and speaker who owns Munchkin Nursery and Gardens in southern Indiana. Contact Gene at munchkinnursery.com or join him on Facebook or Pinterest.

Reprinted from *INPAWS*, newsletter of the Indiana Native Plant and Wildflower Society, Fall 2012, Vol 19, No 3.

Invasive Plant

Crown Vetch, *Coronilla varia* L.

DESCRIPTION

Crown vetch is an herbaceous vine that usually forms sprawling mats or thickets up to three feet tall. The leaves are alternate and pinnately compound, with 15 to 25 pairs of leaflets. The pea-like flowers range in color from white to pink or purple, and bloom during the summer. It has a branched, fibrous root system.

HABITAT

Crown vetch prefers disturbed, open areas, especially with gravelly or sandy soils. This makes openings and disturbed areas such as fields, waste areas, roadsides and embankments perfect habitats for this species.

BACKGROUND

Crown vetch was introduced throughout North America in the 1950s for erosion control, particularly along roadways. It is still being sold and used in many states that have not officially declared it to be invasive.

RANGE

Crown vetch is native to Europe, Asia, and Africa.



Crown Vetch, *Coronilla varia* L.

Picture taken from www.extension.umass.edu

After its introduction to the U.S., it has spread throughout the country. It is currently reported as invasive in many states, especially through the center of the country and along the eastern seaboard.

BIOLOGY AND SPREAD

Crown vetch spreads through both seeds and rhizomes. The rhizomes can extend up to 10 feet, and an individual plant can cover 70 to 100 square feet within four years.

PROBLEM

Crown vetch becomes a problem when it invades natural areas, such as native grassland prairies and dunes, where it works to exclude native vegetation by fully covering and shading those native plants. It can climb over small trees and shrubs, and eventually form large monocultures. It seeds prolifically, but can also rapidly spread by rhizome growth. Due to its nitrogen fixing capabilities, it has the capacity to adversely affect the nitrogen cycle of the native communities that may depend on infertile soils. It can also alter available fuel loads in fire-adapted ecosystems, changing fire intensity.

HOW TO CONTROL THIS SPECIES

Crown vetch can be controlled with a variety of methods, although some may prove more successful than others.

On younger or smaller populations, manual control can be effective. This can include pulling entire plants (making sure to include as much of the rhizomatous roots as possible). Mowing is another potential method of controlling crown vetch. The mowing should occur in late spring and then multiple times through the growing season, for several consecutive years.

Prescribed burning can also be effective when conducted in late spring and for several consecutive years.

Few parasites or herbivores prefer crown vetch, although it is used in an agricultural setting for grazing or as a green manure. It is currently unlikely that any form of biocontrol will be introduced to combat this species, as it is used in many states agriculturally and as erosion control.

For areas where crown vetch has established large, dense populations, chemical controls can be used. Glyphosate, Triclopyr, and Metsulfuron were shown in experiments to be effective at treating crown vetch. Herbicides can also be used after removing the aerial portion of the plant by mechanical means, which may improve results.



American Vetch, *Vicia americana*

Picture taken from www.florelaurentienne.com

NATIVE ALTERNATIVES

The best way to avoid crown vetch infestations is to avoid planting it in the first place. Native warm season grasses, such as big bluestem, *Andropogon gerardii*, little bluestem, *Schizachyrium scoparium*, and Indian grass, *Sorghastrum nutans*, can be used to control erosion. If a legume is desired, use partridge pea, *Cassia fasciculata*, or roundheaded bushclover, *Lespedeza capitata*.

LOOK-A-LIKES

Many plants in the pea family, like the native American vetch, *Vicia americana*—shown above—can look similar to crown vetch, so be sure to positively identify this species prior to controlling it.

REFERENCES

Invasive Plant Atlas of the U.S.: <http://www.invasiveplantatlas.org>

USDA Forest Service Northeastern Area: <http://www.na.fs.fed.us>

Invasive Exotic Plant Tutorial for Natural Lands Managers: <http://www.dcnr.state.pa.us/forestry/invasivetutorial>

Virginia Department of Conservation and Recreation: http://www.dcr.virginia.gov/natural_heritage

Lady Bird Johnson Wildflower Center: <http://www.wildflower.org>

Weeds of the Northeast, 1997; R.H. Uva, J.C. Neal, and J.M. DiTomaso

Content for this article taken from http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_010284.pdf

Folklore

Common Ragweed, *Ambrosia artemisiifolia* L., and Giant Ragweed, *Ambrosia trifida* L.

By Gordon Mitchell



Common Ragweed,
Ambrosia artemisiifolia L.
Picture taken from
www.wisplants.uwsp.edu

Most hay fever sufferers dread summer. Pollen from various plants aggravates their allergies. Some of the worst pollen comes from the Ragweed, Genus *Ambrosia*. There are two species of Ragweed in this area: Common Ragweed, *Ambrosia artemisiifolia* L., and Giant Ragweed, *Ambrosia trifida* L. These two species can hybridize.

Ragweed is a member of the Order *Asterales*, the Family *Asteraceae* or *Compositae*, the Subfamily *Asteroideae*, and the Tribe *Heliantheae*. Ragweed was formerly in the Family *Ambrosiaceae*.

The generic name, *Ambrosia*, is Greek for “immortal” or “food of the gods.” It was believed that if mortals ate this food, they would become immortal. The specific epithet, *artemisiifolia*, is Latin for “with a leaf of the Wormwood,” which is Genus *Artemisia*, another plant species. The specific epithet, *trifida*, is Latin for “three-cleft” or “three-lobed,” which is from the three lobes of the leaves.

Previous scientific synonyms for Common Ragweed were *Ambrosia elatior* L., *A. glandulosa* Scheele, *A. maritima* L., *A. monophylla* (Walter) Rydberg, and *A. paniculata* Michaux. A previous scientific synonym for Giant Ragweed was *Ambrosia aptera* de Candolle.

The common name, Ragweed, is from its ragged leaf patterns. Other common names for the Common Ragweed are Annual Bur-sage, Annual Ragweed, Bastard Wormwood, Bitterweed, Blackweed, Carrot Weed, Conot Weed, Hayfever Weed, Hayweed, Hogweed, Low Ragweed, Oxtail, Roman Wormwood, Short Ragweed, Small Ragweed, Stammerwort, Stickweed, Tassel Weed, Wild Tansy, and Wild Wormwood. Other common names for the Giant Ragweed are Bitterweed, Blood Ragweed, Bloodweed, Buffalo Weed, Great Ragweed, Hayfever Weed, Horsecane, Horseweed, King Head, Palmate Ragweed, Richweed, Tall Ragweed, Texan Great Ragweed, and Wild Hemp. Some of these other common names fit both species.

DESCRIPTION

Annual

Height: Common Ragweed is about 1-6 feet tall. Giant Ragweed is about 2-18 feet tall.

Stem: Their stems are branching. The Common Ragweed stems are green to pink, slightly grooved, and hairy. The Giant Ragweed stems are stiff, rough, and hairy. These stems may exude a red sap.

Leaves: Common Ragweed leaves are alternate near the top and opposite near the bottom. They are bi- or tri-pinnately compound or are finely dissected into narrow segments that are irregularly lobed or toothed. They are about six inches long and about four inches wide.

Giant Ragweed leaves are opposite. They have stiff hairs, slightly toothed margins, and are deeply palmate with 3-5 pointed lobes. They may also be oval or rounded. They are about 6-12 inches long and about 6 inches wide.

Flowers: The flowers are small and are not showy. They only have disk flowers with no petals. Both sexes are in separate flower heads but are on the same plant.



Giant Ragweed, *Ambrosia trifida* L.
Picture taken from plants.usda.gov



Common Ragweed,
Ambrosia artemisiifolia L.

Picture taken from www.wildflower.org

The staminate (male) flowers are arranged in a long, slender, erect, and central interrupted racemous spike located at the top of the plant. Each flower is stalked, yellow-green, and is arranged upside down. These spikes are about 1-6 inches long in Common Ragweeds and are about 1-10 inches long in Giant Ragweeds.

The pistillate (female) flowers are located in leaf axils. They are sessile, green, and are either solitary or are in small clusters. There are fewer female flowers than male flowers. These flowers mature before the male flowers to insure pollination.

These flowers are wind-pollinated. However, Honeybees may gather some of the pollen. Flowering season is July to November.

Fruit: Their fruit is a hard, bur-like, 2-seeded achene. It is top-shaped and is tipped with a stout projection that is encircled by 4-10 short points.

Seeds: Depending upon the size of the plant, Common Ragweed plants may produce about 3,000-50,000 seeds. Giant Ragweed plants only produce up to 300 seeds.

These seeds can stay viable for over five years and can germinate upon disturbed or nutrient-poor soils. These seeds are eaten by birds and by small mammals. The Giant Ragweed seeds may be too large and too tough for some of the smaller birds.

Roots: Their root system is fibrous. Their taproot is shallow.

Habitat: Their habitats consist of abandoned fields, cultivated fields, roadsides, railroads, ditches, and disturbed areas. They are found in open, exposed areas. They may be found in alluvial soils. Common Ragweed prefers dry, low acidic sites, and Giant Ragweed prefers moist sites.

Ragweed may be allelopathic to neighboring plants. It may grow tall the first year but the poison in the decomposing plant may stunt its growth the second year.

Range: The ranges of both species cover most of North America, except northern Canada. Their range expanded after the arrival of the European settlers.

USES:

Ragweed has some medicinal uses. Both the Native Americans and the early European settlers used this plant. Ragweed was used as an antiseptic, an astringent, an emetic, an emollient, and a febrifuge. The leaves were used as a poultice for insect bites, blood poisoning, poison ivy, minor skin eruptions, infected toes, and hives. A tea was made for treating fevers, nausea, intestinal disturbances, nosebleeds, pneumonia, and mucous discharge. The tea was also used as a gargle for mouth sores. The roots were chewed at night to ward off fears.

The pollen of both species was collected as a pharmaceutical for treating ragweed allergies. It is used in modern medicine for allergen immunotherapy.

Ragweed is often consumed by White-tailed Deer or by livestock but may not be a preferred food. This plant has a bitter taste. Dairy cows that eat this plant may produce bitter milk.

Native Americans cultivated the Giant Ragweed seeds as food. These cultivated seeds were lighter in color and were about 4-5 times larger than the wild seeds. They contained about 47% crude proteins, about 38% crude fats, and about 20% edible semi-drying oils. Remains of these seeds have been uncovered at some archaeological sites.

Seeds of both species can sometimes get mixed in with harvested grains. Ragweed seeds will give bread a bitter taste.



Giant Ragweed, *Ambrosia trifida* L.
Picture taken from www.wildflower.org

Ragweed is good as a soil preserver. If an area is disturbed by fire, flood, or any man-made activity, Ragweed is a pioneer species and is often the first plant to colonize the area and prevent soil erosion. Newly-exposed soil may have about 100,000 dormant seeds per square meter.

Ragweed is also a good soil conditioner for the farmers. It contains nitrogen and other nutrients. Before they flower, farmers may cut or plow this plant under and use it as a “green manure”.

Ragweed is useful in phytoremediation. It is useful in removing heavy metals, such as lead, from the soil.

POLLEN GRAINS:

Ragweed pollen, an allergen, is the main culprit of the hay fever story. It is most active during August and September. Over 90% of allergies people suffer are from Ragweed pollen.

The pollen grains are yellow, tiny, rugged, spiny, and numerous. One hundred grains, laid side-to-side, may cross the head of a pin. A single plant may produce up to one billion pollen grains.

These grains are windborne. They can remain airborne for several days and can travel great distances and heights. They have been found 400 miles out at sea and at heights of two miles. However, their highest concentration is within a hundred yards of the plant.

FUTURE OF RAGWEED:

Global warming is presently contributing to hay fever. As the amount of carbon dioxide increases in our atmosphere, Ragweed plants become larger and produce more pollen and seeds. Future generations may suffer more than our present generations.

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

Book Review:

Wild Urban Plants of the Northeast A Field Guide

By Peter Del Tredici

Forward by Steward T. A. Pickett

Publisher: Cornell University Press, 2010.

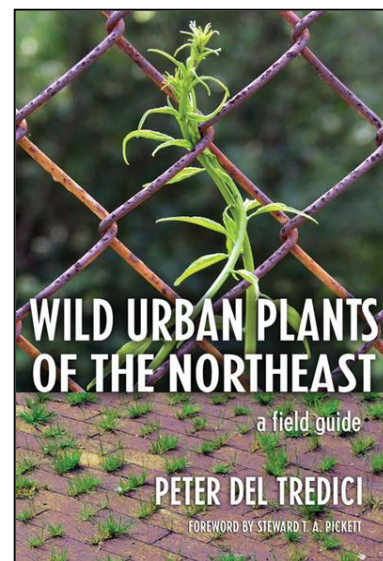
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Review by Christa Partain

Even for a self-described plant geek like me, some plants tend to go unnoticed. Like the places in which they are found, these plants are forgotten, even ignored. Road verges, vacant lots, and abandoned industrial sites are not botanically attractive, and the plants in those sites reflect a degraded environment. As a group, these plants are usually not particularly ornamental, and many are not native. What they have in common is that they are opportunistic, and they are survivors. In the plant ecologist's parlance, they are ruderal species, meaning that they grow in waste places. Most plant enthusiasts and urban dwellers dismiss them as members of two detested categories: invasives and weeds.

In his book, *Wild Urban Plants of the Northeast: A Field Guide*, Peter Del Tredici asks us to re-evaluate our assumptions about these “spontaneous urban plants.” He argues that they have value. Like other plants, they provide “ecosystem services,” which include temperature reduction, food and habitat for wildlife, erosion control on slopes and disturbed ground, stream and river bank stabilization, nutrient absorption in wetlands, soil building in degraded land,

and tolerance of pollution and contaminated soil.

Because the urban environment is continually disturbed, this plant community of opportunists, pioneers, or invasives—whatever label you want to use—will inevitably persist. As Del Tredici says, “In an urban context, the concept of restoration is really just gardening dressed up to look like ecology.” Indeed, in our highly homogenized landscape, what’s the harm of allowing Tree of Heaven to provide shade in the inner city or for Common Reed to soak up excess nutrients in superfund sites? We are not living in reality if we expect to restore fragments within urban landscapes to some period 1000, 500, or even 200 years ago.

Del Tredici does not argue for giving up on preserving wilderness areas or rare habitats; he simply points out that reviling non-natives does not work in the urban context. “Ecological functionality should be

recognized as being of equal value to ecological form.”

For the past six months, I have been working to identify wild urban plants alongside artist Lynn Cazabon, who has dedicated herself to photographically documenting wild plants within Baltimore’s urban landscape. Her project called *Uncultivated* (see uncultivated.info), seeks to draw attention to the tiny pockets of wildness within the urban environment in order to break down hierarchies that privilege certain aspects of nature over others. Like Del Tredici, Cazabon’s project does not value native plants over non-native, but instead simply presents the plants in these spaces. In fact, these sites are surprisingly diverse and contain more native plants than I had assumed.

Like many other field guides, the author organizes the plants by taxonomic group. Within each entry, Del Tredici discusses a given plant’s name(s), nativity, morphological characteristics,

habitat preferences, cultural significance, and, interestingly, its ecological functions. Closely related species are sometimes included. The author also includes five to six color photos with each entry, including close-ups of the flower and leaves, its overall habit and a shot of the plant in a typical setting. The intriguing appendix places some of these plants in a historical context, lists urban horticultural uses (such as “cosmopolitan urban meadows”), and provides key characteristics of twelve common plant families. Del Tredici also includes a comprehensive glossary, but it is not illustrated as many other field guides are.

This book will confront native plant enthusiasts with a paradigm shift in the way they view the landscape around them. Whether you find this provocative book heretical or refreshing, you are sure to come back to it, both figuratively and literally, especially if you frequent urban areas.

Christa Partain is President of the Baltimore Chapter of the Maryland Native Plant Society.

Reprinted from *Marilandica*, a publication of the Maryland Native Plant Society, Fall 2011, Vol 2, No 2.

The Case of the Uncommon Common Milkweed

By Patricia Happel Cornwell

It was a cold, sunny day in late October. We had had a couple of good frosts, and it was time. I put on my old coat and the leather gloves with the hole in the tip of one forefinger and went looking for my shovel. Finally I was going to do one of those things I’m always “going to” do. I was going to sow a patch of milkweed from seeds harvested at my parents’ farm.

My husband and I live in southern Harrison County, Indiana, surrounded by cow pastures and rolling fields of corn and soybeans. Because we mow our property only once in spring and once in autumn, scores of wildflower species take refuge here, among them the lovely orange butterfly weed, *Asclepias tuberosa*. However, in 14 years not one common milkweed, *Asclepias syriaca*, has germinated on our 19 acres. Why?

The farmers around here are big on herbicides, pesticides—you name a “-cide,” they’ll use it. Consequently, there isn’t a single specimen of common milkweed in our part of the county.

On that bright fall day, I set out to remedy this sin of omission. The most time-consuming part was separating the



Common Milkweed, *Asclepias syriaca* L.



Photo from
www.facultystaff.richmond.edu

milkweed seeds from their silky “kite tails.” I chose a slope at the edge of our woods, next to a heap of limestone boulders on which years of rain have revealed in bas relief a collection of antediluvian fossils. I turned the soil in a patch about four feet in diameter and scattered the flat, papery brown seeds on the open ground. For insurance against deer and mower traffic, I put a white wire flowerbed border around them and strewed a few leaves over them to camouflage them from the ever-hungry wild turkeys.

Common milkweed is a perennial that favors roadsides and old fields like ours. Its single downy stem can grow to six feet, bearing three-to-four-inch drooping umbels of dusty lavender-pink blooms June through August. Its leaves are opposite, entire, and oblong. Like most of its sister species (but unlike butterfly weed), if cut or bruised, it exudes milky white latex sap.

There are about 250 genera and 2,000 species of Asclepiads, most of them tropical and subtropical. Various field guides list altogether 14 species

of milkweed found in Indiana. The Genus was named for Asclepios, the Greek god of medicine, because native populations, including Native Americans and later European settlers, used parts of milkweed plants for everything from asthma, contraception, and pneumonia, to ringworm, warts, and wounds. Butterfly weed’s old-fashioned name is pleurisy root.

The repertoire of milkweed doesn’t stop there. Its young shoots have been eaten in salads and cooked like asparagus; the silky tufts that give wing to its seeds once filled life preservers, pillows, and mattresses; and its latex sap was used as both chewing gum and a substitute for rubber. Goldfinches plunder silk from milkweed pods to line their nests.

Milkweed’s best-known customer, however, is not *Homo sapiens* or *Carduelis tristis*, but *Danaus plexippus*—the monarch butterfly. The foliage is the sole food of monarch larvae, and the nectar on the flowers is the sole food of the adults. The cardiac glycosides in milkweed make monarch larvae and adults toxic to birds and other predators. The plants provide a nursery for the young, nourishment for larvae and adults alike, and protection from their natural enemies. No milkweed, no monarchs.

Even if farmers weren’t out to kill every plant they didn’t plant, it’s a wonder milkweed species survive at all. Their oddly constructed flowers may be their own worst enemy. Each flower, one-quarter to one-half inch long, has five down-curved petals around an elevated crown; each umbel of tiny flowers measures two to four inches

across. Sacs of pollen snag on insects’ legs and are pulled from the stamens, but they must then be inserted just so into slits behind the crown. If the insect gets it “wrong” and the pollen sacs go in backwards, those grains will not germinate. Some botanists conjecture that this is why most milkweeds produce many flowers but few seed pods.

A milkweed seed pod is like a sow’s ear that contains a silk purse. When ripe, its rough spindle-shaped exterior splits down one side, exposing a snugly packed bed of white silk attached to scores of tiny brown, paper-like seeds. The wind teases out the fluff and sends the seeds sailing. The white tufts bring the term “angel hair” to mind, but they are a thousand times finer and lighter than the stuff people put on Christmas trees. These fibers spread out like a bridal train behind the seed and respond to the slightest whim of the wind.

After sowing my handful of milkweed seeds in the soil bed I had dug, I took out another pod and threw a handful of winged seeds into the air. I laughed out loud as they lingered momentarily around my head, then took flight. “Good luck!” I said.

Soon it will snow and tuck my milkweed seeds in till spring. Nothing to do now but wait.



Photo from www.bamlog.com

Seeds of *Asclepias syriaca* take to the wind. Common milkweed has become uncommon where pesticides are heavily used.

The Great Pretender

While writing this article, I was unable to identify a milkweed species that has eluded me for years. Everything about the plants is milkweed-like: long ovate entire leaves, umbels of tiny, greenish recurved flowers, fluff-filled pods, even milky sap. They look a lot like green milkweed, but the seed pods are very slender and the stems are red. So I emailed IDNR's Mike Homoya and Kay Yatskievych of Missouri Botanical Gardens.

They arrived at the same conclusion: It's not another milkweed species but hemp dogbane, *Apocynum cannabinum*, a.k.a. Indian hemp. Field guides make no mention of the distinctive red stem exhibited by the specimens in my field, and for good reason: not all hemp dogbane plants have red stems. The slender pods are a more reliable clue than stem color. The dogbane family, *Apocynaceae*, is, at least, related to milkweed, *Asclepiaceae*, and includes such disparate kin as periwinkle, *Vinca minor*, *Amsonia*, and oleander.



Patricia Happel Cornwell is a Master Naturalist.

Reprinted from *INPAWS*, the Journal of the Indiana Native Plant and Wildflower Society, Winter 2011-12, Vol 18, No 4.

Swine Creek Reservation Geauga Park District

Swine Creek Reservation is a 412-acre park located in the southeast corner of Middlefield Township. Situated in the countryside amidst Amish farms, its cultural and natural setting makes it a very popular park. It is Geauga Park District's intent to protect this natural area in perpetuity.

HISTORY

Swine Creek Reservation was once part of a 1,200-acre hunting preserve belonging to Windsor Ford of Mesopotamia. The property had been a popular site for traditional fox hunting.

In 1977, he sold Geauga Park District 268 acres that contained a sugarbush, a pond and a lodge. Additional acreage was added along Swine Creek and the former Baltimore & Ohio (B&O) Railroad Corridor.

NATURAL HABITATS

Forests cover much of the park with many kinds of trees. Small streams divide the woods into upland and lowland, where a rich variety of wild plants and animals can be enjoyed year-round.

Along Swine Creek, walnut, sycamore and cottonwood trees shade lush growths of wildflowers. Teeming with aquatic life, the creek invites streamside exploration. Great blue herons and kingfishers are often seen, and songbirds of many kinds migrate through or nest in this valley.

Meadows are also full of life. Abundant summer wildflowers such as asters and goldenrods attract butterflies and other insect life. Low, dense plant growth provides cover for a variety of small mammals and nesting birds such as meadowlarks and bobolinks.

FACILITIES

Swine Creek Reservation has three picnic areas and a lodge that are available and may be reserved. The Lodge has indoor and outdoor fireplaces, picnic tables and a nearby restroom.

Woods Edge, located near the Sugarhouse, provides picnic tables, electricity and a nearby playground and restroom.

Lake Side Shelter is situated near a pond and playground, and has provisions for horse-and-buggy parking. Valley Shelter, in the southern part of the park on Swine Creek Road, also has buggy parking and nearby restrooms.

TRAILS

Nearly six miles of hiking trails traverse Swine Creek Reservation. Varying in length, they offer several options for long hikes or short strolls.

Providing access to the sugarbush, numerous sap gathering trails crisscross the Gray Fox Trail. Meadowlark, Siltstone, and Sugarbush trails keep to fairly level terrain, while the Valley and Glen trails take on steeper topography with descents into rock-strewn ravines.

Swine Creek Valley, the lower section of the park, can be toured from end to end, high and low, on the Razorback Trail, while the Walnut Trail provides a shorter alternative.

Horseback riding is permitted on the Wagon Trail, Gray Fox and Meadowlark Trails. Trails appropriate for cross-country skiing are marked.

FISHING

Bass and bluegill fishing is available at Killdeer and Lodge ponds. Fish may be taken only with rod and reel or cane pole; a current Ohio fishing license is required in accordance with state regulations. Boating and wading are not permitted, nor is collecting live bait within the park.



SPECIAL FEATURES

During the month of March, the sugarbush in Swine Creek Reservation is in active operation. The Sap's-A-Risin'! Celebration, held on selected Sundays in March, features the history of maple sugaring through displays and demonstrations. Visitors may observe the maple syrup-making process in the Sugarhouse and even taste a sample. Maple sugaring programs for groups of all ages are held on weekdays throughout March.

In the Lodge, Sap's-A-Risin'! Celebration visitors can also enjoy music and maple treats by the fire. Other programs are scheduled here at various times throughout the year including family and children's nature explorations, wagon rides, bird walks, stargazing and monarch butterfly tagging.

With its outdoor fireplace, the Lodge's patio serves as a picnic shelter for hikers, cross-country skiers and those using the nearby skating pond. Conditions of the skating pond are weather dependent.

Swine Creek Reservation is located at 16004 Hayes Road in Middlefield Township.

Content for this article taken from the website of www.geaugaparkdistrict.org/documents/swinecreek.pdf.

Native vs. Non-Native Phragmites

Although phragmites is best known as a wetland invader, not all phragmites are bad. Two subspecies; *Phragmites australis* subsp. *australis*, sometimes known as haplotype M, was introduced to the east coast by the early 1800s and has been gradually expanding its range westward. It forms dense monocultures and is capable of dominating wetlands within a few years.

The native subspecies, *Phragmites australis* subsp. *americanus*, in contrast, occurs as scattered plants within broader plant communities. It is a component of several wetland communities including Great Lakes marsh, coastal fen, and sedge meadows, and is often found along the shores of rivers and lakes.

The links below provide good information on distinguishing between native and non-native Phragmites. The charts compare the differences between them so you can readily identify our native species from the invasive.

Characteristic	Native	Invasive
Stem color	 Stem nodes are shiny and reddish-purple	 Stem nodes are tan-green, dull and rigid
Leaf color	 Lighter, yellow-green	 Dark blue-green
Rhizome	Yellow	White to light yellow
Growth habit	Co-occurs with other plants	Tend towards mature, dense, monotypic stands
Other	Leaf sheaths fall off during the winter, leaving bare stems standing in the spring	Leaf sheaths do not fall off, litter from the previous year has remnant leaves.

Non-native



Native



Non-native



Native



Information taken from www.greatlakesphragmites.net/basics/native-vs-invasive, www.invasiveplants.net/diagnostic/diagnostic.asp and www.mnfi.anr.msu.edu/phragmites/native-or-not.cfm.

Interesting Factoid:**Gentians**

Gentians are known to people from North America and Europe as pretty, deep-blue flowers that are found in the Alps and Rocky Mountains. However, gentians occur on all continents except the Antarctic and grow in a wide variety of habitats, from deserts, savannas, prairies, rainforests, and temperate forests to the tundra. They can be shrubs, lianas, even large rainforest trees, or small herbs that die off after only one season.

The gentian family contains 87 genera and over 1600 species in the newest classification. It is closely related to other plant families that include coffee, periwinkle, milkweed, madder, and dogbane. Hummingbirds, moths, bees, butterflies, bats, and flies are some of the pollinators of gentian flowers, which show a broad morphological diversity in their adaptations to different pollinators. Most gentians have dry fruits and seeds that spread by wind, but a few have berries that are dispersed by birds and mammals.

Research on the evolution of gentians (phylogeny) has shown that gentians evolved in the tropics in Africa-South America, and later spread to the north temperate region. The oldest gentians are found in tropical Latin America, but the majority of all species are now found in the temperate regions of North America, Europe, and Asia.

Interesting Factoids:

- Ann Malmquist, Founder of The Native Plant Society of Northeastern Ohio, chose a fringed gentian, *Gentianopsis crinite*, for the logo because she thought it represented the ultimate native plant. The fringed gentian is rare; and it was her favorite flower. Besides, she thought it was very pretty!
- The smallest gentian can barely be found; it is called *Comastoma tenella*. It grows in the Arctic, where the summers are really short, and it lives only one year. The largest gentian is the rainforest tree in the *Fagraea* group, *Fagraea* Thunb. It grows in Southeast Asia and can grow to 100 feet tall.
- Gentian flowers can be any color of the rainbow, and white, brown, and black. Many people think that gentians are mostly blue, but that is only the common color in the *Gentiana* group from the Alps and Himalayas.
- King Gentius is best known as the last monarch of the Kingdom of Illyria on the Adriatic Coast (modern day Albania and Montenegro) before it was conquered by the Romans in 165 BC. In his ancient encyclopedia, *Natural History*, Pliny the Elder gave Gentius credit for discovering that the root of the yellow gentian, *Gentiana lutea*, could cure malaria. Linnaeus later immortalized Gentius by naming the genus *Gentiana* (and ultimately the gentian family, Gentianaceae) in his honor.
- Without this tall yellow flower that grows wild in French alpine meadows, any number of classic cocktails would not exist. The Manhattan, the Negroni, and the Old-Fashioned, all rely on the bitterness of gentian. Angostura bitters, a staple ingredient found in even the most poorly stocked bars, contains gentian and even broadcasts that fact on the label. Many of the most famous European *amars* and liqueurs set aside their secrecy and plainly claim gentian as a key ingredient. Campari, Aperol, Suze, Amaro Averria, and the aptly named Gentiane are just a few of the hundreds of spirits that depend on this plant for bitterness.
- Gentian was also a key ingredient in Moxie, a soda that was once more popular than Coca-Cola. Essayist and *Charlotte's Web* author E.B. White once wrote in a letter, "I can still buy Moxie in a tiny supermarket six miles away. Moxie contains gentian root, which is the path to a good life. This was known in the second century before Christ, and is a boon to me today."
- The gentian species, *Macroparpaea apparata*, is named after how it was discovered. Jason Grant and Lena Struwe were doing field work in southern Ecuador in 2001 in Parque Nacional Podocarpus, one of the largest National Parks in the Andes. They were traveling along a road in the rain forest when they suddenly found a very strange looking plant without flowers. Since the plant had no flowers or fruits, they could not be sure it was a gentian, and if it was, it was a unique-looking one. They continued on the road, and about the time they were ready to give up due to rain and impending darkness, a flowering tree of this plant suddenly appeared, or "apparated." From this event, the species got the name "*apparata*." "Apparating" is used in the Harry Potter books by J. K. Rowling for the sudden appearance and transfer of a person or object from one place to another.



Many gentians are endangered in many countries. Some species are only rare in certain parts of their distribution area, whereas others only occur in a very small geographic area that is under a distinct threat and therefore are rare. Habitat loss is the major threat to gentians. For example, grazed meadows disappear in northern Europe, rainforests are cut down in the tropics, and native habitats are destroyed when cities and suburbs spread. Some gentians are also becoming rare because of over-collecting in the wild.

One of the reasons wild gentian requires protection is that the root is used in liqueurs and medicine; there is no way to harvest it without digging up the entire plant. The bitter compounds include gentiopicroside and amarogentin, which modern researchers have investigated for their ability to promote salivation and the production of digestive juices. No wonder it is an ingredient in so many aperitifs. Gentian even has benefits for people undergoing cancer treatments who have difficulty tasting or swallowing food, and it is under investigation as an antimalarial and antifungal drug.

Gentians are usually not close to extinction because they are picked by people, but because they no longer have the right place to live. But do not dig up gentians or try to transplant them into your garden. Many gentians only live for a year or two, and most have connections to the fungi in the soil (mycorrhizae) that they need to survive.

This article is based on material taken from www.gentian.rutgers.edu, USDA forest service, www.fs.fed.us, www.prairiemoon, and *The Drunken Botanist: The Plants That Create the World's Great Drinks* by Amy Stewart. Photo in this article were added by OTF editors and taken from kentuckynativeplantandwildlife.com.

Top Ten Native Hummingbird Plants

Operation RubyThroat is an international project studying the behavior and distribution of the ruby-throated hummingbird, *Archilochus colubris*—the most widely distributed hummingbird in the world. It's run by the Hilton Pond Center for Piedmont Natural History in York, South Carolina (803-684-5852). For full details, visit the project's website at www.rubythroat.org.

Although there is a wide range of plants that gardeners can use to attract hummingbirds, the following plants were judged by Operation RubyThroat to be the “top ten” on the basis that they occur naturally within the breeding range of the ruby-throated hummingbird.

1. *Campsis radicans*, Trumpet creeper
2. *Monarda didyma*, Bee balm
3. *Lonicera sempervirens*, Trumpet honeysuckle
4. *Lobelia cardinalis*, Cardinal flower
5. *Impatiens capensis*, Spotted jewelweed

6. *Aquilegia Canadensis*, Red columbine
7. *Lilium canadense*, Canada lily
8. *Spigelia marilandica*, Indian pink
9. *Aesculus pavia*, Red buckeye
10. *Rhododendron catawbiense*, Rosebay rhododendron



Trumpet Creeper, *Campsis radicans*
www.gardeningknowhow.com



Canada Lily, *Lilium canadense*
www.ct-botanical-society.org



Indian Pink, *Spigelia marilandica*
www.barnbones.smugmug.com

Reprinted from *Plants & Gardens News*, Spring 2002, Brooklyn Botanic Garden.



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