



On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

MARK YOUR CALENDARS!

Annual Meeting of the Native Plant Society of Northeastern Ohio at the Cleveland Museum of Natural History

September 16, 2011 - 5:30 pm

The Explorer Series Presentation will immediately follow.

Explorer Series Presentation will host David Karowe, Professor of Biological Sciences at Western Michigan University in Kalamazoo, Michigan. He is an expert on climate change and has been conducting research for over 15 years on the effects of rising atmospheric carbon dioxide on plants and higher levels in the food chain. He has published numerous articles and presented many talks on climate change. Dr. Karowe is currently writing a book on climate change and its ecological consequences.

Program Schedule – Fall 2011

Saturday, September 24, 2:30 pm Gentian walk – Aurora Sanctuary, Pioneer trail. See fall blooming fringed and bottle gentians with Tracey Knierim. Other fall blooming native plants will be turtlehead, button bush, and ladies' tresses orchids. These flowers bloom in the open fields, so dress for the weather. Sunscreen and insect repellent are strongly recommended. Directions: Aurora Sanctuary, Pioneer trail is just east of Page road in Aurora. Parking is on the south side of the road. We will walk into the sanctuary and back to the lake area. The terrain is uneven and moderately hilly. Expect to be out around 2+ hours. Call Tracey @ 330-388-9279 for questions and reservations. If it is raining, the trip may be postponed.

Sunday, September 25, 2:00 – 4:00 pm – Tree ID Workshop – Metzenbaum Park, Geauga County. Opposite or alternate, simple or compound, learn these and other leaf clues for identifying trees by leaf using the Master Tree Finder booklet. Booklet available for \$4, borrow one for the class, or bring your own. Co-sponsored with Geauga Park District. Directions: From Rt. 90, take Rt. 306 south to Chesterland. Continue 1 mile south of Rt 322 to Cedar Rd. Turn right and proceed 1 mile to 7940 Cedar Rd. on right. Call Judy to register at 440-564-9151 (H) or 440-279-0890 (W)

Saturday, October 1, 10:00 am – Noon – Invasive Species at University Farm – Cuyahoga County. Visit Case Western Reserve University Farm to learn about invasive species research with Jean Burns, Assistant Professor at CWRU. Walk the farm, identify common invasive species, including learning to identify common invaders such as the bush honeysuckles, *Lonicera maackii* and *L. morrowii*. Discuss methods of prediction and prevention of biological invasions, including the use of population modeling tools to predict the future population growth of introduced species. Squire Valleeview and Valley Ridge Farms, 37125 Fairmount Blvd, Hunting Valley, OH 44040, between Rt. 91 and Rt. 174 (Chagrin River Road). Call Judy to register at 440-564-9151 (H) or 440-279-0890 (W)

Saturday, October 22, 10:00 am – Noon – Forest Hill Park – Cuyahoga County. Wendy Weirich, Cleveland Metroparks Naturalist, leads trip to this 235-acre oasis in East Cleveland and Cleveland Heights. Fall color, chestnut oaks, Moses Cleveland trees, and remnants of the Rockefeller Estate highlight the trip. Meet at the north end of the parking lot at the Cleveland Heights Community Center, located at 1 Monticello Boulevard at Mayfield Road, Cleveland Heights. Call Diane to register at 440-666-4870.

Board

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The Journal of the Native Plant Society of Northeastern Ohio is published 4 times a year at Novelty, Ohio. ISSN 8756-6087. Questions or comments are welcome and may be addressed to Diane B. Christensen, 8400 Top Rail Lane, Novelty, OH 44072; 440-666-4870, dbpolice@roadrunner.com; or Bill Oberdick, 2459 Charney Rd., University Hts., Ohio 44118, 216-371-3345, boberdick1905@att.net

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.

Call for Articles

We invite articles of general botanical interest or about particular native or invasive plants to be published in *On The Fringe*, the quarterly Journal of The Native Plant Society of Northeastern Ohio. Please send your articles to co-editor Diane B. Christensen, 8400 Top Rail Lane, Novelty, Ohio 44072 or at dbpolice@roadrunner.com.

In an effort to preserve the high standards of our Journal, articles submissions will be accepted for reprinting if they are accurate and well-written and if we think they would be of interest to our audience.

Volunteers and Suggestions Needed

As the new Public Relations Chair on the Society's board, I am in quest of ideas and volunteers to help promote our Society. My objective is to introduce it to as many audiences as possible, to find those who would be interested, but are unaware of our Society. Since the Public Relations Chair has only recently been created, I have a blank slate on which to work. I am very interested in hearing from you and listening to your ideas on how best to promote our Society. In particular, I am looking for:

1. Ideas on how to inform as many as possible about our Society and its mission.
2. Information about nature or botanical events where we can man an information booth, ideally but not necessarily at no charge.
3. Volunteers to help man a booth at these events. You do not need to be a native plant expert. If you are interested or know of anyone who would be interested in volunteering, even for a couple of hours, please let me know.

I would really like to hear from you, so please contact me at tjncrew@aol.com or on my home phone (440-543-6399).

Tracey Knierim
Public Relations Chair

VICTORY!

-----From the Buckeye Forest Council-----

We SAVED the Division of Natural Areas and Preserves (DNAP)!!

BFC led the charge along with former DNAP Chiefs Guy Denny and Dick Mosley. A big THANK YOU to all who testified or called, emailed, or wrote your legislators and/or ODNR Director Mustine! Thank you, as well, to Jack Shaner of the Ohio Environmental Council for his help in this fight.

The Ohio General Assembly amended the budget bill to include all the DNAP protections we asked for:

- ☐ Keep DNAP as its own stand-alone division;
- ☐ Keep the state income tax check-off as a funding source *exclusively* for DNAP;
- ☐ Re-establish the Natural Areas Council as it was originally created.

The General Assembly is voting today to approve the budget bill, which includes these protections. In addition, the Kasich Administration has agreed to not veto the DNAP provisions from the final bill.

The safeguarding of DNAP and its funding sources is crucial for the management and purchase of Ohio's nature preserves. However, the Division's funding was eliminated in the previous budget and the DNAP tax check-off fund was "raided" to pay non-DNAP expenses. Today's vote will put an end to this sorry state of affairs.

DNAP will now be "resurrected," and our state nature preserve system will have the protections it deserves.

Again, many thanks to all who contributed to this important victory!



FOUND: Four Rare Plants and a Rare Plant Community

Four additional State Threatened plants have been found within Geneva Swamp in Ashtabula County. Bushy aster (*Symphyotrichum dumosum*), hobblebush (*Viburnum lantanoides*), southern hairy panic-grass (*Panicum meridionale*) and shining sedge (*Carex albolutescens*) were discovered this year [2010].



© James H. Miller
Bushy Aster
Symphyotrichum dumosum

Bushy aster and southern hairy panic grass are confined to a rare natural community known as the Sedge-Spikerush-Rush Palustrine Sand Plain Community. In Ohio, this rare community is best represented within the Oak Openings Region west of Toledo. The hobblebush population represents the first occurrence of hobblebush on the Lake Erie Plain in the state.

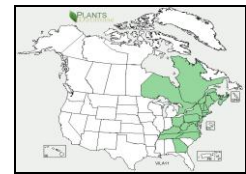


© William S. Justice
Hobblebush
Viburnum lantanoides

The discovery of bushy aster is the first record for Ashtabula County. There are historic records for Lake and Cuyahoga counties (the plant has not been reported in Lake County since 1888). In addition to Oak Openings in Ohio, bushy aster has been found on Presque Isle peninsula and in Butler County, Pennsylvania. The plant has white and purple color forms, and both are present at Geneva Swamp. Previously, this had only been the case at Oak Openings.



Bushy Aster
Symphyotrichum dumosum



Hobblebush
Viburnum lantanoides

Reprinted from the Natural Areas publication of the Cleveland Museum of Natural History, October 2010
Photos in this article were added by *OFT* editors.

Common Arrowhead

By Gordon Mitchell

When observing fauna in the wetlands, it can also be rewarding to observe some of the flora as well. One floral species that is common in our wetlands is the Common Arrowhead (*Sagittaria latifolia* Willdenow). This is the most common of all Arrowhead species.

Common Arrowhead is a member of the Arrowhead or the Water-plantain Family (*Alismataceae*). The generic name, *Sagittaria*, is Latin for “arrow-like” or “of an arrow”. *Sagitta* is “arrow”. The specific epithet, *latifolia*, is Latin for “broad- or wide-leaved”. *Lati* is “broad or wide” and *folia* are “leaves”.

A few other previous scientific synonyms for this species have been *Sagittaria esculenta* Howell, *S. longirostra* (Micheli) J. G. Smith, *S. obtusa* Muhlenberg ex Willdenow non Thunberg, *S. ornithorhyncha* Small, *S. planipes* Fernald, *S. pubescens* Muhlenberg, and *S. viscosa* C. Mohr. At different times and places, other common names for this plant have been Arrowhead, Arrowleaf, Arrowroot, Broadleaf Arrowhead, Broad-leaved Arrowhead, Bull

Tongue, Chinese Onion, Duck Potato, Dutch Potato, Indian Onion, Indian Potato, Katniss, Muskrat Potato, Swamp Potato, Swan Potato, Swanroot, Tule, Tule Potato, Tule Root, Wapato, Wappata, Wappatoo, Water Archer, Water Nut, Waxflower, and White Bull Tongue.

Description of the Common Arrowhead

Perennial

Height: Its total height is 6-48 inches.

Leaves: Its leaves are simple and are arranged in basal rosettes. The leaves have entire margins and are prominently veined. The veins are vertically parallel and meet in the middle and at the ends. The leaves exude a bitter, milky sap.

The petioles are long and stout. They are both wider and sheath-like near the base.

These leaves are arrowhead shaped and have 2-16 inch long leaf blades. The blades are as wide as 10 inches and are arrow-shaped, or are as narrow as a half inch and are linear. Some leaves only have broad leafless petioles (phyllodes).

The leaves above the water are wider than the leaves below the water. These narrow, submerged leaves can more easily tolerate the water's currents.

The leaf blades may be lobed or unlobed. If lobed, they have 2 long, sharp, backward projecting lobes at their base.



Sagittaria latifolia
Common Arrowhead

Flowers: Its flowers are arranged in loose, racemous clusters upon tall, erect, simple or branched, leafless scapes. These scapes also exude a bitter, milky sap. The flowers are also arranged in 2-15 whorls of 3. At the base of each whorl are 3 thin, papery bracts. These

bracts are elliptic or lanceolate, are less than ½ inch long, and have blunt tips.



Sagittaria latifolia
Common Arrowhead

Each flower is radially symmetrical and is about ½-1½ inch wide. It has 3 white, broad, rounded, delicate petals; 3 short, blunt, curved, persistent, dark green sepals; 6-50 yellow stamens with smooth filaments; and a pistil with numerous 1-celled, green carpels crowded into a dense rounded head. The upper flowers are usually male (staminate) and have longer pedicels. The lower flowers are usually female (pistillate) and have shorter pedicels.

These flowers are insect-pollinated. Some of the pollinating insects are Bees (Superfamily Apoidea), Flies (Order Diptera), Beetles (Order Coleoptera), and Damselflies and Dragonflies (Order Odonata).

These flowers may stay in bloom for only 1 day.

Flowering season is usually July to October.

Fruits: Its fruits are aggregated into ½-1½ inch wide, spherical clusters. Each single fruit is a flat, dry, hard, 2-winged, 1-seeded achene.

Seeds: Each seed is about 1/8 inch in diameter. Its styled beak projects at right horizontal angles from the tip of the seed. Ducks (Family Anatidae), Herons (Family Ardeidae), and Rails (Family Rallidae) eat these seeds.

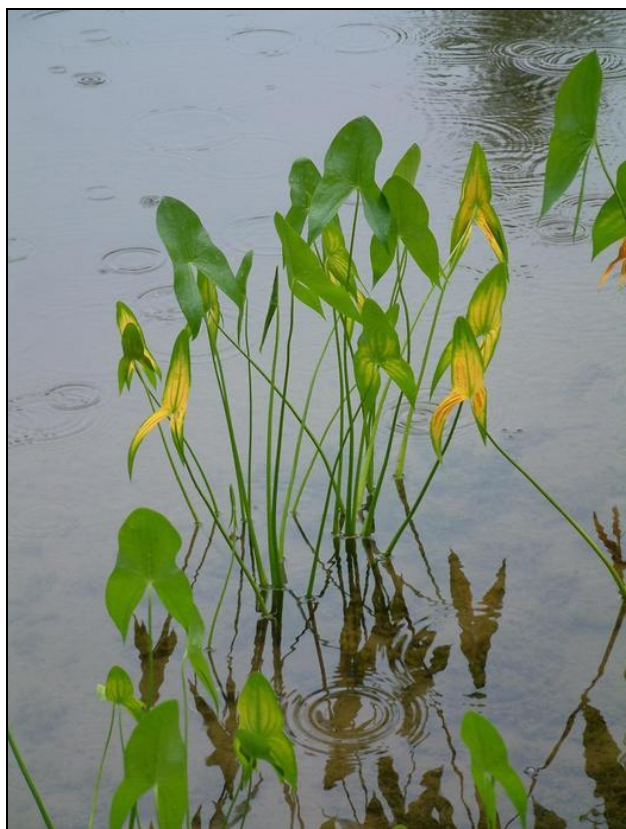
Roots: Its root system is short and fibrous, and consists of long rhizomes that end in thick, starchy corms or tubers. The tubers are about ¼-2 inches thick, about 2 times longer, and have pointed tips, and milky sap.

aquatic animals, such as Ducks, Geese (Tribe *Anserini*), Swans (*Cygnus* sp.), Muskrats (*Ondatra zibethicus* L.), and North American Beavers (*Castor canadensis* Kuhl), eat these tubers.

Habitat: The habitat of this emergent plant consists of wet sites or the shallow waters of lakes, ponds, streams, swamps, marshes, ditches, and muddy shores. This plant grows in large colonies.

This species can tolerate strong currents and waves. It can also survive fluctuating water levels, hard water, and high levels of phosphorus.

Range: Its native range covers most of the eastern U.S. as far west as the Great Plains, western Canada, central California, Hawaii, and the Caribbean. It was introduced into Europe and Australia, where it is an invasive species.



Sagittaria latifolia
Common Arrowhead

Edibility

The Common Arrowhead has edible uses. The tubers, the fruits, and the seeds are all edible. Both the Native Americans and the European settlers consumed them. The tubers are edible and taste like Potatoes (*Solanum tuberosum* L.). If eaten raw, they have an unpleasant,

acrid taste. If eaten cooked, they have a pleasant, sweet taste.

The tubers are first washed and are then cooked by frying, by boiling for 15 minutes in salt water, or by roasting for 30 minutes at 350 degrees. After cooking, they may be peeled. If not consumed, they may be dried, sliced, or mashed, and stored for the winter.

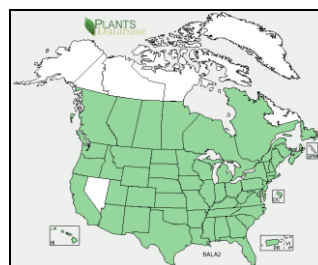
These tubers are gathered from the late fall until the early spring. They are best gathered by removing them from the floor of the wetlands with hoes, rakes, or bare feet. The released tubers float to the surface. Pulling upon the plants will likely cause them to break at their roots.

Some Native Americans raided Muskrat or Beaver dens for their cached tubers. However, they often replaced the tubers taken from their dens with other foods to appease the Great Spirit.

Lewis and Clark's Corps of Discovery observed and subsisted upon this plant along the Columbia River during their long expedition to the Pacific Coast. During the late 19th Century, Chinese immigrants in San Francisco cultivated this plant for subsistence.

Medicinal Uses

This plant also has some medicinal uses. The tubers were made into a decoction for treating indigestion, rheumatism or as a diuretic for urinary and kidney ailments. The tubers were also used as a poultice for treating wounds and sores. The leaves were made into a decoction for treating rheumatism or were used as a wash for treating fevers in small children. However, handling this plant may cause contact dermatitis in some people



Sagittaria latifolia
Common Arrowhead

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

Photos in this article were added by OFT editors.

Invasive Plant:**Japanese Chaff Flower
*Achyranthes japonica*****By Chris Evans**

A new exotic species has been found in southern Illinois. Japanese chaff flower, *Achyranthes japonica* (Amaranthaceae), is a perennial herbaceous plant that is native to Eastern Asia. It was first found in the United States in eastern Kentucky in the early 1980s and has quickly spread along the Ohio River and tributaries. It is currently found in seven states- Alabama, Illinois, Indiana, Kentucky, Ohio, and Tennessee.

**Flower**

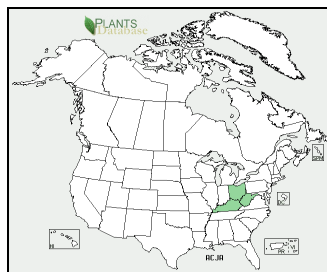
Chris Evans, River to River CWMA, Bugwood.org

Japanese chaff flower is easy to identify. Plants can be up to 2 meters tall, especially in sunny areas. The leaves are opposite, simple, and entire along the margins. The flowers occur on erect spikes at the end of the stems and upper branches. Flowers are small, lack petals, and occur in a tight cluster at the end of the spike. The flowers diverge at

**Fruit**

Chris Evans, River to River CWMA, Bugwood.org

nearly a right angle from the spike, giving the flowers a somewhat bottle-brush look. When the fruits are formed, the spikes elongate greatly and the fruits lie flat against the spike. Each fruit has a pair of stiff bracts that aid the fruit in attaching to clothes or fur.

**Japanese chaff flower
*Achyranthes japonica***

Japanese chaff flower seems to grow best in areas with partial sun and moist soils, but it can also grow in heavily shaded and drier environments. Dense infestations have been found in bottomland

forests, riverbanks, field edges, and ditches. This plant can produce an abundance of seed that is easily transported by sticking to shoes, clothing, or animal fur via the stiff, recurved bracts. If you plan on hiking in areas where this plant is present, please be sure to thoroughly clean all seeds off of your clothing and pet's hair.

**Foliage**

Chris Evans, River to River CWMA, Bugwood.org

**Foliage**

Chris Evans, River to River CWMA, Bugwood.org

Reprinted from the *Inpaws Journal* Indiana Native Plant and Wildflower Society. Spring 2011

Photos in this article were added by *OFT* editors.

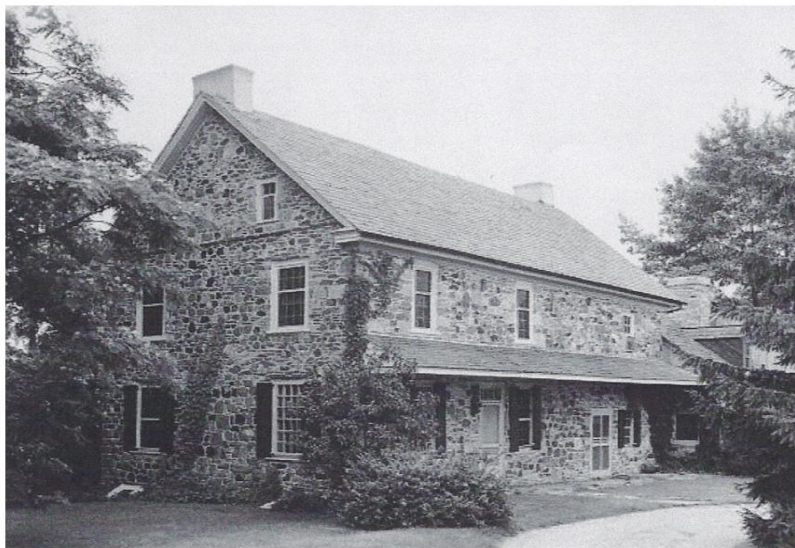
An 18th Century American Botanist Part II The Life of Henry Marshall

By Beverly Stamp

Humphry Marshall was born in West Bradford, Pennsylvania, in 1722, the eighth child of Abraham and Mary Hunt Marshall. His parents, Quaker immigrants from Derbyshire, England, provided him with only a rudimentary English education, which ceased altogether at age 12 when he was apprenticed to a stone mason. However, from very early in life, Marshall was drawn to the study of natural history and continued his education on his own, reading as widely as possible given the scarcity of books in Chester County at that time. With the encouragement of his cousin, the botanist John Bartram, Marshall developed considerable “practical” skill in botany and natural history by his mid-teens, and began to cultivate friendships among other scientists both in America and abroad. Eventually, his correspondents came to include the British botanists John Fothergill, Peter Collinson, and Sir Joseph Banks; the American scientists Thomas Parke and Benjamin Franklin; and many French scientists and plant collectors, as well as a number of German, Dutch, Swedish and Irish plant collectors and scientists.

In 1748, Marshall married Sarah Pennock (ca.1720-1766) and took up the management of his father’s farm near the west branch of the Brandywine River. During the next few years, his time was largely consumed by farming; however, he continued to use free moments to pursue his botanical research. By the late 1750s, he began to exchange locally collected specimens with natural historians in other parts of the country and Great Britain, receiving scientific equipment, books, exotic specimens, money, or marketable goods such as linen in recompense. His work had advanced to a stage that when he began a major enlargement of his father’s farmhouse in 1764, he added a conservatory for the culture of rare plants, probably the first such structure in Chester County.

Upon the death of his father in 1767, Marshall was left a substantial inheritance, enabling him to concentrate more time and resources in his botanical work. By this time his correspondence with the British botanist John Fothergill encouraged Marshall to collect plants beyond the confines of Chester County. Fothergill also paid well for Marshall’s efforts. Equally important, Fothergill helped introduce Marshall to other botanists and plant collectors with the resources to pay for American plants. Within a few years, Marshall found that he could depend almost entirely on horticulture and plant collecting for his income. His business expanded rapidly by means of a network of relationships established through family members, fellow Quakers, and fellow scientists.



Humphry Marshall Estate
North and East Sides



Humphry Marshall Estate
West Side

In 1772, Marshall established a botanical garden on his estate, stocking it with herbaceous and arboreal representatives of the local flora and as many exotic plants as he could obtain from other parts of the nation and Europe. The following year he began the construction of a new house adjacent to the garden, handling all phases of the construction by himself. Also, in that year, he was selected as a trustee of the General Loan Office. Despite pro-Independence sentiments, Marshall was in a precarious position as a pacifist and Quaker during the early days of the Revolution. In 1777, the Trustees of the Loan Office, including Marshall, resigned as a body rather than follow the new British importation laws.

Marshall's publishing career includes contributions on the natural history of tortoises, on sunspots, and agriculture; however he is most remembered for *Abrustum Americanum: The American Grove, or, an Alphabetical Catalogue of Forest Trees and Shrubs, Natives of the American United States* (1785), the first botanical treatise written by a native American on American plants, produced in America. Despite very slow sales in the United States, its use of Linnaean taxonomic nomenclature (though the plants are arranged alphabetically in the text) considerably enhanced Marshall's reputation among his European clientele. His

scientific work and service to the scientific community earned Marshall honorary memberships in the Philadelphia Society for Promoting Agriculture and the American Philosophical Society.

Following the death of his first wife, Marshall married Margaret Minshall (1744-1823) in 1788. There were no children by either marriage. In the last two years of his life, his vision was greatly impaired by cataracts, for which he underwent an apparently unsuccessful surgery. He died in 1801 and was buried at Bradford Meeting House.

Moses Marshall, a nephew of Humphry Marshall, worked with him in his botanical endeavors. He was born in West Bradford, Pennsylvania on November 30, 1758 to Humphry's younger brother James and Sarah Marshall. Moses received an English and classical education, and from 1776 to 1779 he studied medicine in Wilmington, Delaware. He used his surgical skills during the Revolution, particularly at the nearby Battle of the Brandywine (1777). After the Revolution, Moses abandoned his medical practice in favor of assisting his uncle in his expanding botanical and horticultural enterprises.

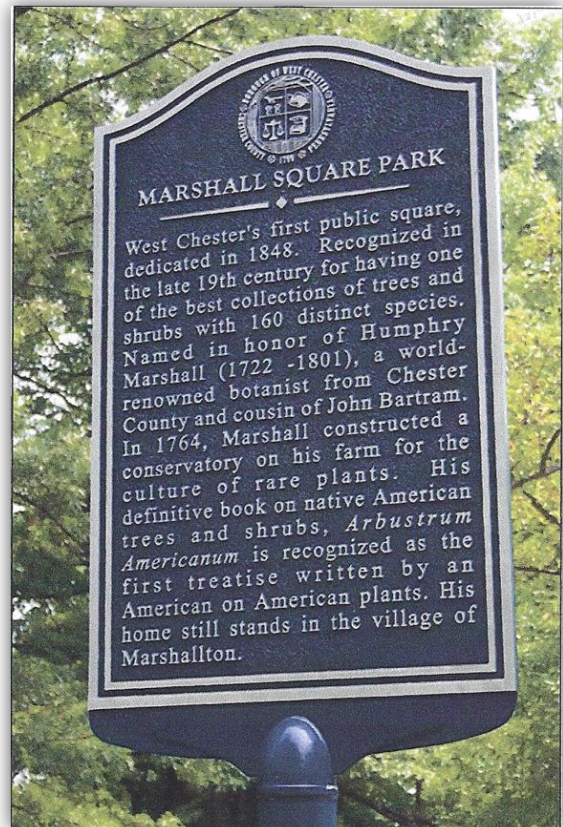
By late 1778, he was participating fully in his uncle's operations, assisting in locating, identifying, propagating, and shipping plant specimens, and he became quite a skilled "practical" botanist in his own right. His most significant contributions were in the preparation of *Arbustrum Americanum*, and the role he played on numerous exploring expeditions undertaken for the benefit of his uncle and their patrons.

Moses' interest in botany appears to have waned by the mid-1790's. In 1796, Governor Mifflin appointed him Justice of the Peace in Chester County, and his duties in this capacity occupied a great deal of his time.

By the time of his uncle's death in 1801, Moses no longer had any time to fill orders for patrons and believed that his uncle's notes probably held little information of value to other botanists. As a result of Moses' indifference, Marshall's garden subsequently fell into almost total neglect. Moses Marshall died in Philadelphia on October 13, 1813.

Beverly Stamp is a member of The Native Plant Society of Northeastern Ohio. This article is a compilation of selections from the Humphry and Moses Marshall Papers at the William L. Clements Library of the University of Michigan.

This is Part II of a four-part series about the 18th century American botanist, Humphry Marshall. In the June 2011 issue of *On the Fringe* (Vol. 29, No. 2), Part I explained Humphry Marshall's family tree. In this issue Part II briefly describes Marshall's life. In later issues of *On the Fringe*, Part III will list the native American plants he discovered, named, and described in print; and Part IV will summarize Marshall's botanical correspondence with scientists of his time.



Marshall Square Park Marker

Fungi: Friends and Foes

For centuries, mushrooms and other fungi were considered to be plants. Modern research has shown that fungi are not plants. Nor are they animals. Scientists now classify fungi in their own biological kingdom.

Unlike mushroom, most fungi are extremely small or even microscopic and are seldom observed by the average person. Fungi generally grow as tubular, hair-like thread called hyphae. Individually, these long and extremely narrow threadlike filaments are not readily visible. However, masses of interconnected hyphae are able to be seen with the naked eye because they form a fleshy or cottony mass called a mycelium.

Green plants make their own food via photosynthesis. Fungi are incapable of producing their own food. So how do fungi feed? The answer depends on the type of fungus. Some fungi decompose dead plants or animals. The threadlike hyphae grow through the decaying tissue, releasing digestive substances that break down large organic molecules into smaller organic molecules, such as sugar. Along with these food molecules, the hyphae also absorb water and mineral ions.

Other fungi form a partnership with the roots of living green plants. These underground fungus-plant associations are termed mycorrhizae. Some of the sugars made in the leaves of a green plant get transported to its roots, where mycorrhizae fungi then utilize these sugars as a food source. In return, the fungi supply the green plant with much more water than the plant's own roots could otherwise absorb; in addition, these fungi give the plant important minerals (like phosphorus) essential for proper development.

There are also fungi that attack living tissues of plants or animals. Many of these pathogenic fungi are significant causes of disease. Humans are susceptible to fungal infections that occur internally (e.g. histoplasmosis) or externally on the skin (e.g., ringworm, athlete's-foot). Extensive losses of agricultural crops and other plants result each year from numerous fungal diseases such as cankers, rusts and mildews.

Mushrooms are the fungi most familiar to people. Depending on the species, mushrooms are found in a variety of places; some of the more common are soil, tree stumps, and fallen logs. Because many fungi are associated with specific kinds of plants, either living or dead, a particular mushroom will generally be associated with-or even restricted to a particular season and habitat.

A mushroom is the spore-producing ("fruiting") body of a fungus whose hyphal mass itself is not visible (it may be underground or buried in wood).

Hyphae may grow for months or even years before environmental conditions trigger the formation of fruiting bodies. In its most recognizable form, a mushroom consists of a cap atop an elongated stalk. Located on the underside of the cap are gills (or in some mushrooms, small holes or pores). Here are borne the spores, often produced by the millions. After being released from the mushroom, the spores drift through the air or are carried (for example by insects) until they land on the ground or on some other suitable surface. If conditions are favorable, the spores germinate and produce the threadlike hyphae characteristic of that fungus. These newly produced hyphae require an appropriate food source in order to grow.



Chicken of the Woods
Yellow Sulfer

One of the essential roles that fungi play in ecosystems is that of “decomposer”. Along with bacteria, fungi break down the remains of dead plants and animals, thereby returning nutrients that would otherwise remain “locked up” and unavailable to living organisms. As noted earlier, mycorrhizal associations are important for the healthy growth of many plant species.

Fungi are important to people in other ways. Some are a vital source of antibiotics, such as penicillin. Fungi are also needed for the preparation processing of certain foods: several types of cheese and traditional soy sauce. Yeasts are fungi used in baking breads and in fermenting alcoholic beverages. Fungi are also eaten outright: button (“pizza”) mushrooms, Portabella mushrooms, shiitake, morels and truffles.

Unfortunately, some mushrooms are highly poisonous. Certain species of amanita are so toxic that the only way to save the victim is with a liver transplant. (Note that the term “toadstool,” commonly applied to any mushroom thought to be poisonous, has no precise meaning.) No mushroom should be eaten unless its identity is known with complete certainty.

For most people, this means that foraging for edible mushrooms should be confined to the produce section of the grocery store.



Turkey Tail

Reprinted from the *Nutshell*, a bi-monthly publication of news and events by the Dawes Arboretum. May/June 2011.

Photos in this article were added by *OFT* editors and provided by Tracey Knierim, NPSNEO Board Member

Maumee Bay, Ohio State Park

Nature of the Area

Maumee Bay State Park is a tribute to Lake Erie, one of the largest bodies of fresh water in the world. The history of Lake Erie began with the glacial period known as the Pleistocene. Massive sheets of ice gouged and scoured the bedrock of Ohio, sculpting the lake basin, and leaving scratches in the rock surface known as glacial striations. The wetlands of the Maumee Bay area offer a vivid array of natural wonders. Wetlands contain more species of wildlife than any other habitat type, including: fox snake, northern water snake, painted turtle, chorus frog, green frog, spotted salamander, raccoon, muskrat, dragonfly, caddis fly, and water striders. Over 300 species of birds have been recorded here. Resident shorebirds such as snipe, great blue heron, common gallinule and ring-billed gulls mingle with waterfowl including Canada geese, pintails, redheads, and ruddy ducks. Songbirds include the red-winged blackbird, yellow warbler, killdeer and swamp sparrow. Spring migration brings many others including the colorful warblers. The plant life is diverse as well. Cattails, buttonbush, phragmites, bur-reed, cottonwood and black willow are just a few examples of the marsh plants at the park.

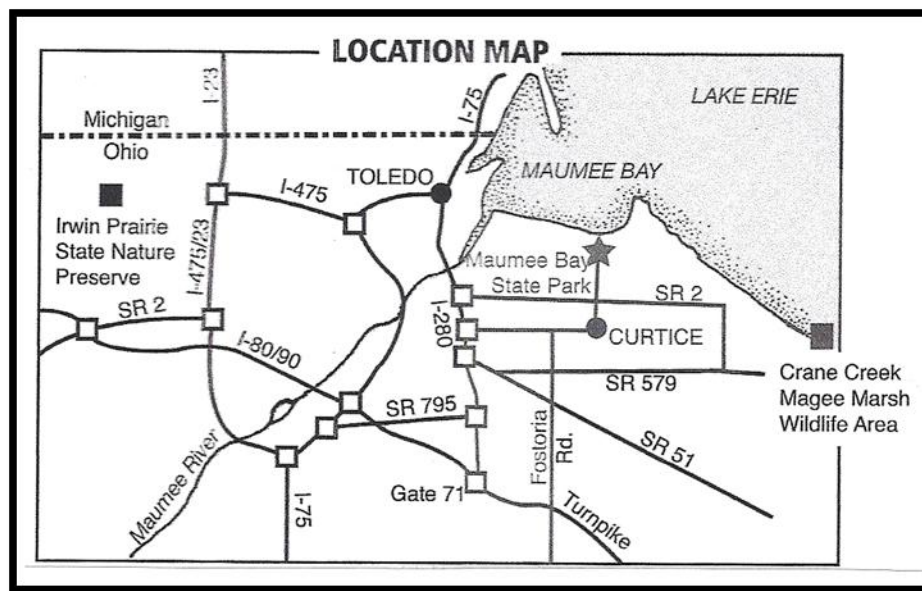
In addition to marsh and swamp wetlands, several prairies in the park add more diversity to the landscape. Ring-necked pheasants densely populate the meadow areas of the park.

The Lake Erie shoreline sets the stage for the comeback of the bald eagle in Ohio. Nesting pairs have been reported recently in Ohio with the majority being in the western basin of Lake Erie.

History of the area

Thirteen thousand years ago, Lake Erie was much larger than it is today - stretching from western New York to Fort Wayne, Indiana. As the lake receded to its present size, a great flat plain was formed (120 miles long and 30-40 miles wide). This area became known as the Great Black Swamp due to the color of the soil and dark shade beneath the trees. The Indians settled only near the well-drained lands beside the Maumee River and its tributaries.

For many years, the swamp was a tremendous barrier to western settlement. Most settlers traveled by boat on Lake Erie to reach southern Michigan. Major cities of the area circled the perimeter of the swamp; none lay within it except Bowling Green. In 1859, a law was passed providing for a system of public ditches to drain the land. By 1870, the swamp was still only half cleared. Eventually, after a period of intense lumbering and draining, the swamp had nearly vanished and the area became a major agricultural region. Acquisition of park lands began in 1974 with matching funds from the land and Water Conservation Fund. Maumee Bay officially became a state park in 1975. The resort opened in May, 1991.



Trails

Developed hiking trails in the park include the Mouse Trail, a 3-mile diverse trail winding through meadows and young woodlands, and several miles of paved combination trails for bicycling and cross-country skiing. A 2-mile boardwalk through swamp and marsh wetlands has interpretive signs, an observation blind and tower, and wheelchair accessible loop.

Nature Center

The Trautman Nature Center offers Interactive displays and programs year-round, and features an auditorium, research laboratory and viewing windows.

Area Attractions

Cedar Point, West Sister and Ottawa National Wildlife Refuges are near the park. Call (419) 898-0014. Crane Creek Wildlife Experiment Station and Magee Marsh State Wildlife Area are located 15 miles east of Maumee Bay. Cedar Point Amusement Park, near Sandusky, is a 90-minute drive from the park. Detroit's "Comerica Park", home of the Tigers, is 75 minutes away, and the Henry Ford Museum in Dearborn, Michigan is only an hour away.

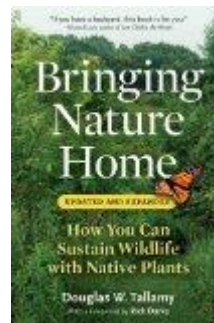
Reprinted from a brochure published by the Ohio Division of Natural Resources, Division of Parks & Recreation

Book Worth Looking At:

Bringing Nature Home: How You Can Sustain wildlife with Native Plants

By Douglas Tallamy

Foreword by Rick Darke



The perfect antidote to the belief that nature happens somewhere else. If you have a backyard, this book is for you – get outside and learn about the wildlife around you, and then do something to make a haven for species at risk.

Richard Louv, author of *Last Child in the Woods*

As development and subsequent habitat destruction accelerate, there are increasing pressures on wildlife population. But there is an important and simple step toward reversing this alarming trend: Everyone with access to a patch of earth can make a significant contribution toward sustaining biodiversity. There is an unbreakable link between native plant species and native wildlife – native insects cannot, or will not, eat alien plants. When native plants disappear, the insects disappear, impoverishing the food supply for birds and other animals. In many parts of the world, habitat destruction has been so extensive that local wildlife is in crisis and may be headed toward extinction. *Bringing Nature Home* has sparked a national conversation about the link between healthy local ecosystems and human well-being, and the new paperback edition – with an expanded resource section and updated photos – will help broaden the movement. By acting on these practical recommendations, everyone can make a difference.

Douglas W. Tallamy

Douglas W. Tallamy is a Professor and Chair of the Department of Entomology and Wildlife Ecology at the University of Delaware in Newark, Ohio where he has written more than 65 research articles and has taught insect taxonomy, behavioral ecology, and other subjects.

Weed Seed Dispersal by Earthworm: Giant Ragweed and Nightcrawlers

By Emilie Regnier

Giant ragweed has been a weed of major importance in Ohio and Indiana corn and soybean fields for over 20 years, and it seems to be moving westward. It is among the most competitive annual weeds of corn and soybean. Since the mid-20th century, giant ragweed has migrated from its native range in North America to Europe, South America, and Asia, where it is regarded as an exotic invasive weed. Giant ragweed also produces copious pollen in late summer and early fall that is a major cause of hay fever in humans.

Like many important agricultural weeds, giant ragweed has a summer annual life cycle that is completed between the months of March and October in Ohio. However, giant ragweed is unlike many of our major weeds in that its seeds are comparatively large, seed production per plant is relatively low, and once buried in soil, the seeds do not remain viable for long periods of time. Giant ragweed seeds serve as a food source for various organisms including insects, rodents, and birds, and almost 90% of its unburied seeds are destroyed during the first six months after the plants shed their seeds.

Given these apparent weaknesses in its reproductive capacity, we are interested in finding out why giant ragweed is such a persistent and growing problem. Since the time between seed and seed burial seems to represent the weakest link in giant ragweed's life cycle, we have concentrated much of our research on investigating what

happens to the seeds during this critical period.



Lumbricus terrestris, the common nightcrawler, is known throughout most of the U.S. as a popular fishing bait and beneficial inhabitant of agricultural soils. It lives in permanent, vertical burrows and feeds on plant litter, which it collects from the soil surface and stores inside its burrow. As the plant litter softens and decays inside the burrow, it becomes palatable to the earthworms. The earthworms build a "midden" over the top of the burrow, a mound of castings and organic debris that seals the opening. Middens are usually easily distinguished from the surrounding soil and indicate the presence of *L. terrestris*.



Lumbricus terrestris
Common Nightcrawler

We have found that *L. terrestris* actively gathers and stores giant ragweed seeds in its burrow by grasping the seed with its mouthparts and burying it inside its burrow or middens. In field experiments in Ohio, over two-thirds of the giant ragweed seedlings that emerged in spring came directly from *L. terrestris* burrows. These findings suggest that the earthworm-giant ragweed association is an important factor in the survival and spread of giant ragweed. This seed foraging



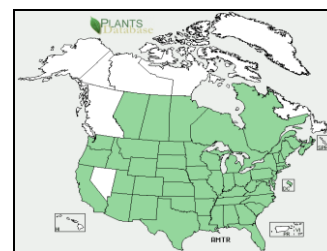
Ambrosia trifida
Giant Ragweed

behavior by *L. terrestris* and its effect on giant ragweed seedling distribution have been confirmed in controlled experiments and surveys of giant ragweed populations. *L. terrestris* behaves as a seed dispersal agent for giant ragweed and this behavior may protect the seeds from predation by rodents, insects, and birds.

Our research has shown that *L. terrestris* forages actively for giant ragweed seeds, that it is capable of burying the majority of the seed produced by a stand of giant ragweed, and that it distributes



seeds over a range of depths thus influencing seed dormancy and seedling emergence. It also suggests that seed burial by *L. terrestris* protects seeds from predation and exerts a strong influence over giant ragweed populations in subsequent years. With the introduction of *L. terrestris* in the U.S., it appears that giant ragweed has acquired a new mechanism of spreading and survival, which may help explain its persistence and expansion as a major weed problem in the U.S.



Ambrosia trifida
Giant Ragweed

Emilie Regnier is an Associate Professor of Horticulture and Crop Science at Ohio State University.

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Photos in this article were added by OFT editors

To the Fringed Gentian

William Cullen Bryant (1794-1878)

THOU blossom bright with autumn dew,
And colored with the heaven's own blue,
That openest when the quiet light
Succeeds the keen and frosty night,

Thou comest not when violets lean
O'er wandering brooks and springs unseen,
Or columbines, in purple dressed,
Nod o'er the ground-bird's hidden nest.

Thou waitest late and com'st alone,
When woods are bare and birds are flown,
And frosts and shortening days portend
The aged year is near his end.

Then doth thy sweet and quiet eye
Look through its fringes to the sky,
Blue—blue—as if that sky let fall
A flower from its cerulean wall.

I would that thus, when I shall see
The hour of death draw near to me,
Hope, blossoming within my heart,
May look to heaven as I depart.

Photos for this piece by Tracey Knierim, NPSNEO
Board Member



Fringed Gentian
Gentianopsis

SUNDEW

By Tom Sampliner

Sundews are a worldwide group of carnivorous plants named for their glistening appearance in bright sunlight due to clear glands upon the plant and leaf surfaces. Worldwide the group includes three different genera, namely, *Byblis*, *Drosera*, and *Droseraphyllum*. While there are over 100 species of *Drosera* worldwide, here in North America we have only *Drosera* and of that genus we have in the Great Lakes Region only four recognized species according to some authors and only three according to others.

Each leaf is stalked and both the leaf and the stalk (pedicel) are edged with stalked clear globes that are actually glands. It is these that give the sundew its well-recognized appearance. The glands put forth mucilage which traps insects like fly paper. The various liquid substances manufactured by the plant drown and digest the insects trapped upon the leaf pad. Because of the clear tentacle globes, the plant has a jewelaceous appearance.

Most common of the species is the round-leafed sundew (*Drosera rotundifolia*). Its extensive range takes us from Alaska in the far west, south into California, across northern U.S. and Canada, through the Great Lakes, down into the Appalachians, and eastward to Newfoundland. It favors sphagnum substrates as home. Each single stalked flower is usually white, though there are occasional pink ones. A thin stalk holds aloft a rounded leaf pad, which easily distinguishes this species from other species in our area.



Round-leaved Sundew
Drosera rotundifolia



Linear Sundew
Drosera linearis

Another species is the linear sundew (*Drosera linearis*). Its range starts farther north, extending north. Each leaf pedicel is long stalked (2cm), and the expanded portion of the leaf can be 3cm. This species is a habitat specialist confined to alkaline marl wetlands (primarily fens), hence a good candidate for Canada's Bruce Peninsula. Notice how the leaf blade edges are parallel to the stalk holding them aloft.

A species commonly called the spatulate sundew (*Drosera intermedia*) is widespread over eastern North America and down the eastern coastline through the Gulf Coast states. Notice how the leaf margins are not parallel and instead enlarge into a spoon shape for each leaf. It's as if each were ready to serve up a tasty portion of insect meat. As compared to the next species, the leaves are narrower, smaller and usually more reddish in color. Also these leaves hold themselves more ascendant, or directly aloft, rather than, as they do in the next species, holding themselves basally parallel to the substrate before bending upward.

Lastly, we come to *Drosera anglica*, which some authors view as merely a hybrid evolved from *D. linearis* and *rotundifolia*, while others view as a valid current species. *Drosera anglica* is a more robust plant than the spatulate sundew. It ranges from Newfoundland on the east, through the Great lakes area north of both Lakes Ontario and Erie, westward all the way to the Aleutian Islands.

All species grow vegetatively during winter by putting forth hibernacula (winter leaves), which in turn can give rise to new plantlets.



Spatulated Sundew
Drosera intermedia



English Sundew
Drosera anglica

Tom Sampliner is a professional naturalist, member of The Native Plant Society of Northeastern Ohio and a former Board member.

Photos in this article were added by *OFT* editors and provided by Tracey Knierim, NPSNEO Board Member.

FOLKLORE: Beechdrops (*Epifagus virginiana*)

By Mark Howes

The forest floor is a fascinating place to explore any time of the year. Vibrantly colored wildflowers in spring make way for the verdant greens of summer. In the midst of this annual splash of color lies a very non-descript plant nestled under the spreading limbs of our American beeches. Almost unnoticed except for those with observant eyes, this purple-brown skeleton of a plant is actually one that teases the imagination. Its name is most appropriate: beechdrops.



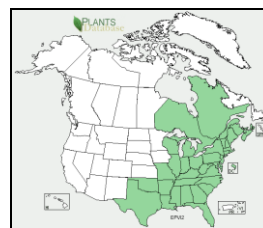
Epifagus virginiana
beechdrops

A member of the *Orbanchaceae* family, beechdrops is a most unique plant. Its generic name, *Epifagus*, is derived from the Greek *epi* for "upon" and the Latin *fagus* for "beech." It has been confirmed in at least 64 counties in Ohio. Although some have suggested that beechdrops are saprophytic (i.e., living off of dead or decaying organic matter) or that it is self-sustaining after an initial period of parasitism, in fact it is a true parasite all of its life. Drawing its very life from beech roots, it can attach to trees of all sizes and has been known to parasitize even one year old seedlings. It does so by projecting a haustorium, a root-like outgrowth through which food is absorbed from the host, into the beech root. As the beechdrops tuber grows, its tissues develop around the beech root, which eventually becomes buried within. . . . The purple-brown phase is the most common in Ohio although there are several color variants.

Beechdrops *have* been used in herbal preparations and medications for generations. Three of its common names - cancer-root, clap root and flux plant - attest to several of its numerous medicinal uses. It has a bitter, nauseating astringent taste, which is lessened by drying. It has been used for bowel afflictions and is reputed to have cured certain forms of cancer although this is doubtful. Beechdrops has been known to arrest gangrene when applied topically to wounds and ulcers and appears to act upon the capillary system. The Iroquois used it as an anti-diarrheal agent.

Very little is known regarding pollination in *Epifagus*. Both the cleistogamous (closed) and chasmogamous (open) flowers of the plant contain nectaries. However, the lack of fruit development from most chasmogamous flowers indicates that cross-pollination is at best infrequent. The exact method of seed dispersal is also uncertain. One possible explanation is that the mature seeds are dislodged by rain drops striking the heaven-ward facing open flowers. Germination usually takes place in the spring. By early July the plants appear as smooth, whitish tubercles about an inch long. By mid-August the plants are mature and can flower anytime into November. Beechdrops overwinter as dry and brittle plants which stand out in stark contrast to a white snowy backdrop. By spring the fragile skeletons remain but show no signs of life and are thus considered an annual.

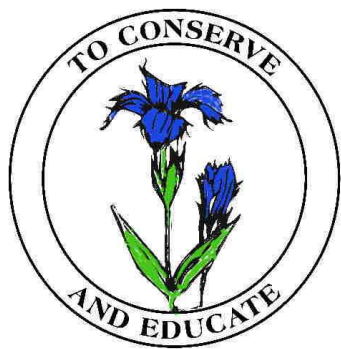
If you have the opportunity the next time you hike, head for the nearest beech tree and look closely at the ground underneath. The chances are good that you will spot these understated yet integral components of the forest ecology, and your life will have been enriched if but in a small way.



Mark Howes is a Preserve Manager at the Ohio Department of Natural Resources

Photo: Thomas G. Barnes @ USDA-NRCS PLANTS Database / Barnes, T.G., and S.W. Francis. 2004.

Wildflowers and ferns of Kentucky. University Press of Kentucky, Photo was added to this article by *OFT* editors.



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Invasive Plant: Japanese Chaff Flower – Chris Evans
An 18th Century American Botanist – Beverly Stamp
Fungi: Friends and Foes – Dawes Arboretum
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Book Worth Looking At: Bringing Nature Home
Weed Seed Dispersal by Earthworm – Emilie Regnier
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Folklore: Beechdrops – Mark Howes

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