



On The Fringe

Journal of the Native Plant Society of Northeastern Ohio

Save the Date! 30th Anniversary Party

The Native Plant Society of Northeastern Ohio will be celebrating our 30 years at the Look About Lodge on Saturday, September, 29. Jim Bissell, Curator of Botany at Cleveland Museum of Natural History will be our speaker. More information will be provided at a later date. This party is in addition to our Annual Meeting in November.

Annual Meeting

The Annual Meeting will be on November 10. It will be held at The Watershed Center, the new indoor exhibit and shelter facility in the Metroparks in Parma. More details will follow.

Program Schedule – Spring 2012

Wednesday, June 13, - 6:30 p.m. Burton Wetlands. Join us on this early summer walk hoping to find Calla Lilies and green fringed orchids. Directions: Take 422 to Rt 44. Go north on 44. Just past Lucky's Stop-N-Go, turn right onto Hotchkiss Rd. At the fork in the road, bear right onto Pond Rd. Turn left onto Old Rider Road. The parking lot will be on your right.

Saturday, June 23, - 9 a.m. Singer Lake Basin. Jim Bissell, Curator of Botany at Cleveland Museum of Natural History, leads a joint trip with NEON to Singer Lake basin and its surrounding hills. This is one of the most significant natural areas remaining in Ohio. The bog system is considered the largest and finest bog remaining in Ohio. Singer Lake harbors the largest leatherleaf bog in Ohio. Over 40 plants found at the Bog are on the Ohio Rare Plant List and most of the rare plants are within the leatherleaf bogs. In addition to more than 50 acres of leatherleaf bog, the basin has a five-acre deep kettle lake surrounded by tamarack, cranberries, and sphagnum. Directions: Travel south from Akron on I-77 to Rt. 241 (Massillon Road). Proceed south on Rt. 241. Turn right (west) onto Koons Road and proceed about 1 1/2 miles to the preserve. You can park at the blue farm house located at 1330 Koons Road. Call Diane to register: 440-666-4870.

Wednesday, July 18, – 6:30 p.m. Jackson Field. We will explore summer field/prairie wildflowers. There should be different species of Goldenrods and Asters, as well as Angelica. Directions: From Solon, go north on Rt 91. Turn Right on to Miles Rd. Just before the Bridge, turn Left onto River Rd. We will meet at the first parking lot on the right.

Saturday, July 21, – 10 a.m. to 1:00 p.m. Pee Wee Hollow, Wayne County. Rick Gardner, ODNR Division of Wildlife Botanist, leads the trip to this Boy Scout camp with nice hemlock ravines. This is a joint field trip with the Mohican Native Plant Society. Bring a lunch or snack. Sturdy hiking shoes recommended. Directions: I-71 South to the St.Rt. 539 (W. Salem/Congress exit). Turn left towards Congress. In Congress, turn right on S. Maple St. (St.Rt. 539). Drive ca. 0.7 miles and turn left on Pleasant Home Rd. (Co.Rt. 48). Drive 0.6 miles and turn left on gravel drive (drive is across from Cedar Valley Rd.) and follow drive until it ends. Call Judy to register at 440-564-9151 (H) or 440-279-0890 (W).

Sunday, August 12, – 10 a.m. to 12:00 p.m. Headlands Dunes State Nature Preserve, Lake County. Join in our search to find beach pea, *Lathyrus japonica*, and other beach species with botanist Tom Sampliner and visiting botanist Dan Boone from Cincinnati Wildflower Preservation Society. Directions: Take St. Rt. 44 north to headlands road cross over and enter headlands beach state park. Continue straight to the far eastern parking lot for the state nature preserve. Call Judy to register at 440-564-9151 (H) or 440-279-0890 (W).

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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.

Native Plant Society of Northeastern Ohio**Grant Announcement for 2012**

The Native Plant Society of Northeastern Ohio will consider applications for an Annual Grant(s) to be awarded to a person or persons working in the field of botany or conservation in northeastern Ohio for a project that demonstrates excellence in research, conservation or education, and that clearly supports the mission of the Native Plant Society of Northeastern Ohio. Land trusts or other organizations or causes that support that mission are also eligible for the Annual Grant.

The Society's mission includes:

- Conservation of all native plants and natural plant communities through habitat protection and other means
- Public education and appreciation of native plants
- Proper ethics and methods of natural landscaping
- Surveys and research on native plants and publication of the information
- Cooperation with other programs and organizations concerned with the conservation of natural resources.

The amount of the grant will be up to \$500. The number of grants available will be dependent on funding. The deadline for submissions is September 1st, 2012, and the grant(s) will be awarded at the Annual Meeting of the Society in the fall.

Applications should include contact information, a summary of the project, and a description of how money will be used. Awardee(s) will be asked to give a brief presentation on the project the following year at the Annual Meeting.

Please e-mail your application to bunchberry1@windstream.net or submit three copies to: Judy Barnhart, President, Native Plant Society of Northeastern Ohio, 10761 Pekin Road, Newbury, Ohio 4406



27 years ago this article appeared in *On The Fringe*



***Vittaria* Gametophytes Discovered In A New Physiographic Province**

By Allison W. Cusick

Since their recognition over 20 years ago, knowledge of the distribution and taxonomic affinities of the perennial *Vittaria* gametophytes found in the eastern United States has expanded greatly. Once thought to be extremely rare and local, they now are known to be common in selected habitats over a broad region of the Appalachians. Farrar (1978) summarized the history of this taxon and presented a map of its distribution as then understood. *Vittaria* gametophytes have been discovered in the unglaciated Appalachian Plateau, Blue Ridge, Ridge and Valley, and Upland Piedmont provinces, all uplifted bedrock areas which presumably have been in continuous existence since Tertiary times. Farrar et al. (1983) discussed these recent finds and reported the gametophytes from sites in Ohio and Pennsylvania near the limits of Pleistocene glaciation. This article describes the presence of *Vittaria* gametophytes beyond these limits. This unusual fern now has been discovered on the glaciated Appalachian Plateau nearly 90 km north of the southern limit of Wisconsinan glaciation. This also is the first report of *Vittaria* gametophytes from the watershed of the Great Lakes.

The *Vittaria* gametophytes were found 10 June 1982 on Little Mountain, Geauga and Lake counties, Ohio, on property of the Holden Arboretum, Mentor, Ohio (Fig. 1). Accompanying the author were Brian Parsons and Thomas Yates, field naturalists of the Arboretum, and Robert McCance of the Division of Natural Areas and Preserves, Ohio Department of Natural Resources. To say that we were surprised by this discovery, would be an understatement. Only a small collection was made at this time (Cusick 21673, ISC). The author revisited the site on 24 August, searching more thoroughly for gametophytes, and again preparing a voucher (Cusick 22000, OS). Colonies of *Vittaria* were found to occur discontinuously in a linear band over approximately 0.5 km of the slope of Little Mountain. Identity of the gametophytes was verified by Dr. Donald R. Farrar of Iowa State University.

The site of this discovery is an extraordinary area not at all typical of glaciated Ohio and a habitat highly suitable for the growth of *Vittaria*. Little Mountain is at the extreme edge of the glaciated Appalachian Plateau, being one of the localized bedrock exposures that mark the escarpment between the elevated Plateau and the Lake Plains of the Central Interior Lowlands province. The mountain is shaped roughly like a dumbbell, oriented north to south, with knobs at either end. The northern knob rises to 380 m, the southern knob to 386 m. Between these summits is a flattened saddle only slightly lower in elevation. The northern knob lies partly in Concord Township, Lake County, while the bulk of the mountain is in Chardon Township, Geauga County. The shoreline of Lake Erie is only 6.5 km north of the mountain. The approximate mean elevation of the lake at that point is 174 m. Thus, there is a difference in elevation of 206 m between the mountain and Lake Erie (U.S. Geological Survey, 1970).

This dramatic change in elevation between lake and summit has a significant effect on local weather patterns. Winds moving south across Lake Erie pick up moisture which is quickly lost once this escarpment is reached. In the lee of these summits, then, is the locally-famous "snow belt" of northeastern Ohio. This local phenomenon is clearly shown on the snowfall map in Gordon (1969) on which the side of Little Mountain may be seen in the pattern of isopleths. Snowfall in the Little Mountain region averages nearly 3 m yearly, far in excess of Ohio's annual average snowfall of about 1m.

The summits of Little Mountain and the other elevations at the edge of the glaciated Appalachian Plateau in Ohio are capped by the Sharon Conglomerate formation of the Pottsville group of the Pennsylvania System of sedimentary rocks. Throughout northeastern Ohio, the Sharon Conglomerate is noted for the formation of massive cliff faces, rock shelters, and slump blocks (Rau, 1970). The designation "conglomerate" is somewhat misleading. Pebble size is extremely variable, ranging from about 1 mm to 5 cm, and occasionally even larger (Heimlich et al., 1970). There may be abrupt lateral gradation in pebble size, a feature strikingly evident on Little Mountain. Coogan et al. (1974) map two prominent belts of Sharon Conglomerate notable for large pebbles, one belt of which terminates at Little Mountain. About 90% of the pebbles are milky quartz, with limonite as the usual

cement. Differential weathering of this cement results often in honeycomb patterns in the cliff faces (Heimlich et al., 1970).

At the base of the Sharon formation lies a major disconformity with the Meadville Shale of the Cuyahoga group of Mississippian age sediments. This disconformity is responsible for two phenomena which contribute to the habitat supporting the populations of *Vittaria*, namely, the origination of springs and the formation of slump blocks. The Sharon Conglomerate is highly permeable, whereas the underlying shale is relatively impervious. This disconformity, then, is marked by a zone of seeps and springs (Heimlich et al., 1970; Rau, 1970). The jointed conglomerate tends to slip along this lubricated shale surface, splitting the rock, which slowly moves downslope. On Little Mountain this joint-controlled slippage forms a picturesque and complex system of blocks and chasms ranging from 1 to 3 m wide, occasionally narrower, 10 to 15 m deep, and often as long as 50 m (Aronson, 1974).

The springs which flow from the disconformity on Little Mountain are exceptional in that they average 8-9°C year-round (Parsons, pers. comm.). This cold temperature allied with the depth and narrowness of the fissures on the mountain permits snow and ice to persist long into the warmer months. The writer noted the remains of ice on 10 June 1982. Even in mid-summer one's breath condenses before one's face while walking through the chasms on the mountainside. The environment within the crevasses of Little Mountain conforms in every particular to the ecological requirements of *Vittaria* as outlined by Farrar (1978, p.4): "a low light intensity of 100 ft-c or less, relatively high humidity, and protection from temperature extremes ... overhanging rock outcrops, dense forest canopy, and nearness to running water."

Floristically, Little Mountain is a part of the White Pine-Hemlock-Northern Hardwoods community (Braun, 1950), a forest association of very limited occurrence in Ohio. The first botanist to visit the mountain may have been John L. Riddell, who collected several species from this "pine-clad, rubblestone knob" (Riddell, 1836, p. 567). Read (1873a, b) listed the major forest trees of the mountain, particularly noting the Hemlock (*Tsuga canadensis* (L.) Carr.) and White Pine (*Pinus strobus* L.) on the northern end of the mountain, the extensive growth of American Chestnut (*Castanea dentata* (Marash.) Borkh.) throughout the summit, and "Rock Oak" (*Quercus prinus* L.) on the southern knob. All these species are yet extant on the mountain, although the chestnut is represented only by fallen, dead trees and root sprouts. Fern's (1887) presented an extensive list of vascular species for the mountain. While his list contains some obvious inaccuracies, it also provides further evidence that most of the herbaceous and woody species found on Little Mountain in the past still grow there today and that the original vegetation conformed to Braun's concept of the White Pine-Hemlock-Northern Hardwoods community.

In most of its known range, the *Vittaria* gametophyte seems associated with the Mixed Mesophytic forest as defined by Braun (1950). This is the case, for instance, with other known Ohio populations. However, the Warren County, Pennsylvania station (Farrar et al., 1983), like Little Mountain, is within the White Pine-Hemlock-Northern Hardwoods floristic province. The occurrence of *Vittaria* gametophytes probably is more closely related to appropriate physical and geological setting than to floristic province.

Little Mountain was a prominent landmark to the first settlers of northeastern Ohio. As early as 1831, a hotel was built on the mountain-top, and within the following 50 years Little Mountain became a celebrated resort. At least three hotels were built on the summit, together with a complex of summer cottages, gazebos, churches, school houses, and bowling alleys. The largest and best-known of the hotels, the Pinecrest, built in the late 1880's featured a Western Union telegraph line and a post office. The cool springs also induced developers to advertise water cures for "invalids." Guests clambered through the chasms on sweltering summer days, enjoyed the cool breezes through the white pines, and gazed at the dramatic view of Lake Erie from the northern knob. It was fashionable to carve one's name on the conglomerate in the "Devil's Kitchen," as one large grotto was dubbed. Many of these graffiti are still legible today, a sort of permanent guest register. The resort era ended by 1920 and the Pinecrest hotel was torn down in 1941. Little Mountain ceased to be the playground of the public and instead became the private preserve of the Little Mountain Club, an elite group of wealthy Clevelanders (Ahlstrom, 1961; Fern's, 1887). The mountain could then recover from the years of wanton vandalism. The present composition of the vegetation and the beautiful stand of mature White Pine are tributes to the ability of plant communities to survive and recover from severe disturbance. Other than the graffiti on the rocks, now largely cloaked by bryophytes, the most notable evidence of the former resort is the abundance of *Vinca minor* L. on the mountaintop.

Little of the disturbance described above would have had a direct affect on the *Vittaria* population. However, it is difficult to be certain how common or widespread the gametophytes might have been prior to the time of the

hotels. Today, the *Vittaria*, although occurring over a considerable linear area of the mountainside, grows in isolated pockets, often only a few square cm in extent, on the walls of the darkest and narrowest of the crevasses formed in the Sharon Conglomerate. The plants do not form great mats of vegetation covering entire rock faces as described by Farrar (1978) or as observed by the author in the Hocking Hills of southeastern Ohio. An occasional colony of the gametophytes occurs in the cast left by the fall of a particularly large quartz pebble. Most often the plants grow in recesses or narrow clefts formed in zones of finer pebble size. The plants definitely are less frequent in the areas of coarser pebbles.

Since this population of *Vittaria* gametophytes is the first reported from glaciated regions, it is interesting to speculate on the mode of introduction of the species to Little Mountain. In this regard, it must be clearly stated that Little Mountain was not a nunatak. Read (1873b) found granite boulders on the mountaintop and White (1980, 1982) maps thin layers of Hiram Till of Wisconsinan age over even the highest summits of the limits of the Appalachian Plateau in Ohio. Clearly, Little Mountain was not a refugium on which individuals of *Vittaria* could have survived glaciation.

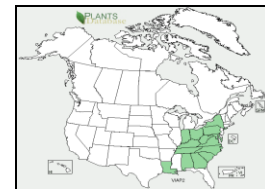
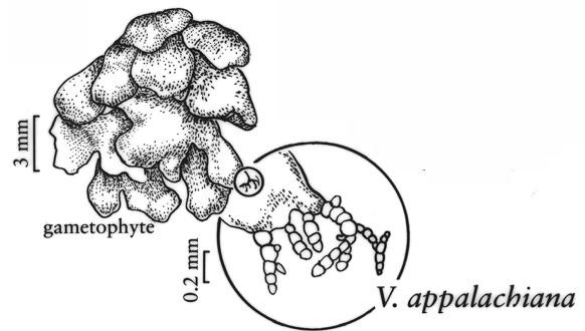
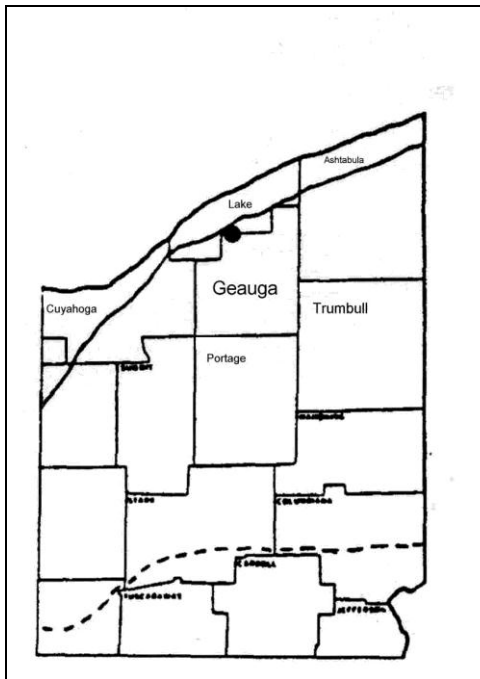
The means of dispersal of this species, even in the heart of its range, is little understood. Although *Vittaria* gametophytes prolifically produce vegetative gemmae, there seems to be no obvious mechanical means for transporting these gemmae across the 90 km gap between Little Mountain and the nearest limit of the Wisconsinan ice. It seems unlikely that the few-celled gemmae could survive wind-borne dispersal over such a distance without fatal desiccation. Also, it is difficult to understand how wind currents can lift these gemmae from the sheltered grottos and canyons in which they occur and convey them into the upper air. A possibility, which seems highly unlikely at least to this writer, is that the plants were introduced by an animal or human visitor who had accidentally picked up the gemmae in southeastern Ohio only a short time before.

Both Farrar and this writer have found *Vittaria* gametophytes at the limit of Wisconsinan glaciation in Fairfield County, Ohio, yet have failed to locate the species in similar habitats and on the same rock strata in areas only a few kilometers beyond the glacial boundary in other Ohio counties. Farrar's two western Pennsylvania stations for *Vittaria* gametophytes are located in Lawrence and Warren counties. The Lawrence County site is about 80 km southeast of Little Mountain and is located just north of the Illinoian glacial limit and south of the Wisconsinan boundary. The Warren County population is about 160 km east-northeast of Little Mountain and is directly south of the Illinoian limit. At present, the Warren County station is the northernmost known occurrence of these gametophytes (Farrar et al., 1983). It is probably useless to speculate overmuch on the origin of the Little Mountain population of *Vittaria* until other, similar sites on the glaciated Appalachian Plateau of Ohio and nearby states are examined for this species. Appropriate habitats elsewhere in glaciated regions may well harbor populations of this gametophyte. Indeed, the perennial gametophyte of an as yet unknown species of *Trichomanes* has been found on the glaciated Appalachian Plateau from central Ohio to New Hampshire (Farrar et al., 1983; McAlpin et al., 1978). Perhaps this find of *Vittaria* should not come as such a surprise after all.

In glaciated Ohio, suitable habitats are very limited in extent and highly disturbed. If the case of Little Mountain is considered, however, disturbance which may have extirpated other types of vegetation may not have had so severe an effect on *Vittaria*. As of this writing, *Vittaria* gametophytes have not been found elsewhere in glaciated Ohio. But much field work remains to be done before any firm conclusions can be reached as to the true distribution of the gametophytes, either nationally or statewide. This find opens new realms for fern enthusiasts to explore.

The author is indebted to R. Henry Norweb, Jr., Director of the Holden Arboretum, for access to the Arboretum property and for permission to collect vouchers. Brian Parsons and Thomas Yates of the Arboretum staff have provided field assistance as well as access to unpublished data on Little Mountain and its history. The Arboretum and its staff should be congratulated for their commitment to the protection of natural areas. Mr. and Mrs. Hugh Palister of Willoughby, Ohio, also have provided the author with information on the history of Little Mountain. My special thanks are owed to Dr. Donald R. Farrar of Iowa State University, Ames, Iowa, for verifying the identity of the *Vittaria* gametophytes, for his sharing of data, and for his encouragement. This research was supported by the Division of Natural Areas and Preserves, Ohio Department of Natural Resources.

Allison Cusick is staff botanist for the Division of Natural Area and Preserves, Ohio Department of Natural Resources. He is widely published and highly regarded all over the country for his discoveries of plants thought to be extinct. We are extremely fortunate to have him as a friend of the Society.



USDA Plant Distribution List

FIG. 1. The northeastern quarter of Ohio. Solid line indicates the northern limit of the glaciated Appalachian Plateau; dashed line, the southern limit of Wisconsin glacial. Solid dot is location of Little Mountain.

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Allison Cusick retired as Chief Botanist of the Ohio Department of Natural Resources in 2002. He is currently Visiting Scholar of the Museum of Biological Diversity at the Ohio State University Department of Evolution, Ecology, and Organismal Biology, 1315 Kinnear Road, Columbus, Ohio 43212-1157. He also is a Research Associate of the Carnegie Museum of Natural History, Pittsburgh, PA.



Vittaria appalachiana
The Appalachian gametophyte



Vittaria appalachiana
Photograph by Alan Cressler

Photos in this article were added by the OTF editors.

Book Note: America's Other Audubon By Joy Kiser

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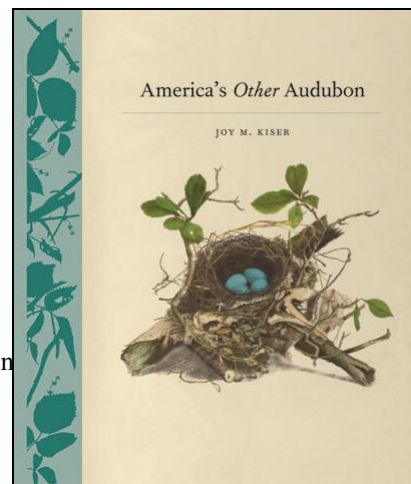
Publication date 5/12/2012

11 x 13 inches (27.9 x 33.0 cm), Hardcover

192 pages, 68 color illustrations, 4 b/w illustrations

Rights: World; Carton qty: 0; (-1.1)

America's other Audubon is hot off the press. Joy Kiser's large (11x13) facsimile reprint of *Nests and Birds of Ohio* is beautifully executed, and her essay about its creators is interesting and well-written. List price is \$45, but it is available through Amazon for \$25, including shipping. - *The OTF Editors*.



Nearly everyone is familiar with John James Audubon and his seminal color-plate book, *The Birds of America*. But few people are aware of another monumental volume of artwork, *Illustrations of the Nests and Eggs of Birds of Ohio*. Inspired by viewing Audubon's lithographs at the 1876 World's Fair in Philadelphia, twenty-nine-year-old amateur naturalist and artist Genevieve Jones began working on a companion volume to *The Birds of America*, illustrating the nests and eggs that Audubon omitted. Her brother collected the nests and eggs, her father paid for the publishing, and Genevieve learned lithography and began illustrating the specimens. When Genevieve died suddenly of typhoid fever, her family labored for seven years to finish the project in her memory. The original book, sold by subscription in twenty-three parts, included Presidents Rutherford B. Hayes and Theodore Roosevelt among its subscribers.

Only ninety copies of the original book were published in 1886, and fewer than twenty-five copies now remain in institutions and private hands. Featuring reproductions of all sixty-eight original color lithographs, archival photographs, selected field notes, and a key to the eggs and birds, *America's Other Audubon* chronicles for the first time the story behind the making of this extraordinary nineteenth century book. *America's Other Audubon* includes a foreword by Leslie K. Overstreet, curator of Natural-History Rare Books at the Smithsonian Institution.

Joy M. Kiser began her professional career as the librarian for the Cleveland Museum of Natural History in 1995. In 2001, she moved to the Washington, DC area to become the librarian for the National Endowment for the Arts (NEA). She now works as a writer/editor for the federal government.

Invasive Plants:

Fighting Hydrilla in the Cayuga Inlet

By Holly L. Menninger, PhD

The keen eyes of a young Floating Classroom volunteer recognized something out of the ordinary in a tangled pile of vegetation pulled aboard the MV Haendel during routine aquatic plant sampling in the Cayuga Inlet [in the Finger Lakes region] on August 4, 2011. In swift succession the staff of the Floating Classroom contacted local aquatic plant expert Bob Johnson who confirmed the plant's unfortunate identity: *Hydrilla verticillata* (known as 'hydrilla' or 'water thyme').

Notoriously known as "the perfect aquatic weed," hydrilla was first introduced to the US in the 1950s when the contents of an aquarium were dumped into a waterway in Florida. It has since spread throughout much of the eastern US (from Florida to Maine) and into a number of western states. It is found worldwide on every continent except Antarctica.

This is the first detection of hydrilla in upstate New York's waters, and the risk of it spreading to Cayuga

Lake and other regional waterbodies is substantial. Fragments of the plant, which are easily caught and transported by boats and boat trailers, can sprout roots and establish new populations. Fragments also float and are capable of dispersing via wind and water currents.

Hydrilla grows aggressively, up to an inch per day, and creates a thick mat of vegetation when it reaches the water's surface. If left unchecked, hydrilla can reduce the quality of aquatic habitat and displace native species; clog waterways; interfere with boating, fishing, and swimming; and cost millions of dollars to control.

Hydrilla quickly shades out other aquatic plants, displacing species like pond weeds and eelgrass. It does well in a wide variety of freshwater habitats including canals, springs, streams, ponds, lakes, rivers, and reservoirs. Hydrilla can survive a range of environmental conditions, including high and low nutrients, acidic to alkaline waters, and high to low light conditions.



Hydrilla
Hydrilla verticillata

Hydrilla is a perennial plant that overwinters in northern climates by producing a storage structure, called a 'tuber,' from roots and stems buried in the sediments. The tuber re-sprouts in the spring when conditions warm. Hydrilla can set seed, but primarily reproduces vegetatively via floating pieces that set roots, buds produced along the stems (called turions), or overwintering tubers.

Hydrilla has long slender stems that can grow underwater to lengths of up to 25 feet. Its identifying characteristics are four to eight small, pointed leaves arranged in circular whorls along the length of the stem. The edges of the leaves appear serrated. Hydrilla is often confused with native water weeds, particularly common waterweed (*Elodea canadensis*), whose leaves



Elodea canadensis. University of Florida, Center for exotic and invasive plants. plants.ifas.ufl.edu

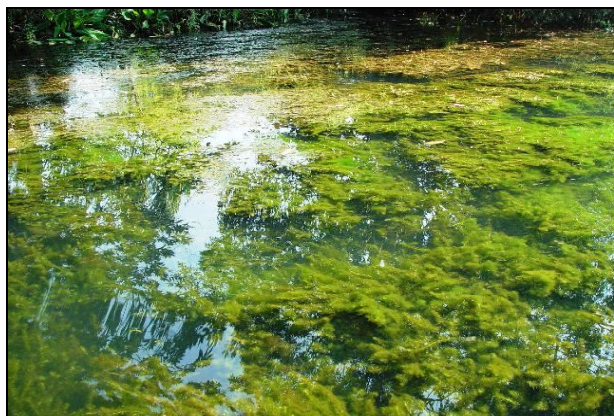
typically occur in whorls of three and appear smooth-edged. It also resembles the invasive Brazilian waterweed (*Egeria densa*), which is found downstate in New York and has finely serrated leaves (0.75 - 1.5 inches long) in whorls of 3 to 6.

Survey efforts throughout the Cayuga Inlet and the southern shelf of Cayuga Lake near the end of August revealed that hydrilla is growing throughout the Cayuga Inlet. Plants were collected from the deepest (12 ft) parts of the channel as well as in shallow areas, like the kayak/canoe launch area at the Ithaca Farmers' Market. Overall, the infestation covers more than 95 acres from the mouth of the Inlet near the lighthouses to the north, past the Rte.79 bridge to the south. It extends into the Allan H. Treman Marina and up Cascadilla Creek to the Rte. 13 bridge.

Since mid-August, a task force comprised of state and local municipal officials, scientific experts, natural resource managers, and local stakeholder organizations - collectively known as the Cayuga Inlet Hydrilla Task Force - has met weekly to develop and coordinate management action, spread prevention, and public outreach.

The Task Force considers the Cayuga Inlet infestation a case for Early Detection - Rapid Response. To date, no populations of hydrilla have been detected in the Lake proper, and field evidence (plant morphology, tuber development) suggests the hydrilla infestation may be less than two years old. With substantial amounts of biomass subject to fragmentation by boating and paddling activity, tuber production already underway, and turion (vegetative bud) production slated to begin in October, the Task Force recognized that there existed a very narrow window of opportunity to take action; if no action is taken, the hydrilla infestation will grow exponentially

larger next year and most likely spread throughout the vast network of interconnected waterbodies in the Finger Lakes Region.



Hydrilla
Hydrilla verticillata

The Task Force, in consultation with local community members, businesses, politicians, and Inlet users, evaluated different management options and concluded that the use of a quick-acting contact herbicide called endothall (tradename: Aquathol K) throughout the 95 infested acres was the best course of action. National hydrilla experts and local resource managers all agree that applying endothall is the best way to reduce the potential for hydrilla spread this season; the herbicide will remove above ground plant biomass as well as arrest turion and tuber formation. These experts also agree that follow-up actions and monitoring will be necessary for at least the next five years. Taking action now will provide the Task Force a window of time to plan for that long-term follow-up.

The Tompkins County Soil and Water Conservation District, as the local relevant agency, applied for a NYS Department of Environmental Conservation permit to apply the herbicide. Permit approval and endothall application is anticipated to occur in mid-October. At the concentrations applied during treatment of the Inlet (3.0 parts per million), endothall is not toxic to humans or animals. As a standard safety precaution, however, some water use restrictions will be in place for 14 days.

Some, but not all, plants growing in the Inlet will

be susceptible to the effects of endothall. Hydrilla is considered highly susceptible to endothall, but common waterweed (*Elodea canadensis*) is not. Other common native plants, including eelgrass (*Vallisneria spiralis*) and water stargrass (*Zosterella dubia*), are considered to have medium susceptibility to endothall. Some other plants, including some pondweeds (*Potamogeton* sp.), coontail (*Ceratophyllum demersum*), and Eurasian watermilfoil (*Myriophyllum spicatum*), are expected to be highly susceptible to endothall treatment at the concentrations anticipated in the Cayuga Inlet. Fortunately, the seed production of native plants is now well underway, and those seeds will not be affected by the endothall treatment; thus, successful germination and plant recovery is expected next growing season. Significant dilution of endothall is anticipated by the time treated water leaves the Inlet and enters Cayuga Lake, and thus minimal impact is expected on the aquatic plants growing on the southern shelf of Cayuga Lake.

In addition to the use of herbicide, the Task Force has taken significant steps towards spread prevention, particularly by restricting boater activity. The City of Ithaca and Allan H. Treman Marine Park closed their boat launches in late September and strongly discouraged boating activity on the Inlet. On October 5, the Tompkins County Sheriff (who has authority over waterways in the county) officially closed the Cayuga Inlet to all boat traffic. This closure will prevent boating activity that could exacerbate plant fragmentation and is necessary to create conditions for effective herbicide application.

The Task Force asks that all residents and recreational users of Finger Lakes waters familiarize themselves with hydrilla and be able to identify it. Please be vigilant and take care to properly inspect, clean, and dry all boats and equipment after use. Let's keep this 'perfect aquatic weed' from spreading to other waters.

Holly L. Menninger is Coordinator of the NY Invasive Species Research Institute.

Reprinted from *Solidago*, The Newsletter of the Finger Lakes Native Plant Society, Vol. 12, No. 3, October 2011.

Hydrilla: An Aggressive Waterweed

The highly invasive aquatic plant *Hydrilla verticillata* is known commonly as 'hydrilla' or 'water thyme.' More information about hydrilla, the Cayuga Inlet Hydrilla Task Force, the herbicide endothall, boating restrictions, and what you can do to help is available at: <http://ccetompkins.org>.

There you can also view an image of hydrilla and other water plants that look similar to hydrilla.

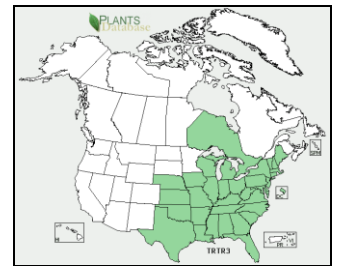
Orchid Hunt

By Kenneth Hull

I know swamps, bogs, marshes and fens in the heat of August,
When vegetation is head-high with switch grass, cattails, brambles and vines
Along with downed trees, and boot-sucking mud all set on preventing my progress.
Poison ivy, poison sumac and stinging nettle wait in silence to snag me.
But I must risk it, if I'm to find orchids protected by these stalwart defenders.



Some orchids may be present within this mess, but the elusive nodding pogonia
Resides on the other side, through a field of tall goldenrod and thickets that add
To my misery, then into the deep woods adjacent to yet another swamp
That has left fingers of black muck on whose edges grow beech and yellow birch.
Here, with diligence because they are nearly invisible, I find a few of these orchids
Six inches off the ground, white with limey green throats and purple pollen sacs.
This small flower, resembling a bird in flight, opens for just one day, then dies.



Ubiquitous mosquitoes more interested in me than these endangered orchids
Swarm, nip, tuck, dart, dodge and defy insect repellant DEET.
I'm soaked in sweat, swatting and swearing at these creatures, anxious to flee
So in reckless haste I take some pictures and trudge the same route back.
Elated to find them in flower, exhausted by the effort, with smug satisfaction
I now reside in orchid hunter's heaven.



Nodding Pogonia
Triphora trianthophora

Reprinted from *Solidago*, The Newsletter of the Finger Lakes Native Plant Society, Vol.13, No. 1, February 2012.

Weird Plants: Native Flowers Can Have a Real Wild Side

By Chet Neufeld

It's no secret that I love native plants, and while they are all nice in their own way, the ones I really like are the unusual ones.

Most often, they have unusual adaptations such as being able to trap and digest insects as our native sundews and pitcher plants do, or possessing ornate flowers like our native orchids do.

But sometimes even common, "ordinary looking" native plants get a weird streak in them. Whether it's genetically induced or the result of a fungus, local conditions or something totally unexplainable, sometimes nice plants do weird things.

For some reason or another, 2010 was a very good year to find weird plants. Not only did I find some of my own, but I also had many photos of weird plants sent to me.

Many of the photos I received this year are of Saskatchewan's provincial flower, the western red lily

(*Lilium philadelphicum* var. *andinum*). If any of you have read *Prairie Phoenix* by Anna Leighton and Bonnie Lawrence, you'll know that the western red lily is highly variable in its appearance. It can range in colour from deep red to bright yellow, have varying amounts of spots in the throat of the flower, and possess different amounts and shapes of petals (technically called tepals when dealing with the western red lily, but that's another story).



Photos by Bob Godwin (left) and Paul Pantan (right)

(Above left) Pink western spiderwort (*Tradescantia occidentalis*).

(Above right) Pale yellow spotted western red lily (*Lilium philadelphicum* var. *andinum*).

While the western red lily has its share of oddities, there are many other native plants out there that also tend to go awry from time to time.

Western spiderwort (*Tradescantia occidentalis*), a threatened plant listed in the *Species at Risk Act*, is another plant that can sometimes show some variation. While conducting rare plant surveys on a population of western spiderwort, I stumbled on a pink-flowered specimen. Typically the flowers are a deep blue-purple, but this one had bright pink blossoms. Others have found similar specimens in the same area, although it is uncertain whether or not it was the same plant.



Photo by Bob Godwin
This is a typical western spiderwort (*Tradescantia occidentalis*) specimen.



Photo by Jennifer Rumancik
This specimen of western spiderwort has an extra petal and stamen.

In another location, a plant was found that was the right colour but had four petals instead of the normal three (photos previous page). It also had an extra stamen (they usually only have six).

Also this summer, I found a sunflower (*Helianthus spp.*) in the sand dunes of the Dundurn AESB pasture during the NPSS Rare Plant Survey Techniques Course. The flower on the right in photo below. has roughly half the number of petals and is lighter in colour, while the flower on the left is the “normal” specimen. Interestingly, both of these flowers were growing on the same plant!

Some species of flowering plants that more commonly have a colourful flower also have an uncommon, white-flowered form. While at the Maurice Street Nature Sanctuary near Nipawin, I stumbled across a white form of early blue violet (*Viola adunca* var. *adunca*), which, as its name suggests, is typically blue to purple (photo on page 14).



Photo by Chet Neufeld

A double-bloomed gaillardia (*Gaillardia aristata*) with the blossoms facing back to back



Photo by Chet Neufeld

These sunflowers (*Helianthus spp.*) were found near Dundurn, Sask. The flower on the right has roughly half the number of petals and is lighter in colour, while the flower on the left is normal. Interestingly, both flowers were growing on the same plant!

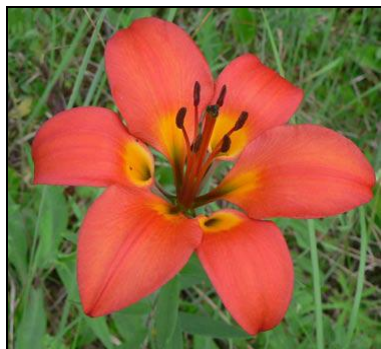


Photo by Paul Panton

This lily has the typical colouring, but is missing the spots on the inner part of the tepal.



Photo by Candace Neufeld

This is a normal specimen of the western red lily (*Lilium philadelphicum* var. *andinum*) – including six tepals, the right orange colouring and the typical spotting.



Photo courtesy of Nature Saskatchewan

This specimen also has the typical colouring and spots, but sports two extra tepals and two extra stamens.

Another native plant that can have white flowers is blue-eyed grass (*Sisyrinchium montanum*). Again, as its name suggests, it normally has blue to purple-coloured flowers. Occasionally though, I'll find a washed-out or even white-flowered blue-eyed grass. In fact, this year I found a white-flowered blue-eyed grass growing in my lawn. I only have the typical blue-eyed grass planted in my yard, so it will be interesting to see what happens next year.

Another wildflower that can have odd flowers is gaillardia (*Gaillardia aristata*). While I've never seen a variation in flower colour, I've seen many different types of flowering heads. The photo on page 12 shows a double-bloomed gaillardia, with the blossoms facing back to back. What a way to increase your chances of pollination! I wonder if the seeds will be viable and, if so, whether they will produce a double-bloom plant. It seems very unlikely, but this is typically how new species start, so you never know.

Another native flower that has shown high variation is black-eyed susan (*Rudbeckia hirta*). I've seen specimens that have unusually large flowers (up to 5 times the size) that are contorted into various shapes, some curling back on themselves to form a ring. The stems on these are also typically deformed, having wide, ribbon-like stems (only 2 to 3 mm thick but up to 5 cm wide).

While on the NPSS annual summer field tour in the Cypress Hills Interprovincial Park in July, participants found the above mountain lady's-slipper (*Cypripedium montanum*). Sometime during the formation of its flower, the slipper part of the flower and one of the sepals remained joined, preventing the slipper from fully forming. However, it appears that not only did the sepal form (the green wavy edge on the white slipper), but another fully formed sepal grew in its place, perhaps triggered to grow by the failure to split.



Photo by David Freeman

A mountain lady's slipper (*Cypripedium montanum*) in Cypress Hills Interprovincial Park was found with part of the slipper formed into a sepal.

As you can see, native plants truly can do weird and wonderful things. Keep your eyes open and you too might find one of these natural wonders.



Photo by Chet Neufeld

This white form of early blue violet (*Viola adunca* var. *adunca*) was found at the Maurice Street Nature Sanctuary near Nipawin. As its name suggests, is typically blue to purple in colour, not white.

Chet Neufeld is the Executive Director of the Native Plant Society of Saskatchewan.

Reprinted from *Native Plant News*, the Newsletter of the Native Plant Society of Saskatchewan, Vol. 15, No.4, Winter 2010. The photos in this article were taken from the original article.

Pictures from Eagle Creek Wildflower Walk

The following pictures were taken by Tracey Knierim on the April 18th wildflower walk at Eagle Creek this year.



Trillium or Quadrillion?



Members Hike Eagle Creek

Native American Medicinal Use of Trees

The American Indian relied heavily on many of our indigenous trees as sources of medicines. Preparations were made of either the bark, leaves, or roots. Each one was designed through trial and error to act in a specific manner, whether it be a diuretic, cathartic, bitter tonic, nervine, emetic, antiemetic or rheumatic, used as an ointment or plaster for drawing.

Bark was gathered either in the fall or spring from young trees. The rough or outside bark was shaved, dried in the shade, and stored from the elements.

Roots intended for medicinal purposes were washed clean and not kept long in the water, as this would diminish their effectiveness. After being washed clean, they were spread in the sun a short time to dry the water off. They were then spread in the shade until perfectly dry.

Butternut (*Juglans cinerea*) was used as a purgative. The virtues being confined to the bark and root, the manner of extraction was to boil for several hours until it became the consistency of molasses.

Pine (*Pinus*) ranked among the most useful. The buds, bark, rosin, and roots were all used. The bark, when prepared, acted as a laxative. The buds and inside bark were steeped in water and used for coughs, and the rosin was used for everything from rheumatism and backache to maladies known only to women.

Dogwood (*Cornus florida*) provided a tonic, stimulant, antiseptic, and astringent to the local tribes. The bark of the root was the strongest, but the flowers and berries were also used.

Wild Cherry (*Prunus cerasus*) bark was a good tonic for intermittent fevers, as well as a valuable treatment for jaundice.

Sweet-Gum tree (*Liquidambar styraciflua*). The inner bark was boiled and taken to relieve diarrhea, while the gum or rosin was an excellent ingredient in salve for wounds, sores, and ulcers.

Beech tree (*Fagus grandifolia*). The principal use was in the form of poultices, made by thickening a strong decoction of the bark or leaves with corn meal and applying to the inflamed wound.

These are but a few of the trees used by early American Indians, who understood and loved their environment, and respected and appreciated the gifts of nature that gave them spiritual and physical support.

The tremendous knowledge of the American Indian on the use of the natural resources for medical purposes has benefited all mankind.

This knowledge is still being used by Indian doctors and even modern medicine.

From the Archive: On The Fringe, November 1983, Vol. 1, No. 9.

Rhododendron Cove State Nature Preserve

This fascinating natural area is situated in southern Fairfield County, Ohio, five miles southeast of Lancaster. This region has been known by naturalists for its biological diversity for many years. Dedicated by the Division of Natural Areas and Preserves as a state nature preserve in April 1996, Rhododendron Cove is significant for having the highest concentration of native great rhododendrons, a state endangered species, in Ohio. The preserve also protects striking geological features.

Geology

About 175,000 years ago, the massive glacial wall of Illinoian ice stalled just to the north of the Black Hand Sandstone which makes up Rhododendron Cove. As the climate moderated, meltwaters rushing southward deposited silt and gravel in the old pre-glacial Logan River Valley and adjacent coves and side valleys. Nearby, Pump Station Road is built upon one of these gravel terraces. The cove itself contains deposits of fine silts representing slack-water sedimentation.

The preserve is located within the Hocking Valley region, an area known for its Black Hand Sandstone features. Rhododendron Cove is a horseshoe-shaped ridge of Black Hand Sandstone overlain with a thin layer of Logan Sandstone. The Raccoon Shale is found at the very base of the cliffs. The sandstone is evident as one walks the preserve trails. Large, fern-covered sandstone blocks rest at odd angles adjacent to the high-walled ridge. Bands of white quartz pebbles are interbedded in the brown-gray Black Hand Sandstone. The pockmarked cliff faces reflect an erosional process known as "honey-comb weathering." The acidity of the sandstone-derived soils and the cool, moist environment within the cove are limiting factors to the types of plant communities and rare plants found here.

Stretching from a few miles north of the village of Sugar Grove to the southern boundary of Hocking County, the Sugar Grove Region is a twenty-mile wide band that is one of the richest botanical regions in Ohio. Its flora may be described as an outlier of the Appalachian flora found to the south and east. The population of great rhododendron, *Rhododendron maxima*; is especially noteworthy. A visit to the preserve in late June to early July, when the rhododendron is in peak bloom, is reminiscent of a walk through the Appalachian Mountains.

The stream valley within the cove provides a safe haven for many common wildflowers and plants of this region. Black cohosh, large-flowered trillium, wild geranium, and a variety of violets are but a few of the numerous wild-flower species growing here. Wet seeps at the base of the cove, on its eastern side, create a wet meadow where skunk cabbage makes a late winter appearance. Other species in the seeps include golden saxifrage, lady's-tresses orchid, mountain mint, and wing stem. More than a dozen species of ferns grow in the preserve. Among them are walking fern, wood fern, polypody, and Ohio's tiniest fern, the weft fern.

The hillsides and ridgetop reflect the character of the unglaciated portion of the Allegheny foothills. A close look at the cliff face reveals hay-scented fern, lobed and mountain spleenworts, and numerous species of mosses and lichens. On the ridge, hardy species such as mountain laurel, trailing arbutus, striped wintergreen, and Virginia pine eke out an existence on the thin, acidic soil. The skeletal

remains of American chestnut remind us of a time when the American Chestnut composed 25 percent of the eastern hardwood forests.



Visiting the Preserve Requires Written Permission

Rhododendron Cove State Nature Preserve is a very special place. Since it is connected to the nearby road only by a narrow easement, parking and access is very limited. To minimize the impact on the preserve and yet provide access to the general public to enjoy this natural area, visitation is permitted only by written access permit from the Division.



Photos in this article were added by OTF editors. Reprinted from a brochure published by the Ohio Department of Natural Resources, Division of Natural Areas and Preserves.

Getting to Know Goosefoots

By Jen Rumancik

It isn't easy being Smooth Arid Goosefoot.

In the face of wind-whipped sand, scalding temperatures, water shortages and aggressive neighbours ready to invade its territory, Smooth Arid Goosefoot (*Chenopodium subglabrum*) has remained competitive and hopefully will continue to do so!

Let's not tiptoe around, here's an overview of everything you might want to know about goosefoots - in particular the rarest Canadian member of the family - Smooth Arid Goosefoot.

First, Goosefoots are quite common, with 100 genera and 1,500 species found worldwide. Have you ever noticed a plant with little green "globe-like" flowers forming along an upright stem? If you have, chances are it was a plant in the Goosefoot family, Chenopodiaceae.

All plants in this family have tiny flowers called globules. If you take a closer look at these plants with a hand lens you will notice that their flowers do not have petals; instead, you will see two to five sepals, usually united. Next, look for the yellow coloured stamens; not all goosefoot flowers have stamens, but if the stamens are present they should be as numerous as the sepals.

Even though all members of this family have similar flowers, their vegetative and life history characteristics may be very different. They range from annuals to perennials, herbaceous to woody, monoecious to dioecious and some are even polygamous!

Smooth Arid Goosefoot is an annual plant that flowers from June to August. It grows 20 to 80 cm high, with many ascending branches. Its leaves are smooth, narrow, alternate and linear with one vein. Its small flowers are green in colour and found widely spaced along the stem. Its fruits are thin-walled with one lens-shaped, black and shiny seed.

This species has only ever been found in Alberta, Manitoba, and Saskatchewan in Canada. It grows in sandy soils, usually at the edge of stabilizing dunes.

It has been associated with other rare plants that require similar habitat such as: small-flowered sand-verbena (*Tripterocalyx micranthus*), hairy prairie-clover (*Dalea villosa* var. *villosa*), western spiderwort (*Tradescantia occidentalis*), beaked



Closeup of inflorescence

Smooth Arid Goosefoot
Chenopodium subglabrum



Leaves and stems

Smooth Arid Goosefoot
Chenopodium subglabrum



Chenopodium standleyanum

annual skeletonweed (*Shinnersoseris rostrata*), sand nutgrass (*Cyperus schweinitzii*), nodding buckwheat (*Eriogonum cereum* var. *cereum*) and bur ragweed (*Ambrosia acanthicarpa*).

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated Smooth Arid Goosefoot as a species of Special Concern in April 1991 because of its unique biological characteristics and its loss of habitat. In April 2006, it was reassessed and due to its small, fluctuating population size and restricted habitat (active sand dunes), it was designated as Threatened.

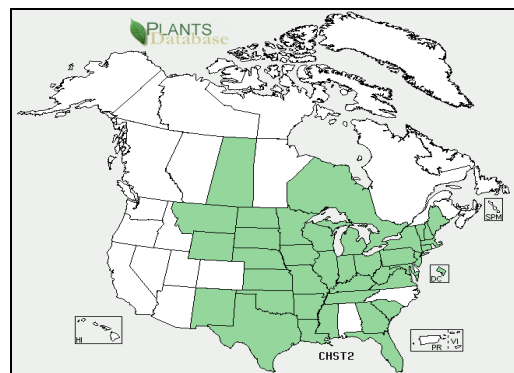
These sand-dwelling plants face threats such as habitat loss resulting from sand dune stabilization, invasive species, oil and gas development and recreational activities. This plant's limited and sometimes isolated habitat acts as an ecological barrier for gene flow to take place between populations.

However, there is still hope for Smooth Arid Goosefoot. It can tolerate high alkali areas where most other plants cannot survive. It can also tolerate harsh sandy sites by surviving windy, arid, hot and eroded conditions.

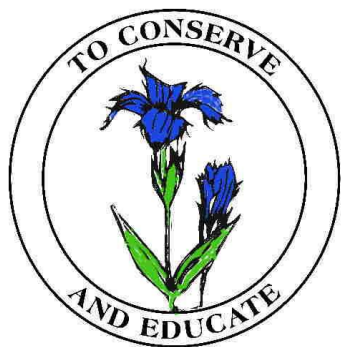
Reprinted from *Native Plant News*, the newsletter of the Native Plant Society of Saskatchewan, Vol. 16, No. 3, Fall 2011.



Chenopodium standleyanum



USDA Plant Distribution Map



Chapters of the Ohio Native Plant Society

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The Botanizers
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On The Fringe

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