



De-Phragging Our Shorelines

Les Cheneaux Watershed Council

www.lescheneauxwatershed.org (906) 484-3031 – Wendy Wagoner – 578 M-134, Cedarville, MI 49719

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Common Reed

Phragmites australis (Cav.) Trin. ex Steud.

Grass Family (Poaceae)

HISTORY IN THE LES CHENEAUX ISLANDS

Phragmites australis, or common reed, is invading the Les Cheneaux Islands shoreline. Five years ago the invasive phragmites variant was rarely seen in Les Cheneaux, but in 2010 one hundred eight phragmites stands were mapped by volunteers. During 2011 we will work with property owners to help control the phragmites that is growing on their respective properties. It is important to differentiate between native and non-native phragmites variants. We have evidence that non-native variants have hybridized with native the native form: control measures will be used against the resulting hybrid forms as well as the non-native phragmites. This project is crucial to the restoration of local native wetland plant communities and protection of vital fish and wildlife habitat. Complete eradication is unlikely and control will require a commitment to an integrated and long-term approach. A map of *P. australis* growth in the Les Cheneaux area can be found at: <http://www.lescheneauxwatershed.org/weedmap.asp>



DESCRIPTION

The non-native form of *P. australis* (common reed) is a tall, perennial, wetland grass. Horizontal stems (rhizomes) give rise to annual erect shoots, approximately one inch diameter, which support broad sheath-like leaves and a plume like flower head. Leaves and stems are stiff and sharp - due to a high content of cellulose and silica. Plants often originate from a rhizome fragment or less frequently from seed, and can form colonies hundreds of acres in size.

DISTRIBUTION AND HABITAT

Recent research in molecular genetics has shown that native North American phragmites, is being displaced in the Northeastern U.S. by an invasive form from Eurasia. Phragmites occurs throughout most of the United States and southern Canada. It grows in all areas of the lower peninsula of Michigan in open wetland habitats such as along the shores of lakes, ponds, streams, brackish and freshwater marshes, and even wet fields. Native phragmites strains generally are not found growing in water compared to the non-native variants that thrive in moist soils as well as shallow water. The invasive form is particularly frequent in disturbed or polluted soils along roadsides, ditches, dredged areas, and almost anywhere there are slight depressions that hold moisture. One of the most common means of distribution appears to be by fragments of rhizome that are transported by road maintenance equipment. Phragmites is known to tolerate both alkaline and acidic conditions. Once established, it spreads rapidly.

EFFECTS OF INVASION

The invasive Eurasian strain of phragmites grows aggressively in areas that are disturbed or stressed by pollution, dredging or other alteration of the natural hydrologic regime. This destructive weed quickly displaces desirable plants species such as wild rice, cattails, and native wetland orchids. Invasive phragmites stands adversely reduce or eliminate diverse communities of plants, and provide little food below ground or shelter for wildlife. It's high, dense biomass blocks light to other plants and overgrows native plant communities quickly becoming a phragmites monoculture. High phragmites biomass is also a potential fire hazard.

CHARACTERISTICS:

NOTE: Included images show the native phragmites and the non-native, invasive comparison. In attempting to distinguish between native and non-native forms it is important to remember that many of the characteristics listed are qualitative differences, rather than absolutes and may be affected by local growing conditions.

(Photos by Robert (Lakeside) Smith)

HEIGHT

Phragmites ranges in height from 3–15 feet, yet 80% of the plant is **contained** below ground in a dense mass of roots and rhizomes that can penetrate a depth greater than 6 feet.

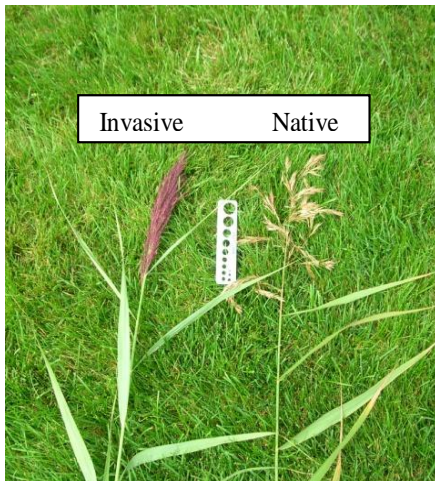


STEM

The stiff, smooth, erect stems are hollow, round, and unbranched. The stems can be almost woody, and are sometimes purplish or burgundy in the native species.

LEAVES

The leaf blade is 2–24 inches long and ½–1½ inches wide. It tends to be stiff and flat, with rough margins. The leaf surface is hairless and prominently veined above; the underside is smooth or sparsely hairy. Leaf blades taper to a long point and narrow slightly toward the stem. The foliage is gray-green during the growing season. The plant turns tan in the fall and most leaves drop off but the erect stems with their plume-like tips remain conspicuous in the winter landscape. (However, the leaves of the invasive form usually remain tightly bound to the stem, a characteristic that helps differentiate the non-native from the native form.)



FLOWERS & SEEDS

The invasive variant feathery, purple-brown-silver, dense, feathery plume-like flower heads appear at the tips of the stems by late June and are 5–16 inches long and up to 8 inches broad. The native phragmites has plumes that are sparse (Photo on left). Individual clusters of flowers are arranged densely along the branches of the plume. The flowers are surrounded by silky white hairs, and are purplish at first, becoming tawny to dark brown later in the season. Seeds are brown, thin and delicate: Large quantities of seed are produced, seed viability has been found to be higher than past research has indicated.

ROOTS

Phragmites has long, stout, scaly, creeping rhizomes (horizontal underground stems) that form extensive mats just below the soil surface. Roots and erect shoots are produced at nodes of the rhizomes. The plant spreads rapidly due to its vigorous rhizomes which can exceed 60 feet in length, grow more than six feet per year, and readily grow into new plants when fragmented. Rhizomes broken by natural actions such as waves, or human actions such as dredging or disking, quickly take root in new locations. Rapid expansion is also facilitated by other disturbances such as discharge of nutrients, wetland drainage, fire suppression and road salt.

REPRODUCTION AND METHODS OF DISPERSAL

Phragmites spreads mainly by elongation and fragmentation of rhizomes. Recent research indicates that proliferation from seeds is more common than previously thought.

CONTROL

Careful planning and long-term management can yield varying levels of control of common reed. Because a healthy wetland ecosystem is generally resistant to invasive species, long-term control of common reed depends

upon restoration of the health of the ecosystem. Control of large, dense stands requires follow up treatments due to residual viable rhizomes and neighboring population's as well existing seed banks.



Result of stems cut beneath the water after 30 days

extensive root system created by this plant. Hydrologic controls such as flooding for an extended period during the growing season may also be successful. *Note: Clean all equipment used for phragmites control before using in another location, to stop the spread of seeds or rhizomes to other areas.*

MECHANICAL

Cutting can be done in late August thru September and should be repeated for several years. The roots of plants growing in water have been observed to drown when stems are cut below water level. Hand-held cutters and gas-powered hedge trimmers work well. All cut shoots should be carefully removed to prevent re-sprouting and can be composted (if composted incorrectly seeds could still be viable), bagged and brought to the landfill is the best method or burned. Cutting too early in the growth cycle could increase stand density. Some patches may be too large to cut by hand, but repeated cutting the perimeter of a stand can prevent the vegetative expansion. Digging and hand pulling is ineffective due to the



Effect of tarp cover on an invasive phragmites stand after 90 days.

BLACK PLASTIC / REINFORCED GEOMEMBRANE BARRIER

After cutting a stand of phragmites, anchor a sheet of black plastic over the cut area using sand bags or rocks. High temperatures under the plastic will eventually kill off the plants. This technique works best when the treated area is in direct sunlight. The following year when the plastic is removed, a few phragmites shoots may return. These can be cut or hand-pulled at that time. *DeepRoot Phragmites Barrier™* is an impervious reinforced polypropylene geomembrane that prevents the spread of phragmites when installed vertically in a trench dug around the perimeter of a phragmites patch. This barrier is used to prevent phragmites from encroaching into a landscape. Rhizomes and

adventitious roots are not able to penetrate the barrier and will subsequently grow in other directions. For more information, about this product, contact DeepRoot Partners, L.P. 81 Langton Street, Suite 4, San Francisco, CA 94103; (800-458-7668 or www.deeproot.com)

CHEMICAL

Herbicide application with *glyphosate* is most effective in the early fall, while the plant is in full bloom. Because common reed often grows in or near water, only formulations approved for aquatic use such as *Rodeo, glyphosate* should be utilized. An additional chemical called a surfactant should be added to these aquatic formulations to improve the effectiveness of the treatment. Applications will need to be made at least two years in a row, and two times in one season.

Herbicide application with Habitat, *imazapyr*, is more effective but costs more money. Both of these herbicides are non-selective and will affect any plant species through contact with the leaves or stems. *Imazapyr* should be used in late summer (Aug-Sept) and needs a pesticide use certification sprayer. Using the *glyphosate* and *imazapyr* is also considered highly effective.

Herbicide application with *Fusilade DX*®, a grass specific herbicide, can be applied in non-aquatic areas.

Methods of application will depend on the associated plant community but may include aerial spraying, hand-held or backpack sprayers, and hand wicking. Herbicide use in combination with burning has generally proven to be the most effective means of control, and results in minimal disturbance to wetlands although it may be difficult to get a good burn in wet areas. Repeat treatments will likely be necessary. If the plants are too tall to spray, cut back in midsummer and apply glyphosate when regrowth reaches 2-3 ft tall. Using pre-cut strands of binder twine, tie up multiple stems, cut stems over the twine with hedge shears and apply herbicide to the cut stems. After the first treatment wait 2-3 weeks and do a follow up application of herbicide, wait 2-3 weeks then cut or mow down the stalks to stimulate the emergence and growth of the native plants previously suppressed.

Contact the Les Cheneaux Watershed Council (www.lcwatershed.org or 906-484-3031) for information on permits and licensed/certified applicator/sprayers in our area.

Note: In Michigan, controlling phragmites using herbicide treatments or mechanical methods, prescribed burns will likely require a permit from the MDEQ prior to treatment or removal.

BIOLOGICAL

No biological controls are known at this time; however, research is being conducted by Bernd Blossey at Cornell University. Blossey has been researching the chloropid fly, *Platycephala planifrons*, to assess its potential as a biological control agent as well as several other insects native to Europe that are known to attack phragmites.

REFERENCES

Internet Resources:

Les Cheneaux Watershed Council – www.lescheneauxwatershed.org

Chippewa East Mackinac Conservation District / EUP Cooperative Weed Management – www.chipmackconservation.org

Wisconsin DNR Invasives – www.dnr.wi.gov/invasives

Cornell University – <http://www.invasiveplants.net/phragmites/morphology.asp>

Delaware River Invasive Plant Partnership: Invasive Plant Fact Sheets, Phragmites - <http://www.paflora.org>

The National Invasive Species Council – <http://www.invasivespecies.gov>

U.S. Fish and Wildlife Service Phragmites Control Plan – <http://www.fws.gov/invasives/>

The Nature Conservancy - <http://www.tncweeds>

Plant Conservation Alliance's Alien Plant Fact Sheets – <http://www.nps.gov/plants/alien/factmain.htm>

Natural Resources Conservation Services - <http://plants.usda.gov>

Department of Environmental Quality, Aquatic Nuisance Control - www.michigan.gov/deqinlandlakes

Alberta Invasive Plant Council - <http://www.invasiveplants.ab.ca/>

Invasive species fact sheet prepared by:



Wendy Wagoner

EUP Cooperative Weed Management Area Coordinator / Les Cheneaux Watershed Treasurer



Bob Smith

Les Cheneaux Watershed Council President