



David Brenner



Michigan DNR



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Todd Marsee Michigan Sea Grant

A LANDOWNER'S GUIDE TO PHRAGMITES CONTROL



JENNIFER M. GRANHOLM, GOVERNOR
STEVEN E. CHESTER, DIRECTOR
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WWW.MICHIGAN.GOV/DEQ

A Landowner's Guide to Phragmites Control



Phragmites australis (frag-MY-teez), also known as common reed, is a perennial, wetland grass that can grow to 15 feet in height. While *Phragmites australis* is native to Michigan, an invasive, non-native, variety of phragmites is becoming widespread and is threatening the ecological health of wetlands and the Great Lakes coastal shoreline. The invasive variety of phragmites creates tall, dense stands which degrade wetlands and coastal areas by crowding out native plants and animals, blocking shoreline views, reducing access for swimming, fishing, and hunting and can create fire hazards from dry plant material. It is thought to have been introduced to North America in the early 20th century from packing material and ballast on ships from Europe that contained peat and sediments which was frequently dumped in coastal marshes.

Phragmites typically grows in coastal and interior wetlands, lake margins, roadside ditches, and other low, wet areas, although it can also be found in dry areas. It spreads rapidly due to its vigorous rhizomes (horizontal roots that produce new shoots) 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 that give phragmites a competitive edge, including discharge of nutrients, wetland drainage, fire suppression, and road salt.

Identification

Phragmites plants range from 6 to 15 feet in height, yet 80 percent of the plant is contained below ground in a dense mass of roots and rhizomes that can penetrate the soil to a depth greater than six feet. In the summer, its flat gray-green leaves are 2 to 2.5 inches wide, 8 to 15 inches long and alternate along the stem. Phragmites has a distinctive purple-brown seed head with plumes appearing by late July. These feathery plumes that form at the end of stalks are 6 to 20 inches long and up to eight inches wide with many branches.



Phragmites turns a tan color in the fall and most leaves drop off, leaving only the stalk and plume-topped shoot commonly seen throughout winter. Each mature plant can produce as many as 2,000 seeds annually. New stands of phragmites may develop from seed, although this is a slower process than spreading by rhizome fragments.



Although it is uncommon, native phragmites can be found in some areas. Before attempting to control phragmites, it is important to identify the native phragmites versus the non-native, invasive variety. Additional information on how to identify native versus non-native phragmites can be found at www.invasiveplants.net/phragmites/phrag/morph.htm.



Phragmites stands during summer.



Phragmites stands during winter.

Controlling Phragmites

Controlling the spread of phragmites is crucial to the restoration of native wetland plant communities and protection of vital fish and wildlife habitat. Phragmites can easily spread if improper control methods are used. The following guidelines will help ensure that phragmites control efforts are effective.

Phragmites can be controlled using an initial herbicide treatment followed by mechanical removal (e.g., cutting, mowing) and annual maintenance. For large areas with dense stands of phragmites, prescribed burning used after herbicide treatment can provide additional control and ecological benefits over mechanical removal. However, phragmites burns very hot and fast, and prescribed burns should be performed only by trained personnel.

In Michigan, controlling phragmites using herbicide treatments or mechanical methods will likely require a permit from the Michigan Department of Environmental Quality (MDEQ) prior to treatment or removal. A burn permit and approval is required from local fire departments or the Michigan Department of Natural Resources prior to prescribed burning.

No biological control methods for phragmites are currently available. However, researchers at Cornell University are studying several insects native to Europe that are known to attack phragmites as possible biological controls. For more information, visit <http://invasiveplants.net>.



Photo on the left: A treatment site in Sterling State Park with a dense stand of phragmites prior to any treatment. Photo on the right: A treatment site shown in the spring after a fall herbicide treatment using a glyphosate/imazapyr combination followed by a winter prescribed burn.

Chemical Control: The First Step

To date, field experience and research have shown that using herbicides is the most effective method and is recommended as the first step toward effective control of phragmites. Glyphosate and imazapyr are two herbicides known to be effective in controlling phragmites. These herbicides are non-selective and will affect any plant species through contact with the leaves and stems. However, when applied using the correct method and used according to chemical manufacturer's instructions, impacts to native plants, as well as mammals, birds, and fish can be minimized. The aquatic formulations of these herbicides are required for use in wetlands. An additional chemical called a surfactant should be added to these aquatic formulations to improve the effectiveness of the treatment.

While the cost per gallon of imazapyr can be significantly higher than glyphosate, results from recent studies suggest that imazapyr used alone or in combination with glyphosate can control phragmites for a longer period of time. When using herbicides, phragmites should be treated in early to late summer (June – September) using imazapyr, or late summer (August – September) using either glyphosate or a glyphosate/imazapyr mixture, to achieve effective control.

Numerous methods may be used to apply these herbicides, depending on the size of the phragmites stand and existing site conditions. Herbicide application methods for scattered plants or isolated plant stands include: injecting stems, hand swiping or selective hand spraying. Spot treating areas with scattered plants or isolated stands can prevent the establishment of large dense stands and is more cost effective. Large dense stands may require use of commercial equipment. The use of a licensed or certified applicator is recommended to minimize damage to native plants and to ensure that safety requirements are met. The use of a licensed applicator certified in aquatic pest management is recommended for herbicide application in wetlands. Pesticide use certification is required prior to using imazapyr according to the manufacturer's label and is recommended prior to using glyphosate.

For information about licensed commercial pesticide applicators, contact the Michigan Department of Agriculture, Pesticide and Plant Pest Management Division, at 517-373-1087 or visit www.mda.state.mi.us/pest.

Mechanical Removal: The Second Step

Mowing or cutting individual stands to remove dead plant material after herbicide treatment is an important step toward achieving phragmites control. This encourages native plant growth and allows for identification of phragmites regrowth for herbicide spot treatment. Mowing and cutting should not occur until at least two weeks after herbicide treatment to allow plant exposure to the herbicide. Depending on site wetness, mowing or cutting treated plants once after an herbicide treatment is recommended during late summer to fall (August to first hard frost) or in winter when the ground is frozen. Mowing at the wrong time of year or mowing without first treating with herbicides will stimulate growth and contribute to further spread of phragmites.

Hand cutting can remove individual plant stems or very small stands of phragmites; however, a brush cutter is more effective for large, dense stands. The cutting blade should be set to a mowing height greater than four inches to help minimize impacts to small animals and native plants.

In Michigan, mowing and cutting phragmites below the ordinary high water mark of the Great Lakes and Lake St. Clair requires a permit from the MDEQ, Land and Water Management Division.

Removal of phragmites through digging and hand pulling is ineffective due to the extensive root system created by this plant. Disturbing the soil through mechanized disking or raking may also contribute to rapid expansion of phragmites and is not recommended.

Equipment used to manage phragmites should be cleaned of all debris before removing it from the treatment site to prevent the unintended spread of seeds or rhizomes to other areas. If the site is mowed or cut, immediately collect and bag the cut plant material to prevent seed spread and allow sunlight to reach the soil surface to promote germination of native plants. For large areas

Possession of phragmites is restricted in Michigan. However, possession for purposes of identifying, treating and destroying is allowed under the law.

with dense phragmites stands, using a flail-type mower can eliminate the need for this step because it will adequately destroy most plant parts. Proper disposal of plant material is important to prevent the spread of phragmites to other areas. Composting is not advised because not all seeds may have been destroyed in the composting process.

The Challenges of Controlling Phragmites



As with most invasive plants and animals, complete eradication of phragmites is unlikely. Phragmites control requires a commitment to an integrated and long-term management approach. To achieve desired results, herbicides must be used in conjunction with mechanical methods or burning, and re-applied in subsequent years to spot-treat individual plants or patches of plants that were not completely eliminated in the first application. Large, dense phragmites stands will likely require follow-up spot treatments, and phragmites will continue to re-establish from remnant and neighboring populations, as well as the existing seed bank. Phragmites typically

begins to recover three years after treatment and will become reestablished unless follow-up annual maintenance occurs, including spot treatment with herbicides.

While phragmites control can involve significant expenditure of resources, the environmental and social benefits derived from restoring native wetland communities to coastal and interior wetlands are even greater. The control methods described can result in a significant reduction of phragmites resulting in improved shoreline views, water access, and recreational uses as well as wildlife habitat.

Be careful

Coastal and inland wetlands provide habitat for many native song birds, waterfowl, mammals, amphibians, and fish species which depend on native wetland vegetation. Wetlands are also home to many rare and delicate plants. Take care not to trample or damage native vegetation when controlling phragmites.



Permit Information and Technical Assistance

Landowners interested in controlling phragmites may be required to obtain one or more permits from local, state and federal authorities, as several environmental laws may be applicable. For local ordinances, contact your local municipality for information. For federal permit information, contact the U.S. Army Corps of Engineers, Detroit District at 1-888-694-8313.

A permit is required to remove phragmites mechanically, including cutting and mowing, below the ordinary high water mark of the Great Lakes and Lake St. Clair. For more information, contact the Michigan Department of Environmental Quality, Land and Water Management Division, through the Environmental Assistance Center at 1-800-662-9278 or visit www.michigan.gov/deqwetlands.

A permit is also required to treat phragmites using herbicides if the plants are in standing water at the time of treatment or below the ordinary high water mark of the Great Lakes and Lake St. Clair. For more information, contact the Michigan Department of Environmental Quality, Water Bureau, Aquatic Nuisance Control Program at 517-241-7734 or e-mail deq-lwm-anc@michigan.gov. Information is also available at www.michigan.gov/deqinlandlakes.

This publication was produced by the Office of the Great Lakes,
Michigan Department of Environmental Quality.



Financial assistance for this project was provided, in part, by the Michigan Coastal Management Program, Michigan Department of Environmental Quality, through a grant from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.



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DEQ  Michigan Department of Environmental Quality

Printed by authority of P.A. 451 of 1994
Total Number of Copies Printed: 30,000; Total Cost: \$3,534.40; Cost Per Copy: \$0.118