

Field Guide for the Control of Common Reed (*Phragmites australis*) on Lake Huron Beaches



Prepared by

The Lake Huron Centre for Coastal Conservation

© 2007, Lake Huron Centre for Coastal Conservation

**Field Guide for the Control of
Common Reed (*Phragmites australis*) on Lake Huron Beaches**

ISBN - 978-0-9783621-5-7

This publication was made possible through funds from Environment Canada's *Invasive Alien Species Partnership Program*, and the *Habitat Stewardship Program for Species at Risk*.

Special thanks to the Town of Saugeen Shores and the Township of Huron-Kinloss for participating in Common Reed control trials. Thanks also to Rafael Ofinowski, University of Manitoba, for contributing his insights and expertise to this project.



P.O. Box 178
Blyth, Ontario, Canada
N0M 1H0
Phone: (519) 523-4478
Email: coastalcentre@lakehuron.on.ca
Internet: www.lakehuron.on.ca

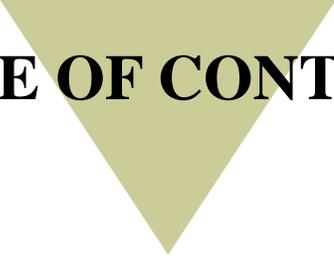


TABLE OF CONTENTS

| | |
|--|-----------|
| Why is Common Reed a Concern? | 5 |
| Identifying Common Reed | 6 |
| Habitat | 7 |
| Growth Pattern | 7 |
| Where Does Common Reed Come From? | 7 |
| How Affected are Lake Huron's Beaches? | 8 |
| Preventing the Spread of Common Reed | 9 |
| Control and Management | 9 |
| Proper Disposal | 12 |
| References | 13 |

Why is Common Reed a Concern?

In 2005, European Common Reed (*Phragmites australis* - pronounced *frag-mite-ees*) was identified as Canada's 'worst' invasive plant species. Common Reed is a very aggressive, robust, densely growing member of the grass family. Its height and density allow it to form single-species stands that outcompete most non-woody native plants. The buildup of litter from previous years of growth prevents other species from germinating or establishing. It is capable of occupying and degrading vast areas of important lake habitats, like dunes, marshlands and fens. Common reed vegetation communities have low plant diversity and offer poor quality habitats for wildlife.

- In coastal dunes, the reed forms dense stands between the beach and the dune. This disrupts the critical exchange of sand between the lake and the dune, which could ultimately affect the ecology of the dunes, and the quality of the beach. Some dune plants depend on sand burial as part of their ecology.
- The organic layer produced from the decay of Common Reed could change the physical structure of the sand impeding the flow of groundwater. This could increase people's exposure to pathogens in wet sand if the local groundwater has become affected by pollution from nearby faulty septic systems.
- Common Reed is aggressive and can displace native beach plant species, many of which are rare. Along some parts of Lake Huron's coast, particularly along the south shores of Manitoulin Island, Common Reed could alter the habitat of the endangered Pitcher's Thistle (*Cirsium pitcher*), which could lead to a collapse of this species in Canada.

Identifying Common Reed

Common Reed is conspicuous and is usually identifiable from a distance. In controlling this invader, it is important to avoid harming native plants. Learn to recognize Common Reed and avoid disturbing native plants on your beach.

Common reed is a tall perennial that ranges in height from one to three metres. Long, narrow leaves alternate on its tall stalks. Leaf blades are approximately 2.5 centimetres wide and are flat or rolled. Plants grow in dense, single-species (monocultural) stands.

Common Reed has a feathery purplish plume-like flower. These are tiny and full of silky hairs. Flowering and seed set occur between July and September, (recently on Lake Huron in early to mid-August). The flower remains on the plant throughout the winter.

Once established, the plant spreads through growth of rhizomes or by seed. Stems rise from joints in the rhizomes and shoots that are knocked over can take root and produce new shoots. The reclining stalk can send out runners that generate new plants. Stout roots, often exceeding 6 metres in length, interlock to form a dense network that can withstand fires, mowing and other damage to stalks and leaves. The underground network of rhizomes has an expansion rate of about one metre per year, but can spread up to 10 metres in nutrient-rich areas .



Common Reed flower



Stand of Common Reed on beach

Habitat

Common Reed typically grows in wetlands or other wet areas, including roadside ditches. On beaches it has found a niche in wet beach swales (depression between the dune and the open beach). As the plant has become more established, it has been observed in drier dune areas as its roots expand to deeper moist sands. Common Reed is also expanding into coastal wetlands in central Bruce County. Northern expansion could lead to invasion into highly sensitive fen habitats on the Bruce Peninsula.

Growth Patterns

Typically, Common Reed colonizes a new area from small fragments of rhizomes (underground stems), dispersed by water, animals, machinery and humans. Once established, new stems grow from underground rhizomes and it begins to spread. Rhizomes spread horizontally in all directions during the growing season.



Photo showing network of underground rhizomes.

Where does Common Reed Come From?

Common Reed is an alien, invasive plant with origins in Europe and Asia. Common Reed has recently found its way to some of Lake Huron's beaches and has raised much concern over its potential effects on the ecology of the beach environment.

Common Reed may establish first on points and headlands, and spread following the coastline into more sheltered bays. Spread likely occurs when fragments of runners (perhaps broken by wave action), or seeds, are washed along the Lake Huron coast. This grass is now widely established in Lake St. Clair and to the north on Manitoulin Island. Recent studies by the Coastal Centre found little evidence that Common Reed is originating inland and spreading to the coast along rivers and streams. The established populations observed along Lake Huron beaches likely contribute to the wider spread. It is likely that the lowering of water levels in Lake Huron since 1999 has contributed to the spread of Common Reed by creating large expanses of uncolonized, seasonally flooded coastal areas with silty or mucky soils. Studies along the St. Lawrence River in Quebec have also shown that low water levels favour the establishment of Common Reed.

How Affected are Lake Huron's Beaches?

The establishment of Common Reed along the Lake Huron coastline is extensive. Small stands, and often extensive patches of Common Reed have been observed in a variety of coastal habitats. Although Common Reed thrives in coastal meadow marshes, it has also established along open sandy beaches, and in sand dune habitat where it can access the water table. Common Reed can displace rare species in good quality dune habitat. This can lead to the alteration of dune ecosystems, which could ultimately lead to beach and dune degradation.

Preventing Common Reed from Overtaking Lake Huron's beaches

The ability of Common Reed to spread rapidly means that “early containment,” especially in areas with natural vegetation or high social value, is critical in order to ensure the wise use of limited resources. In some areas, infestations may be so extensive that control efforts are not practical. Priority areas in southern Bruce County were identified in 2007 and include places where control is confined to smaller, manageable patches, or where rare coastal habitats (dunes, fens, marshlands) are threatened. Best results are often obtained by preventing the colonization of high quality habitat.

Where resources are limited, it is better to completely eliminate Common Reed from one area than to partially eliminate it from many.

In any effort to control Common Reed, it is critical to avoid damaging native dune or wetland species. Care must be taken to target only the Common Reed.

Control and Management of Common Reed

Cutting

Studies in the United States suggest that cutting the plant after the flowers have emerged but before seeds have set (*in southern Ontario this occurs around the first or second week of August*) provides the most effective control. At this point in their growth pattern, plants have invested the maximum amount of energy in the flowering head once it has emerged, and so cutting at this time (and eliminating their means of photosynthesis) depletes the rootstock faster. There is also evidence that, unlike many other invasive species (e.g. Purple Loosestrife),

Common Reed seeds are not a primary mode of reproduction. Its main mode of reproduction is by rhizomes and stolons.

With cutting, there is a need to repeat the treatment annually for several years. Hand-pulling, though labour intensive, is an effective technique for controlling Common Reed in small patches with sandy soils.

For small areas, gas powered hedge trimmers are very effective at cutting through the tough stalks.



Freshly cut and cleared patch of Common Reed.

Large stands of Common Reed have been cut by local municipalities using tractor-mounted mowers. While effective, this method disturbs native plants and may break up the stolons of Common Reed which contributes to its spread. Machinery can also transmit other non-native and/or invasive species from outside the area or habitat (e.g. agricultural weeds tolerant of wet places), or even between sites. It also disrupts and may destroy the nests of some birds (e.g. Red-winged blackbirds). Vehicles on beaches can also damage or destroy beach organisms preyed upon by shorebirds (Piping Plover, Sandpipers, etc.)

Cutting and Herbicide

In experimental trials done in the United States, the cutting of larger stands having high stem densities has been identified as not an effective control method unless coupled with an immediate application of glyphosate herbicide to the freshly-cut, stem cross sections or with a cut-stem injection of glyphosate. However, it must be noted that in Canada, there is currently no glyphosate-based herbicide that is regulated for use in areas near water. It is only possible therefore to use glyphosate herbicide in areas well away from water, on dry soil.

The use of herbicides should only be applied by a provincially licensed applicator approved and authorized by the local municipality. Depending on the site, other agency approvals may be necessary.

In sensitive areas (such as those with species at risk, or rare dune or wetland species), the use of herbicides should also be supervised by a qualified field biologist familiar with native coastal plants and species at risk. Such use may also require permits from both federal and provincial authorities.

Black Plastic

Black plastic or geotextile blanket has been used with moderate success. This approach can be effective on smaller patches of the grass. Large sheets of 6-mm plastic are laid over a cut area of Common Reed and held in place with stakes, sandbags or logs. Under plastic, temperatures increase, and complete surface kill is the intended result. In experimental trials undertaken by the Coastal Centre in 2006-07 using black geotextile blankets, results were mixed. Further trials are intended.



Installation of black geotextile blanket over a freshly cut area. Blanket was left in place for several months with mixed results.

Proper Disposal of Common Reed

Due to the extremely robust nature of invasive species, composting in a typical backyard compost pile or composting bin is not appropriate. Place all cut plant material in heavy duty, 3 millimetre or thicker, black contractor quality plastic clean-up bags. Alternatively, bundle cut plants and place on tarps for carrying and loading onto a transport vehicle. The tarps will help prevent the dropping of seeds and rhizome fragments that could re-contaminate the site, or spread to other sites. Securely tie the bags and transport from the site in a covered vehicle in order to prevent spread or loss of the plant material during transport from the control work site to the appropriate municipal staging or disposal location.



Proper bagging of cut plants for removal from the site.

Contact Information

Lake Huron Centre for Coastal Conservation

P.O. Box 178
Blyth, ON
N0M 1H0
Ph: (519) 523-4478
Email: coastalcentre@lakehuron.on.ca

Wye Marsh

16160 Hwy 12 East,
PO Box 100
Midland, Ontario
L4R 4K6
Ph: (705) 526-7809
Email: info@wyemarsh.com

References

Bickerton, H., 2007. "Occurrence of Common Reed (*Phragmites australis*) on Lake Huron shorelines: Field Trip Report and Recommendations". Unpublished report to the Lake Huron Centre for Coastal Conservation.

Catling, Paul M. 2005. NEW "TOP OF THE LIST" INVASIVE PLANTS OF NATURAL HABITATS IN CANADA. *National Program on Environmental Health, Agriculture and Agri-food Canada, Wm. Saunders Bldg., Central Experimental Farm, Ottawa, Ontario, Canada K1A 0C6*

Crowe, A. and Milne, J. 2007. Relationship between natural and degraded beach ecosystems and *E. coli* levels in groundwater below beaches of the Great Lakes, Canada, in proceedings International Association of Hydrogeologists conference, Lisbon, Portugal.

Howe-Theisin, V., 2006. Common Reed (*Phragmites australis*, University of Maine Cooperative Extension Bulletin #2532, <http://www.umext.maine.edu>
Lapin, B. and Randall, J. Element Stewardship Abstract for *Phragmites australis*, The Nature Conservancy, Arlington, Virginia.

Mal, T.K. and Narine, L., 2003. "The Biology of Canadian Weeds. 129. *Phragmites australis* (Cav.) Trin. ex Steud.", in Canadian Journal of Plant Science.

Notes:

