*Invasive Species*

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

Prepared by

**The Lake Huron Centre for Coastal Conservation**

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

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## *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 such that a barrier is produced to the flow of shallow groundwater. As a result the flow of shallow groundwater below the beach will be impeded and the water table will rise. If the local groundwater has become affected by pollution from nearby septic systems or other sources, this could increase people's exposure to pathogens in wet sand.
- Common Reed is aggressive and can displace native beach plant populations, many of which include rare species. 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 flower

Common Reed is fairly conspicuous and is usually identifiable from a distance. In any invasive plant control effort, 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.

Stand of Common Reed on beach

Common Reed has a feathery purplish plume-like flower. Flowers are tiny with lots 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.

The plant spreads through the 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 m. in length, interlock to form a dense network that can withstand fires, mowing and other forces that damage stalks and leaves. The underground network of rhizomes has an expansion rate of about one metre per year, but in nutrient-rich areas can spread up to 10 metres.

## Habitat

Common Reed typically grows in wetlands or other wet areas, like 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. The plant 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, or transported to the beach by ATV, contractor, or other vehicles. As this grass is now widely established in Lake St. Clair and to the north on Manitoulin Island, the original sources are widespread. Based on the Coastal Centre's field study, there was little evidence that Common Reed is originating inland and spreading to the coast along rivers and streams. The established plant populations observed along Lake Huron beaches are likely the key sources contributing to its 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 un-colonized, 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*

***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.***

The ability of this plant to spread rapidly means that "early containment," especially in areas with good natural vegetation or a high social value, is critical in order to ensure the wise use of limited resources. In some areas of infestation, the reed population may be so extensive that control efforts are not practical. Priority areas in southern Bruce County were identified in 2007 and include areas where reed grass control is in smaller, manageable patches, or where rare coastal habitats (dunes, fens, marshlands) are threatened. Best results in invasive species management are obtained when the species of concern, at least in the initial stages, is kept out of high quality habitat. The second stage is, working from the best natural areas, to begin to work in to the "core" of the invasion.

Where resources are limited, it is better to completely eliminate Common Reed from one area than to partially eliminate it from many. In working in any Common Reed control program, wearing steel-soled boots are highly recommended for your own safety.

## *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.

Freshly cut and cleared patch of Common Reed.

With cutting, there is a need to repeat annually for several years to reduce spread of plants. 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.

Large stands of Common Reed have been cut by local municipalities using tractor based cutters. While effective at cutting the plant, it also cuts all native plants that may be present. There are also some concerns with the use of heavy machinery to mow Common Reed on sandy beaches. It may break up the stolons and contribute 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 certainly disrupts and possibly destroys 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

The use of herbicide to control invasive plants, like Common Reed, should be considered as a last resort after all other control measures have failed and the plant is out of control. Use of herbicide needs to be carefully planned, target only the invasive plant, and be undertaken by professional applicators under strict supervision by the public authority. 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 regulated glyphosate-based herbicide that is regulated for use in areas of standing water. It is only possible therefore to use glyphosate herbicide in areas a safe distance from a body of water, and on dry soil.

Researchers from the Ontario Ministry of Natural Resources did experimental trials in 2007 in Rondeau Provincial Park using various types of herbicide. It was found that glyphosate herbicide was the most effective, and safest, ensuring that it was properly applied.
The application of herbicide in an environmentally significant coastal area, like dunes, beach, and wetlands, requires special planning and treatment. This may include labour intensive techniques such as hand-wicking or using a backpack-style hand sprayer that targets the invasive plant and eliminates herbicide drift and the possibility of over application. Timing of such application is important, with fall application preferred since native plant species will have become dormant. This prevents unnecessary mortality of non-target plants.

In particularly 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. Coastal areas have a higher than average concentration of rare species and species at risk. Species at Risk are protected by federal and provincial legislation. Failure to have due diligence over potential Species at Risk could result in severe penalties.

The Coastal Centre recognizes that the use of pesticides (herbicides) along the shoreline may be controversial if the purpose and the implementation are not clearly defined. The purpose of controlling the spread of *Phragmites australis* is to protect the biodiversity of native plants and therefore ecosystem health of the region. **It is not being done for cosmetic purposes.** It is not being completed for the purpose of maintaining a view to the lake or for sight lines to the beach. By controlling or reducing the threat of *Phragmites* overtaking native plants, the shoreline and beach dune ecosystem will remain intact. If *Phragmites* is permitted to dominate the vegetation type along the shoreline, the ecosystem will be compromised. Any test plot or application location using pesticide as part of the control treatment should include specific communication techniques to engage and inform the neighbouring shoreline community on the purpose of the application, the reason for using herbicides and the safeguards that are being used.

**If the use of herbicides is being considered, it should be applied in fall once native plants have senesced. Herbicide should only be applied by a provincially licensed applicator approved and authorized by the local municipality. Ecological evaluation of a target site should be undertaken by a qualified professional biologist, or related discipline, prior to application. Depending on the site, other agency approvals may be necessary.**

## 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.

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*Notes:*


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