



GREEN RIBBON
CHAMPION

BEACH CARE TOOLKIT



LAKE HURON
COASTAL CENTRE



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The Lake Huron Coastal Centre fosters citizen awareness and action for a healthy Lake Huron coast, inspiring this generation to protect and restore coastal waters, life and landscapes for those that follow.

The Green Ribbon Champion program has received funding support*, in-kind contributions, and assistance from:



**Such support does not indicate endorsement of the contents of this material.*

WELCOME!

By participating in the Green Ribbon Champion program you are helping to protect globally rare and unique ecosystems for the people and wildlife that call Lake Huron home!

Sand beaches and dunes account for approximately 2-3% of Lake Huron's shoreline, yet they support a wide range of diverse plant and animal species, and attract thousands of people to coastal towns every summer. Healthy intact dunes provide a range of benefits, or "ecosystem services", for communities, including shore protection, water purification, increased biological diversity, erosion control, and better quality beaches.

The dune ecosystem on the Lake Huron shoreline serves as a safe haven for species at risk like the Monarch Butterfly, Piping Plover, and Pitcher's Thistle. Protecting species at risk and their habitat is essential to protecting the incredible biodiversity of Lake Huron. The Pitcher's Thistle is a globally rare plant, found only in dune ecosystems in the Great Lakes basin. Great Lake basin. These same dunes provide a critical habitat for the Piping Plover and the Monarch Butterfly. Additionally, these species at risk rely on dune ecosystems as important stopping grounds on their migratory journeys and provide connectivity for other wildlife.



To become eligible for the Green Ribbon Champion award each participant must satisfy six targets for good beach stewardship based on a grading system (A - D) which is used for each target.

Green Ribbon Champion recipients are recognized for their efforts to understand coastal ecosystems, and for their actions to preserve, protect and restore them.



Participants who achieve straight A's receive a Gold Green Ribbon Champion award. Participants who achieve B's, C's and D's have some improvements that could be made, but they will receive either a Silver or Bronze Green Ribbon Champion award.

GRADE	TASKS REQUIRED
A	0
B	1 - 2
C	3 - 4
D	> 5

HEALTHY BEACH TARGET AREAS

1. Access Path
2. Sand Dunes
3. Dune Profile
4. Invasive Species
5. Species at Risk (SAR)
6. Equipment Storage



Straight paths, as illustrated in Photo 1, are prone to wind scour and considerable erosion as wind from the lake blows up the path gathering momentum and erosive force. Municipality residents are very aware of this problem, especially during the spring and fall. Sand blowing up pathways from the beach clogs roadways and can deposit around cottages.

The easiest way to stop the sand from blowing off the beach is simply to create a narrow pathway that has an 'S' shape. The 'S' shape forces the wind to blow through the beach grass, which cuts wind velocity and prevents large scale erosion.

Photo 2 illustrates a good example of a narrow 'S' shaped pathway to the beach, and a proper location for a cleared sitting area. By clearing an area behind the dunes and at an angle to prevailing winds, the sitting area causes minimal dune impacts because the wind does not have a straight path to blow sand off the beach and path.

As an alternative, consider sharing a path to the beach with your neighbours. Not only will you be minimizing negative impacts on the dunes, you can share summer holiday stories while you make your way through the dunes to enjoy the lake.



Photo 1: Example of a straight and wide beach pathway which is prone to erosion.



Photo 2: Example of an "S" shaped pathway which prevents large scale erosion.

The photo to the right shows us how the removal of part of a sand dune and its beach grass impacts beach sand quality. Because sand dunes represent an accumulation of sand, they are naturally higher than the adjacent beach. Also, the depth to the water table is proportional to the height of the surface of the sand. Therefore, the lower the surface of a beach, the closer the surface is to the water table.



The photo above also illustrates how the removal of a portion of the dune over time has lowered the surface of the beach, leading to wet sand conditions (as shown by the darker coloured sand).

Note that the dunes on either side of the depression have both a higher surface and dry sand (as shown by the lighter coloured sand).

Wet sand on beaches away from the shoreline creates additional problems; it attracts and sustains unwanted vegetation that can ruin your sandy beaches. Note that in the photo, the foredune with the high and dry sand contains mostly native beach grass and no invasive vegetation.



The easiest way to correct this problem is to allow the dune to develop and grow naturally, either by using sand (snow) fencing to trap sand in the low area, planting beach grass in the low area, or allowing the beach grass to spread from the adjacent dune into the low area as featured in the photos below. For more information about this see the Dune Planting Guide produced by the Lake Huron Coastal Centre.



It is important to respect the natural composition of native species on the beach because they have evolved in a beach dune ecosystem and have organized themselves in a predictable way from water's edge to forest.

The dune profile is a cross-section through the dune system showing the change in the height of the surface of the beach and dune, and the vegetation types that occur as you move from water's edge to inland locations. The change in plant species, known as "plant succession" describes the natural development and change of plants on dunes. Over hundreds of years, the older parts of the dunes that are away from the lake become stable due to having little influence from wind and waves, and hence the plants become more permanent such as trees.

The three major sections of a natural dune environment in your Municipality are:

1. **The beach:** relative flat area or gently rising from the shore to the base of the dunes; affected by waves and storms, hence no vegetation.
2. **The foredune:** noticeable rise in surface elevation, lightly vegetated (especially beach grass) affected by wind and blowing sand but not waves; grasses migrate towards and away from the shore in response to long term lake level changes.
3. **The backdune:** higher and older portion of the dune environment, not affected by waves or lake level changes, may be affected by strong wind; a stable environment for long-term establishment of trees, shrubs, etc.

A healthy dune system is adaptable to changes in the lake, such as long-term lake-level changes. As water levels rise and fall, the grasses in the foredune expand and erode in unison. Any interruption in this natural cycle, such as removal of dunes and beach grass, building sea walls, or development of permanent structures in the foredune or backdune can impact dune succession, and therefore the system's ability to adapt to changing lake conditions over time (refer to photos below for comparison.)



Healthy beaches are able to respond to changing water levels in the lake. The images show Bruce Beach, south Bruce County on the shores of Lake Huron during a record high water year in 1986 and lower water in 2005.



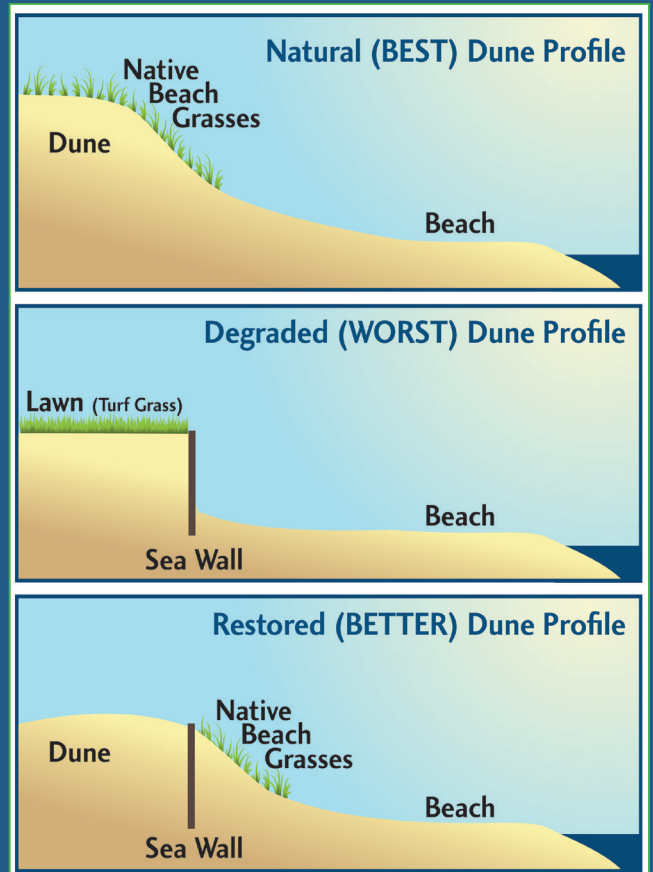
The simplest way to avoid long term damage is to properly maintain and care for the dunes and the native vegetation that creates a healthy dune profile. When planting is necessary, choose native vegetation appropriate to each section of the dune profile. If native species are difficult to find, contact the Lake Huron Coastal Centre. Many native species can be easily propagated or transplanted from a local source. You may refer to the LHCC's native plant guide "[The Good, The Bad, and The Ugly](#)".

SEA WALLS

With respect to the dune profile, sea walls built in response to high lake levels pose a challenge to the natural function of dune systems. While dunes provide dynamic flexibility, eroding and re-building with the changing water levels, sea walls are rigid, fixed structures.

During periods of low lake levels, the vertical wall can cause beach loss and change wind patterns, affecting how and where sand gets deposited. During periods of high lake levels, these vertical structures can reflect wave energy downward at the base of the wall, which can cause scouring in front of the wall and erosion that can undermine the structure, causing it to fail. A healthy dune with beach grass acts as a natural sea wall, that will protect properties during times of high lake-levels.

The lake and your property will benefit from the removal of an existing sea wall followed by the restoration of a healthy dune profile. Keep in mind that the opinion of a qualified coastal professional should be sought to ensure such change does not cause unnecessary risk. If you already have a sea wall that cannot be removed, consider letting the sand blow and accumulate against your wall and allow a natural sand dune to develop. This dune may be eroded during periods of high lake levels, but better the lake take the sand than undermine your sea wall.



In a beach-dune ecosystem, it is important to stop the spread of invasive plants. Invasive plants are species from another ecosystem or continent, whose introduction or spread will negatively impact coastal processes, native plants and wildlife. Their presence can even impact property values and your ability to use the shoreline.

Phragmites australis (*Phragmites*) also known as European Common Reed is Canada's number one invasive plant. The image below shows a dense stand of *Phragmites*. *Phragmites* can quickly spread along a shoreline, blocking views and access, choking out native beach vegetation, and interrupting natural coastal processes. *Phragmites* prefers to invade naturally wet beaches, but the invasive plant can also change the moisture content in a dry sandy beach which allows for new species more typical of a wetland to establish. Once this happens, restoration to a dry sandy beach can take years, if at all.

Controlling *Phragmites* before it grows into dense monoculture stands is the best option for shoreline landowners at this time. Herbicides are the quickest option, but require a licensed pesticide applicator with the proper permits and permissions for shoreline work. Repeated manual control, such as digging and removal of roots, has been proven to stress the plant and eventually it may stop growing in that location. At a minimum, shoreline residents should be cutting the seed heads, usually in early August, from the plants and disposing of them in garbage bags on an annual basis to slow the spread of the plant along the coast.



Phragmites can quickly spread along a shoreline, blocking views and beach access, and changing the moisture content in the sand. The picture on the right shows a close up of the seed heads produced by the plant.

Other non-native species that appear on the beach should be removed, but are not as high a priority because they will not impact the beach like an invasive species will. The best way to know what species are invasive, is to learn what species are supposed to be on the beach so you are able to quickly identify a new, potential invader.



White Sweet Clover, an invasive species.

The Lake Huron Coastal Centre has published a plant guide, "Lake Huron Coastal Dune Plants: The GOOD, the BAD and the UGLY" which can be a helpful tool.

The guide lists common native, non-native and invasive species that can be found on the shoreline and provides control options for the invasive species. This guide is available at www.lakehuron.ca.

TURF GRASS

Turf grass, used by many to create lawns, has no place along the shoreline where a beach and dune ecosystem exists. Turf grass requires large amounts of fertilizer and water to get established and grow. Since sand is porous, water carrying excess fertilizers quickly percolates into the groundwater and is carried into the lake where the added nutrients can create nearshore water quality issues such as algal blooms.

Turf grass also attracts geese. Excessive geese droppings can increase *E. coli* in the sand and the lake to unsafe levels. Native species such as beach grass do not attract geese and have deep roots that will filter nutrients and help protect nearshore water quality. Turf grass can also introduce common weeds to a beach environment which can be difficult to remove once they establish. Turf grass will not capture sand and grow a dune either, leaving your property vulnerable to changing lake conditions and causing a loss of fine sands over time.

Turf Grass & Septic Systems

Turf grass is not the only option available when planting above a septic system. The Lake Huron Coastal Centre's "Dune Planting Guide" suggests several species that will grow well over a septic bed.

If your septic bed is close enough to the house or cottage that it is sheltered from strong winds, even sand alone is a better option than turf grass.



Protecting and recovering species at risk and their habitat is a key part in conserving biodiversity on Lake Huron's shoreline. The Great Lakes basin houses the global population of Pitcher's Thistle, where it inhabits coastal dunes. Lake Huron dunes also provide critical habitat for the Endangered Piping Plover and Monarch butterfly. Dune ecosystems provide important migratory corridors for these species, as well as providing connectivity for other wildlife.



MONARCH BUTTERFLY

The Monarch is a fairly large showy, orange and black butterfly with small white spots. The largest threat is habitat loss and fragmentation. Historical and current use of pesticides and herbicides may also limit recovery. Planting pollinator friendly-flowers can aid in providing food for the species.





Female Piping Plover (Photo: Mark Peck)

PIPING PLOVER

This small shorebird is well-camouflaged on the pale sand beaches it favours. Major threats to its population include human disturbance such as beach raking, motorized vehicles on the shores, along with invasive species, which degrade or eliminate their habitat, compounded by the effects of predation.

PITCHER'S THISTLE

This plant species may grow for many years before flowering. Major threats include recreational use of the dunes (particularly by ATVs), manipulation of the dune environment (leveling, planting of lawns, stabilization structures), shoreline development and landscaping, and displacement of critical habitat by invasive plant species.





Residents' enjoyment of the water often includes using a watercraft, and then pulling it onto the beach when returning to shore. It has become common to pull a watercraft up into the dunes to keep the beach clear for pedestrians and away from high water during storms. Storing the watercraft in the dunes for an extended period of time can damage the vegetation and structure of the dunes, so it is important to minimize this impact as much as possible. Moving the watercraft from storage to the shore and back again should be done with great care to ensure minimal disturbance. It is also important to carefully fill gas and oil tanks and properly dispose of empty containers.

IMPROVING WATER QUALITY

Rain and snow melt that runs off your property, water that goes into your septic system; and water that flows from your garden hose all end up flowing to the lake. Fertilizers and pesticides applied to your property, and anything you put down the drain, can end up as a pollutant in the lake. The more water held back and then released slowly into the sand will help reduce the amount of pollution reaching the lake.

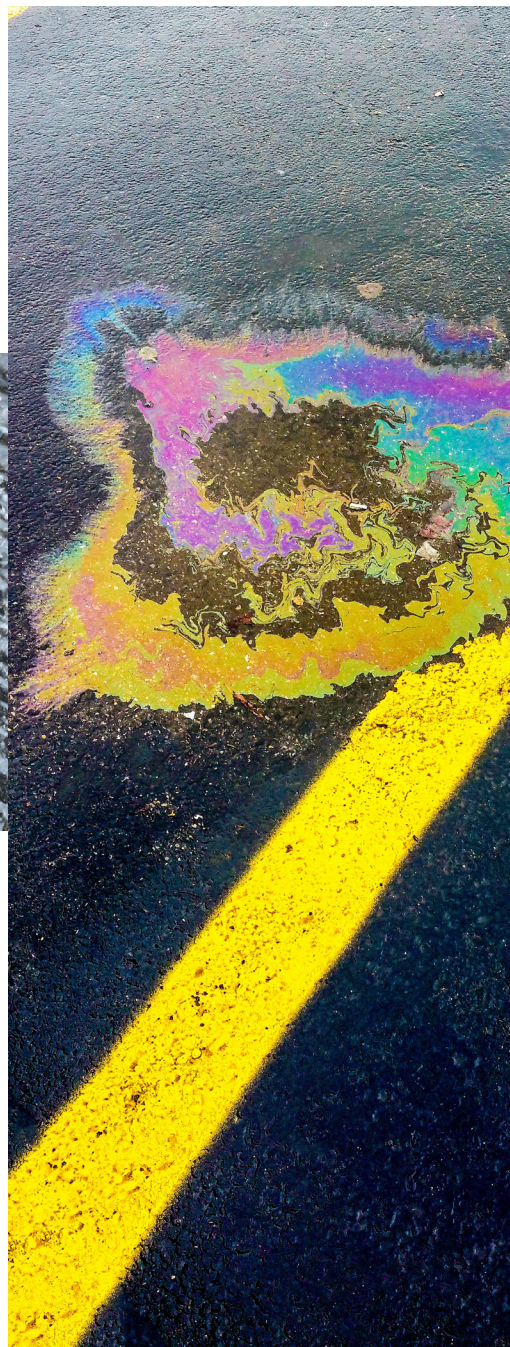
ALL WATER FLOWS TO THE LAKE!

1. Keep it clean
2. Slow it down
3. Soak it up



Proper maintenance of septic systems is extremely important to protecting water quality of both your groundwater (well water) and the lake. Septic systems should not be located close to any water course. Septic systems should be inspected annually and pumped every 3 - 5 years by a qualified septic system contractor.

Every property in the Municipality drains water into Lake Huron. The accumulation of nutrients from your property, storm water management facilities, and all other potential sources of water pollution create conditions for algae blooms. Algae blooms can ruin swimming opportunities and the enjoyment of the lake. Do your part to protect water quality.



At the beach evaluation, Lake Huron Coastal Centre staff will provide you with a Beach Care Toolkit and walkthrough their findings with you. Following the evaluation, you will receive the results by email that will contain restoration recommendations. The program is able to provide some sand fencing, T-posts, and signs for participants (refer to materials available below).

It is important to confirm the work you plan to implement so that the Lake Huron Coastal Centre can ensure you receive the right materials. You can do this on the day of your beach evaluation, or by e-mail in reply to your results.

Also, keep in mind that any work proposed should be shared with your neighbour. It is good to keep them informed about expected changes so that they can help protect newly planted areas or perhaps your good stewardship ethic inspires them to make changes on their own property. Working together will increase efficiencies and double the positive results of your activities.

MATERIALS AVAILABLE FOR COASTAL STEWARDSHIP ACTIVITIES

Information Resources

The Lake Huron Coastal Centre has a wealth of information on our website to assist participants with improving beach stewardship. Fact sheets, booklets, and instructional videos are available free-of-charge on the Lake Huron Coastal Centre website: www.lakehuron.ca. Additional assistance is always available by contacting the Lake Huron Coastal Centre.

Beach Grass

If your property requires beach grass, your copy of the beach sketch will illustrate how many grasses you will need and where you should plant them.

Sometimes it is best to plant in phases because sourcing beach grasses can be challenging. Working with your neighbours and your beach association to harvest local grasses using sustainable methods should produce enough beach grasses for most participants. Even small patches of grasses can be expanded over time. Beach grass harvesting is not recommended until late fall, after the plant has gone dormant for the winter. The Lake Huron Coastal Centre has published a "[How to plant beach grass](#)" factsheet that is available on the website.





Sand Fencing & T-posts

If your property requires sand fencing, the copy of your beach sketch will illustrate where the sand fencing should go, and it will indicate how many rolls of sand fencing you should use.



Signs

Various signs are available from the Lake Huron Coastal Centre such as "Dune planting area", "Please stay on the trail" and "Sensitive dune area".



Other Materials

Some beaches may require additional materials such as native shrubs or trees. The program may be able to provide a limited number of native plants for your restoration work. The Lake Huron Coastal Centre can provide guidance on where to source various additional items in Ontario, or who to contact for assistance.





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