

# Shoreline Erosion & Stabilization



Mattagami Region  
Conservation Authority

Caring for your shoreline means less work, not more! You will help preserve water quality and protect the beauty of your paradise, maintaining its investment value. Extra benefits include more time to relax and enjoy!

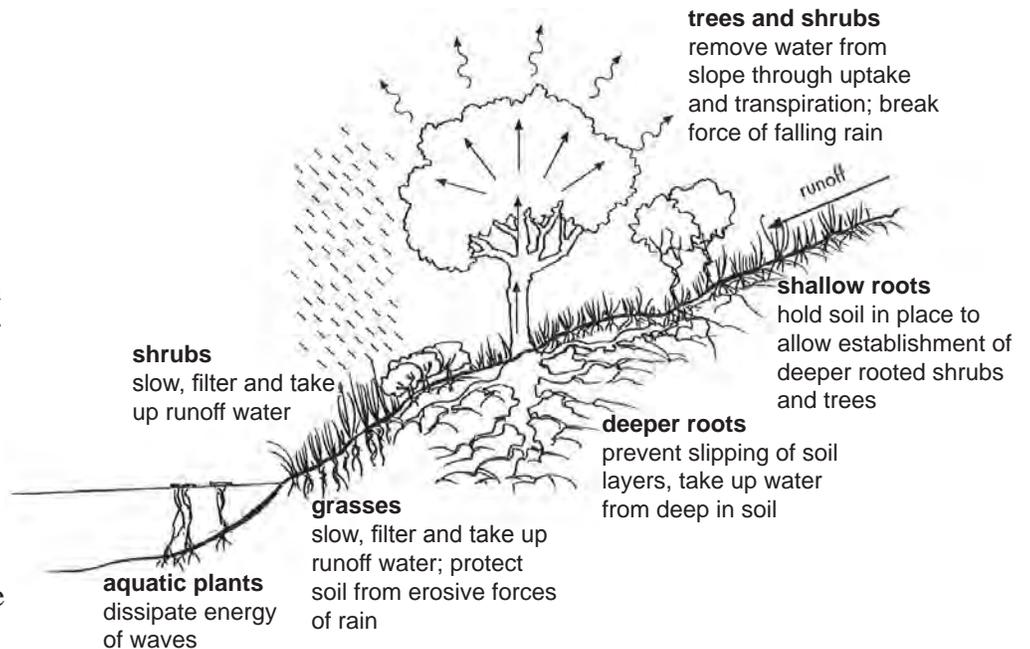
Shorelines erode for various reasons: natural wave and wind action, ice action (freezing and thawing) and such human activities as altering the waterfront with lawns, docks and break walls. When soil is exposed and vegetation is cleared or kept mowed to the water's edge, the stabilizing effect of root systems is lost, which in turn opens the land to the power of the waves, ice and surface runoff. It is important to remember that erosion is a natural process and no shoreline treatment will stop it. At best we can implement practices that will reduce the impacts of erosion.

Despite their popularity, natural erosion cannot be prevented with concrete shore walls or sloped rock. Both of these measures are expensive and temporary fixes. Major storms, ice damage and the effects of time eventually cause these to fail. Hardened shores in one place may also mean more erosion problems at neighbouring shoreline areas, when wave, flow and ice energy is deflected elsewhere.

Although simple sloped rock protection may offer small feeding and refuge spaces for fish and aquatic invertebrates, a fully naturalized shoreline is generally considered the best multi-purpose approach to protecting the lake's edge. Water and ice energy is easily dissipated as it washes up the shore slope, and deep-rooted vegetation acts to further stabilize near-shore soils. Restoring your shoreline or leaving it in a fairly natural state is the best strategy for shoreline property owners to use against shoreline erosion.

## Techniques to Reduce Shoreline Erosion

- Encourage a buffer zone of native vegetation. The buffer zone can be as little as three metres wide, as long as it contains a variety of native species.
- Maintain a smaller lawn away from the waterfront; a pathway may be mowed for access down to the water, but keep any development well back from the lake.
- "Rip rap" (stabilizing a shoreline with rocks) may be used as an alternative, however it can be expensive and in certain situations may reduce fish habitat.
- Existing armour stone or gabion baskets can be modified to incorporate some slope and natural vegetation to extend the life of your retaining wall and improve habitat.



*The role of vegetation in minimizing erosion on a shoreline*

## Restoring Developed or Damaged Shorelines

### Vegetated Buffer Zone

Plant native species of trees and shrubs with a variety of other aquatic and upland plants. Biodegradable erosion-control fabric can be effective when used with native plants; it holds the soil while allowing plants to grow through it.

### Loose Rock Buffer Zone

In some instances, loose rocks can be placed on a gradual slope and used to stabilize an eroding shoreline. Native shrubs and vines should be planted among rocks and will provide natural protection to absorb and dissipate wave action.

### Bioengineering Techniques

Vegetated geogrids and bundles of branches, or “wattles,” staked into the bank will protect the shoreline from eroding. Live stakes or posts of willow or red osier dogwood also work to stabilize eroding shorelines. Brush layers can be used on steeper banks where deeper reinforcement of the soil is needed.

### Buffer Zones Help Protect Our River

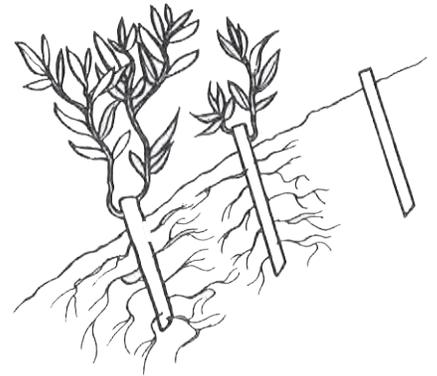
There are many benefits of maintaining a shoreline buffer zone:

- Provides food and shelter for many fish and wildlife species
- Protects your property and investment
- Holds onto fine bottom sediments, keeping them in place
- Absorbs wave energy, preventing shoreline erosion and ice damage
- Takes less work to maintain than a larger lawn
- Prevents surface runoff and contaminants from entering river water
- Restores the ecological functions of the river’s ecosystem

Protect the natural shoreline by replanting areas that lack trees and shrubs, and maintaining those areas that already exist. Keep a smaller lawn and leave a wide buffer area of trees, shrubs and indigenous vegetation around all shoreline areas. Development could vary depending on slope and contouring and should be kept at least 30 metres away from the shoreline.

### Planting Local Native Species

“Native plants are an important part of our natural heritage. They have adapted to our soils and climate, and they provide homes and shelter for many other types of life. This in turn fosters a healthy, balanced ecosystem, which is more resistant to damage by pests and diseases.”



*As a live stake of native willow, dogwood or poplar grows, its roots act like rebar in concrete to help to stabilize an eroding shoreline*



**To prevent erosion when watering new plants on slopes:**

- **Mulch**
- **Build berms or small dams of rock or soil around plants to hold water**
- **Use a fine spray when watering**

## “Why Should I Plant Native Species?”

Native (indigenous) plants thrive on minimal care and maintenance. They are so well adapted to living in their natural ecosystems that they do not need the chemical support their exotic counterparts depend on to survive. Native plants will even withstand moderate drought conditions.

By providing shelter to local wildlife species that are losing their natural habitat, native plants contribute to biodiversity and the preservation of local gene pools. Native plants also give your property a sense of place. Indigenous wildlife species such as birds, bees and butterflies all help to bring a native plant garden to life. With a wide variety of beautiful wildflowers, such as Jewelweed and True Forget-Me-Not, your landscape will be a splendour of colours throughout the seasons.

Ask for native plants at your local garden centre and make sure that the plants you purchase are native to the immediate area. Never dig plants from the wild. The risk of damaging a flourishing natural area is unnecessary when many sources of cultured native plants are becoming available. Some native species to consider would be Alternative-leaf Dogwood, Red Osier Dogwood, Nannyberry, Sumac, and Bebb’s Willow. Take a look at what species grow naturally in the area. Those species should do well on your site as well.

## Common Shoreline Plants of Northeastern Ontario

These plants are all native to northern Ontario and suited to shoreline rehabilitation.

### Trees

|                     |                               |
|---------------------|-------------------------------|
| Eastern White Pine  | ( <i>PinePinus strobus</i> )  |
| Larch Tamarack      | ( <i>Larix laricina</i> )     |
| Red Maple           | ( <i>Acer rubrum</i> )        |
| White Spruce        | ( <i>Picea glauca</i> )       |
| Bur Oak             | ( <i>Quercus macrocarpa</i> ) |
| Silver Maple        | ( <i>Acer saccharinum</i> )   |
| White Birch         | ( <i>Betula papyrifera</i> )  |
| Eastern White Cedar | ( <i>Thuja occidentalis</i> ) |

### Shrubs

|                          |                                |
|--------------------------|--------------------------------|
| Alternative-leaf Dogwood | ( <i>Cornus alternifolia</i> ) |
| Red Osier Dogwood        | ( <i>Cornus stolonifera</i> )  |
| Nannyberry               | ( <i>Viburnum lentago</i> )    |
| Bebb’s Willow            | ( <i>Salix bebbiana</i> )      |
| Black Elderberry         | ( <i>Sambucus Canadensis</i> ) |
| Staghorn Sumac           | ( <i>Rhus typhina</i> )        |

### Wildflowers, Aquatic Plants & Others

|                    |                                 |
|--------------------|---------------------------------|
| Joe-Pye Weed       | ( <i>Eupatorium maculatum</i> ) |
| Jewelweed          | ( <i>Impatiens capensis</i> )   |
| Water Sedge        | ( <i>Carex aquatilis</i> )      |
| Common Cattail     | ( <i>Typha latifolia</i> )      |
| True Forget-Me-Not | ( <i>Myosotis laxa</i> )        |
| Willow Aster       | ( <i>Aster praealtus</i> )      |
| Swamp milkweed     | ( <i>Asclepias incarnate</i> )  |
| Cord Grass         | ( <i>Spartina pectinata</i> )   |

### Resources

A Shoreline Owner’s Guide To Lakeland Living. (n.d.). Retrieved from [http://kawarthaconservation.com/pdf/Lakeland\\_Living\\_Guide.pdf](http://kawarthaconservation.com/pdf/Lakeland_Living_Guide.pdf)

Shoreline Erosion. (n.d.). Retrieved from <https://www.bcnature.ca/wp-content/uploads/2015/03/Section2-8.pdf>

The Tree Atlas <https://www.ontario.ca/environment-and-energy/tree-atlas>

Ontario Wildflowers <http://www.ontariowildflowers.com/>

**Before you consider making any changes to the shoreline, check with the Mattagami Region Conservation Authority.**



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