

Beach Conservation



Dune Conservation means Healthy Beaches

Our sandy beaches are a great place for recreation and relaxation. They can be a great place for serenity, nature appreciation and play. They provide great value to communities. Often though, our beaches are taken for granted. And with greater demand for beaches, we place greater stresses on them.

In order to understand how we impact our beaches, it's important to understand how beaches function. Beaches are part of a system that includes the beach we sit, walk or run on, but it also includes the sand dune, and it includes the sandy lakebed and sand bars. It all operates together. If we mess with one part, we mess with them all.

Sand dunes, for instance, are simply an extension of the beach; a reservoir of sand that the lake 'borrows' from time to time, during storms when the waves erode the dune and carry the sand into the lake. Without dunes, our beautiful sandy beaches would erode away.

For some context, Lake Huron's dunes are found along a small fraction (about 2 to 3%) of the lake's 6,000 kilometre shoreline. Lake Huron's dune systems, therefore, represent an extremely small land mass. They are narrow linear

features restricted to localized areas along major shorelines, and their total area is quite small. Yet these are the areas of the lakeshore that attract thousands of people each summer, placing them under great pressure.

All ecosystems have a certain threshold for being able to absorb human impacts. Dunes have a very low threshold. Dune vegetation is sensitive to even modest damage by people crossing over the dune to get to the beach.

American Beachgrass, or Marram grass, is one of the primary dune species that helps to anchor sand and build the dune. It is a native coastal plant that has the capacity to endure the extreme conditions of the dune environment, including sand burial. During high lake levels, the dune and the Marram grass are eroded. During low lake conditions, Marram grass grows lakeward and the dune rebuilds itself. Without the dune, sand drifting and sand loss from the beach would be a serious problem.

Dunes provide a range of beneficial services that provide enormous value to the coastal community. Some of



Photos above show a beach under high lake levels (left; 1986) and low levels (right; 2005). Dunes will erode under high lake scenarios, as the sand is 'borrowed' and used to help protect the beach by building an offshore sand bar that helps reduce energy from oncoming waves. Under low lake scenarios, dune vegetation recovers and builds the dunes. Without the dunes, the sand would have continued to blow inland and become lost from the beach, leaving behind coarser sand and gravel.



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In the photo above, the lack of dune vegetation caused extensive landward sand drifting, burial of trees, and threatened cottages behind it. Retaining dunes prevents this sand erosion and drifting problem.

these free services include the following:

Shore protection – Dunes are known throughout the world as being the most effective protection device, greatly outperforming engineered structures. Their dynamic ability to give and take is what makes them so efficient at coastal protection. And they're free.

Water purification – as with any stream, river or watercourse, the establishment of vegetated buffers is universally acknowledged as an effective measure for filtering pollutants out of the water before it reaches the river or lake. Dune vegetation also performs this function because their deep root systems provide a good filter.

Biological diversity – Coastal dunes have an impressive diversity of plants and animals within them. Some of these species are globally or provincially rare, and others are regarded as Species at Risk and need our help to survive. As habitat, dunes are unlike any other ecological feature in Ontario, and so they are special places to plants, animals and people. The higher diversity of species gives them greater resiliency to changing conditions.

Erosion control – without the dunes, sand would continue to blow inland, drifting over whatever was in its path. Dune vegetation is extremely efficient at capturing and holding sand and preventing it from being lost from the beach.

Beach quality – dunes are a reservoir of sand that gets exchanged from time to time with the lake. Without the dunes, sand would be washed away by waves, and carried by wind beyond the active shore system. Fine sands, in particular, would be lost, and the quantity of sand at the beach would be reduced. This all leads to a degraded beach over time.

Social benefits – beaches are wonderful places to relax, rejuvenate our souls and connect with nature. Dune vegetation is essential to all of this. Without this vegetation, there would be no dunes, and without the dunes, we're left with degraded beaches.

Conservation is key to preserving the values of our beaches. How climate change will affect our beaches is starting to become clearer. With a trend toward increased lake temperatures, we can expect higher wind speeds off the lake. As the difference between air temperature and water temperature narrows, wind speeds increase. Higher wind speeds will increase wind-related beach erosion. Invasive species are anticipated to be more of a threat. We're already familiar with the invasive grass European Common Reed (*Phragmites australis*) spreading across our beaches. Healthy native coastal plants can help prevent future invasive species infestations.

Higher air temperatures and reduced winter ice formation could mean less protection to the beach during the winter storm season. Ice has typically protected the beach from wave and wind erosion. Dunes increase the resiliency of the shore and the ability of the beach to respond to these changes.

What Can You Do?

- *Avoid damaging dune vegetation. It holds the dune in place and helps prevent sand erosion.*
- *Cross dunes where there are established pathways, boardwalks or other structural cross-overs.*
- *Motorized vehicles can instantly destroy dunes that took years to evolve and develop. Motorized vehicles have no place on our beaches.*
- *Beach grooming can lead to a cascade of negative issues. Grooming should only be done seasonally, or when the amount of debris exceeds a certain threshold.*