



Bluff Conservation

Coastal Erosion: People living on the edge

Fluctuating water levels is a natural process that occurs with regularity along the Great Lakes. Shoreline bluff erosion is also a natural process which, while it beleaguers some cottagers, does offer a practical, and essential benefit to the shoreline when you step back and look at the BIG PICTURE.

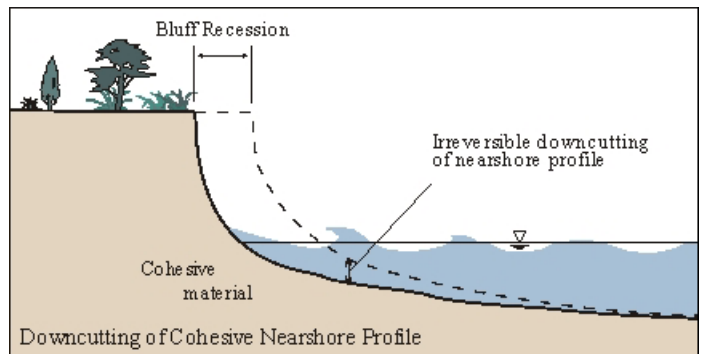
If we look at the shoreline from Amberley to Grand Bend (the Huron County shoreline), we see that some areas are more prone to erosion than others. Historical information for this area shows that there are certain areas of the shoreline that are continually eroding, other areas that erode more slowly, and still other areas that have wide sandy beaches and have been stable for many decades.

Erosion has been occurring along the Great Lakes since they were formed over 10,000 years ago. It's a natural process that is necessary to the ecology of the shoreline. Without erosion, our beaches would disappear. It all comes down to coastal processes. When storm waves crash along

the shoreline, that energy can cause erosion at the bottom of bluffs. Lake Huron's bluffs are composed of glacial till (that's the clay, silt and sand material left behind by glaciers). As the base of the bluff is eroded by waves, it causes the slope to become unstable, and in certain situations, this over-steepening of the bluffs can lead to massive slope failures, known as slumps. In a slope failure, large portions of the bluff slide from top to bottom ending up on the beach or in the lake. The waves then sort this material out: clay and silt, because they're such small light particles of soil, get suspended in the water causing the water to turn brown. These light soil particles eventually get deposited offshore. The sand, which is made up of larger, heavier particles drop out of the water column and stay along the shoreline forming our beaches.

The waves will carry the sand along the shoreline by alongshore currents. For instance, when the waves are coming out of the northwest (that's the direction the strongest waves tend to come

Profile showing how bluff erosion also includes erosion of the lake bottom. Lake bottom erosion causes deepening of the nearshore and that allows larger waves and wave energy to reach the shore, leading to more bluff erosion.





76 Courthouse Square
 Goderich, Ontario, Canada
 N7A 1M6

Phone: (226) 421-3029
 Email: coastalcentre@lakehuron.ca
 Website: www.lakehuron.ca

Providing Leadership in Coastal Conservation

www.lakehuron.ca



Bluff erosion near Goderich provides the supply of sand necessary for the beach and dune systems in the Grand Bend-Pinery-Ipperwash area. Without this constant supply of sand, the dunes, and the special ecology they support, would deteriorate.

from), they approach the Lake Huron shoreline at an angle that causes sand to be carried from north to south. Of course when waves come out of the southwest, the sand is carried from south to north. But overall on Lake Huron, sand is carried from north to south and end up in certain areas of the shoreline where the physical characteristics cause the sand to be deposited. Then, dunes will form where beach grasses and other specialized coastal vegetation develop.

Erosion is a natural process that is important to enable other critical coastal processes to take place. Our beach and dune systems rely on bluff erosion and shore processes to exist. Our beaches and dunes, in turn, protect the shoreline from storm waves and erosion.

Having a cottage in an eroding area can be a nerve wracking experience. “Will the cottage make it another year?” When cottage development first started taking place along Lake Huron, information wasn’t readily available to help people locate their building safely. As a result, a number of cottages along the lakeshore were built in high risk zones. Fortunately, information does exist now to allow people to locate their cottages a safe distance back from the shoreline, based on historical erosion rates and the potential for slope failure.

Will lower lake levels projected under climate change slow bluff erosion along the lake? Perhaps at first, but waves will gradually re-adjust the shoreline and erosion rates may resume as before.

The shoreline is dynamic, and change is the rule. We’ve been given the notion that erosion is a negative thing. Taken in the context of the Lake Huron ecosystem, erosion is actually beneficial. Often, the best approach when faced with extensive bluff erosion is to move back the cottage, if possible, and let it happen. Often, when dealing with one of the Great Lakes, you have no other choice.



Funding support for this publication was made possible through:

