



# Beach Conservation

# True Grit

By Geoff Peach, LHCCC

The next time you spread your towel on the beach, think about this:

One of the most popular types of shoreline in the Great Lakes region is the sandy beach. Sand is deposited on beaches when waves from the lake move it up from the lake bottom to the shoreline. The sandy shorelines are ever changing.

Littoral transport (the movement of sedimentary material along the shoreline by waves and currents) carries sand parallel to the shore (a process called longshore transport) and perpendicular to the shore (on-offshore transport).

The wind can also transport sand, carrying both large and small grains and deposit them either up or down shore, often in the form of sand dunes.

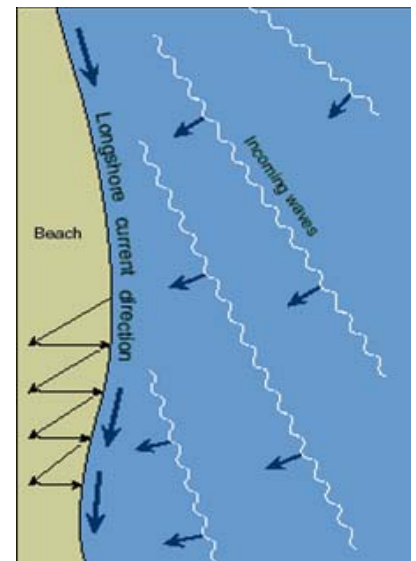
## Beach Ecology

It may seem that sand beaches look pretty barren and devoid of life. But many different life forms inhabit a beach, such as algae and other microfauna (tiny animals; especially, those invisible to the naked eye). As a result, beaches are rich feeding grounds for migratory shorebirds. Shorebirds are often seen searching the

beaches for drowned insects, especially during the spring and fall migrations. The beach also collects driftwood and other debris that a variety of beetles, spiders, and shorebirds like to feed upon.

## What is sand made of?

Sand consists of rocks, crystals, and shells that are eroded over a long period of time by wind, water, and ice. The composition of sand can change greatly from beaches in one region to another. For example, the black sand beaches of Hawaii are composed of volcanic ash and rocks, while the



*Sand is transported alongshore by currents formed when waves strike the beach at an angle. Sand is also carried along the shore in a zigzag pattern by waves rushing onto the beach and back to the lake.*



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white beaches of the Caribbean consist of sea shells. The tan-colored beaches around the Great Lakes area are made up mostly of grains of quartz. A handful of scooped sand from a beach along Lake Huron will most likely contain the following minerals in roughly the following proportions:

Quartz (87-94%)  
Feldspar (10-18%)  
Magnetite (1-3%)

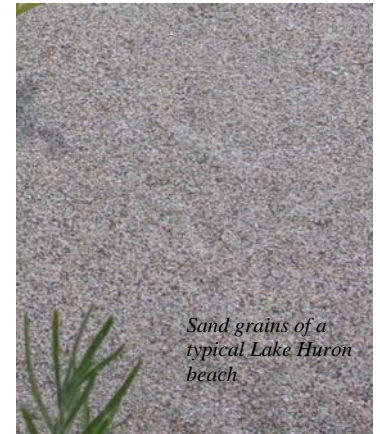
*less than 1%:*

Garnet (red)  
Calcite (white)  
Ilmenite (brownish-black)  
Hornblende (green, brown, black)  
Epidote (yellowish-green, brownish black)

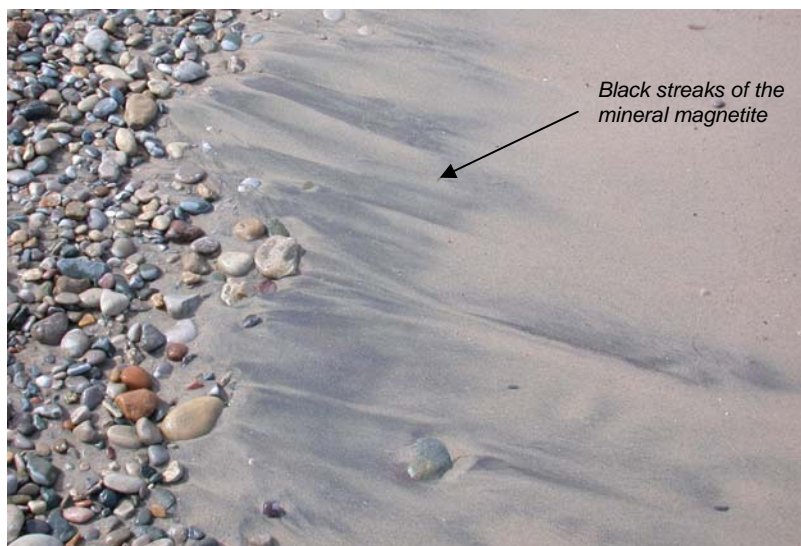
**Black Sand?**

You may have walked along the beach and noticed patches or streaks of black on the sand's surface and wondered, is it pollution, an oil spill, top soil? Actually, these black sand streaks that accumulate along our beaches are the mineral magnetite. The gentle waves of summer pile fresh sand onto the shore. As the sand dries, winds blow finer, lighter grains into the dunes, leaving the heavier minerals behind. By summer's end, the heavy iron-rich grains of magnetite have accumulated to the point that some stretches of beach appear quite black. Magnetite can be easily collected by using a magnet.

The next time you stroll along your favourite beach, pay closer attention. You may never look at your beach the same way again.



*Sand grains of a  
typical Lake Huron  
beach.*



*Black streaks of the  
mineral magnetite*