

Sediment along the beaches and dunes of Eastern Lake Ontario

Mary Penney, Stewardship & Habitat Program Coordinator,
New York Sea Grant

Sandra Bonanno, Consulting Ecologist and

Chris Lajewski, Land Steward, The Nature Conservancy

Fun Fact:

To create dunes three things are needed: onshore winds, sand, and structures (like plants) to trap the sand so it can accumulate.

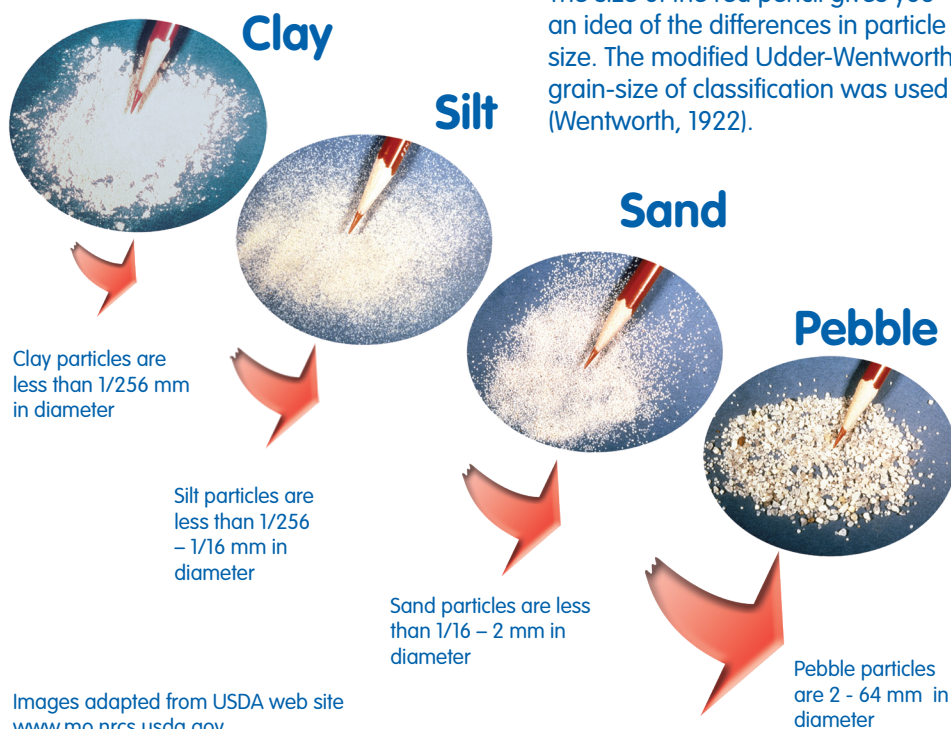
What is sediment?

The word **sediment** is the collective name for loose, solid particles that are created from the breakdown of rocks. The breaking down of rock is similar to cutting a log with a chainsaw. The log is like a large rock, the sawdust from the log is sediment, and the chainsaw's blade is similar to the action of wind and water that breaks down the rock into smaller particles. Sediments can be moved by wind, ice, and water and are named by how big the particles are.

Types of sediment

The smallest sediment particles are **clay** particles, which are very fine. A powerful microscope is needed to see these particles. In lake water, waves and currents move clay particles easily. **Silt** particles are slightly larger than clay, but still very fine. Both clay and silt move offshore and settle very slowly in deep water when they are washed into Lake Ontario by erosion. **Sand** particles are larger than silt. Individual sand grains are big enough to be seen with the naked eye. Sediments larger than sand include gravel (**pebbles** and **cobblestones**) and **boulders**. Water can move all of these sediments, with strong enough currents!

The size of the red pencil gives you an idea of the differences in particle size. The modified Udden-Wentworth grain-size of classification was used (Wentworth, 1922).



Images adapted from USDA web site
www.mo.nrcs.usda.gov



New York Sea Grant
SUNY College of Oswego
Oswego, NY
13126-3599
Tel: 315.312.3042

www.nyseagrants.org

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Sediment



The largest particles are cobblestones (left) which are 64-256 mm in diameter and boulders (below) which are over 256 mm. The yellow pad gives you an idea of the size. Photos by Mary Penney

Eastern Lake Ontario's sand

Sand is the most common sediment found along the eastern Lake Ontario shoreline. Sand that's eroded from upland dunes settles easily in water. During low water, sand is carried back onto the dunes by prevailing westerly winds.

The sand along eastern Lake Ontario was formed in different ways. Waves pounding larger sediments against each other created some of the sand. Waves breaking shells of zebra and quagga mussels (both are invasive species in Lake Ontario) created some sand. Some of the sediment was already sand-sized when it was eroded from the uplands.

Sand is one of the special ecological components of the eastern Lake Ontario shore. It is one of the vital components for dune development. Sand also creates an environment for recreational opportunities such as photography and bird watching.



Where did the sand come from?

The sand of eastern Lake Ontario's shore was deposited thousands of years ago when glaciers retreated north into Canada and Greenland. Some of the sand can be found in the shallow water, on the beach, and in a mound on the dunes. There is no new source of sand for our beaches or dunes. If the sand washes or blows into the wetlands that are sheltered behind the dunes, it may be lost from the dune system forever. Keeping sand in the shallow water of Lake Ontario, beaches, or dunes makes this important resource available for this unique (dune) ecosystem.

References

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Advisory Committee:

Sandy Bonanno,
Consulting Ecologist
Carolyn Deary-Petrocci,
Oswego County BOCES
Chris Lajewski,
The Nature Conservancy
Irene Mazzocchi,
NYS Department of Environmental Conservation
Erica Schreiner, *Oswego County Soil & Water Conservation District*

Fun Fact:

The Eastern Lake Ontario Dunes and Wetlands Area is the only place on the US shore of Lake Ontario with enough sand to form dunes.