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## Features

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### Looking at the lake

Teachers get hands-on view of Lake Superior's ecosystem

By DAN SCHNEIDER, DMG Writer

POSTED: July 1, 2008

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HANCOCK TOWNSHIP - A group of teachers netted pelagic zooplankton and phytoplankton from Lake Superior's water and scooped benthic organisms from the bottom of the lake aboard Michigan Technological University's Research Vessel Agassiz Wednesday.

These teachers came from all over the Michigan and some from other Midwestern states for a close look at Lake Superior's ecosystem as part of the Great Lakes Watershed Investigations Teacher Institute last week at Tech.

The organism-fetching expedition started off from the Lily Pond boat dock at about 8 a.m. The first step was loading a motley assortment of equipment on board the research vessel: a box with several empty mason jars and an anchor; a bucket containing a number of clear tubes, a sizable graduated cylinder and a yardstick; a heavy-duty clamshell scoop.

"There are a lot of expensive pieces of equipment on this boat that we will use today, but there are ways to do all of this much simpler," Tech environmental engineering professor and excursion leader Noel Urban said, assuring teachers they would be able to replicate the day's explorations with their students.

Before leaving the Portage Waterway, teachers measured the turbidity of the waterway's water using a relatively simple device: a Secchi disc. A Secchi disc is a disc about eight inches in diameter that is lowered into the water. The depth at which it can no longer be seen is recorded as a measure of light's ability to penetrate the water.

That day, the disc was visible to a depth of 4.9 feet.

"That's pretty deep," Urban said. "That means we're getting a lot of Lake Superior water."

Water from the big lake moving into the Portage Waterway heightened the waterway's clarity. A surface temperature of 14 degrees Celsius and a temperature of 12 degrees Celsius at a depth of five meters were also recorded.

The boat's diesel engines chugged to life and the Agassiz headed out to a spot northeast of McLain State Park, about three miles off the shore where the water was about 114 meters deep. There, the water was colder: 8.41 degrees C at a depth of 5 meters; 6.44 degrees Celsius 20 feet down.

Interestingly, the water temperature at 10 meters was about a tenth of a degree warmer than at the surface. Urban said this was caused by eddies off of the Keweenaw current mixing the water's temperature layers.

Urban said the average surface temperature of Lake Superior four degrees Celsius in the past 30 years. He said the impact of climate change on Lake Superior's ecosystem is one of the most pressing questions facing scientists who study it.

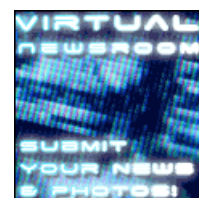
Three miles off the coast, the Secchi disc was visible to a depth of between 8.5 and 9.5 meters, depending on which pair of teachers was doing the measuring. Typically, Urban said, a Secchi disc is visible 14 meter below Lake Superior's surface, and sometimes they are visible as deep as 18 meters.

"This isn't clean Lake Superior water, it's been influenced by rivers bringing material from the shore," he

### Article Photos



Dan Schneider/Daily Mining Gazette  
Tech environmental science professor Noel Urban holds a jarful of zooplankton to the light while high school teachers Alex Long, middle, and Mike Frost observe.





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said.

Next, the Mason jars and anchor came into play. The anchor was used to sink in succession a pair of cone-shaped filtering nets to a depth of 30 meters. The 126-micron net brought up a sample of animal-like zooplankton while the 63-micron net brought forth plant-like zooplankton.

Both of these types of plankton were filtered into the Mason jars and eventually taken to Tech's campus for observation under microscopes.

Next, the clamshell bucket was lowered to the lakebed, bringing up a scoopful of clay sediment and the benthic organisms that lived in it. This would also be analyzed in a laboratory on Tech's campus.

Karen Baculz, who teaches at Marquette Senior High School, said the trip dovetailed well with what she does in her classroom.

"When I do the eco-systems, I really try to focus on the local ones, especially Lake Superior because it is so important and nothing's ever taught about it," she said.

Nicole Olszowy, a science teacher at Fowlerville High School, said she hopes to replicate some of the exercises on a smaller scale on inland lakes near her school.

"We don't have the Great Lakes in the middle of the state," she said.

Alex Long, who teaches at Washtenaw Technical Middle College in Ann Arbor, said the opportunity actually interact with the environment is important in environmental education.

"That's one of the hardest things is to get kids into it, to care enough about it to pay attention," he said. "Hands-on learning is crucial."

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