

Pictured below: (1) A Ponar grab pulled up mud samples for biological studies of the Lake's benthic animals, including worms, snails, crustaceans and insect larvae. But, (2) as NYSG's Helen Domske pointed out to Wisconsin Sea Grant's Jim Lubner, what came up most were invasive zebra and quagga mussels. Also collected (3) *Cladophora*, a common filamentous algae, displayed here by Buffalo teacher Michelle Tabone, alongside researcher Dr. Gregory Boyer.

Though *Cladophora* is not harmful to humans, Domske says, "The problem in Lake Ontario is that when storms cause it to break off, dead sections pile up near the shore, where they rot and create an anoxic environment for bacteria – including botulism. Botulism outbreaks have killed thousands of fish and waterfowl."

Photos by Paul C. Focazio



"If you come away with nothing else, you've seen first-hand that the Great Lakes is an amazingly complex system," said SUNY College of Environmental Science and Forestry researcher **Dr. Gregory Boyer**, addressing over a dozen teachers who just completed a week-long teaching cruise on Lake Ontario. The educational expedition, aboard the U.S. Environmental Protection Agency's 180-foot *R/V Peter L. Wise Lake Guardian*, was led by NYSG Coastal Education Specialist **Helen Domske** and made possible by the Center for Ocean Sciences Education Excellence (COSEE) Great Lakes.

The 16 fourth to tenth grade teachers (pictured above) – from New York schools in Appleton, Buffalo, Chittenango, East Aurora, Silver Creek, Sodus, Syracuse and Williamsville, as well as schools in Ohio, Illinois, Michigan and Minnesota – began their voyage with Domske, Boyer and other researchers and educators in mid-July at the Erie Canal Harbor's marina in downtown Buffalo (see map on page 7 to track their journey).

Domske, who has conducted similar "Shipboard and Shoreline Science" workshops on Lake Erie as well as an excursion on Lake Ontario several years ago,



Watch

worked with the teachers to develop journals and teaching tools to bring back to their classrooms. And teachers acquired plenty of hands-on experience, from collecting and analyzing data throughout the Lake to touring the Eastern Lake Ontario Dunes and Wetlands Area and Salmon River Fish Hatchery during one stop in Oswego with **Mary Penney**, NYSG's Dune and River Stewards Coordinator.

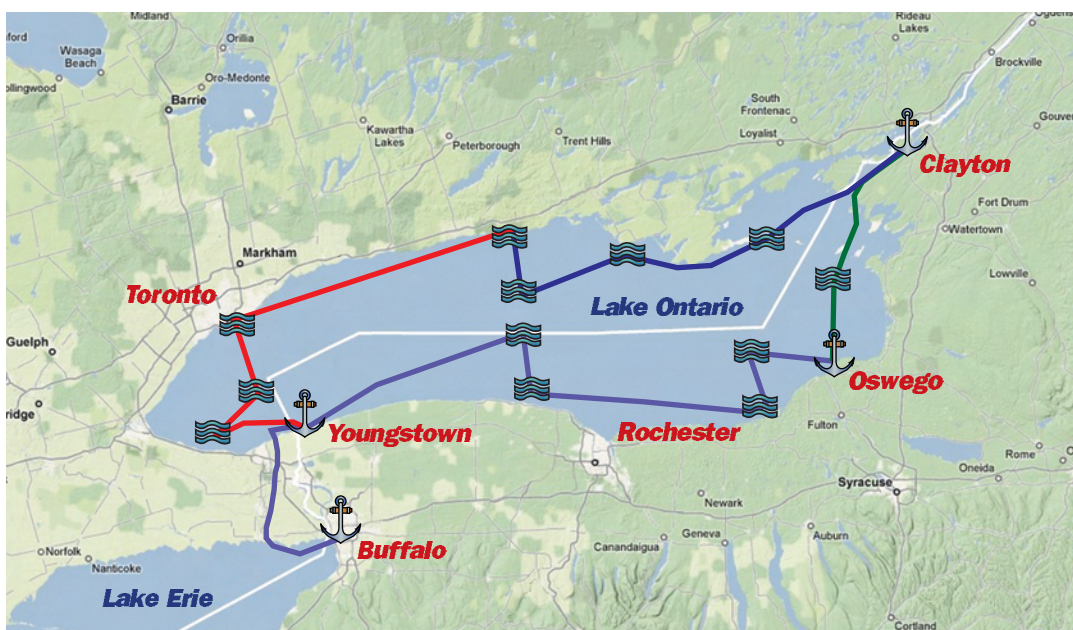
The *Lake Guardian* will take COSEE Great Lakes teachers out on Lakes Huron and Superior next summer. These and the U.S.'s other three "inland seas," Lakes Ontario, Michigan and Erie, form the largest group of freshwater lakes on Earth.

— Paul C. Focazio



On the docks of Youngstown's Coast Guard Station, U.S. Fish and Wildlife Service biologist Mike Goehle and his technicians safely shocked fish species, including a red horse sucker (pictured), smallmouth bass and yellow perch. The fish – which were temporarily stunned so they could be captured for monitoring – were placed in a cooler and identified for teachers and reporters from the *Buffalo News* and *Niagara Gazette* before release back into the Niagara River.

Water samples were drawn using a Rosette sampler to analyze chemistry and water quality – factors such as surface temperature, dissolved oxygen, pH and fluorescence (a measure of algae abundance).



@nyseagrant.org

After leaving the dock in Buffalo, the *Guardian* traversed the eight locks of the Welland Canal before stopping in Youngstown, NY. In addition to docking at ports in Clayton and Oswego, the research vessel passed over a dozen "stations" (noted by wavy lines) in Lake Ontario where water, and bottom sediment samples were drawn for analysis. For more on the sampling aboard the *Lake Guardian*, field trips, media events in Clayton and Oswego, an interactive map, video clips and more, read Paul's daily blog at <http://coseegreatlakes.net/weblog> (Click on "Shipboard and Shoreline Science on Lake Ontario").