

## **Cornell Scientists Tracking Oneida Lake Blue-Green Algae**

Cyanobacteria, also known as blue-green algae, are microscopic organisms which have been on Earth for at least 3.5 billion years and are found naturally in many lakes, including Oneida Lake. Some species form colonies that are clearly visible as strands or clumps in the water. Although small in size, cyanobacteria can have large impacts on ecosystems due to their abundance. In addition, some of the Oneida Lake species are toxic, and if ingested, can be harmful to humans and animals. In the summer and early fall, cyanobacteria can rapidly multiply in surface waters causing visible, blue-green colored blooms which decrease water quality affecting human and animal health, drinking water, and recreation. Factors that affect cyanobacteria bloom formation and persistence include light intensity, water temperature, nutrient availability, pH, and water column stability. Due to the complex interrelationship of these factors, there are seasonal and year-to-year fluctuations in Oneida Lake cyanobacteria abundance and species composition. Additionally, climate change is impacting the northeastern United States with increasing air temperatures and precipitation, and changes in the timing and intensity of precipitation. Oneida Lake surface water temperatures have been shown to increase by approximately 1°F/decade from 1985-2009 and nutrient concentrations will likely increase due to increases in precipitation and changes in the intensity of precipitation potentially leading to increases in cyanobacteria. Although knowledge of cyanobacteria is continually increasing, additional research is required to fully understand the magnitude of blooms and their seasonality, as well as, the realized ecological impacts of toxic cyanobacteria blooms to food web structure and function.

As part of the weekly sampling by the Cornell University Biological Field Station at Shackelton Point, we are investigating some of these questions, including increased attention to the timing of cyanobacteria blooms and species identification as related to water temperature, water column stability, and nutrient loading from streams. Dr. Greg Boyer, Professor at SUNY-ESF, is also investigating the toxicity of Oneida Lake cyanobacteria. All of this information is necessary to provide recommendations to water resource managers to protect and preserve Oneida Lake.

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Oneida Lake - Summer 2011 (Photo by Heather Lee)



Oneida Lake Shackelton Point Harbor – Summer 2013 (Photo by Amy Lee Hetherington)