DAILY MESSENGER

Researchers find foam, algae connection on Canandaigua Lake

By Julie Sherwood
Posted Aug 26, 2020 at 3:37 PM
Updated Aug 26, 2020 at 3:37 PM

Latest findings shed new light on the sudsy substance at times floating on Canandaigua Lake

You could call them foam chasers. Researchers Rick Smith and Stella Woodard, with help from citizen scientists, pulled out all the stops to get to the bottom of that sudsy substance on Canandaigua Lake. Findings from their latest research, done last year, reveal a connection between lake foam and toxic blue-green algae.

“These big blooms can really affect the chemistry of the lake on a large scale,” said Smith, during a presentation via Zoom last week with the Canandaigua Lake Watershed Association.

Is the foam hazardous?

The finding showed microcystin — the toxins produced by blue-green algae — at higher concentrations in the foam than in nearby water. In a few cases, the concentrations were higher than the state Department of Health’s recreational limit. The study included testing for PCBs (polychlorinated biphenyls), highly toxic industrial compounds. Those results will be forthcoming.

Smith and Woodard, of Global Aquatic Research LLC, collected samples throughout the late summer and fall of 2019. The pair are experts in aquatic research with multiple accolades to show for their work.

Smith said the study on Canandaigua Lake is not a first for finding algae responsible for foam.

Other examples are foam on the North Sea and on the English Channel.

Research indicates the source of the foam comes from within the lake and proteins for invasive mussels are not the source. An advanced technique used to identify organic substances indicated the foam is primarily made of carbohydrates, in particular long chains of sugars called polysaccharides.

As for the source of the foam-causing polysaccharides — all measurements were consistent with microcystis algae, the researchers said. That's the cyanobacteria that are responsible for the harmful algae blooms and that produce the microcystin toxins responsible for beach closures.

Stella elaborated on what's going on.

Invasive zebra and quagga mussels in the lake feed on plankton — small and microscopic plants and animals floating in the water, which can include the algae toxin. Like humans, the mussels don't like these toxins and it can make them sick. So the mussels spit it out, along with a mucus. Over time, this drives up concentrations of blue green algae.

More to learn

Future research should assess the foam's potential to accumulate heavy metals and industrial toxins. That's in addition to further investigation of microcystin toxins in the foam. The Canandaigua Lake Watershed Association and Global Aquatic Research are developing a phase 2 plan to assess four-season sampling and further testing for pollutants.

More about the researchers

Smith founded Global Aquatic Research, which collaborates with scientists and labs across the U.S. He holds a Ph.D in chemical oceanography from Texas A&M University and did postdoctoral research at the University of Connecticut. He earned the U.S. Department of Defense 2016 Project of the Year Award in Environmental Restoration.

Woodard earned a Ph.D. in geological oceanography from Texas A&M University and did postdoctoral research at the Institute of Marine and Coastal Sciences at Rutgers University. She logged over 150 days at sea as a sedimentologist for the International Ocean Discovery Program, federally supported oceanographic research, and private industry.

How you can help

The Canandaigua Lake Watershed Association, a nonprofit to protect the watershed, says everyone can help control toxins in the lake by limiting nutrients entering the watershed.

The best ways: Use less fertilizer; control animal waste and wastewater discharge; reduce erosion; and preserve and plant shrubs, trees, and groundcover along tributary streams.

The latest findings on Canandaigua Lake foam follow work in 2003, when researchers from SUNY College of Environmental Science and Forestry, Finger Lakes Community College and the Canandaigua Lake Watershed Council performed chemical testing on the foam.

The CLWA is raising funds to support expanded foam research. Learn more at https://bit.ly/2EzUMsM

To learn more about the Canandaigua Lake Watershed Association, visit https://www.canandaigualakeassoc.org/