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Study Verifies Toxin-Producing Algae in Oyster Pond

By BRITTANY FELDOTT Jan 17, 2017

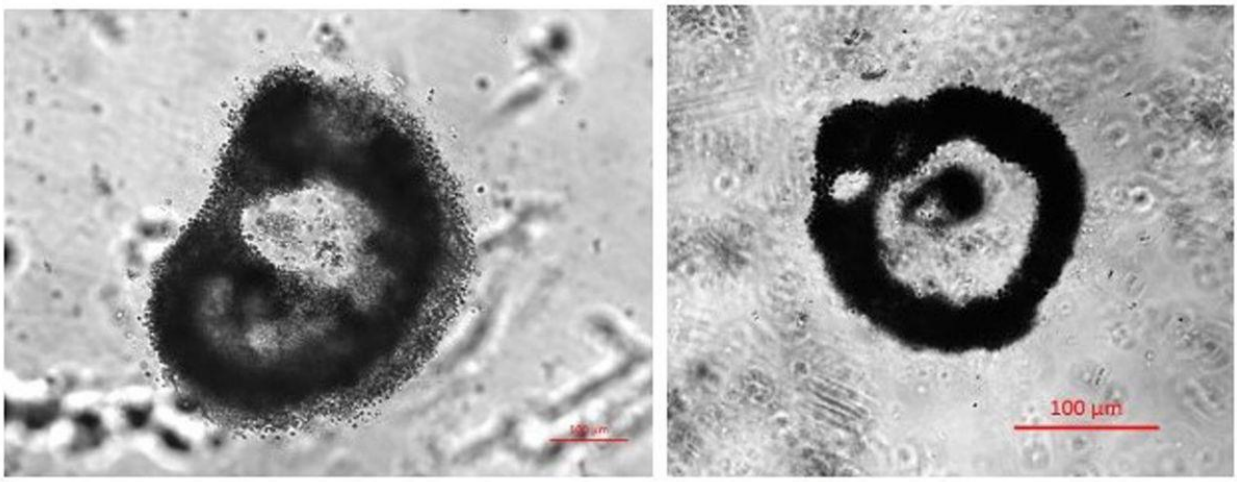

Figure 9: Microcystis from control water incubation (left) and from initial sediment (right).

An undergraduate research project has verified concerns that a cyanobacterial algae bloom in Oyster Pond this summer emitted potentially dangerous toxins.

Kristy Sullivan, a junior at Wheaton College, undertook the study as a participant in the Semester in Environmental Science program at Marine Biological Laboratory in the fall.

Under the guidance of molecular biologist Kristin E. Gribble, Kristy analyzed samples from Oyster Pond to identify the different types of algae present in the water and sediment.

Kristy gathered samples between November 14 and December 5, during which time the algae bloom had already subsided. However, by taking the samples to the laboratory, adding excess nutrients and incubating the water and sediment, she was able to quickly grow the already-present algae enough to identify the various algae genera.

She discovered five types of freshwater algae. Two of those were Microcystis and Aphanocapsa, which are cyanobacterial species that create microcystin toxins. Those toxins can cause nausea, vomiting, paralysis and acute liver failure in large doses or in the case of long-term exposure.

Based on her cell counts, Kristy said that a child would have to drink a few liters of water from Oyster Pond before reaching the dangerous toxicity levels set by the World Health Organization. She did note that individuals with liver conditions may be at a higher risk of harm by the toxins.

Kristy also tested the salinity of Oyster Pond and reported that in December the salinity in Oyster Pond measured 0.16 parts per thousand more than it had in August, at the height of the algae bloom. However, salinity levels remained below the suggested threshold of the Oyster Pond Environmental Trust—between two and four parts per thousand—which would limit freshwater algae growth.

Kristy said that the strong presence of Microcystis algae in the sediment samples suggested that the species is overwintering in pond sediment, and she concluded that another algae bloom could arise in the summer of 2017 if salinity levels do not increase.