

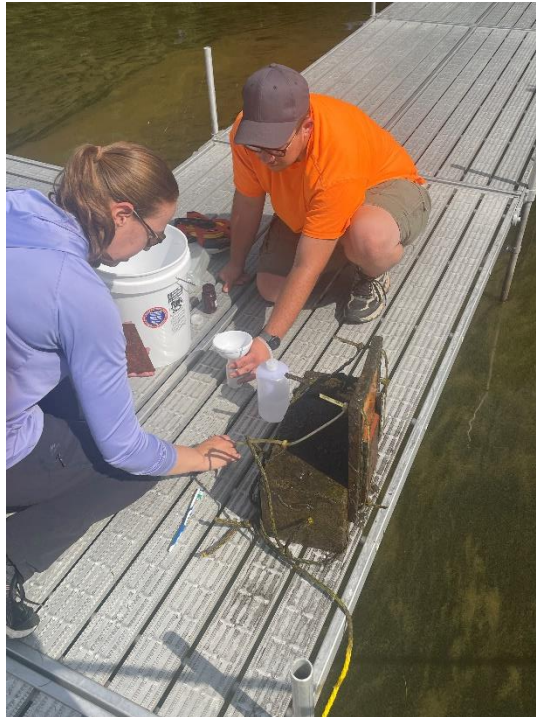


## Chautauqua Current No. 29

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### UNDER THE MICROSCOPE

#### Hrycik and Jefferson Project Seeking Answers on Algae



*Figure 1. Dr. Allison Hrycik and Kasey Crandall collect algae from a tile station at Long Point State Park. Photo by Jay Young*



*Figure 2. Pictured above is an algae collection tile, which have been deployed at 11 sites around the lake in 2023. Photo by Dr. Allison Hrycik.*

*By Jay Young*

*Chautauqua Lake & Watershed Management Alliance*

On a sunny Tuesday morning Dr. Allison Hrycik makes her way across a lawn and onto a dock at Long Point State Park, her hands full of tools. Joined by associate Kasey Crandall, Hrycik arrives at a yellow rope tied to a stanchion and begins to unpack. Above the rope there is a sign reading “algae research in progress, there are submerged clay tiles next to the dock to collect algae as part of an ongoing research study through Rensselaer Polytechnic Institute and The Jefferson Project.” This is one of eleven different locations selected for the first year of Hrycik’s research program on Chautauqua Lake.

Before getting to the tiles in question, Hrycik and Crandall record a long list of data. An instrument goes into the water giving readings of temperature, oxygen, conductivity, water clarity, and chlorophyll. Water depth and photosynthetically active radiation (science-speak for sunlight) also get recorded. “I’m going to take a surface reading to see how much sunlight is coming down and then I’ll take another reading at half a meter to get an idea of how much the surface algae blooms are shading the stuff that is underwater,” Hrycik says.

With background data recorded and water samples collected, Hrycik lifts the cinderblock hanging from the rope onto the dock. Two tiles are attached to the front of the block. “It is just an unglazed clay tile, they told me when I bought them that they are the kind they use in restaurants because when they get wet it’s not too slippery,” Hrycik says. “That’s what is used for a lot of algae surveys. What we do is pick all of the benthic invertebrates off because we are interested in the algae.” After clearing away any critters, Hrycik and Crandall use a toothbrush and water to scrape algae from

the tile into a sample bottle. Back at the lab at the State University of New York at Fredonia, Hrycik will use these samples to record the types and amounts of algae we have on our shores.

After earning her PhD in biology from the University of Vermont in 2021, Hrycik spent time working at Buffalo State University before joining the team at Rensselaer Polytechnic Institute as a research scientist. With RPI and The Jefferson Project rolling out their science programs on Chautauqua Lake over the past three years, Hrycik was brought on board full-time this season to begin researching the unique populations of algae in our local waters. It was an RPI colleague, Brian Mattes, who began using subsurface tiles to study algae on Lake George in 2019. “One of my co-workers started on Lake George because he was hearing complaints that people’s wooden docks were getting slippery because of algae growth,” Hrycik said. “So he started putting those (tiles) out to answer that question, and then we kind of realized it is a really nice way to answer other ecological questions. So we ended up expanding, he has it going in Lake George and I have Chautauqua.” In addition to the 11 near-shore experiments, Hrycik also routinely gathers water samples in a boat farther from shore. “This is kind of the near-shore component, so it is a good complement to what we are seeing out in the lake,” she said. “All of that lake sampling is kind of off-shore, not right up near docks. I think it is still really important to sample near docks because that is what people are seeing and that’s what is impacting homeowners on the lake the most. That is where a lot of the algae blooms are.”

The SUNY Fredonia Biology Department, where Hrycik is a visiting researcher, is a key collaborator in this new research program. Crandall is currently pursuing his master’s degree at Fredonia under advisor Dr. Courtney Wigdahl-Perry (a Jefferson Project research liaison) while undergraduate student Sydney Hawkins helped to construct the tile stations now in place on the lake. Wigdahl-Perry’s lab offers Hrycik a nearby location where algae and water samples can be stored and analyzed throughout the season. The compelling rollout of research we have seen locally by The Jefferson Project and its partners now includes two vertical profilers, 11 algae tile stations, in-lake water sampling and analysis, and plans to install six stream monitoring stations over the next year. As Hrycik noted, different questions require different types of tools. “We have the vertical profilers in the lake that give us tons of data and have all these very fancy sensors,” she said. “And then we can learn a lot also from these ten-dollar setups from Home Depot. It just depends on the question you want to answer. This just happens to be the best tool.”

Algae, especially harmful algal blooms, are cropping up in headlines more and more frequently these days. Public interest in this specialized field of biology is growing. “It has been interesting to figure out what the actual trend is, because we hear about algae increasing, and a lot of people are saying algae is increasing recently,” Hrycik said. “But we don’t have great data to back that up, so it is exciting that we are starting what we hope will be a long-term monitoring program where we can actually track things quantitatively a little bit better. It does seem like people are getting way more interested in and concerned with algae.” Moving forward the work being performed by Hrycik and her colleagues will provide valuable facts on the ground about these organisms and their relationship to humans. While the comprehensive data collection efforts underway can vary in method, they all seek a common objective. That is a collaborative *science toward solutions* approach which expands our knowledge of the environment and harmful algal bloom dynamics, and identifies the right tools and strategies to help the lake now and in the future.

*\*The Jefferson Project is a collaboration between Rensselaer Polytechnic Institute, IBM Research, and the Lake George Association. Local funding and support for this work has been provided by*

*Chautauqua Institution, Chautauqua County, the Ralph C. Sheldon Foundation, and the Alliance. More information on lake data and research can be found at [chautauquaalliance.org/data-and-research/](http://chautauquaalliance.org/data-and-research/).*