Chautauqua Current No. 20

Chautauqua Lake & Watershed Management Alliance, Inc.
April 3, 2023

Figure 1. Volunteer Vince Liuzzo (left) and Chautauqua Watershed Conservancy Director of Conservation Twan Leenders are pictured addressing starry stonewort in Ashville Bay.

RETURN ON INVESTMENT

How Lake Data Drive Action

By Jay Young

Chautauqua Lake & Watershed Management Alliance

"More science is being done on the lake than ever before" is an important point we have been hearing from different parties lately. In past *Chautauqua Current* issues, we have looked at some of the different research groups that have come to the lake in recent years, and the goals of their programs. Many of these efforts are aimed at gathering new types of data that had not, or perhaps could not, be collected in the past. Researchers work to identify gaps in our existing knowledge, and help us fill in the blind spots. The goal is that these programs can yield information that complements existing datasets, improves our understanding of the ecosystem, and also better informs our management decisions. But where does the rubber meet the road in this process? How do the dollars budgeted for research and monitoring lead to action?

We can think of this ongoing process of gathering data like making a film. When you are producing a movie or a TV show, you often shoot as much footage as your budget and schedule will allow. You don't necessarily know exactly what shots, camera angles, and takes you are going to end up using in the final cut, so you try and get as much coverage as possible to set yourself up for success later. After all, going back to do reshoots might be difficult, expensive, or impossible. From a research standpoint you can't travel back in time to grab a piece of data, because conditions will have changed. You also want to make sure that the footage you do shoot is high quality, that your camera is focused and the lighting is correct. For monitoring, this means that your methods are as sound as possible.

This analogy helps us picture how research is conducted and can be used to inform our decision making. Scientists design a research program—like a script and a production schedule. They secure funding. They get the right people in place to gather the data—their cast of actors and crew. They collect as much high-quality data as possible—they shoot as much good footage as they think they can use later. The final product comes when all of these different pieces are stitched together so that we, the audience, can draw our conclusions and take action.

We saw one example of how this "movie-making" process can work last year. In the fall of 2022 the Chautauqua Watershed Conservancy's Aquatic Invasive Species Early Detection Volunteer Taskforce discovered new growth of invasive starry stonewort, and a pilot removal project was organized. Several different datasets were needed so that action could be taken. The annual plant surveys that are performed on the lake archive hundreds and hundreds of data points, which document where and how much plants are growing. This can help track the spread of problem species over time. The iMapInvasives Species Program is an on online database where sightings and reports of invasive species are collected and catalogued for easy use. Using these different datasets, CWC was able to determine that more detailed surveys were needed, perform that work, map the new starry stonewort infestations, and then organize a management trial. We can think of this story as part of a film, which was made possible by collecting the raw data or the "footage" before intervening.

How funds are distributed between active management and monitoring programs is always going to be a challenge in lake management. At times, it can seem like data are just being collected for their own sake, or the connections between research and decision making appear murky. The starry stonewort example illustrates how monitoring programs like the annual plant surveys can serve important roles in both the short and long term. There is always a chance to use data in new ways after they have been collected, so that nothing ever really goes to waste. The information from these surveys can serve an immediate role in helping stakeholders organize a management program, and they can help us look into the past to see how our plant communities are changing over time. But without the data, those tasks are more challenging. Without the footage, how do you make your movie?

The sentiment that many seem to be expressing is that we have an awful lot of footage when it comes to Chautauqua Lake. That includes long-term historical datasets, and more recent research programs that are bringing new techniques and tools to bear. The Citizens Statewide Lake Assessment Program offers us decades of historic water quality data for the North and South basins, and can now be easily accessed through a public Department of Environmental Conservation dashboard. That footage is invaluable if you want to make a movie about trends related to things like temperature, pH, and chlorophyll.

More recently, we have been getting new footage like sonar biovolume data from our annual surveys, which allows for new visual representations of plant growth over time. We also have high-frequency monitoring of water quality being performed, which is extremely valuable for addressing harmful algal blooms. Many different datasets are being collected in parallel along different timescales with unique but overlapping goals. You need a lot of high-quality footage shot in a lot of different places by different people to make an Oscar winner, and the analogy holds for lake and watershed management. We are more likely to reach sound conclusions and reduce the uncertainty in our decision making if we have input from multiple datasets. It can take time for these investments to bear fruit on the management side of the equation, but nothing goes to waste when good data are collected. The value of this information often appreciates over time, providing us with immediate benefit for our initial goals and long-term worth to address new challenges.