



2022 - 2023

ANNUAL SUMMARY

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Our Mission:

Provide leadership to preserve, protect, and improve the environmental quality of the Elk River Chain of Lakes Watershed for all generations with emphasis on Lake Bellaire, Clam Lake, Torch Lake and their tributaries.

RECENT ACTIVITIES

Volunteer Lake Monitoring

TLA has been monitoring water quality in Bellaire, Clam, and Torch lakes for over twenty years to determine long term trends and detect early warning signals. Monitoring consists of water clarity measurements and Chlorophyll-a samples every two weeks. Mid-lake phosphorous samples are taken in the Spring and Fall to keep an eye on nutrient levels.



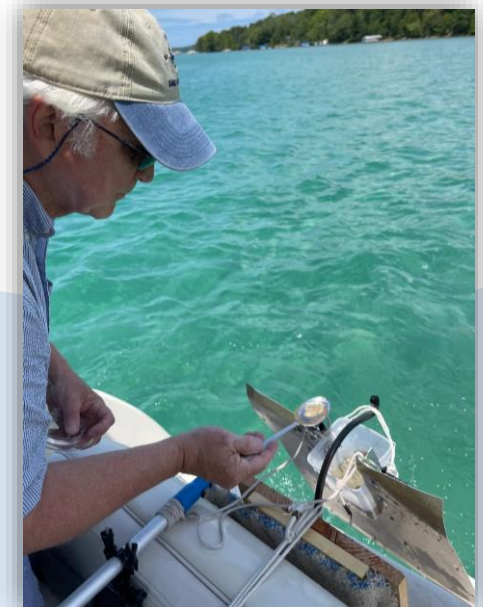
In-lake NDD Experiment

Devised by Dr. Jan Stevenson (MSU), this in-lake experiment is designed to answer the question of whether more or less nutrient availability led to the appearance of Golden Brown Algae. Frames made from PVC pipe containing one of four nutrient treatments were replicated four times each and deployed at two location on Torch Lake. After one month, sediment and algae samples were collected inside and outside of each frame. Cell counts and species composition are being examined by Dr. Stevenson and the chemistry of the GBA mat is being analyzed by a commercial laboratory.



GBA Characterization Study

A two year study by Dr. Jan Stevenson continues our quest to determine why Golden Brown Algae has increased its abundance on Torch Lake in recent years. A survey of twenty specifically selected sites will be conducted in 2023 and 2024. The objective is to relate the abundance of benthic algae to the species composition and chemistry of the benthic algae mat. The survey is being coordinated with a USGS study sponsored by Torch Lake Protection Alliance. In combination, these studies hope to identify whether human activities led to an increased abundance of benthic algae.



RECENT ACTIVITIES



WWTP permit update

After emergency releases totaling twenty million gallons of partially treated wastewater from the Village of Bellaire Waste Water Treatment Plant last year, changes were made to the WWTP process which will be reflected in the renewal of the plant's permit in 2024. TLA's goal is to make certain changes to the permit do not end up allowing more phosphorus to be discharged to the waters of Lake Bellaire and the lower chain of lakes.



Summer Intern Program

This summer, three students from three area high schools are participating in a study to determine the density of invasive quagga mussels and the depths at which they inhabit Torch Lake. The team scored big points for innovation by combining equipment for physical sample collection with underwater video at depths from 40 to 150 feet and sample collection to depths of 200 feet. Video revealed the hit or miss nature of some sample grabs and the pervasive carpet of quagga mussels existing in the forty to seventy foot depth range.



Eurasian watermilfoil

TLA joined forces with members of Torch Lake Protection Alliance to monitor and treat the known sites of invasive Eurasian Water Milfoil in Torch Lake. Currently there are six sites under observation which will be either chemically treated or the plants will be hand-pulled by the team this summer. The team is beginning a survey process in Clam Lake this year as well.

RECENT ACTIVITIES

Community Education

An event in July under a tent at Alden Depot brought everyone together in a relaxing atmosphere to learn about important things that affect our environment. Attendees learned about septic system from our area Health Department Sanitarian, oak wilt disease threatening yet another tree species in our watershed, an engineering analysis of local dam capacity based on the recently completed hydrology model, quagga mussels invading our lakes and an update on the ongoing investigation into causes of Golden Brown Algae.



Science Education Outreach Program

The SEOP program continues to get area elementary students involved in hands-on activities encouraging the future stewards of our lakes and to love and appreciate our natural resources. Grants were awarded to Birch Street Elementary and Rapid City Elementary in the Kalkaska School District, John Rodger Elementary in the Bellaire School District and to Central Lake Elementary.



Grants and Funding

TLA was awarded a \$2000 grant from **Paddle Antrim's "Ripple Effect" grant program** to help offset the cost of the Torch Lake 20 Site Golden Brown Algae Characterization Study. Additional grants have been applied for to support this large project. We don't expect to receive information on new grant status until the end of August. The **Gerrit Lee Wierda Memorial Fund** helps to fund our internship program. **The Dole Family Foundation** helps to fund our water quality studies. We sincerely appreciate all of the help in funding our work to preserve and protect our waters!





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