

THREE LAKES ASSOCIATION

SERVING LAKE BELLAIRE, CLAM LAKE AND TORCH LAKE IN ANTRIM COUNTY, MICHIGAN

APRIL 2021

Give A Hoot

Spring is in the air, birds are returning, and flowers are popping with color. If you are like most homeowners you are starting to think about your yard: cleaning up debris from the winter, mulching, adding new plants, and getting the lawn mower ready for use. The yard is a place for relaxation and for many, a source of pride. It's a space we can craft into something beautiful, that meets our recreational needs and demonstrates our care for our homes and our families.

The yard can also demonstrate care for our lakes and streams. You can have lush grass, filtered light, and attractive plantings and landscaping while also protecting the water. In the next few issues of the TLA Quarterly we will be sharing some tips for how to do just that.

A major portion of yard care is lawn maintenance. Some want a consistently dark green color and others aren't bothered by the change in color that occurs naturally through the growing season. Grass color is largely dependent on nutrients and water, and there are lake friendly (and lake damaging) ways to go about applying them.

First is water. Ideally irrigate with lake water. Set up a simple pump system that will give access to high quality water for your lawn. However, don't over-water; excessive moisture will move nutrients into the lake.

Second is nutrients. A great way to

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Be Wise sign for Clam Lake and Lake Bellaire



Keep Torch Blue sign for Torch Lake.

maintain nutrients is to mulch your grass or leaves and apply them to your lawn. They will decompose quickly and give a great boost to your grass.

Applications of chemical fertilizers will help your grass green, but they come with a hidden cost, and one that you will pay in time on your lakeshore. The cost is that the grass may not take up all of the nutrients. Depending on your situation, a large portion of the nutrients could be washed into the lake by the rain, where they will be put to use in growing algae.

Consistent fertilizer use virtually guarantees a slimy, weedy lakeshore

in time. If you feel you must fertilize, apply only what is needed based on soil analysis and stay back 30 or more feet from the water's edge. Also wait to fertilize until 3 weeks after lawn green-up and sweep any fertilizer spread on hard surfaces into the lawn where it can be used. There are no lake-friendly fertilizers. Fertilizer means nutrients, and excess nutrients are bad for all lakes.

This year, try irrigating with lake water and mulching the lawn with grass clippings. Many people find that there is no change to their grass when they switch to these techniques, and any changes they do see are fine because they know it means the lake will benefit. It's a small price to pay for an algae free shoreline. If everyone stopped fertilizing their lawns, we would all benefit in huge ways.

You can display your commitment to keeping excess nutrients out of your lake by getting yourself a No Fertilizer yard sign. Fill out the form at our website, 3lakes.com, and Todd Collins will reach out to you.

You can also pick up a sign at the Torch Conservation Center True Blue Gallery in Alden, which opens Memorial Day weekend. Signs are free of charge!

The No Fertilizer campaign is a collaboration between Torch Lake Protection Alliance, Torch Conservation Center, and Three Lakes Association. This article was created in collaboration with Torch Lake Protection Alliance. A version of this article will also run in their newsletter.

CONTRACTOR THREE LAKES ASSOCIATION

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The TLA Quarterly is published by the Three Lakes Association Please direct comments or questions to: P.O. Box 689 Bellaire, MI 49615 3lakes.info@gmail.com

Executive Director Jeanie Williams

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President's Message

Since Three Lakes Association was formed our focus has never straved far from keeping a close eye on local water quality. As we enter our 55th year, this summer will be no exception. In the Spring edition of TLA Quarterly we celebrate years of dedicated service by one of our water quality monitoring team members who is handing over his Secchi disk and sample collection bottles to a new crop of volunteers. There's also information on what you can do to help the environment and reduce nutrients entering our waterways, from tips on recycling boat storage shrink wrap to use of chemical fertilizers and maintaining a healthy lawn. Learn how we are partnering with others to make sure aquatic invasive species don't invade our lakes and how you can get involved. TLA will also be collecting and analyzing water samples, including from the shallow aquifer below our lakes, as part of an on-going investigation into the causes of an increased vibrancy of the algae growing on lake bottoms. Finally, learn

about our plan to engage with area high school biology students and find out what one of our summer interns from the past is doing these days.

You can view a full water quality report, including trends, for Lake Bellaire, Clam Lake and Torch Lake on our home page at 3lakes.com. If reading about TLA's programs makes you want to get out on the water to join the effort, contact us at <u>3lakes.info@gmail.com</u>. This year, we have an exciting opportunity for a volunteer with boat access to the North half of Torch Lake which involves weekly or bi-weekly water clarity measurement throughout the summer and water sample collection on some of those trips. Training and equipment will be provided. You don't have to be scientist to join our team, all that's necessary is a desire to preserve these beautiful lakes for future generations!

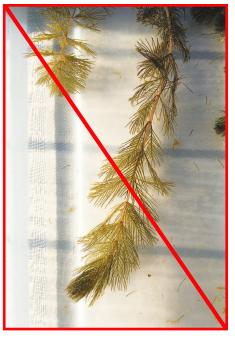
Fred Sittel

Update on Eurasian Water Milfoil

Eurasian Water Milfoil (EWM), an invasive aquatic plant species, remains a significant threat to the health of Torch Lake. Left untreated, EWM creates a thick mat of vegetation at the water surface, which chokes out native plants and pushes fish out of the area. It can become thick enough to present a problem for boating and can take over entire lakes. We don't expect things to get that extreme on Torch Lake, however it could become dominant and troublesome in certain areas if we don't take action to keep it at bay.

Last year marked the launch of a joint Three Lakes Association and Torch Lake Protection Alliance task force to focus on EWM monitoring and eradication activities. EWM was located and treated in four locations in Torch Lake itself and also two locations in the Clam River. Since EWM can take hold from small pieces of the plant breaking free, continuous monitoring of the lake and waters immediately adjacent to the lake will continue to be a priority.

See our article on TLA summer projects to see what this team is up to in 2021.



Eurasian Water Milfoil Collected from Torch Lake. Notice the feather-like leaf shape.

A version of this article will also appear in the Torch Lake Protection Alliance Newsletter.

Boat Wrap Wrangling

By Greg Fredericksen Milton Township Zone Director

As Riparians, we are all focused on doing our best to maintain and improve our water quality. As many of us are also boat owners, we need to also focus on environmental impacts from our love of boating.

With spring approaching and as we start to get our boats ready for summer fun, some boats will need to have the protective shrink wrap removed. There is a way to recycle our used shrink wrap so it doesn't end up in a landfill.

Bay Area Recycling for Charities of Traverse City is part of a state-wide recycling program for shrink wrap. They have partnered with Dr. Shrink in Manistee and the Michigan Recycling Coalition. They collect boat shrink wrap in the spring and through the fall every year. Neighbors can consolidate their used shrink wrap and coordinate a pick-up date for their neighborhood. Or individuals can drop off their used shrink wrap at the Bay Area Recycling for Charities location in Traverse City at Chums Corner location at 466 US-31.

What to do:

- 1. Purchase a recycling bag for \$7. This fee covers the bag, material collection, and recycling. Follow this link to get your bag: <u>https://dr-shrink.com/product/ez-fillrecycling-run-bag/</u>
- 2. Register your bag so it will be picked up by the Michigan Recycling Coalition. The registration form is at the link above.
 - a. Fill out the form and email it to: Katherine at <u>kfournier@</u> <u>michiganrecycles.org</u>
 - b. Return your registration by June 1, 2021.
- 3. You will then be contacted with details about how to schedule your pickup, or where you can drop off your bag.
- 4. Feel good about participating in responsible disposal of that big wad of plastic!





New Members and Donations _

A warm welcome to the new members who have joined us in the past few months

Glen & Meg Ackerman Robert & Shelley Allen Gary & Margery Brunk Michael & Jeanne Fadden Gerald & Marisa Halford Christopher Hilton Diane Hinshaw Jason & Andrea Holman Brian Klaus David Knight Matthew & Laurie McAuliffe Patrick Morrissev Robinson Family Partnership Karen Rolf Mark & Jill Schroen Daryl & Stacy Trierweiler

We are very grateful for everyone who recently donated \$500 or more Bob Black Brian Klaus Tye Nordberg Tim & Shelley Reisen Josh Scott Torch Chiropractic & Wellness John Wright

These individuals were honored through memorial contributions to Three Lakes Association

Jeff Jones Betty Kohl Gerrit Wierda

Two Decades of Protecting Water Quality

By Fred Sittel TLA Interim President

TLA Director Duane Drake has been keeping a close eye on Lake Bellaire water quality for more than twenty years. Originally from the Toledo area, Duane was introduced to Lake Bellaire in 1961 because his wife Pat's parents owned a cottage on the lake. His original passion for northern Michigan was snowmobiling and for a time, he groomed State trails in the Alba area. After more than a decade of renting a place on Lake Bellaire for one week each summer, Duane and Pat inherited the family cottage. And by that time Duane had added water skiing and boating to his recreational passions.

It was on the back porch of the old cottage in the late 1990's that he agreed to join other TLA volunteers engaged in long-term water quality monitoring of Lake Bellaire, Clam Lake and North and South Torch Lake. Collecting and maintaining a database of critical water quality metrics using consistent procedures over many years is important to detecting the slow changes driven by pollution. There are no government programs that monitor what's happening from year to year on every lake in the State, so ultimately, it comes down to volunteers who often are assisted by local non-profits and State agencies. And luckily there are volunteers like Duane.

Duane was measuring water clarity every week during the summer months by lowering a visual target called a Secchi disk to the depth where it can first be detected by eye. Generally, the clearer the water the less nutrients and sediments there are and the better the water quality is. He has also been taking monthly samples of the amount of chlorophyll-a in the water, which is a pigment found in all green plants including algae that indicates how much phytoplankton is living in the water.

Water clarity and chlorophyll-a can be used to calculate a lake's trophic status index which is a measure of how biologically productive a lake is. Low index values are associated with *oligotrophic* lakes which are not very biologically productive but have high water clarity and quality. Medium values indicate a *mesotrophic* lake, while higher values indicate eutrophic lakes that tend to be very biologically productive with



Duane Drake with a water quality monitoring tool kit at his feet, explains how to extract chlorophyll-a from a water sample during a meeting last month with Rick Meyers and Cheryl Lynn Fields.

large, diverse fish populations. *Eutrophic* lakes, however, often have cloudy water, weedy bottoms and an overall lower water quality. On a geological time-scale, most lakes start out oligotrophic and age slowly to become more eutrophic. Monitoring a lake's trophic status over shorter time-scales such as decades can identify if a lake is aging naturally or if aging is being accelerated by nutrient pollution.

Duane has also been collecting water samples early in the spring and again in late September which are analyzed for total phosphorus concentration. Nutrients like phosphorus are associated with human activities such as lawn and agricultural fertilizers, septic systems and stormwater runoff.

When Duane first became involved, volunteers were assisted by the regional nonprofit, Tip of the Mitt Watershed Council (ToTM). In 2004, TLA joined a program offered by the Cooperative Lakes Monitoring Program (CLMP) which is a collaborative effort between the Michigan Lakes and Streams Association and the then Michigan Department of Environmental Quality. It was at that point when he accepted responsibility as program coordinator in addition to Lake Bellaire measurement and sampling.

At the time, TLA's Art Hoadley was the CLMP volunteer for Clam Lake as he still is today. Often, Art would be flying over Lake Bellaire in his yellow sea plane and "tip a wing" when he recognized Duane collecting samples below. In the subsequent years, Duane recalled, nobody had their boat in the water in time for spring phosphorous collection. It was at those times that he was assisted by TLA's Dean Branson who seemed always able to find someone with a boat and trailer to help out.

During one outing to collect samples from both the North and South ends of Torch Lake on a day with extremely brisk winds, the boat captain was forced to trim up the motor and push down the throttle to make headway. Upon returning to the launch ramp, a third volunteer helping out that day declared that he would never go out in a boat with Duane or that captain again!

The CLMP program was being funded by the Clean Michigan Initiative bond which ran out in 2017. After several years of relying on line-item budget appropriations, funding wasn't available in 2020 so TLA re-joined the ToTM program. Although CLMP funding is again available for 2021 and beyond, TLA has decided to remain with ToTM.

However, after twenty years of water quality monitoring Duane is sure he wants to start spending more time near shore. That means it's time to pass the torch on to someone else. Actually, in this case, on to two other people. TLA member Rick Meyers, who maintains a boat on the Intermediate River below Bellaire Dam, will take over water clarity measurement and sample collection for Lake Bellaire. Cheryl Lynn Fields, whose grandfather, Jack Norris, was TLA's original "citizen scientist," will be the new program coordinator.

Thank you, Duane for the many years of service protecting water quality for everyone who loves these beautiful lakes! If you are cruising the shoreline of Lake Bellaire this summer and see a prominently displayed Ohio State flag you might be in front of Duane and Pat's house. You will know that for sure if the boat on the hoist is named "Pat's Snowmobile." Duane laughs when he says, "that was a very big deal between us, I got the new snowmobile I always wanted and she got a new boat!"

What's Ahead for 2021?

Summer 2021 is within reach! Here is an overview of the major Water Quality projects we will be engaged with in the warm months. If ANY of these projects sound like something you would like to get involved with, please reach out to us! <u>3lakes.info@gmail.com</u>

From Art Hoadley: Aerial photography

In order to track changes in the Torch Lake shoreline, aerial photos will again be taken of the entire Torch shoreline in both May and August. These flights have been performed each year since 2012. All these photos have been stored on the TLA cloud drive and organized for display in Google Earth Pro. Researchers have been using these photos to track changes in golden brown algae.



From The Eurasian Water Milfoil Team: Citizen Science

We will be establishing a team of volunteers who scout the lake for EWM on a regular basis. In tandem, we will be developing a campaign to help our riparian landowners and lake users identify and report suspected EWM infestations. It will take contributions from all of us to combat this very aggressive invasive plant species. If you have interest in becoming one of our EWM scouts, please contact Rick Doornbos at TLA (rsdoornbos@torchlake.com)

From Dean Branson: Summer High School Internship

One of the viable hypotheses for a possible root cause of golden brown algae (GBA) is that the organisms in the lakes that naturally control the appearance of these assemblages of diatoms by grazing on them, such as snails, crayfish, and clams, may have lost their appetite for this food.

Since snail abundance at several locations in Torch and Bellaire Lakes was measured in 2019 as part of our assessment of swimmer's itch, part of our 2021 Summer Interns' goal is to determine if the snail abundance at those locations has changed. Another goal is to enclose dozens of each species of snails on mats of GBA at these locations, and then to photograph the snail trails several weeks later, as an indicator of snails grazing on GBA. A final goal is to microscopically examine snail feces to determine if the snails only prefer a few of the 140 species of diatoms that make up the GBA assemblages.

From Becky Norris: Golden Brown Algae

We've been singing the "are we there yet" refrain concerning the research into the proliferation of golden brown algae (GBA) in our lakes in recent years. And the answer is getting closer to "yes." Our consultant, Dr. Jan Stevenson, has been going through our accumulated data with a fine-tooth comb. He has advised us to pursue certain specific activities for the summer of 2021:

- Find out if the lake snails dine on GBA (and if so which snails and which diatoms)
- Have a repeat look at household drinking-well water for water chemistry nutrients
- Increase water chemistry sampling for comparing near-shore and open-water locations
- Get in one more season of monitoring water chemistry at our near-shore sites

The in-depth review of our data will, we hope, provide enough information to settle the questions as to what is driving the GBA proliferation and let us conclude that the GBA is or is not a harbinger of water quality change.

From The Eurasian Water Milfoil Team: Plant Survey

The joint task force of TLA and TLPA will complete a plant survey covering the entirety of Torch Lake to identify all known locations of EWM and to document native plant species. This survey will provide the basis for our long-term monitoring and control plan and will provide the necessary information to obtain permits for treatment activities. Completion of this survey will be dependent on our ability to obtain external funding from local foundations to help offset its cost.

From Jeanie Williams: Long Term Monitoring

We continue collecting data in the deep basin of each lake to track trends and changes in three key water quality areas: Water clarity, Phosphorus, and Chlorophyll-a. We are being supported in this monitoring by Tip of the Mitt Watershed Council who also supports this monitoring throughout the Elk River Chain of Lakes. From June through August, water clarity is measured weekly or bi-weekly, Chlorophyll-a is measured once or twice each month, and Phosphorus is measured twice each summer. If you would like to help us monitor Clam Lake, Lake Bellaire, or the North or South basin of Torch Lake, let us know!

Photo by Art Hoadley from his seaplane. Looking north along the west shore of Torch Lake, 2010.

2020 Water Quality Trends

2020 was an unusual year for humans, but it was pretty typical for the deep basins of our lakes. We know this because we have been tracking some basic parameters of lake health since 2004, and others since 1976 – that's 45 years! This long term monitoring is foundational for understanding lake health, and for simply getting to know the character and temperament of our particular water bodies.

Every body of water is different – the surrounding soil types, bedrock, depth, climate, and other factors will give the water body its unique character. And like getting to know a person, the more often we frequent it and ask questions about its well being, the better we can know it and care for it.

Each year, thanks to the efforts of trained and dedicated volunteers, we track three key parameters: Water Clarity, Chlorophyll-a, and Phosphorus. Together these three tell us about the character of our lakes, and if they are becoming more nutrient rich over time or less nutrient rich over time. If there are changes, the puzzle is to figure out what might be causing any changes, and the challenge is to actually make adjustments to our behavior and land use that support lake health.

TLA Volunteers venture to the deepest part of the lake weekly or bi-weekly to measure water transparency. Water samples to measure Chlorophyll-a are taken on some of these trips so that two samples are taken each month. A water sample for phosphorus is taken on the first trip of the summer and on the last trip.

The deep basin is chosen as a location for sampling because it is the most stable location; it is the location least susceptible to the many variables on the shoreline: wave action, lawns, solar gain, runoff, ground water, etc.

If you want to see the full report, look for it on the home page of our website, <u>www.3lakes.com.</u>

			arity (feet e surface)			Phosphorus (µg/L)	Overall
		Range	Average	Range	Average	September 2020	
	Lake Bellaire	10-15	11.6	0.76-1.29	1.02	3.95	Low to medium nutrients
ALL AND A	Clam Lake	9-17	11.6	0.82-1.59	1.06	4.87	Low to medium nutrients
	Torch Lake North	19-40	26.4	0.01-0.35	0.25	2.74	Low nutrients
	Torch Lake South	18-45	28.1	0.20-0.47	0.30	1.03	Low nutrients

Summary of 2020 Water Quality Data:

Torch Lake water is much more transparent than the water of Lake Bellaire and Clam Lake. All of the lakes were clearer at the beginning of the summer and stabilized into their less transparent state by early July.

Chlorophyll-a was much lower in Torch Lake than in Lake Bellaire and Clam Lake. This makes sense because chlorophyll-a measures the amount of chlorophyll in the water, as contained in microscopic algae called phytoplankton. Phytoplankton is one factor that reduces transparency of lake water. Chlorophyll-a remained relatively steady for all four locations through the summer of 2020.

Likewise, phosphorus was lower in Torch Lake than in Lake Bellaire or Clam Lake. Phosphorus feeds algae, and although other factors come into play, less phosphorus would be predicted where there is less Chlorophyll-a. In all lakes the amount of phosphorus has been stable since 2004, or might be trending slightly downward. However, usually decades worth of data is needed to identify these sorts of trends for sure.

In sum, the water quality of all three of our lakes is very high in the deep basin zone. This means we have a big responsibility to maintain this high water quality. What we do near the shore will eventually take hold in the deepest parts of the lake, and if that happens it will be harder to reverse the impacts. Let's make the impacts positive ones!

Do your part to maintain high water quality. Provide a shoreline that is thick with native plants, shrubs, and trees. Direct runoff to rain gardens. Donate time or money to conservation organizations that are protecting shoreline and upland habitat. There are lots of things you can do! And please let us know if you would like to be part of our water collection activities with an email to info.3lakes@gmail.com.

Checking in with former TLA Summer Intern Natalie Ranger

In 2011, Natalie Ranger was one of six TLA summer interns who kayaked around Torch, Clam, and Bellaire Lakes, as part of a survey of Cladophora patches. This survey was conducted in conjunction with six TLA volunteers. Cladophora is a type of fibrous algae, native to our area, that proliferates in high nutrient areas. Cladophora patches may indicate places where groundwater with excess amounts of phosphorus is seeping into the lakes.

Since 2011, Natalie graduated from Elk Rapids High School and then attended the University of Michigan where she majored in neuroscience. She then went on to receive a Masters Degree from Case Western University in Social Science and Administration. She married Don Fedrigon, her Elk Rapids High School sweetheart, who is currently involved in a residency in Urology in Atlanta.

Natalie Ranger Fedrigon is currently working at Children's Healthcare of Atlanta's Marcus Autism Center where she is a coordinator for the Marcus Crisis Prevention Program. This program teaches techniques to safely prevent, manage, and de-escalate challenging behaviors, like hitting or biting, in autistic children. These behaviors can cause harm to the kids and/ or to their caregivers, and can prevent children from getting the services they need. Natalie is involved in training people all over the world to use these techniques in hospitals, therapeutic centers, schools, homes, and more. According to Natalie, "this position is a great fit for me as it



Natalie Ranger (TLA Summer Intern) and Norton Bretz (TLA Executive Director, 2011) immediately following Natalie's presentation to the Elk Rapids School Board.

combines my interests in psychology, business, public health, social work, research, and child advocacy. My favorite part of this position has been seeing the difference this training can make on the lives of children and their caregivers."

The Three Lakes Association High School Summer Internship program exposes ambitious high school students to research techniques and builds a deeper appreciation for the lakes and environment around us. Many of our interns go on to pursue careers in science, but as Natalie makes it clear, the internship program is for students with all sorts of interests. If you know a local high school student who might like to take part in our 2021 summer internship program, please visit our website for all the details, 3lakes.com. They will be posted soon!



Natalie Ranger Fedrigon, March 2021, instructing caregivers on safe ways of interacting with autistic children who hit and bite.



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Because lakes don't come with a manual, AND the choices we make on land impact the lake...

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Step 1. Sign up for TRUE BLUE News and receive a monthly tip. <u>https://conservetorch.org/subscribe/</u> (We won't share your email information!)
Step 2. Check out in-depth articles on our website. <u>https://conservetorch.org/</u>

Step 3. Pick up free materials on lake-friendly practices at the TRUE BLUE Gallery in Alden. Open May- September.

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			 Education
OWNSHIP:	TOWN:	ZIP:_	 Invasive Species
SUMMER PHONE:			 Membership
WINTER POSTAL ADDRESS: (Stree	et, P.O. Box)		 □ Finance
			Public Relations
^ITV/	CTATE.	710:	 Service
CITY:			Other
MINTER PHONE:			 Three Lakes Association is a 501(c)(3) corporation. Your dues and other contributions are tax deductible.

Help us add 100 new or renewed memberships by August 15

-Membership counts!

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Three Lakes Association P.O. Box 689 Bellaire, MI 49615 3lakes.com



The mission of the Association is to 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.

