



55 Years

# QUARTERLY

THREE LAKES ASSOCIATION

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

OCTOBER 2021

## Full Aquatic Plant Survey of Torch Lake

You can tell a lot about a lake by looking at the “seaweed” growing in it. Torch Lake, for instance, is home to many different species of aquatic plants. Most of them are native, and beneficial. But some of them are invasive, and unwanted. What exactly they all are, and where exactly they are all growing, is the subject of an Aquatic Plant Survey being conducted this fall on Torch Lake.

Thanks to a generous donation from the Dole Family Foundation, a joint team from TLA and TLPA have engaged Tip of the Mitt Watershed Council to complete this survey.

Water Resource Specialists from Tip of the Mitt will examine the entire circumference of the lake, looking for any and

all plants growing between the shore and out to a depth of about 30 feet. Patches of underwater vegetation are located using an aerial drone, and then followed up on by field workers in a boat taking actual plant samples.

As of late September, the team had already spent eight days on the lake and examined plant growth at 136 sample points. In general, plants were found in areas where the depth dropped off along the shorelines or near obstructions (for instance fish cribs, the old boiler, etc.). Most of the substrate on Torch Lake is not suitable for plants to grow, so it appears that obstructions and drop-offs provide a catch point for sediment and nutrients that help plants grow. An online mapping system is being utilized to document all observations including the species, location, and size of the plant bed.

So far, 17 different species of aquatic plants have been identified, most of them various species of native pond weeds and Chara. One unwelcome invader that has turned up on the list is Eurasian watermilfoil, or EWM for short. As we have previously documented, EWM is an invasive plant that has the ability to out-compete native plants and spread rapidly. It can quickly become a



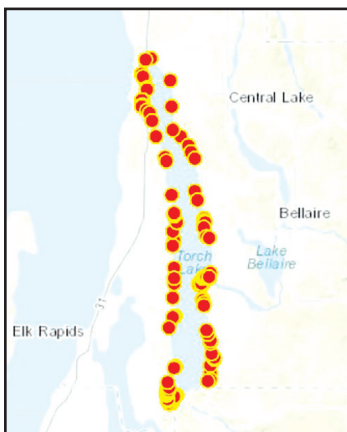
**Evan of Tip of the Mitt collecting aquatic plants on Torch Lake for the plant survey**

real problem, as it has in several other northern Michigan lakes.

Fortunately, only one previously-unknown colony of EWM has turned up as a result of the survey. This patch and three other known patches of EWM are being chemically treated this fall by PLM Land and Lake Management, a highly-respected company that has been treating EWM in the Chain of Lakes for years. A joint TLA-TLPA volunteer team

will then monitor these sites to see if additional or alternative treatment is necessary next year.

Meanwhile, the Aquatic Plant Survey work continues. The results of the survey will be a valuable addition to the common database of records being created to have a robust method of keeping track of our water quality measurements, aquatic plant life findings, our treatment actions, and how our water is changing over time.



**Map of survey locations**

*Sneak  
peek*

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## THREE LAKES ASSOCIATION

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### Executive Director

Jeanie Williams

### Administrative Assistant

Lois MacLean

# Invasive New Zealand mudsnails found in Shanty Creek

Invasive New Zealand mudsnails have been detected at the mouth of Shanty Creek, a tributary of the Grass River. The snails were found during routine monitoring in May by the Grass River Natural Area Stream Watch project and confirmed through DNA analysis by Oakland University in August.

Emily Burke, conservation and education specialist with Grass River Natural Area, Inc., said she was able to identify New Zealand mud snails while sampling Shanty Creek thanks to invasive species identification training provided by the CAKE (Charlevoix, Antrim, Kalkaska and Emmett) CISMA in the spring.

This brown to black, one-eighth-inch long mudsnail, a native of New Zealand, is considered invasive and is prohibited in Michigan due to the environmental harm it can cause to rivers, streams and lakes.

Following Burke's report, a team from Oakland University conducted monitoring with eDNA techniques on 15 sites in Elk River Chain of Lakes but found no additional infestations.

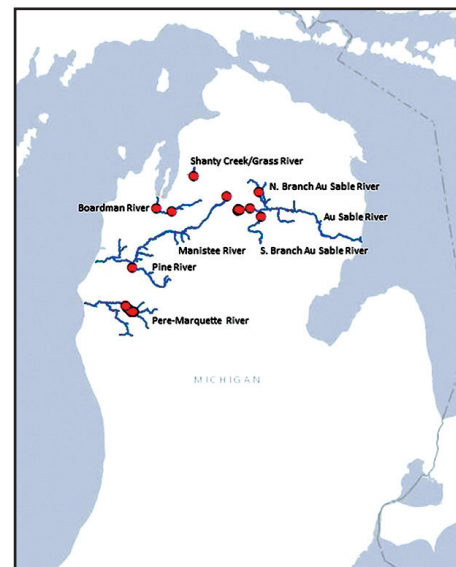
eDNA techniques (e stands for environmental) collect water samples and screen them for DNA from the species of interest. Generally, if a species is present in a stream or lake its DNA will be swirling around in the water. eDNA sampling is an efficient way of looking for species that might be time consuming to find or difficult to access.

However, the technique isn't failsafe. The eDNA samples taken at the mouth of Shanty Creek also turned up negative, and we know there are New Zealand mudsnails in Shanty Creek.

Local and state partners will continue to monitor the area and everyone needs to decontaminate their gear after visiting a stream in the Elk River Chain of Lakes to prevent the spread of New Zealand mud snails and other harmful species.

### A HISTORY

[New Zealand mudsnails](#) were first discovered in the United States in Idaho's



**Invaded river systems in Michigan, to date. Red dots indicate locations with confirmed presence of New Zealand mudsnails. Map courtesy of Jeremy Geist, Trout Unlimited.**

Snake River in 1987. Since then, the snails have spread throughout the western states and into areas of the Great Lakes by attaching themselves to boats, waders and equipment.

The Grass River is now the sixth river system in Michigan known to be infested by the mudsnails. Their discovery in the Pere Marquette River in August 2015 signaled the first detection in a Michigan inland waterway. In 2016, populations were confirmed in the Boardman and Au Sable rivers. By 2017, the invasive snails were found in the Upper Manistee and Pine rivers.

Michigan's salmon season, which peaks in September and October, draws thousands of anglers to Michigan's premier rivers.

"This is a time when people are likely to visit multiple rivers and streams over a few days," said Lucas Nathan, Michigan Department of Natural Resources aquatic invasive species coordinator. "If they are not cleaning equipment thoroughly each time, there is a potential to introduce New Zealand mudsnails into new waters."

### What harm can a snail do?

Because the New Zealand mudsnail reproduces by cloning (females develop complete embryos without fertilization), a single snail can start an entire population.

*MUD SNAILS continued on page 3*

# Mud Snails

*Continued from page 2*

One snail can produce over 200 young in a year. Since few natural predators or parasites of this species exist in North America, their numbers grow rapidly each year.

A high density of mud snails can eat so much that food becomes scarce for other stream invertebrates, such as mayflies and caddisflies. In turn, in rivers invaded by New Zealand mudsnails, fish that feed on native invertebrates like mayflies and caddisflies may find it more difficult to find food.

Fish will consume mudsnails, but due to the snail's thick shell, they are difficult for fish to digest, offer the fish little nutritional value and can be excreted alive. Substituting mudsnails for native food sources can reduce the growth, condition and ultimately the abundance of key sport fish including trout.

## What is being done?

Since the initial detection, the DNR and Department of Environment, Great Lakes, and Energy have incorporated mudsnail monitoring into their standard sampling procedures, increasing the potential for early detection in several rivers and streams each year.

Volunteers across the state, like those with the Grass River Natural Area Stream Watch, conduct regular monitoring of streams and rivers through the Michigan Clean Water Corps, or MiCorps, to determine stream health and look for invasive species. Other partners,



**New Zealand Mudsnails on a hand – notice how tiny they are! Photo courtesy of Emily Burke, Grass River Natural Area.**

including universities and cooperative invasive species management areas also engage in annual monitoring.

## What can you do?

If you are near the mouth of Shanty Creek, PLEASE decontaminate any equipment, especially waders and boot bottoms, before leaving the area. The [NZMS Collaborative](#) offers these steps for cleaning boots and waders:

**Remove** muck/aquatic plants from boots and waders

**Spray** thoroughly with a disinfectant, such as Formula 409

**Let it sit** for 20 minutes

**Rinse** with tap water, away from the river

**Dry** boots and waders thoroughly before next use

In fact, after a visit to any lake, river or stream, be sure to clean, drain and dry your boat, trailer and equipment before heading to a new destination.

The New Zealand mudsnail's small size requires careful examination and cleaning of places where plants, mud or debris can be found on poles, nets, waders, boots, buckets, kayaks, canoes and flotation devices. Anything that has been in the water or at the water's edge should be inspected before it is packed or loaded.

The short video, [New Zealand Mudsnail Ecology and Fishing Gear Decontamination in Michigan](#), available at [NZMSCollaborative.org](#), provides a demonstration of the cleaning technique as well as information on how to identify the invasive snail. Additional information on New Zealand mudsnail, including how to report a suspected discovery of the snail, can be found at [Michigan.gov/Invasives](#).

*Article adapted from MDNR press release*



## Volunteer Needs

**Water Quality:** We need someone to scan documents through a copy machine at the Antrim Conservation District in Bellaire. If you have basic administrative skills this job will be easy to learn. Once trained, you can do the project on your own schedule, when the District Office is open.

**Publicity:** If you have writing, editing, marketing, publishing, design or related skills that you might like to contribute, please reach out. You could share your skills for a one-time thing, on an on-going basis (such as the quarterly newsletter), or to help us

create a system to make any of these tasks easier for us.

We could also use a person to chair the publicity committee. This person supports the newsletter, makes sure we are sharing our work on social media and with local news outlets, and organizes email communications to our membership. The publicity chair does not do all of the work! They have a small team of people that help.

Please call 231-412-7551 or email [3lakes.info@gmail.com](mailto:3lakes.info@gmail.com) if you are interested in any of these opportunities.



# The Best Summer Ever

By Anna Anger  
2021 TLA Intern

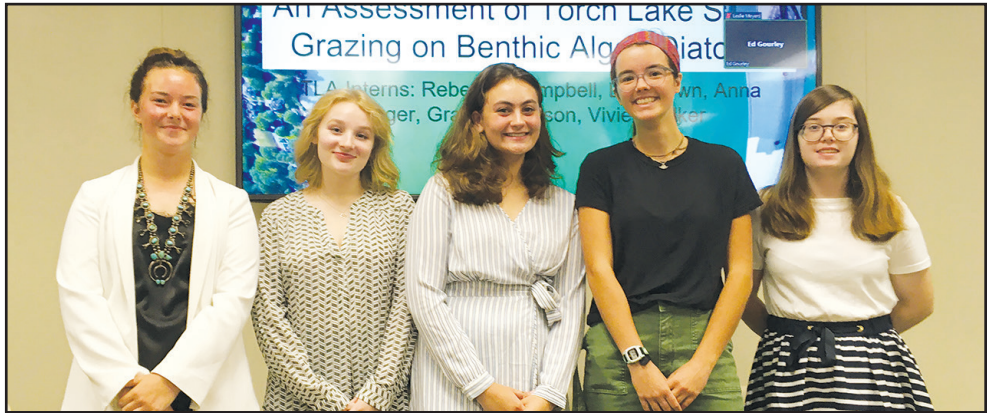
I used to think I would enjoy studying mathematics in college, but after my internship with TLA, environmental science has caught my eye. The Three Lakes Association has been studying the root cause of golden brown algae (GBA) for years now, and this summer, I was lucky enough to be one of five high school interns to be part of this project.

To begin, TLA volunteers were gracious enough to already have a study plan, which saved us a lot of time. The goal of this project was to figure out why the GBA in Torch Lake is growing so fast, an issue which could have serious ecological repercussions, and if perhaps, snails, who are known consumers of algae, might play a role. Do snails eat the diatoms that make up GBA?

We started out in the field, and by field I mean Torch Lake. We gathered 216 snails from two different locations. Afterwards, we placed the snails under enclosures we made and anchored them off shore at Camp Hayo-Went-Ha and the home of TLA board member, Ed Gourley. We collected the snails a week later to find out if the snails ate GBA, and if so, which types of diatoms they preferred to eat.

When we weren't in the water or in the lab, we were eating muffins on the grass and discussing how we could improve our experiment.

We were able to collect both snail feces and GBA samples that would be used to tell us whether or not the snails were controlling



**TLA interns after they presented their findings to the TLA Board of Directors. Vivian Felker, Rebeckah Campbell, Anna Anger, Lily Brown, Grace Robinson. Each intern also presents to the School Board in their school district.**

the GBA. To do this, we got some help from Michigan State University professor Dr. Jan Stevenson who told us all about the gorgeous diatoms that make up GBA.

Grass River Natural Area was generous enough to allow us to work there throughout the summer and let us host a lecture from Dr. Stevenson. Did you know that algae is made up of different diatom types? For this study we focused on five main diatoms that make up the GBA in Torch Lake: cymbelloids, fragilarias, diatomas, centrics, and epitheimias.

After learning a little about diatom features, we put ourselves to the test! We spent a lot of time looking through microscopes and tallying how many of each diatom type we saw, and how many of those were alive. One day, we spent four straight hours observing them through microscopes. Our tally markings were used to analyze the diatom composition of the feces and of the

complete GBA samples

One of our more remarkable findings was how many diatoms actually lived. Out of all of the diatoms in the GBA available to the snails, most, 80%, were alive, while in the snail feces, after consumption, just under 80% remained alive. This really tells us that the snails didn't digest very many diatoms because the snail feces had nearly as many live diatoms as the GBA itself. The diatoms passed straight through the snails alive.

It could be said that the snails aren't controlling the algae, because the diatoms are coming out undigested. The abundance of living diatoms was originally expected to decrease after passing through the snails, but this was proven wrong. Now we wonder what else the snails could be eating?

Maybe next summer, more interns will investigate the diet of a snail, but for now, I think I just had the best summer ever.



**Vivien and David (Internship Coordinator) in the water placing enclosures with snails at Hayo-Went-Ha.**



**Anna, Rebekah, and David using microscopes at GRNA**

# A 2021 Look at Golden-Brown Benthic Algae

By Becky Norris

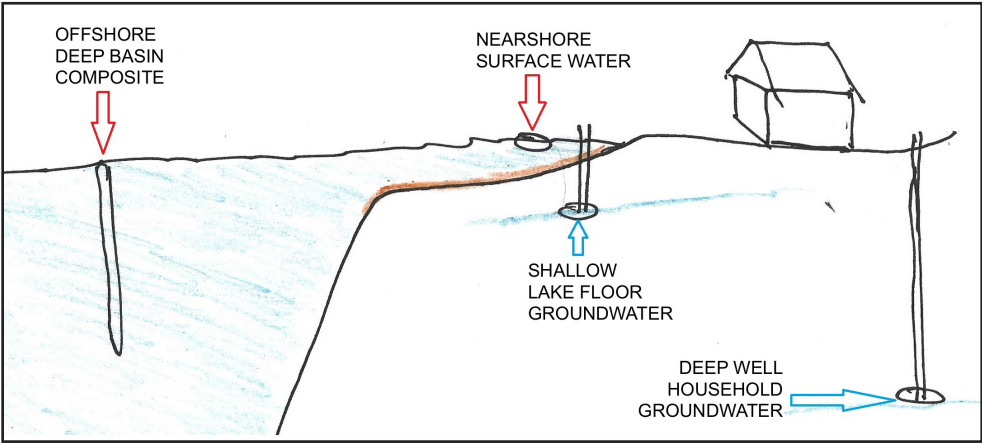
As our research continues into the nature of the golden-brown benthic algae (GBA, diatoms living and growing on the floor of the lake), in the summer of 2021 we again collected nearshore surface water and lake floor groundwater samples to obtain their nutrient chemistry profiles. We also collected offshore composite samples (see table for description) to compare their profiles to samples obtained in 2020. And once again, as we did in 2016, we collected household drinking water from substantially deeper sources of groundwater than the lake floor samples.

Differences that may be found in the nutrient chemistry profiles of these four sources allow us to draw conclusions concerning some of the potential sources of nutrients for the GBA. They may also allow us to judge whether shallow groundwater has been enriched with nutrients beyond that found in deeper veins of groundwater, something that could potentially occur with land-applied fertilizers or leachate from septic drain fields.

Including the current year’s work, we have collected samples that provide data on:

1. Near-shore surface water and lake floor groundwater over a span of 6 years
2. Near-shore versus offshore lake water profiles over two consecutive years
3. Two sets of deep groundwater five years apart

Careful review and interpretation of these data should allow us to reach reasonably firm conclusions as to the contributions of



Locations of the collected water samples.

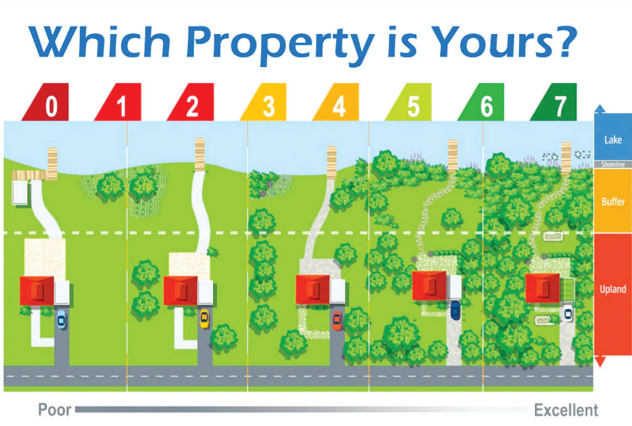
Sample location	Nature and utility of this sample type
Offshore Composite	Sample with the nutrient chemistry profile of the offshore lake water environment. This is obtained by dropping a weighted sample bottle many feet deep and allowing it to fill gradually as it is pulled back to the surface. This technique produces a sample that is representative of the lake as a whole.
Nearshore Surface Water	Sample with the nutrient chemistry profile of the nearshore lake water environment. This is obtained by dipping a sample bottle about a foot deep into the surface of the lake within the first 30 feet or so from the shoreline.
Shallow Groundwater	Sample with the nutrient chemistry profile of the groundwater percolating into the lake floor environment. This is obtained from a piezometer, a well point driven 1 ½ to 2 feet into the floor of the lake with attached tubing through which water can be drawn.
Deep Well Groundwater	Sample with the nutrient chemistry profile of the groundwater supplying drinking water to a home. This is obtained by filling a sample bottle from a faucet at the home.

locally-sourced nutrients as drivers of the GBA proliferation. And these conclusions could lead to recommendations for local

remedial actions and/or exploration of other factors that may be playing a substantial role in the GBA story.

## Mi Shorelands Survey Update:

In 2021 eight TLA members took the Mi Shorelands Survey. We are grateful for your participation and hopeful that what you learned was helpful to you! If you would like to take the Michigan Shorelands Survey, follow this link <https://www.mishorelandstewards.org/rate.asp> and select Three Lakes Association when given the option. This survey will help you determine what you can do next on your property to support and protect the beautiful water you love.





# NEW TLA Member Portal

Three Lakes Association is pleased to announce our new Member Portal. In November there will be new options for managing your TLA membership and submitting donations. The generosity of numerous donors has made it possible for us to set up and fund new membership management software through I4A for the next five years.

We have been doing it the old way for a long time. Paper membership forms, manual data entry, hand reconciling of accounts, multiple disconnected software systems to handle our database, newsletters, accounting and donations, and increasingly antiquated software all around. I4A puts it all into one integrated system, which will simplify all of our processes, keep our software always up to date, and make for an enhanced membership experience.

When you donate or renew for 2022 (starting in November), you will see a new web form to fill out. It will be very similar to the old web form, if you have been using that one. We will collect two addresses from everyone: your winter address and your summer address. If they are the same, then you will enter the same info twice. An email address will now be required.

If you don't have an email address (or don't want to give one) you can still renew or donate through the postal mail. You can also still call us to update your account if you don't have access to a computer. The old ways of renewing, updating and donating will stick around!

We are moving away from PayPal, so if you have an automatically renewing membership through PayPal you will need to end the transaction on PayPal and restart the auto renewal in our new system. It will be easy to do.

The new portal will give you some new options too. It will be easy to update your



contact information and check on the status of your account – things that you couldn't do before. I4A also makes it possible for us to create a member directory and member-only segments on our website. Let us know if you would like to see those things.

We can also send segmented emails, so we can deliver emails to only the specific people who will be most interested in them. And it will be very easy to opt out of marketing emails if you only want things like receipts from us and not things like newsletters and event announcements.

Please let us know if there are other things you'd like to see that would make your membership even better or easier. I4A might be able to do it!

We will be sending out additional information about the new Member Portal to all members that have provided us with an email address. If you have not provided an email address, or need to update your email address, we invite you to use our current website form: [3lakes.com/update-](http://3lakes.com/update-membership-information/)

[membership-information/](http://3lakes.com/update-membership-information/). Members without an email address will receive information via USPS mail.

Finally, we wish to express our thanks to the following folks who have encouraged and financially supported this initiative for the next five years. This would not be possible without them.

## THANK YOU!

Dan Lorimer  
Willis Ashby  
Todd Collins  
KC Babb  
Verne Powell  
Terry Malone  
Bob and Susan McLean  
George Powell  
Andrew K Powell  
Art Brereton  
Brian Zeeb  
Virginia and Dave Griffis  
Bill and Connie Frey  
Barb Van Pelt  
Gordy Schafer  
Steve DeTar  
Bob and Pam Currey  
Jim Leto  
Bo Manning  
Dave DeTar  
John Hamaty  
Charles Turk, D.O.  
Dan Crites  
Art Lambert  
Mike Gentile

## New Members and Donations

We are grateful for the recent memorial donations that named these individuals:

Susan Darst Jeffery  
Betty Kohl  
Gerrit Lee Wierda

We also welcome new member Don Hirt to TLA

# New Board Members

On August 5, 2021 we held our annual meeting to affirm the actions of the Three Lakes Association board and to elect board members and officers to two-year terms.

Our congratulations and gratitude go to all of the board members who will continue to serve until 2022: President: Fred Sittel; Director at Large: Mike Novak, and those who will continue to serve until 2023: Vice President: Rick Doornbos; Treasurer: Ed Gourley; Directors at Large: Dean Branson and Art Hoadley; and Zone Directors: Clearwater Township: Tina Norris Fields, Milton Township: Greg Fredericksen, Central Lake Township: Steve Laurenz, Forest Home Township: Fred Sittel, Custer Township: Gary Knapp.

We were also delighted to welcome two new board members, Brian Hayes as Zone Director for Torch Lake Township and Gary Bart as Zone Director for Kearney Township. We asked them to briefly introduce themselves for this newsletter.

## Here is Brian Hayes:

I live in Central Lake township 3 or 4 months per year and in Brentwood, TN the rest of the year.

I joined the TLA board because they

had a vacancy for Torch Lake Township. As a board member, I want to help work on positive solutions to protect the waters we love. We need to make sure we preserve this precious resource for future generations.



I worked for General Motors for 39 years. I have the ability to work on complex issues, I work well with people and I believe in data driven problem solving.

I first came to Torch Lake in the 1970s when our family

bought a cottage in Torch Lake Village. I still do the majority of my boating in this area. We enjoy all aspects of boating and water sports. We swim, sail, kayak, paddle board, ski, wakeboard or just float and enjoy the lakes.

I look forward to working with Three Lakes Association and getting to know more of the people that help protect our lakes.

## And now Gary Bart of Kearney Township:

I wanted to join the TLA board to do my part to ensure the quality is maintained or improved in our lakes.

I hope to be a source for information



in my zone about anything pertaining to the lakes and also take any concerns that people might have and present them to the board. I like to think that I can listen and empathize with people about their concerns.

I love the fact that these lakes that we live on or fish on or boat on are so clean that anywhere in the chain you can jump in for a swim if you like – not the case with many lakes and rivers in other states and countries.

Brian and Gary are already proving to be valuable board members. Please join us in welcoming them.



Our 55th Annual Meeting occurred on a beautiful August afternoon on the shore of Lake Bellaire. We were delighted to hear from our speakers, Deanna Jerdee of Paddle Antrim and Jenn Wright of Grass River Natural Area. We also honored Becky Norris for her long service as a board member to the Three Lakes Association. Most of all, we loved meeting our members – both familiar and new faces! Please keep in touch.



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.

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## Membership counts!

Starting in November, it will be easier than ever to renew online at [3lakes.com](http://3lakes.com)  
The membership you purchase today will be effective through the end of 2022

**DONOR \$100** ☐ **STEWARD \$500** ☐ **BENEFACTOR \$1,000** ☐ **LIFE \$2,000** ☐ **BASIC \$60** ☐

Michigan Riparian Magazine Subscription add \$17 ☐

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May we include your name in our newsletter donor list? Yes ☐ No ☐

**Are you interested in volunteering in any of the following areas?**

- ☐ Water Quality
- ☐ HS Intern Program
- ☐ Water Safety
- ☐ Education
- ☐ Invasive Species
- ☐ Membership
- ☐ Finance
- ☐ Public Relations
- ☐ Service
- ☐ Other

Three Lakes Association is a 501(c)(3) corporation. Your dues and other contributions are tax deductible.

**To join Three Lakes Association,**

Please visit our website [3lakes.com](http://3lakes.com) or return this form with your check to: THREE LAKES ASSOCIATION, P.O. Box 689, Bellaire, MI 49615