



PRESERVE PROTECT EDUCATE

Lime Lake Association

Leelanau County, Michigan

ANNUAL REPORT 2023

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Our Mission

To be stewards of the environmental purity and beauty of Lime Lake.

Our Vision

The Lime Lake Association is dedicated to the conservation and preservation of Lime Lake, its shores and streams. To serve this purpose, the Association will promote environmental education, scientific research and testing to safeguard water quality and abate health hazards and collaborate with public and private entities.

Lime Lake Association Board

Dean Manikas - *President*

Mark Fisher - *Vice President*

Jeff Kane - *Treasurer*

Molly O'Toole - *Secretary*

Lisa Genesen - *Fund Raising*

Margaret O'Toole - *Membership*

Mary Barss - *Hospitality/Merchandise*

Ron Reimink - *Volunteer*

Cathy Stocker - *Communications*



FROM THE BOARD

Welcome to the first annual report of the Lime Lake Association. We are an all-volunteer board guided in our role by our vision and mission statements.

In 2021 the board adopted a 3-year work plan and completed the initial cycle in the summer of 2023. Paramount to the plan's implementation was our contract with lake biologist, Kelsey Froelich (Freshwater Solutions, LLC). In addition to our science objectives, we also set a goal to achieve 100% association membership of all riparians (we are currently at 60%). To help achieve this, we upgraded our communications to a digital format through a fully integrated website. We expand on all of this in the pages that follow.



WE ARE A SMALL ASSOCIATION WITH A BIG RESPONSIBILITY TO PRESERVE THE ENVIRONMENTAL PURITY AND BEAUTY OF LIME LAKE FOR FUTURE GENERATIONS.

Our critical work preserving water quality, addressing invasive species, educating our community and more depends on the commitment of our lake community. We are grateful to our members who volunteered hours and made financial contributions in 2023. Our intention with this report is to provide you with a review of our on-going efforts, current successes and future needs to inspire you to remain committed in 2024 and to help us increase our membership.



Become a Member!

Please visit our website at www.limelake.org and join our online mailing list. For your convenience, you can also renew your yearly membership there through a secure link. Our annual operating costs, currently averaging \$16,000, are funded by membership dues and we depend on renewals to keep up with our work. If you haven't yet renewed your membership or joined for 2024, please do so as soon as possible. If you prefer paying by check, a mail-in form is provided with this report. Please Note: The membership year runs January through December.

GOALS, OBJECTIVES & FINDINGS

SHORELINE PRESERVATION THROUGH GREENBELTS

Greenbelt creation is an important and manageable way to provide shoreline protection from erosion, to allow filtration of rain run-off and to protect our water quality.

We offer free greenbelt consults to all riparians. In 3 years, Kelsey has conducted 16 consults. In 2023, two riparians met with Kelsey and one took advantage of our \$200 association fund-matching toward the purchase of native plants.

The Lake Steward program is part of the consult which connects you to a statewide website where you can take a survey and receive personalized recommendations.

We hope to see all property owners making efforts toward protecting more of the Lime Lake shoreline through Greenbelt creation.



WE HAVE INVESTED IN THIS RESEARCH BELIEVING “AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE.”

MONITOR AND ERADICATE INVASIVE SPECIES

Invasive species can drastically impact lake ecosystems. We employ consistent monitoring, early detection, and rapid response plans. We monitor via drone surveys, rake tossing, and scuba dives at our aquatic gardens,

Lime Lake has a good diversity of native water plants. Thus far, we are spared the most troubling invasive, Eurasian Watermilfoil (EWM) that now plagues many lakes in our region including Little Glen and Lake Leelanau.

Lime Lake does have the invasive Yellow Flag Iris. With The Leelanau Conservancy we ran two summer dig events at our preserves. Kelsey also enlisted property owners to do spot diggings along their shorelines. Our goal is to eradicate the species within three years.

We are also collaborating with the Grand Traverse Band of Ottawa and Chippewa Indians in an innovative eDNA early detection program (see pg 6).

WATER QUALITY

CLARITY TESTING, SEPTIC SEEPAGE, ALGAL SURVEYS



CLARITY TESTING: Lime Lake continues to have very good water clarity. Riparians Marcia and Jeff Lee generously volunteered their time to conduct our secchi disc testing for water clarity over the course of 3 months during the summer. Kelsey also engaged with the Leelanau Conservancy to share their Lime Lake historical data on nitrogen and phosphorus levels.

SEPTIC SEEPAGE: We concluded a two-year project assessing levels of enteric bacteria (bad bugs from the human digestive track) and know we have septic seepage into our lake. Usage matters! Population increase means a greater risk to our lake. Please do not exceed your septic capacity. All riparians should have their septic system checked every 3 to 5 years. We must each do our part!

ALGAL SURVEYS: There is a pattern of summer algal blooms. Currently all are normal and nontoxic. We will continue to monitor, with a keen eye out for harmful blooms.

2024 BUDGET PROJECTION

We budget generously to meet all obligations, and with a \$16,000 annual budget, we need all riparians to contribute membership dollars. Membership year runs January through December.

ANNUAL SERVICE	FY'24
Greenbelt Reimbursements	\$600
CLMP membership for statewide water quality study	\$30
Drone shoreline survey every 3 years to monitor effects of greenbelts and shore erosion	\$3,000
Lake Biologist	\$5,000
eDNA study (with a match of \$9,750 from the Grand Traverse Band)	\$5,250
Printing, postage, PO box, and miscellaneous	\$1,450
Shetland Creek maintenance	\$600
TOTAL	\$15,930



NEW LIME LAKE WEBSITE LAUNCHED SPRING OF '23

We made the timely decision to update our online presence in 2023. Thanks to the dedication and generosity of Tamryn Peterson (a local realtor with Coldwell Banker, professional photographer, and website developer) and Cathy Stocker (LLA Board Member in charge of communications) we launched a beautiful and fully integrated website that we are excited for you to explore and enjoy as a useful resource at www.limelake.org.

UPDATES, DISCOVERIES & HONORS

1 Unlike most lakes in Leelanau County, **Lime Lake does not have troublesome terrestrial invasive species** such as Purple Loosestrife, Phragmites, Coltsfoot, and Yellow-flag Iris (most have been eradicated).

2 Our Good Harbor Bay Watershed is the only watershed in Leelanau County that **does not currently have the very invasive Eurasian Watermilfoil**.

3 **Lime Lake has four different species of parasites that cause swimmer's itch** which are easily controlled when using preventative strategies. Effective strategies include swimming after morning and toweling off immediately.



FRESHWATER SPONGES

Lime Lake has freshwater sponges! Sponges are a positive indicator of the overall health and ecological balance of an aquatic environment.

These sensitive and remarkable filter feeders contribute to improved water quality by extracting suspended particles and organic matter.

Such a happy discovery should encourage us to continue our efforts in preserving the purity and beauty of Lime Lake.

FISH SURVEY

The DNR conducted a weeklong fish survey in Lime Lake, August 2023. Totals included 986 fish caught (and released) with 18 species identified. The longest fish was a 24" Northern Pike and a few 20" Small Mouth Bass. We have a good number of White Suckers, a forage fish and "canary in the coal mine" indicating a healthy lake system.



Eight species of forage/bait fish were found supporting a healthy fishery. Perch were elusive, but those found had a range of size/maturity. Two surprises: Alewives continue to come in from Lake Michigan, but no Brown Trout. A hypothesis is that Lime Lake, and many inland lakes, despite planting thousands of trout, are not hospitable environments (water clarity may be a reason).

COVER STORY



Lime Lake was honored as the featured lake in the 2023 fall issue of The Michigan Riparian Magazine. A publication of the Michigan Lakes and Streams Association, it is the only quarterly magazine devoted to covering current issues relevant to the preservation and protection of Michigan's inland waters.

You can become a member of MLSA (and receive their publications) by going to mymlsa.org. Cover photo for the issue was provided by Richard Stocker, a Lime Lake riparian!



RUSTY CRAYFISH

WE'VE UNFORTUNATELY DISCOVERED RUSTY CRAYFISH. THIS AQUATIC INVASIVE DESTROYS PLANT BEDS, AS WELL AS ECOSYSTEMS. WE'RE LOOKING INTO WAYS TO MONITOR THE RUSTY CRAYFISH POPULATION.



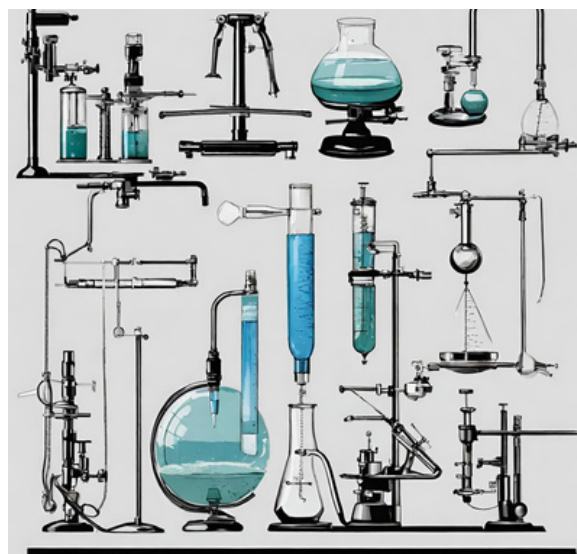
Updates on eDNAProject

DIGITAL POLYMERASE CHAIN REACTION

New technologies are revealing answers to mysteries found in our freshwater lakes in ways unimaginable just a few years ago. Digital polymerase chain reaction (dPCR) now allows for detection of very minute amounts of environmental DNA (eDNA) left in the water by all life forms, while next-generation sequencing (NGS) methods, such as NGS barcoding, identify thousands of aquatic organisms from a single water sample. The value of these advances for understanding how we can manage and best preserve our treasured Lime Lake water can't be overstated.

Aquatic invasive species (AIS), harmful algal blooms (HABs), and excessive enteric bacteria (along with their accompanying nutrients) present the three greatest and most immediate threats to preserving Lime Lake. Any of these threats can very quickly destroy how we currently recreate, and greatly reduce the value of our properties for future generations. Knowing the current make-up and ecological balance (or imbalance) of all aquatic life forms is essential for directing our management actions as lake stewards.

Due to a unique and synergistic relationship between Lime Lake biologist, Kelsey Froelich, and Dr. Patrick Hanington (University of Alberta, Canada), one of the most talented and recognized scientists in North America, our work on Lime Lake dovetails with Dr. Hanington's exciting new, multiple-year initiative beginning in 2023 that will greatly improve the way we evaluate and manage freshwater ecosystems across the continent. This international collaboration will generate valuable data from our NW Michigan region and, most importantly, allow us to tap into a world-class university infrastructure that provides expertise and support necessary for success.



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Lime Lake Association
Leelanau County, Michigan

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The Lime Lake Association
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Membership Matters



Renew for 2024! Membership runs annually January through December.

Please consider a minimum annual donation of \$250. This is just \$20 per month and allows us to maintain current programs, increase outreach, and be ready should an invasive species like Eurasian Watermilfoil become detected.

Contact Information

Name(s)

Optional: In Honor/In Memory of

Phone Number

Email

Address

Our biggest expense is science. We conduct ongoing research to prevent invasive species and monitor water quality; we offer educational resources and free greenbelt consultations; and we strive to set an example of stewardship that will safeguard the lake we love.

Join at any level – it's easy!

- ☐ \$50 Member
- ☐ \$100 Sustainer
- ☐ \$250 Benefactor
- ☐ \$500 Partner
- ☐ Other: _____



Thank you for your support and stewardship!

**Make checks payable to Lime Lake Association.
Include this form with your check and mail to
PO Box 50, Maple City, MI 49664**

**Annual donations can also be made online at
www.limelake.org/donate**

Your annual tax deductible contribution directly supports our mission of preserving and protecting the environmental purity and beauty of Lime Lake.