



Lime Lake

Leelanau County, Michigan

www.LimeLake.org

Lime Lake Annual Meeting

July 27, 2024



Lime Lake Annual Meeting

1. Website Overview
2. State of the Lake
 - a. General updates
 - b. Wake Boat Legislation
 - c. eDNA Results
 - d. Fish Survey Results
 - e. Shoreline Survey Results
 - f. Reminders & Info

Annual Meeting, Saturday, July 27, 8:30 am. Learn More.



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Leelanau County, Michigan

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THIS IS LIME LAKE

Pristine water, stunning shorelines, steep forested hillsides, sparkling creeks and streams, and over 60 acres of preserved natural areas. This is Lime Lake, a gem of Leelanau County.

As a Lake Association our mission is the stewardship of Lime Lake's environmental purity and beauty, and anyone who lives on the lake or just loves to visit can become a member.

Through educational outreach, monitoring and research, community building, and collaborations

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Non-political & non-commercial

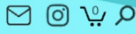
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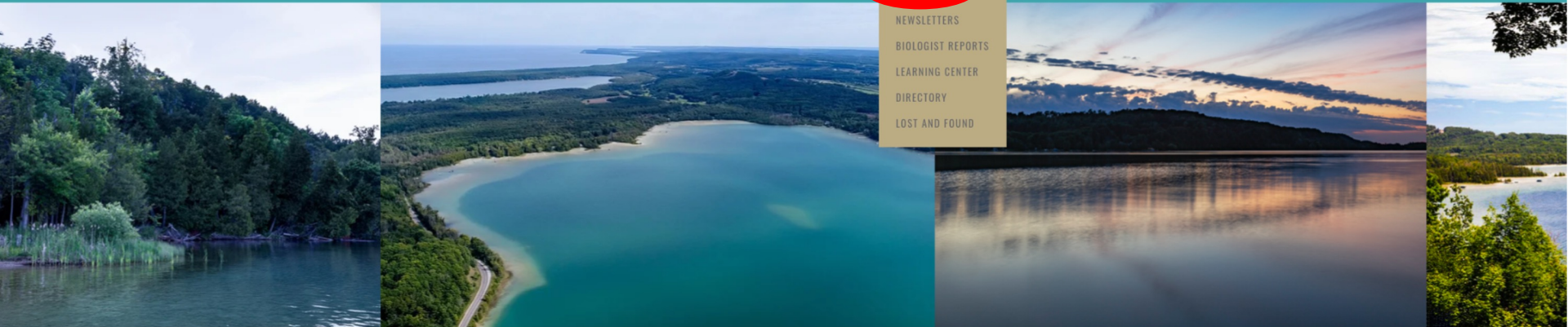
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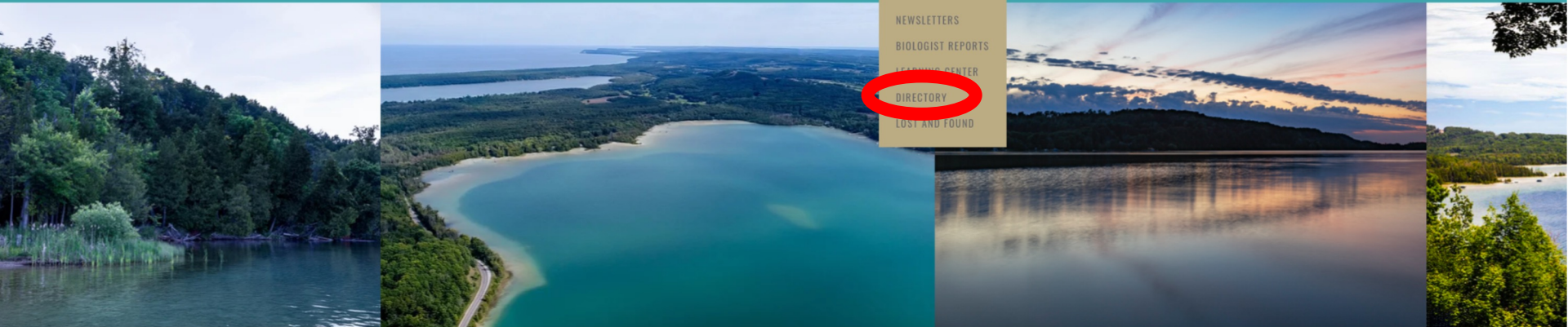
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Password:

For members only!

Guest Area

Please enter the password below.

Go



First Name	Last Name	Primary Address	Property Address	Email 1	Email 2	Phone 1	Phone 2
------------	-----------	-----------------	------------------	---------	---------	---------	---------

Michele & Jim							
Sara & Frederick							
Kimberly							
Mary & Robert							
Molly Kaye & James							
Janna & Eric							
Deborah & Scott							
Jesica & Alex							
Kathy Marciniak & Bruce Barnes							
Sherry & Kip							
Elaine & Bob							
Laura & Chip							
Lynn & Ken							
Jodi & Mike							
Connie & Tony							
Diana & Daniel							
Marshall							



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Jul 11

It's all Connected: A Shetland Creek Cleanup Reminds Us To Leave...

Lime Lake is the most upland body of water in The Good Harbor Bay Watershed so what we do here...

55 0



Jul 1

Getting Dirty to Protect Lime Lake

Thanks to volunteers & vigilance we're closer to reaching our goal of eradicating yellow flag iris fro...

44 0



Jun 17

Volunteers Needed: Friday, June 21, 12pm

Volunteers needed to pull the invasive yellow flag iris from areas in Pat's Preserve this Friday, Jun...

38 0

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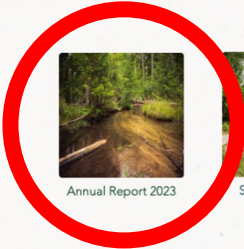


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Newsletters



Annual Report 2023



September 2023



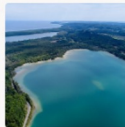
Summer 2023



Spring 2022



Fall 2021



Spring 2021



Fall 2020



Spring 2020





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Lime Lake Association

Leelanau County, Michigan

ANNUAL REPORT 2023

Highlights

From the Board • P. 2

Goals, Objectives & Findings • P. 3

2024 Budget Projection • P. 4

Updates, Discoveries & Honors • P. 5

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*

At the bottom of the home page!

LIME LAKE OUR COMMUNITY, OUR RESPONSIBILITY



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The Lime Lake Association
P.O. Box 50
Maple City, MI 49664
Email: info@limelake.org



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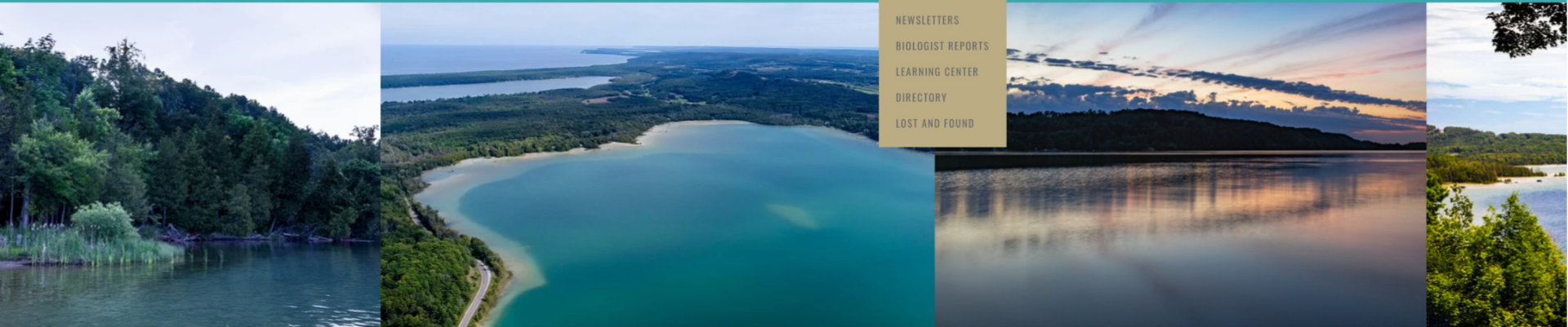
Website Donated by
Tamryn Peterson



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Donate and Join The Lime Lake Association

First Name

Last Name

Email

\$

Donate in the name of (optional)

Membership Matters

Join at any level - it's easy!

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

- \$50 - Member
- \$100 - Sustainer
- \$250 - Benefactor
- \$500 - Partner
- Optional - In Honor / In Memory Of

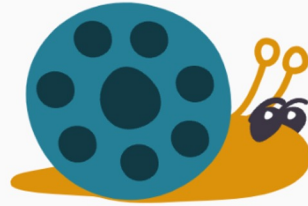
Encrypted and secure!

Help Us Make a Difference!

Our biggest expense is science. We conduct

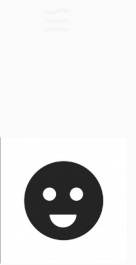


Thank you for your support and stewardship.



If you would prefer, please send a check made out to the Lime Lake Association and mail to:
The Lime Lake Association
P.O. Box 50, Maple City, MI 49664

We'll take your money however you feel comfortable giving it!



The Lime Lake Association
P.O. Box 50
Maple City, MI 49664
Email: info@limelake.org



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Website Donated by

State of the Lake

- Lake happenings
 - Wake boats
- eDNA interesting results
 - Fish survey results
 - Shoreline survey results
 - Reminders & Info

State of the Lake

THIS IS A POP QUIZ!

~ Must get 100% to earn a NEW Lime Lake sticker!

~ First 5 people to claim their prize

♡ HONOR SYSTEM ♡

What are we working with the Leelanau Conservancy to remove on Pat's and Teichner Preserves (for the third year)?

- a. Purple Loosestrife
- b. Red Swamp Crayfish
- c. Sea walls
- d. Yellow Flag Iris



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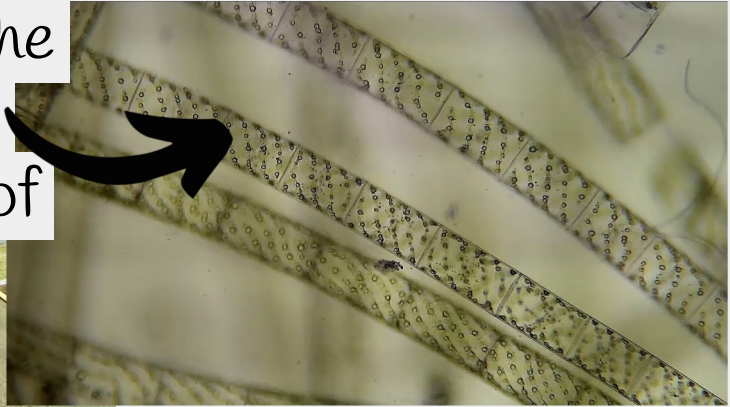
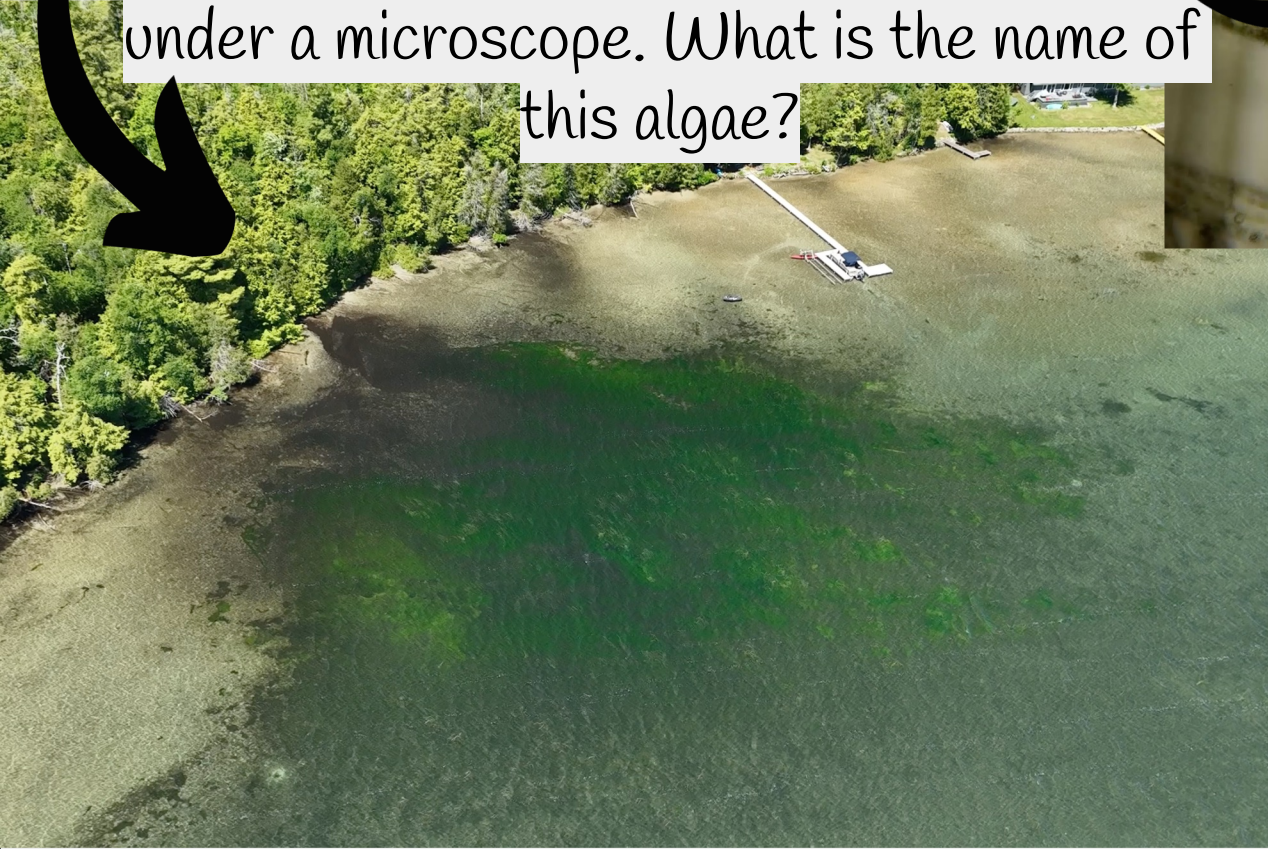


= 2023



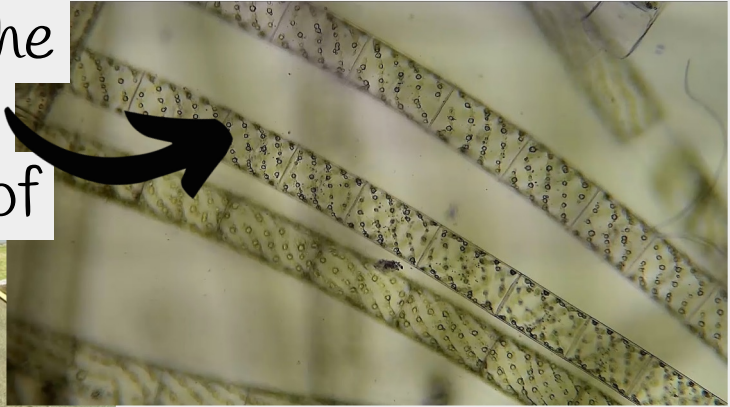
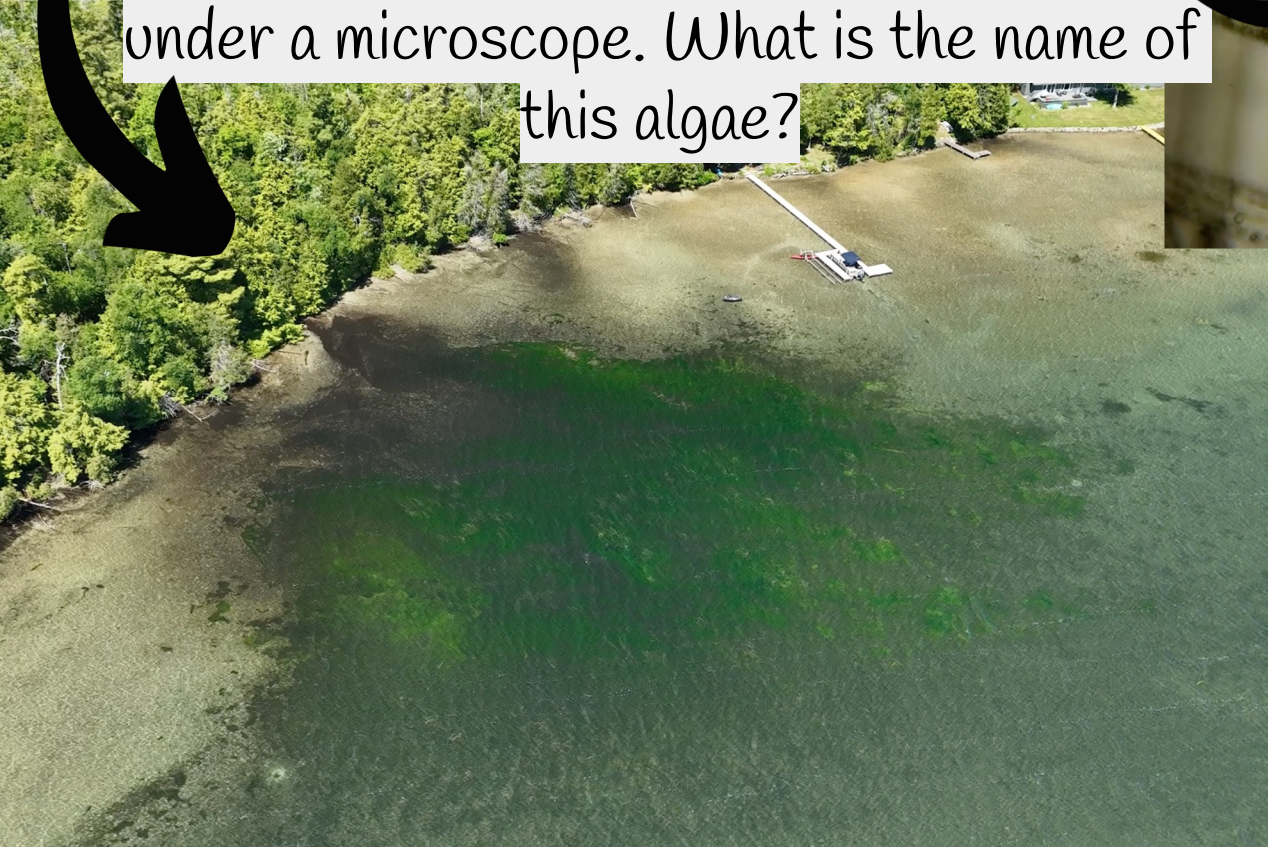
= 2024

This algae bloom took place in June on the south end of the lake. It looks like this under a microscope. What is the name of this algae?

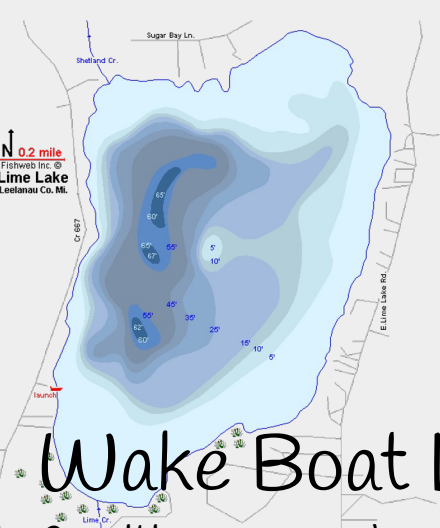


- a. Mougeotia
- b. Camplotonia
- c. Spirogyra
- d. Curleodia

This algae bloom took place in June on the south end of the lake. It looks like this under a microscope. What is the name of this algae?



- a. Mougeotia
- b. Camplotonia
- c. Spirogyra
- d. Corteodia



Wake Boat Legislation

Awaiting approval

- Based on research studies looking at wave action disturbance to fish populations, bottomlands and shorelines^{1,2}
- Boats using ballast tanks
- 500 ft from shore
- 20 ft of water



¹<https://conservancy.umn.edu/server/api/core/bitstreams/e8866f1b-ae7e-411e-a2cb-0156cabeabc1/content>

²<https://mymlsa.org/wp-content/uploads/2023/07/Fisheries-Report-37-Wake-Boat-Study-Official-Version-Released-on-7.28.2023.pdf>



What does the 'e' in eDNA stand for?

- a. Exciting
- b. Environmental
- c. Experimental
- d. Elusive



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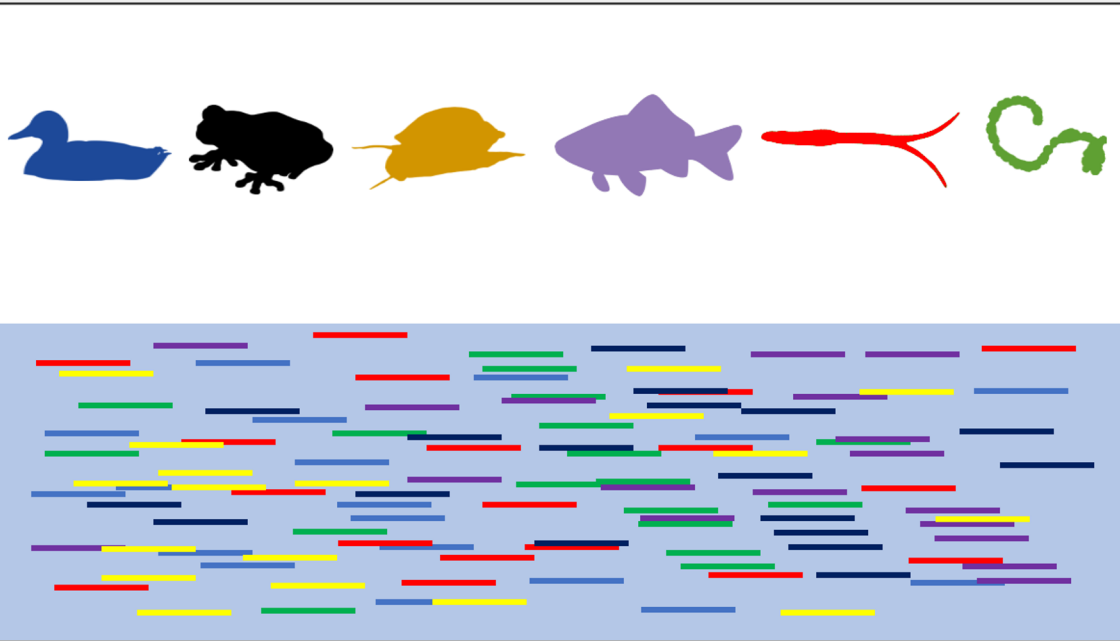
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What is eDNA?

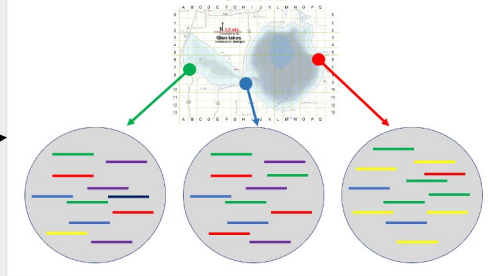
Each species has a unique DNA code, which is found in every cell of its body.



This unique DNA can be 'shed' into the water as eDNA from:

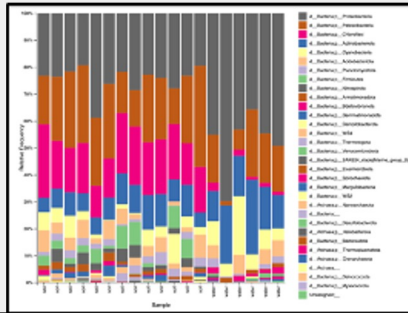
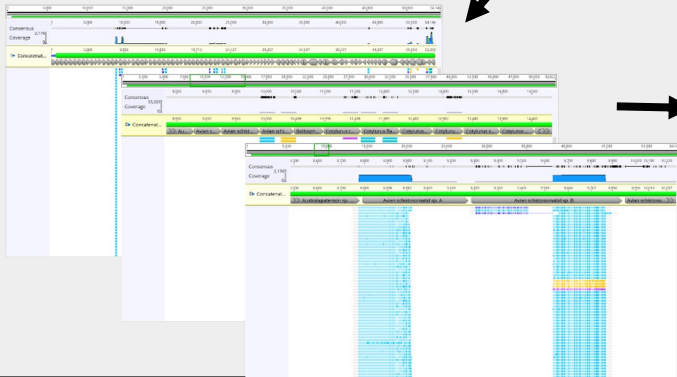
- Feces
- Mucus
- Tissues
- Actual organism

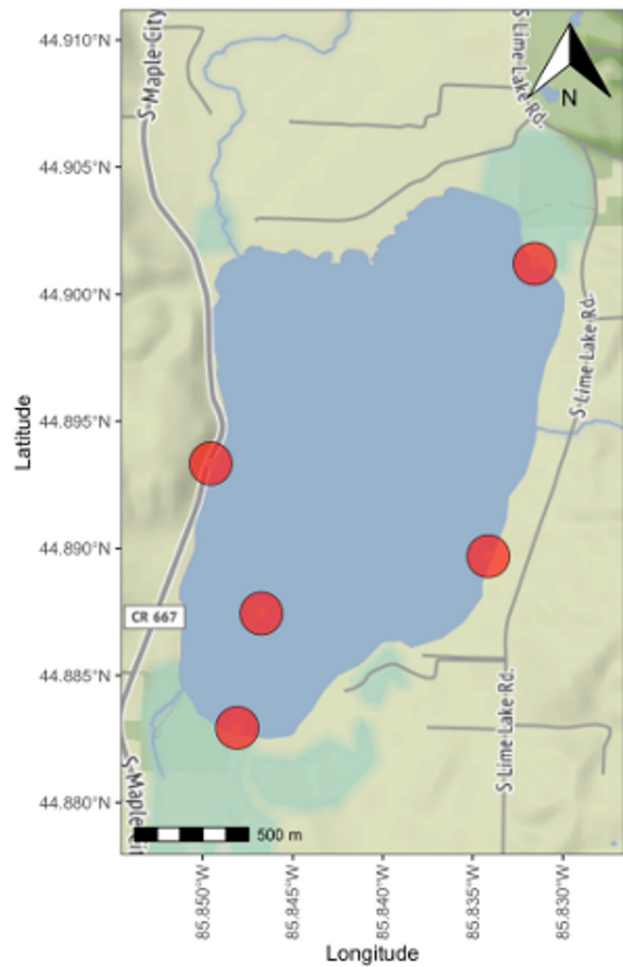
How is eDNA measured?



*6 filters per site

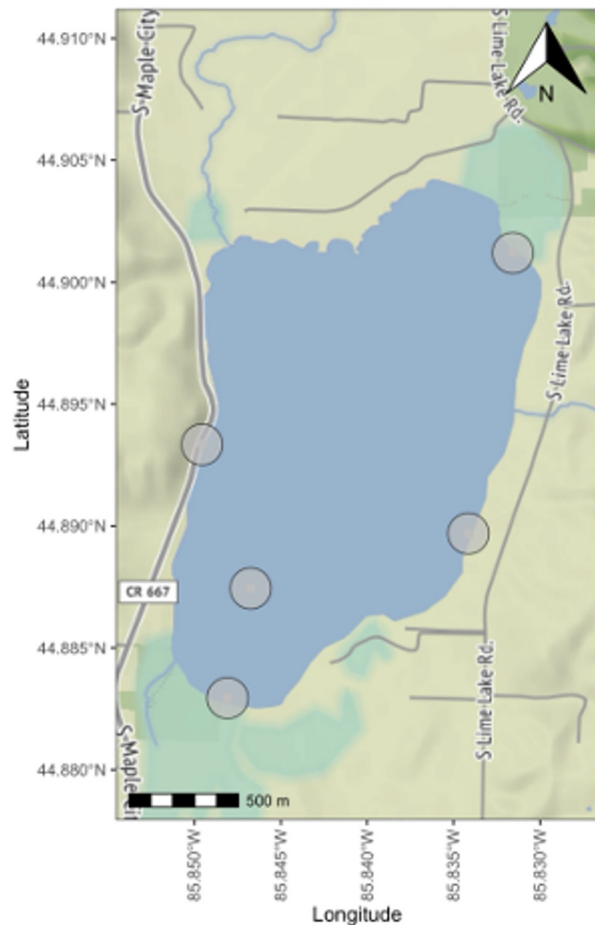
*AIS,
invertebrate,
vertebrate,
plants, bacteria,
(possibly
trematodes)





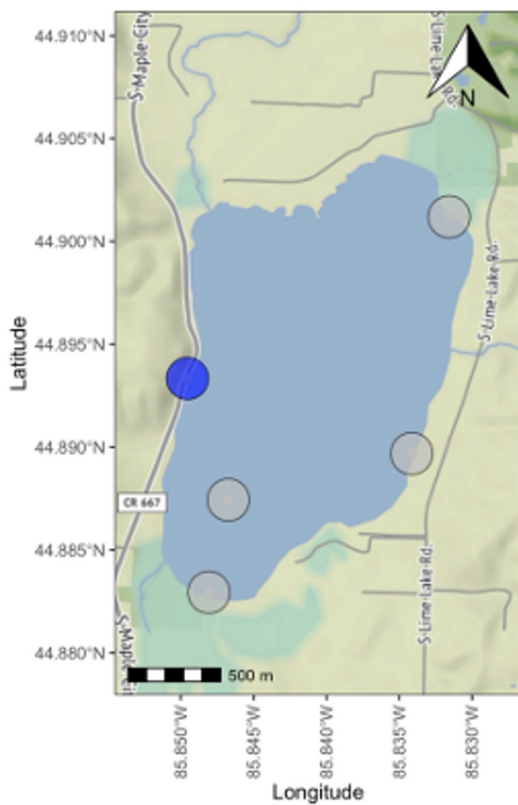
Zebra Mussel Risk

● Detected



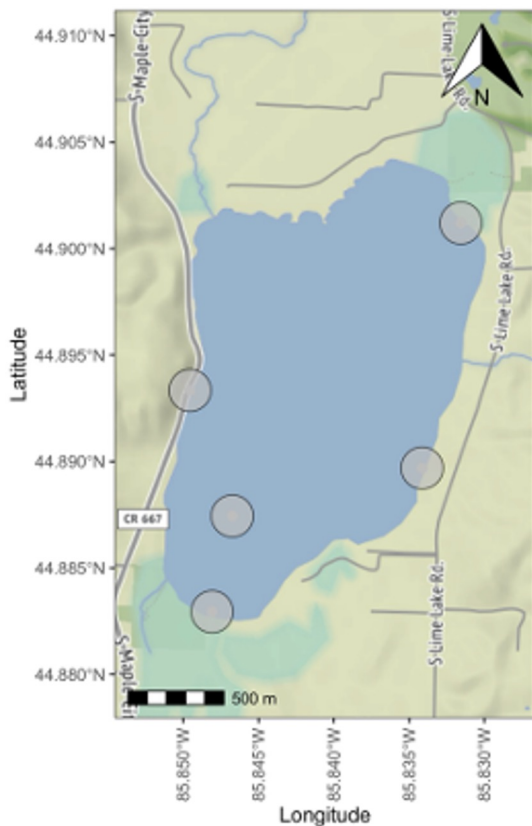
Quagga Mussel Risk

● Not detected



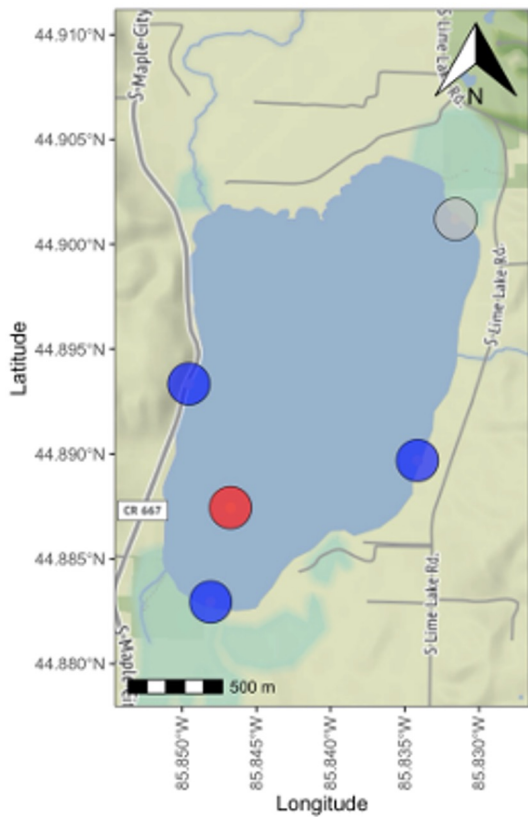
New Zealand Mud Snail Risk

- Not detected
- Weakly detected

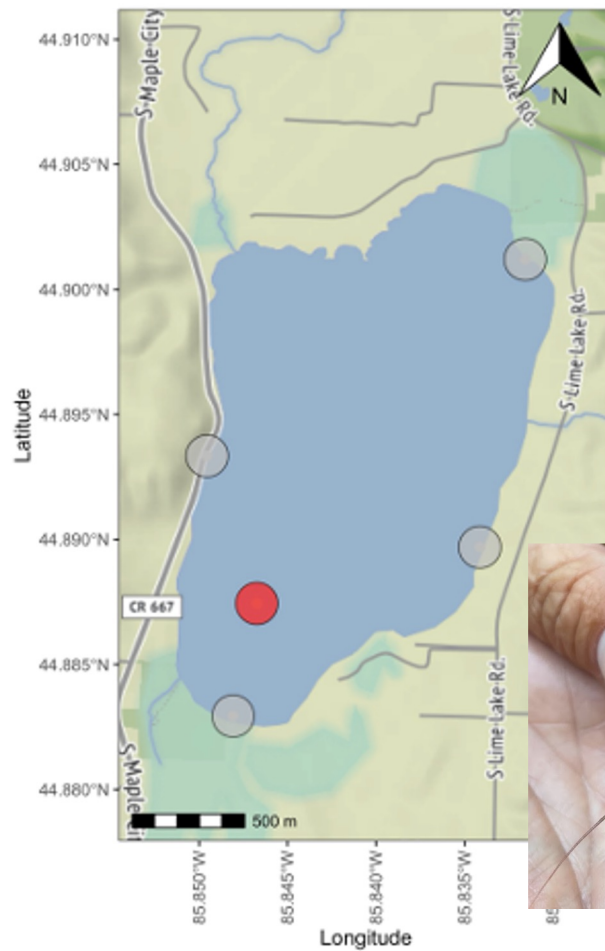
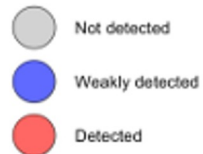


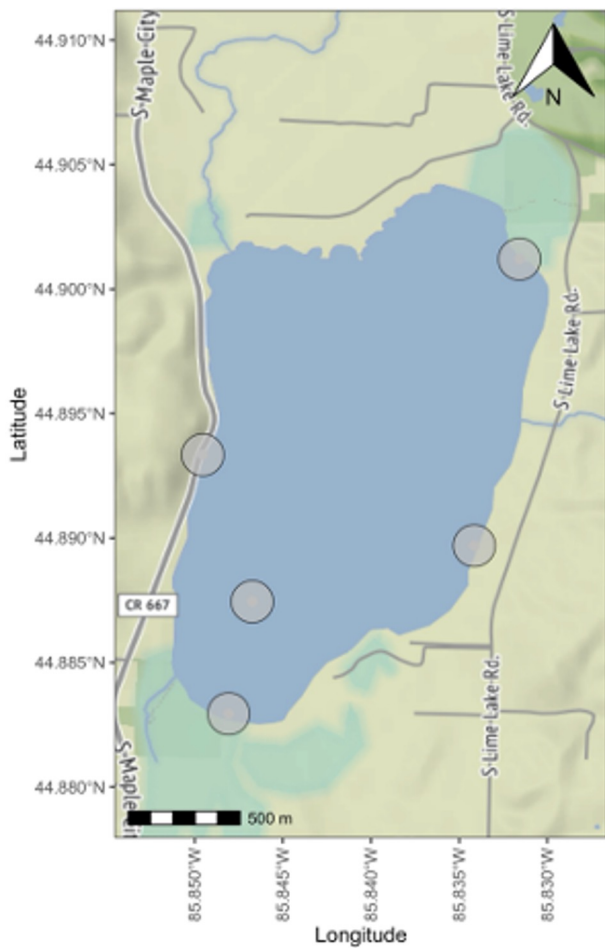
Chinese Mystery Snail Risk

- Not detected



Northern Crayfish Presence





Marbled Crayfish Risk

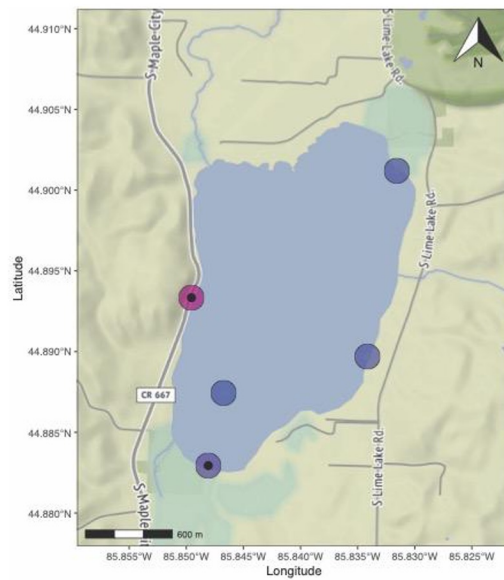
Not detected



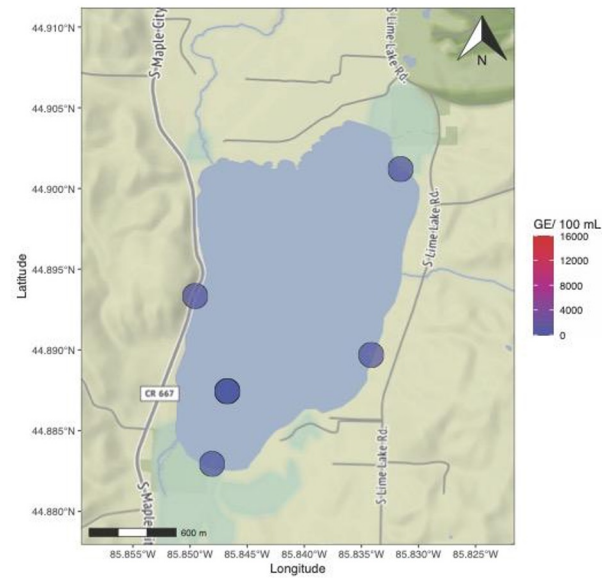




6/28/23



8/8/23



9/26/23

Enterococcus= bacteria in animal poop

Dots = high levels

Good news= none of these samples include human poop bacteria!



Anatoxin and Microcystin

These are both toxins produced by cyanobacteria

Good news- we had low Microcystin and NO anatoxin
DNA in our water!

Fish Survey Results



- June 27-28, 2023
- 18 species of fish collected
- 973 individual fish

Fish Survey Results

Hard to compare 2010 to 2023 due to

1. Different sampling methods
2. Different sampling time
3. Different water temperatures at time of sampling

Fish Survey Results

Table 1. Number, weight, and length of fish collected from Lime Lake with large mesh fyke nets, seines, trap nets, inland gillnets, and electrofishing in June 2023.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches)
Alewife	13	1.30%	0.3	0.10%	4
Banded Killifish	14	1.40%	0	0.00%	0-2
Black Bullhead	6	0.60%	2.8	0.90%	8-11
Bluegill	15	1.50%	0.2	0.10%	1-4
Bluntnose Minnow	53	5.40%	0.4	0.10%	2-3
Blacknose Shiner	1	0.10%	0	0.00%	1
Brown Bullhead	9	0.90%	5.2	1.70%	7-12
Creek Chub	8	0.80%	0.1	0.00%	2-4
Common Shiner	18	1.80%	0.3	0.10%	2-4
White Sucker	61	6.30%	62.2	20.60%	1-20
Johnny Darter	5	0.50%	0	0.00%	1-2
Longear Sunfish	9	0.90%	1.4	0.40%	1-11
Mimic Shiner	1	0.10%	0	0.00%	2
Northern Pike	1	0.10%	3.2	1.10%	24
Rock Bass	258	26.50%	101.2	33.60%	2-11
Sand Shiner	279	28.70%	0.6	0.20%	1-3
Smallmouth Bass	91	9.40%	103.4	34.30%	0-20
Yellow Perch	131	13.50%	20.2	6.70%	2-14
Total	973	100.00%	301.5	100%	

Present in 2023, but not 2010:

- Banded Killifish
- Black Bullhead
- Blacknose Shiner



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Absent in 2023, but present in 2010:

- Spottail Shiner
- Brown Trout
- Bowfin
- Largemouth Bass



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- Smallmouth Bass and Yellow Perch are both growing above state average for length at age



Shoreline Drone Survey Analysis

- Drone survey occurred June 2024
- Previous survey done in 2019



2019:

Greenbelts + Natural
Shorelines = 31 %


No Greenbelt = 69%

Category	2019	Percentage of properties
Beach Sanding	19	14.96%
Detectable Algal Growth	13	10.24%
Drain Pipes	6	4.72%
Erosions	13	10.24%
Greenbelts	21	16.54%
Inlets	14	n/a
Lk Water Irri	2	1.57%
Natural Shoreline	19	14.96%
No greenbelt	87	68.50%
Rip Rap	55	43.31%
Sea Walls	7	5.51%
Terres Invas	10	n/a



2019 drone
analysis

 = no greenbelt

 = greenbelt/ natural
shoreline

Based on 2019 drone survey,
what goal did we set?

- a. Decrease the natural shoreline by 50%
- b. Just don't get worse
- c. Increase by 3 greenbelts a year for the next 3 years



Based on 2019 drone survey,

what goal did we set?

- Decrease the natural shoreline by 50%
- Just don't get worse
- Increase by 3 greenbelts a year for the next 3 years



2019:

Greenbelts + Natural
Shorelines = 31 %

No Greenbelt = 69%

Goal = 9 more greenbelts ~ 7 % increase

2019:

Greenbelts + Natural
Shorelines = 31 %

No Greenbelt = 69%

Goal = 9 more greenbelts ~ 7 % increase

2024:
(preliminary data)

Greenbelts + Natural
Shorelines = 43%
(+ 12%)

No Greenbelt = 57%
(10 less properties!)



20,513
(preliminary count)

Greenbelts + Natural
Shorelines = 43%
(+ 12%)

No Greenbelts = 57%
(10 less properties!)

Green
Shore

No Gr

Why would you want a greenbelt?

- a. It's beautiful
- b. Decreases erosion
- c. Geese can't get on your yard
- d. You'll grow mint for your
mojitos
- e. All of the above

Why would you want a greenbelt?

- a. It's beautiful
- b. Decreases erosion
- c. Geese can't get on your yard
- d. You'll grow mint for your
mojitos
- e. All of the above

Let's keep the momentum rolling!



Ask your neighbors if they've scheduled a greenbelt consult!

- 30 min
- FREE!
- Ideas only- no commitments
- \$200 matching from LLA
- email : kelsey.froelich@gmail.com



Random Reminders & Info!

Aquatic Gardens Survey



- No Eurasian Watermilfoil (EWM) found!
- Aquatic gardens look healthy

Riparian Magazine

THE MICHIGAN RIPARIAN

FALL 2023 | VOLUME 59 | NUMBER 4



LIME LAKE

STATE REGULATIONS AND
LOCAL ORDINANCES

SHORELINE WOOD HABITAT
INSTALLATIONS FOR
LAKEFRONT
PROPERTY OWNERS

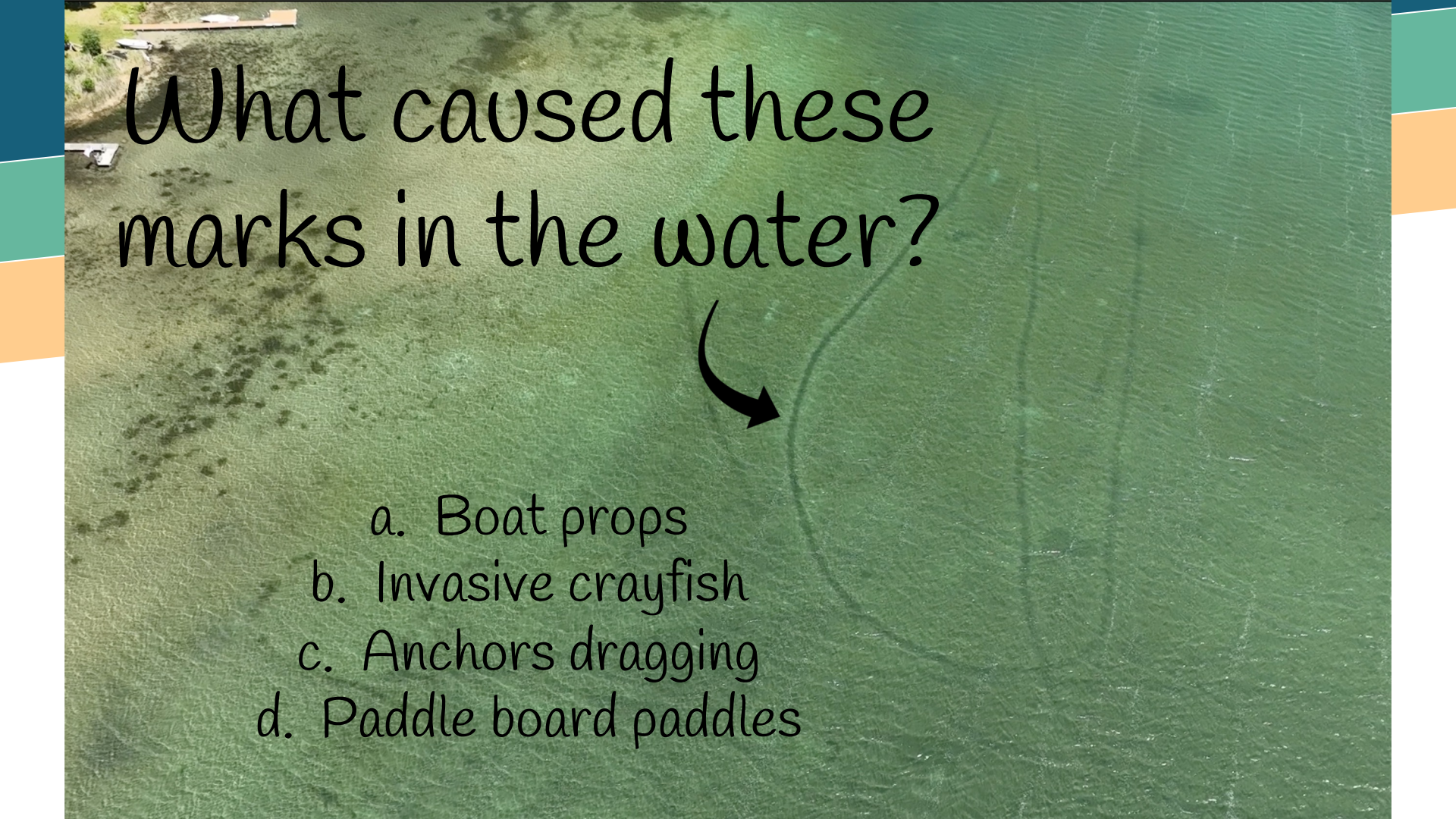
WAKE BOATS -
WHAT CAN BE DONE?

MI-RIPARIAN.ORG

Interested in a Discovery Boat Tour?

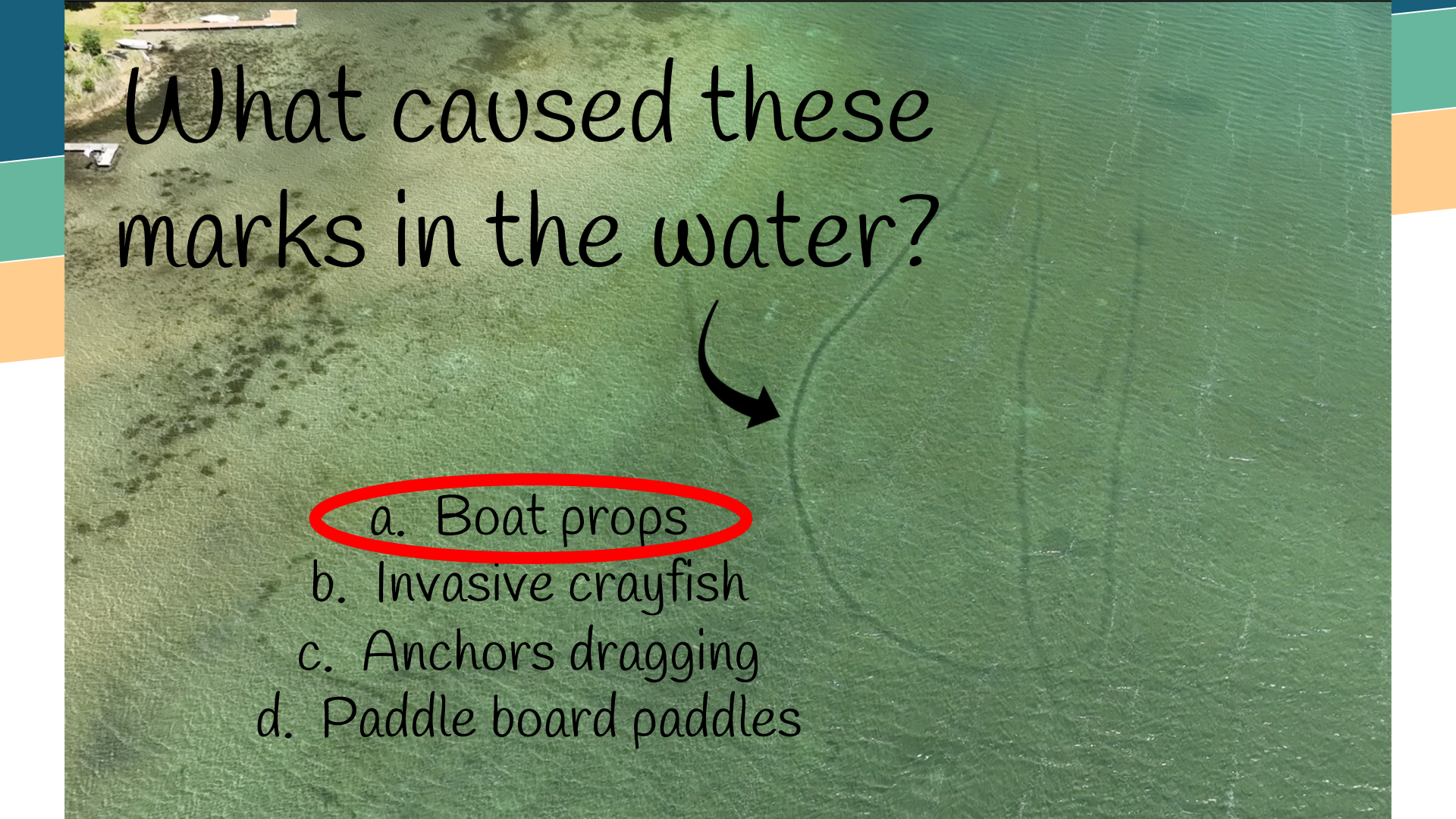
- Sign up with Lisa to show interest
- Discovery Boat tours would be held NEXT summer



An aerial photograph of a body of water with a circular mark. A black arrow points from the text above to the mark. The water is greenish-brown, and there are some structures on the shore in the top left.

What caused these marks in the water?

- a. Boat props
- b. Invasive crayfish
- c. Anchors dragging
- d. Paddle board paddles

An aerial photograph of a body of water, likely a lake or reservoir, showing a boat's wake. A red circle highlights a specific mark in the water, and a black arrow points from the text below to this mark. The water is a deep green color, and the wake is a lighter, V-shaped pattern.

What caused these marks in the water?

- a. Boat props
- b. Invasive crayfish
- c. Anchors dragging
- d. Paddle board paddles



Let's keep
our lake
clean!

**BOAT AND TRAILER CLEANING STATION
HELP STOP INVASIVE SPECIES!**

FOLLOW THESE STEPS


- ▶ **CLEAN** boats, trailers and equipment.
- ▶ **DRAIN** live wells, bilges, ballast tanks and all water by pulling drain plugs.
- ▶ **DRY** boats and equipment.
- ▶ **DISPOSE** of unwanted bait in the trash.

IT'S THE LAW

VIOLATION OF THE LAW IS A CIVIL INFRACTION. VIOLATORS MAY BE SUBJECT TO FINES.

- ▶ **DO NOT** launch or transport watercraft or trailers unless they are free of aquatic organisms, including plants.
- ▶ **DO NOT** transport a watercraft without removing all drain plugs and draining all water from bilges, ballast tanks, and live wells.
- ▶ **DO NOT** release unused bait into the water.

SEARCH THESE AREAS FOR INVASIVE SPECIES



TOOLS

- ▶ Use tools to remove vegetation from boats and trailers.
- ▶ Place vegetation in the trash.
- ▶ These tools help protect our lakes. We have confidence in the honor system. Please return them.

*Provided by
Leelanau Clean Water*

**CLEAN BOATS
CLEAN WATERS**

**STOP AQUATIC
HITCHHIKERS!**

This project was funded by the Michigan Clean Boats, Clean Waters program with Great Lakes Restoration Initiative funding.

Wash your
watercraft
before
putting them
in Lime Lake!

All eyes on the water!

Native



Invasive

Check out our table to see invasive species!

Kelsey Froelich: 616-293-7525

Limelake.org 

Don't forget to sign up for eblasts!