

THE GREEN LAKE AND DUCK LAKE ASSOCIATION WELCOMES YOU TO OUR 48TH ANNUAL MEETING

THE OBJECTIVES OF THE ASSOCIATION SHALL BE: 1) TO MONITOR THE GREEN LAKE AND DUCK LAKE ECOSYSTEMS AND TAKE ACTIONS NECESSARY FOR MAINTAINING OR IMPROVING OUR LAKES, WATERSHED, AND RIPARIAN COMMUNITY. 2) TO EDUCATE RIPARIAN'S AND THE LOCAL COMMUNITY ABOUT RELEVANT ECOLOGICAL, RECREATIONAL AND ETHICAL ISSUES ENDEAVORING TO MAKE OUR COMMUNITY A BETTER PLACE TO LIVE.

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GET YOUR ASSOCIATION DECALS

- MEMBERS ONLY
- INCLUDED IN MEMBERSHIP
- STATIC CLING OR STICKER

-

HOW TO OBTAIN ADDITIONAL DECALS

- VISIT OUR WEBSITE AT [HTTPS://WWW.GLDLA.ORG/](https://www.gldla.org/) AND CLICK ON THE CONTACT TAB
- CONTACT BOARD MEMBER



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AGENDA

- **CONSENT AGENDA**
 - CONFORMATION CORRECTION AND APPROVAL OF MEETING MINUTES FROM 2021
 - INTRODUCTION, RETIREMENT, & RENEWAL OF EXISTING BOARD MEMBERS - MEMBERSHIP VOTE
- **OLD BUSINESS**
 - 2021/2022 BOARD ACCOMPLISHMENTS
 - STANDING COMMITTEE DEFINITION & REPORT OUTS
 - GLADLA IS A 501C3 NON-PROFIT – DOES YOUR COMPANY MATCH DONATIONS
 - 2021/2022 LAKES EVALUATION
 - SWIMMERS ITCH 2022
- **NEW BUSINESS**
 - MICHIGAN SHORELAND STEWARDS PROGRAM/MICHIGAN NATURAL SHORELINE PARTNERSHIP
 - NEW SIGNS FOR LAUNCH SITES
 - SOME NEW TECHNOLOGIES FOR EFFECTIVE LAKE MANAGEMENT
 - NEW WEBSITE ROLLOUT SEPTEMBER
 - DUES TO INCREASE FOR 2023 – WHY?
 - 2021/2022 WATER LEVEL MANAGEMENT UPDATE
 - WINTER PROJECTS FOR 2022
- **TREASURER'S ANNUAL REPORT -**
- **PUBLIC COMMENT**
- **GUEST SPEAKER – BREANNE GRABILL PLM LAKES AND LAND MANAGEMENT**

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**ANNUAL MEETING MINUTES
PREPARED BY MARIETTA HAMADY**

**FROM 2021 ARE AVAILABLE AT
THE FRONT DESK**

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BOARD RETIREMENTS

- ITS WITH GREAT SADNESS THAT I ANNOUNCE THE RETIREMENT OF SEVERAL OF OUR LONG-TERM BOARD MEMBERS. THEY HAVE SUPPORTED, ADVOCATED, AND WORKED TIRELESSLY FOR OUR LAKES.
- JOHN THOMAS OUR FORMER TREASURER – GREEN LAKE
- MARC ALDERMAN TIRELESS SUPPORTER AND AQUATIC VEGETATION GURU – GREEN LAKE
- ED DEWEY GENERAL ALL AROUND GREEN LAKE TOWNSHIP LOVER WILL STEP DOWN AS PRESIDENT WHILE STAYING ON THE BOARD SUPPORTING SOCIAL MEDIA THROUGH 2023 – GREEN LAKE
- THEIR EXPERTISE AND ATTENTION TO DETAIL WILL BE SORELY MISSED BY THE ORGANIZATION

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NEW BOARD APPOINTMENTS

- ITS WITH GREAT PLEASURE THAT I ANNOUNCE THE FOLLOWING NEW BOARD APPOINTMENTS FOR YOUR APPROVAL
- **OFFICERS**
 - EMILY ANDERSON APPOINTED AS OUR NEW TREASURER – GREEN LAKE
 - PAUL JOHNSON APPOINTED AS OUR NEW PRESIDENT – DUCK LAKE
- **BOARD MEMBERS**
 - MARK JACKSON – DUCK LAKE
 - DOUG GRIESE – GREEN LAKE

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| | | |
|--|--|---|
| Officers | Liaison | State/County/Network of Lake Association/Publications Review |
| <ul style="list-style-type: none"> • Ed Dewey - President • Paul Johnson – Vice President • Marietta Hamady – Secretary • John Thomas – Treasurer | <ul style="list-style-type: none"> • State/County/Township/DNR • Ed Dewey • Paul Johnson • Network of Lakes Associations • Ed Dewey – Paul Johnson • Claire Stephenson • John Thomas • Sarah Hehir | Outside Publications Review Ed Dewey Paul Johnson Marietta Hamady |
| Plant Variety | Plant Sampling & Identification | Special Projects |
| <ul style="list-style-type: none"> • Ed Dewey - Green Lake • Rich Garvey – Green Lake • Doug Griese – Green Lake • Marietta Hamady – Green Lake | Paul Johnson – Duck Lake Sarah Hehir – Duck Lake Dick Thompson – Duck Lake PLM – Duck Lake | Mobile Boat Wash, EWM Monitoring, AIS, CBCW, <ul style="list-style-type: none"> • Mobile Boat wash – Ed Dewey Claire Stephenson Paul Johnson Doug Griese • Rich Garvey Marietta Hamady • Farmer's Market Booth – Ed Dewey Marietta Hamady • Website – Ed Dewey Ken Chamberlain Sarah Hehir Doug Griese Paul Johnson • Email contact program – Ed Dewey • Corporate Lakes Monitoring Program (CLMP) – Rich Garvey Paul Johnson |
| Water Quality/Clarity | Water Sampling, Lab Review & Results | Membership |
| <ul style="list-style-type: none"> • Water Quality • Paul Johnson Sarah HeHir – Duck Lake & Feeding Streams • Rich Garvey – Green Lake & Feeding Streams • Water Clarity • Rich Garvey – Green Lake Secchi Disk Testing • Paul Johnson – Duck Lake Secchi Disk Testing | | Newsletter/Brochure/Welcome Program <ul style="list-style-type: none"> • Newsletter – Marietta Hamady • Welcome Programs – Claire Stephenson, Marietta Hamady • Maintain Members Name Addresses – John Thomas • Maintain Membership Numbers & Lake Budgets – John Thomas • Create Mailing Labels for Mailing – John Thomas |

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Green Lake and Duck Lake Monthly Task Sheet

| January | February | March | April | May | June | July | August | September | October | November | December |
|-------------------------------|--|------------------------------|-------|------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------|------------------------|
| | | | | Board Meeting Treasurers Report | Board Meeting Treasurers Report | Board Meeting Treasurers Report | Board Meeting Treasurers Report | Board Meeting Treasurers Report | Board Meeting Treasurers Report | | |
| Winter Newsletter Publication | Dues Winter Newsletter Distribution | | | Summer Newsletter Prep | Summer Newsletter Publication | Summer Newsletter Distribution | Annual Meeting | | Special Projects Wrap-up | Winter Newsletter Prep | Winter Newsletter Prep |
| | Maintain Membership Address Database | Water Quality Sampling & Lab | | | Water Quality Sampling & Lab | Water Clarity Results | Water Quality Follow-up if required | Water Quality Follow-up if required | Special Projects Next Year Planning | | |
| | Collect dues Maintain Budget | Water Clarity Readings | | | Water Clarity Readings | Water Quality Follow-up if required | Water Clarity Readings | Water Clarity Readings | | | |
| | TAXES | | | | | Plant sampling/recording | | | | | |

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WE ARE NOW A 501C3 NON-PROFIT <..\2019 GLADLA\501C3 FILING\IRS APPROVAL005.PDF>

- WE ARE NOW A VALID NON-PROFIT AND HAVE BEEN ABLE TO BENEFIT THIS YEAR FROM COMPANY MATCHING PROGRAMS
- IF YOUR COMPANY HAS A NON-PROFIT MATCHING PROGRAM PLEASE REMEMBER TO SUBMIT YOUR DONATIONS TO GLADLA TO YOUR COMPANY PROGRAMS

WE ARE REQUIRED BY OUR BY-LAWS TO PERFORM A YEARLY AUDIT AND FILE TAXES FOR THE ASSOCIATION – IF YOU ARE OR KNOW OF A LOCAL CPA THAT COULD ASSIST IN THIS AREA PLEASE LET ME KNOW AFTER THE MEETING

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GLOSSARY OF TERMS

- EGLE – ENVIRONMENT GREAT LAKES & ENERGY, FORMALLY DEQ
- DNR – DEPARTMENT OF NATURAL RESOURCES
- MSU – MICHIGAN STATE UNIVERSITY
- CLMP – COOPERATIVE LAKES MONITORING PROGRAM
- HOA – HOME-OWNERS ASSOCIATION
- MICORP – MICHIGAN CLEAN WATER CORPS
- EAPW – EXOTIC AQUATIC PLANT WATCH
- MISIP – MICHIGAN SWIMMERS ITCH PARTNERSHIP
- CBCW – CLEAN BOATS CLEAN WATERS
- AIS – AQUATIC INVASIVE SPECIES

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HERE ARE SOME HIGHLIGHTS OF WHAT THE BOARD ACCOMPLISHED THIS YEAR:

- REGULAR COMMUNICATION AND MEETINGS WITH ANDY SMITS, THE GRAND TRAVERSE COUNTY COMMISSIONER, AND THE MICHIGAN DNR. THE TWO ORGANIZATIONS WORK TOGETHER TO MANAGE THE GREEN LAKE/DUCK LAKE WATERSHED.
- FOUR BOARD MEMBERS ATTENDED THE ANNUAL MICHIGAN LAKES STEWARDSHIP ASSOCIATION CONFERENCE TO GAIN KNOWLEDGE ABOUT “BEST PRACTICES” FOR LAKE MANAGEMENT FROM EXPERTS AT MSU AND GVSU, AND OTHER LAKE ASSOCIATIONS AROUND THE COUNTRY
- ATTENDED TRAINING SESSIONS ON AQUATIC PLANT IDENTIFICATION, WATER QUALITY AND CLARITY, AND NATURAL SHORELINE MANAGEMENT. **TWO GLADLA MEMBERS HAVE QUALIFIED FOR THE GOLD STATUS IN MICHIGAN CLEAN WATER CORPS’ SCORE THE SHORE PROGRAM**
- CONDUCTED WATER TESTING AND PLANT SAMPLING THROUGHOUT THE SUMMER.
- ENGAGED IN CONTINUING EDUCATION ABOUT SWIMMERS ITCH AND POTENTIAL INVASIVE SPECIES SPREAD

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UPDATES/ACCOMPLISHMENTS (CONT)

- HELD TWO BOAT WASH CLINICS AT THE GREEN LAKE BETSIE RIVER DNR LAUNCH AND DISTRIBUTED PROMOTIONAL MATERIALS TO EDUCATE BOATERS ABOUT NEW MICHIGAN LAWS ASSOCIATED WITH THE CLEAN BOATS CLEAN WATER PROGRAM. THE DNR, MSU, AND BENZIE CONSERVATION DISTRICT HELPED COORDINATE THESE EVENTS
- ANOTHER EDUCATIONAL EVENT IS SCHEDULED ON SEPTEMBER 2ND AT THE INTERLOCHEN STATE PARK 9:30AM – 3:00PM
- HAD A BOOTH AT THE INTERLOCHEN FARMER'S MARKET
- PRESENTED AT TWO HOA ONE ON DUCK LAKE AND ONE ON GREEN LAKE
- REVIEWED NEW DRONE TECHNOLOGIES FOR EFFECTIVE LAKE MANAGEMENT AND SHORELINE SURVEYS
- DEVELOPED AN IMPROVED, EASY-TO-USE GLADLA WEBSITE THAT WILL LAUNCH SEPTEMBER 2022.
- POSTED THE HISTORY OF OUR ASSOCIATION ON OUR FACEBOOK PAGE
[HTTPS://WWW.FACEBOOK.COM/GREEN-LAKE-AND-DUCK-LAKE-ASSOCIATION-1642508239318965](https://www.facebook.com/green-lake-and-duck-lake-association-1642508239318965)

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OUR GOLD SHORELAND STEWARDS

• DICK THOMPSON – DUCK LAKE



• GARY & JEAN PERKINS – GREEN LAKE



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HOW CAN I RATE MY SHORELINE?

- [HTTPS://WWW.MISHORELANDSTEWARDS.ORG/RATE.ASP](https://www.mishorelandsteward.org/rate.asp)
- [HTTPS://WWW.SHORELINEPARTNERSHIP.ORG/](https://www.shorelinepartnership.org/)



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Healthy Shorelines

- Valuable and important because...
- They provide habitat for fish, birds, amphibians, and other animals.
- They help maintain water quality, limit erosion, and slow rain runoff.

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OUR BOARD MEMBERS AT THE ANNUAL MICHIGAN LAKES AND STREAMS CONFERENCE



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2022 BOAT WASH EDUCATIONAL EVENT



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IT'S THE LAW FOR 2022!

- THE GLADLA WITH ASSISTANCE FROM THE DNR AND MSU'S CBCW AND THE BENZIE CONSERVATION DISTRICT GLADLA HELD 2 EDUCATIONAL BOAT WASHES AT THE BETSIE RIVER BOAT LAUNCH – GREEN LAKE AND WE HAVE ONE SCHEDULED AT THE INTERLOCHEN STATE PARK FOR SEPTEMBER 2ND
- THANKS TO THE DNR, MSU, BENZIE CONSERVATION DISTRICT, AND OUR GLADLA TEAM MEMBERS FOR MAKING THIS EDUCATIONAL EVENT HAPPEN AGAIN THIS YEAR

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BOATER EDUCATION & BOAT WASHING PROCESS



THE PAD BELOW CATCHES THE WATER

THE PAD BELOW CATCHES THE WATER WHICH IS VACUUMED UP AND HAULED AWAY



NICE SAILBOAT

IT'S IMPORTANT TO REMEMBER IT'S NOT ONLY POWERBOATS THAT CAN TRANSFER AIS SAILBOATS, KAYAKS PADDLEBOARD ALL CAN TRANSFER AIS



OUR MSU CREW HARD AT WORK

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EDUCATING BOATER WHILE WE WASH



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MSU'S DR. JO LATIMORE WITH HER TEAM AND ED



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NEVER TOO EARLY TO START LEARNING

OUR TEAMS WITH THE HELP OF MICHIGAN STATE UNIVERSITY
STUDENTS EDUCATED OVER 60 PEOPLE AS PART OF OUR
EDUCATIONAL OUTREACH

[HTTP://WWW.RECORD-EAGLE.COM/NEWS/LOCAL_NEWS/MSU-STUDENTS-BRING-BOAT-WASH-STATION-TO-GRAND-TRAVERSE-COUNTY/ARTICLE_74F04EFF-72EB-5F77-8B32-B0674D4A5E43.HTML#UTM_CAMPAIGN=BLOX&UTM_SOURCE=FACBOOK&UTM_MEDIUM=SOCIAL](http://www.record-eagle.com/news/local_news/msu-students-bring-boat-wash-station-to-grand-traverse-county/article_74f04eff-72eb-5f77-8b32-b0674d4a5e43.html#utm_campaign=BLOX&utm_source=Facebook&utm_medium=social)



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WORKERS TO THE RIGHT TALKERS TO THE LEFT



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THESE TRAILERS WERE PARKED AT THE GREEN LAKE LAUNCH THE MORNING OF THE 2019 BOAT WASH WITH WEEDS ATTACHED

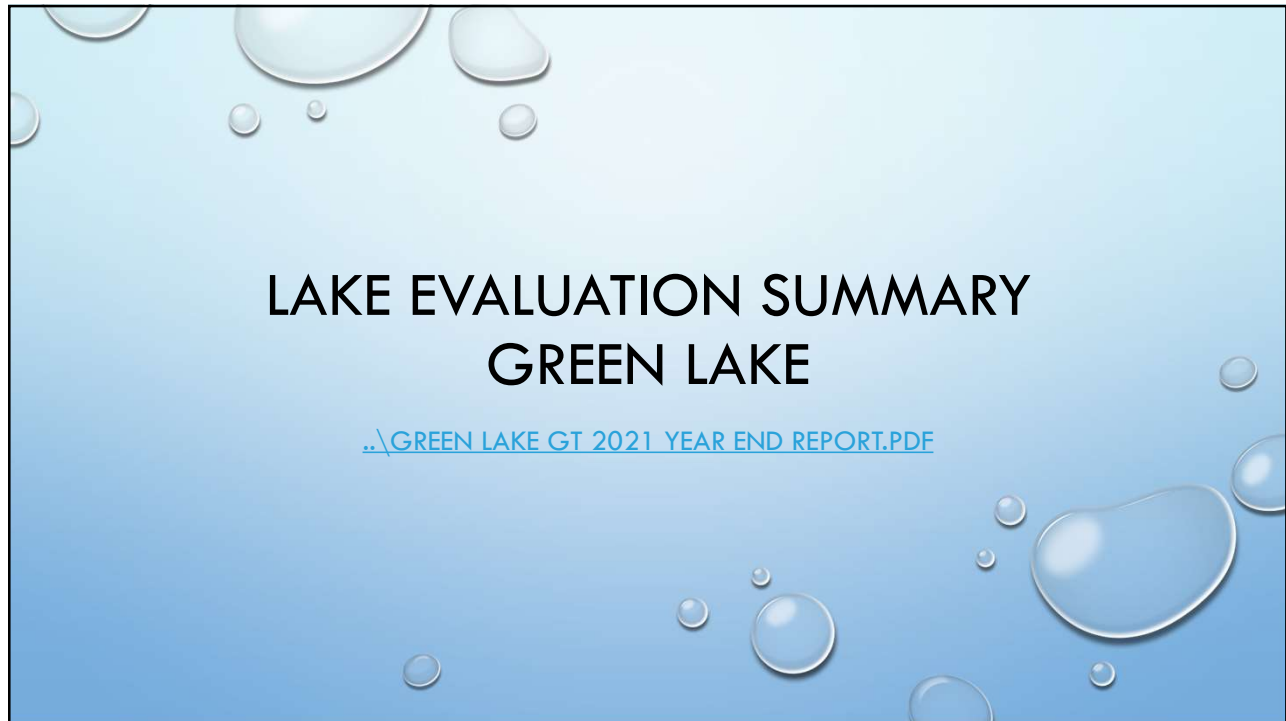


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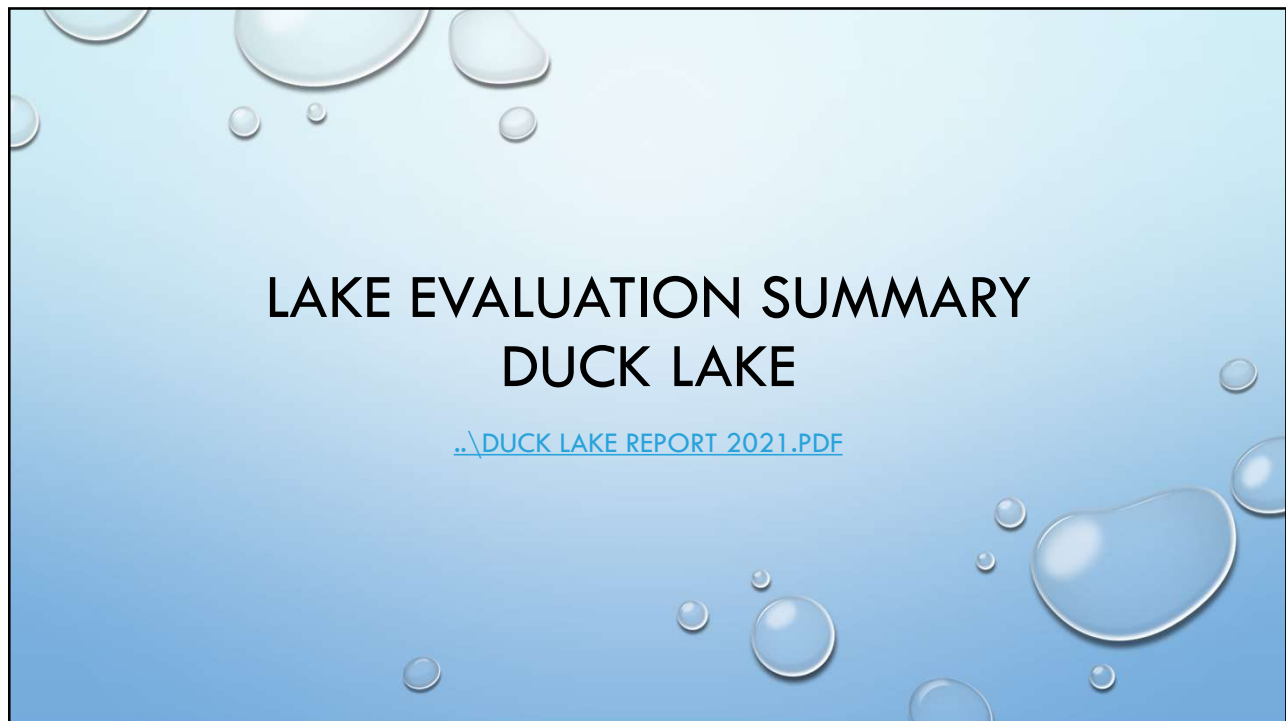
WHY MONITOR?

- MONITORING YOUR LAKE'S WATER QUALITY IS PART OF WHAT'S NEEDED TO KEEP IT CLEAN FOR THE ENJOYMENT OF YOU AND YOURS FOR GENERATIONS TO COME. BY MONITORING, YOU'LL KNOW IF YOUR LAKE CONTINUES TO BE READY FOR FUN AND RECREATION, OR IF IT'S STARTING TO DEGRADE OVER TIME. AND IF THERE IS A WATER QUALITY PROBLEM, ONLY MONITORING WILL GIVE YOU THE ADVANCE WARNING NEEDED TO TAKE EARLY ACTION TO PROTECT YOUR LAKE.
- OUR CONTACTS AT MSU, BENZIE CONSERVATION DISTRICT, COOPERATIVE LAKES PARTNERSHIP, CAKE AIS PROVIDES SAMPLING METHODS, TRAINING WORKSHOPS, TECHNICAL SUPPORT, QUALITY CONTROL, AND LABORATORY ASSISTANCE FOR VOLUNTEERS TO MONITOR THEIR LAKES.

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SURVEY STRATEGY

- [..\GREEN LAKE AVAS 2021.PDF](#)

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BOARD MEMBERS WITH PLM JUNE 2022 AQUATIC VEGETATION SURVEY

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A blue gradient background with several realistic water droplets of various sizes scattered across it, some with highlights and shadows.

WHAT DOES EWM LOOK LIKE?

<HTTPS://WWW.FACEBOOK.COM/AISDETECTORS/VIDEOS/242981717646813>

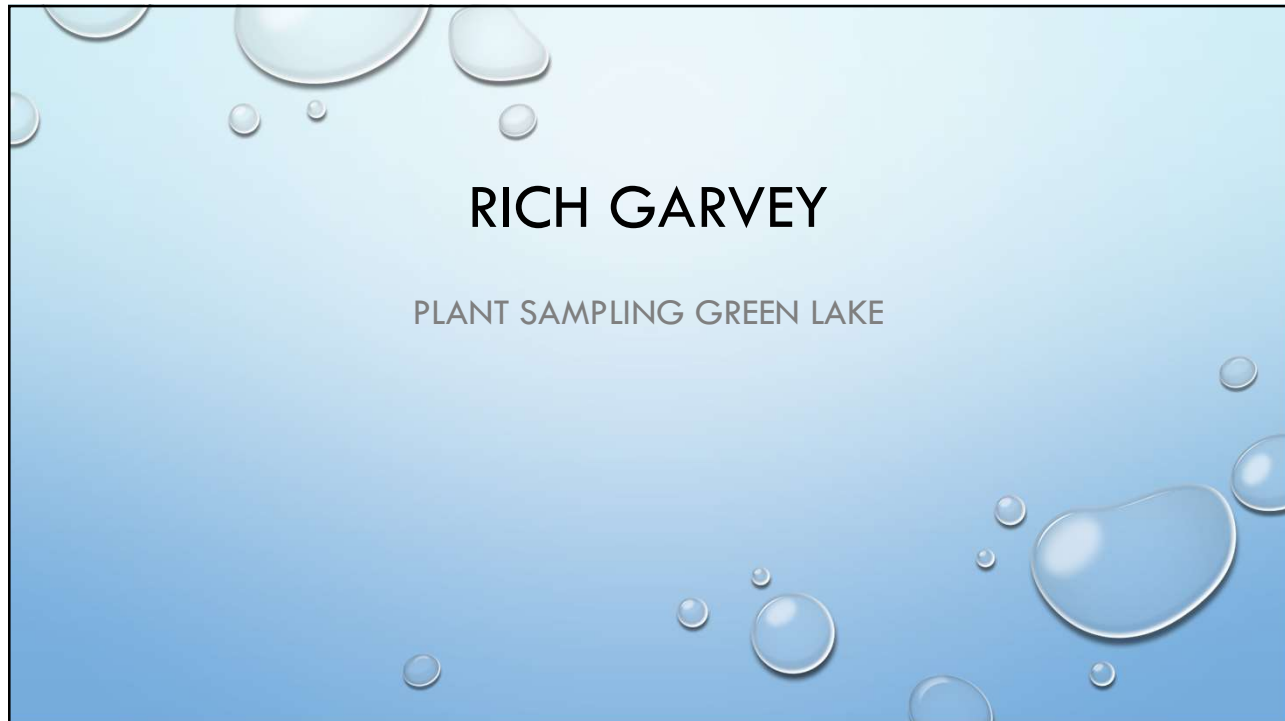
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A blue gradient background with several realistic water droplets of various sizes scattered across it, some with highlights and shadows.

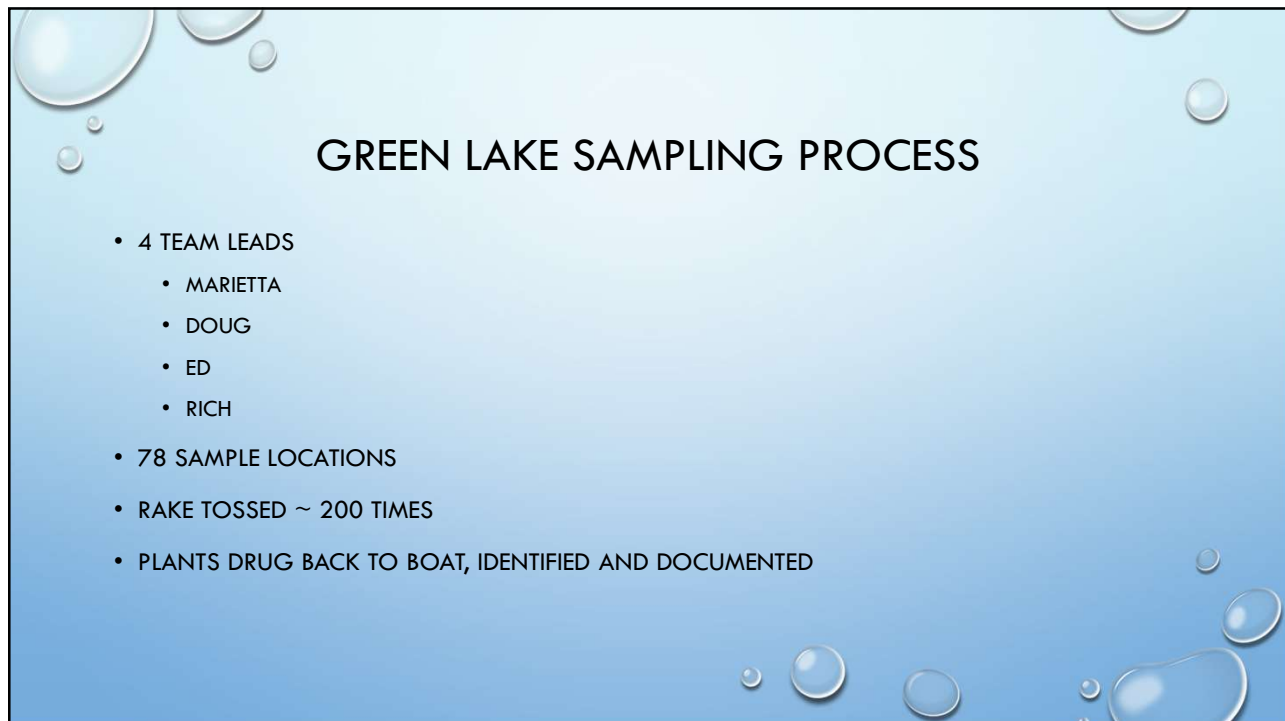
WHAT DOES NATIVE PHRAGMITES LOOK LIKE?

<HTTPS://WWW.FACEBOOK.COM/CAKECISMA/VIDEOS/4768938246468574>

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GREEN LAKE PLANT SAMPLING SITES

Green Lake, Duck Lake Association
Serving the Duck Lake, Green Lake and Betsie River Watershed

Plant Survey Form

Lake: Green Duck (Circle one) Date: _____

Site: _____ (See Map) Site GPS Coordinates: _____

Please use the following letters to report your findings in the table below.
(See reverse side for explanation of terms.)

D= Dense H= Heavy M= Moderate S= Sparse F= Found 0= Not found

| Plant | 3 ft | 9 ft | 12 ft |
|-------------------|------|------|-------|
| Bladderwort | | | |
| Buttercup | | | |
| Coontail | | | |
| Elodea | | | |
| Northern Milfoil | | | |
| Pondweed: | | | |
| Bushy (Najas) | | | |
| Curley Leaf | | | |
| Fern | | | |
| Flat Stem | | | |
| Large Leaf | | | |
| Thin Leaf | | | |
| Variable | | | |
| Clasping leaf | | | |
| Reeds | | | |
| Stonewort (Chara) | | | |
| Water Marigold | | | |
| Water Star Grass | | | |
| Valisneria | | | |
| Other: | | | |
| Other: | | | |

Any observations worth noting, i.e. changes in vegetation or water:

Sampler's Name: _____

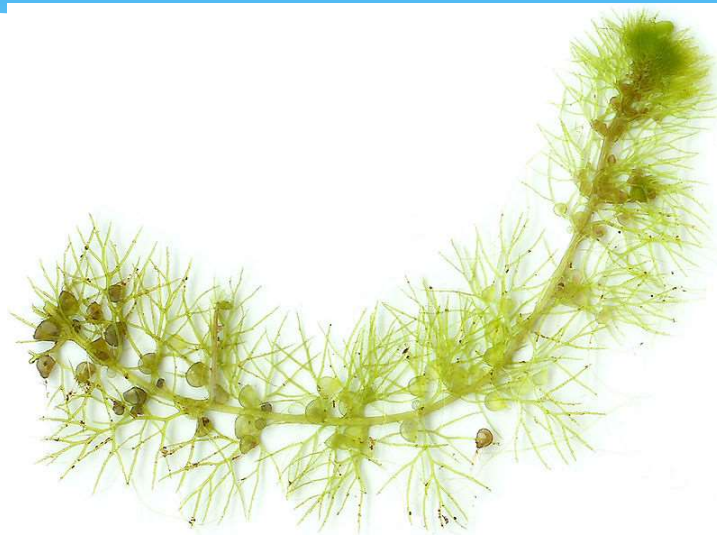
(Return a form for each sampling site to your coordinator.)

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Examples of Plants Found During Green Lake Sampling All Native Species

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Bladderwort



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Coontail



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Northern Watermilfoil



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Stonewort (Chara)



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Wild Celery

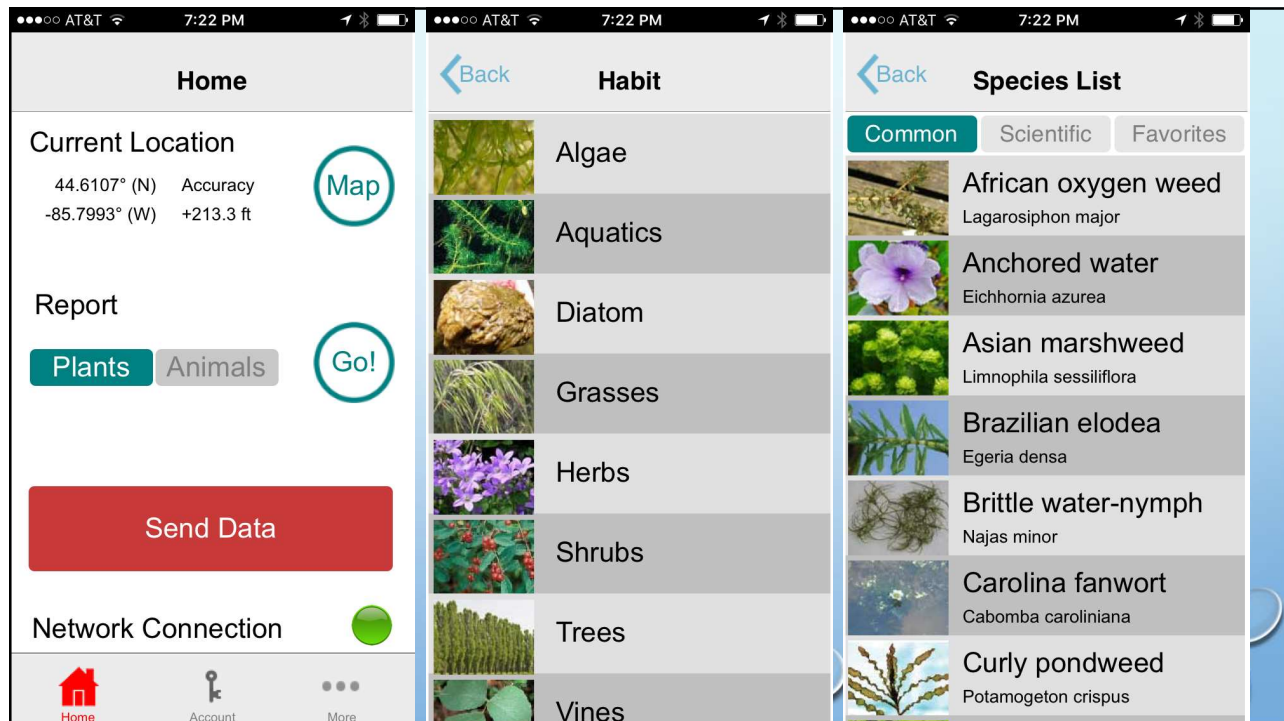


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HOW CAN YOU HELP?

- VISIT MIDWEST AQUATIC PLANT MANAGEMENT SOCIETY [HTTP://WWW.MAPMS.ORG/WP-CONTENT/UPLOADS/2015/02/PLANT-CHART2.PDF](http://www.mapms.org/wp-content/uploads/2015/02/Plant-Chart2.pdf) DOWNLOAD PDF AND LEARN ABOUT NATIVE AND INVASIVE PLANT VARIETIES
- DOWNLOAD PLANT IDENTIFICATION MOBILE APP TO IDENTIFY ANY AQUATICS
- VISIT [HTTP://WWW.MISIN.MSU.EDU/APPS/](http://www.misin.msu.edu/apps/) DOWNLOAD MISIN MOBILE APP TO REPORT ON SUSPICIOUS PLANTS
- **WE ARE FORTUNATE TO HAVE SUCH A DEDICATED AND HARDWORKING BOARD. IF YOU WOULD LIKE TO ASSIST PLEASE CONTACT US AT GREENDUCKLAKES2021@YAHOO.COM**
- CLEAN, DRAIN, AND DRY YOUR BOAT AND TRAILER WHEN MOVING BETWEEN LAKES IT'S THE LAW IN 2019

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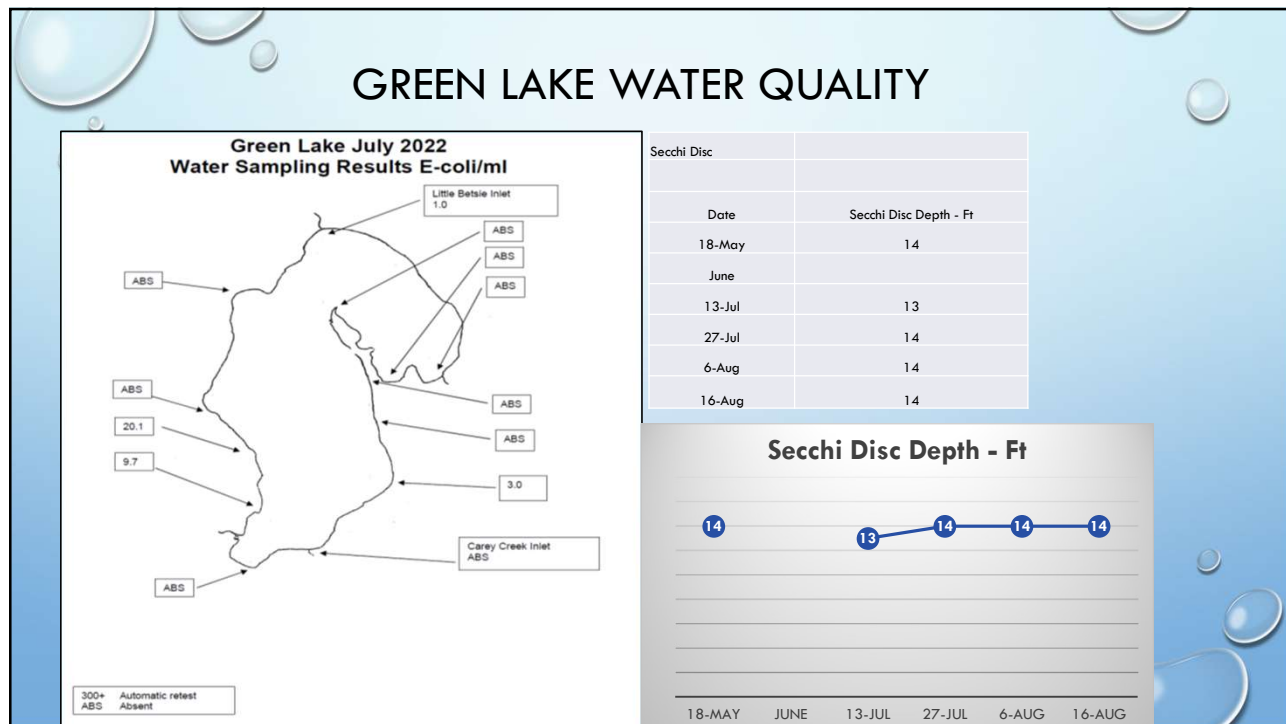
WATER QUALITY/CLARITY

- PAUL JOHNSON – DUCK LAKE
- SARAH HEHIR – DUCK LAKE
- RICH GARVEY – GREEN LAKE

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2022 GREEN LAKE WATER QUALITY/CLARITY – RICH GARVEY

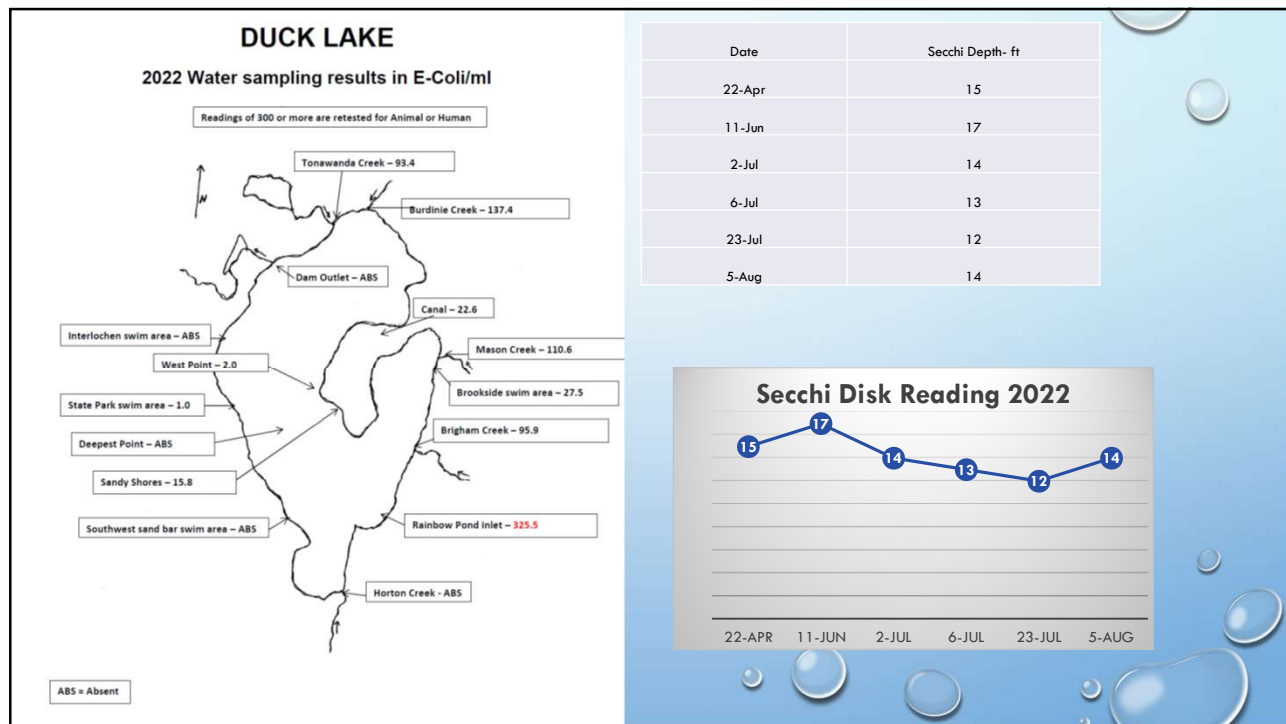
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EXCERPT FROM FRESHWATER SOLUTIONS LETTER TO MISIP MEMBERS DATED 14 MARCH 2019

- WE FIRMLY BELIEVE NEW DISCOVERIES AND DATA SHOULD PROVIDE DIRECTION FOR NEW RESEARCH. FOR INSTANCE, THE UNEXPECTEDLY HIGH NUMBER OF "WORMS IN THE WATER" IN GLEN LAKE AND NORTH LAKE LEELANAU IN 2018, EVEN AFTER TRAPPING AND RELOCATING ALL SUMMER RESIDENT MERGANSERS FOR TWO YEARS, RAISED QUESTIONS AND PROVIDED DIRECTION FOR NEXT STEPS, AS YOU WILL SEE IN THE FOLLOWING PROPOSAL. DEVELOPMENT OF OUR SPECIE-SPECIFIC ASSAYS AND SUBSEQUENT APPLICATION TO ALL WATER SAMPLES COLLECTED IN 2018, REVEALED THAT *T. STAGNICOLAE* (THE PARASITE PRESUMED TO ONLY CYCLE THROUGH MERGANSERS) DOMINATES THE PARASITES IN ALL LAKES (AT LEAST AT ONE POINT IN TIME), INCLUDING LONG LAKE AND SOUTH LAKE LEELANAU WHERE SUMMER MERGANSERS ARE ABSENT. THIS MAKES US QUESTION WHAT IS OCCURRING ON THOSE AND SIMILAR LAKES IN THE REGION. THE UNEXPECTED DISCOVERY OF A NEW SCHISTOSOME SPECIES SHED FROM A SNAIL PRESUMED TO NEVER HOST THESE PARASITES... WELL, THAT DISCOVERY SPEAKS FOR ITSELF.

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EXCERPT FROM FRESHWATER SOLUTIONS LETTER TO MISIP MEMBERS DATED 20 APRIL 2020

Dr. Patrick Hanington, Ph.D.

Ronald Reimink, M.A.



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SWIM AFTER LUNCH

FWS/UA scientists were able to quantify the risk of contracting swimmer's itch as a function of time-of-day (Rudko et al.⁵, 2018). Since most of the itch-causing cercariae exit the snails in the morning and only live for a day, you would expect fewer cercariae to be around in the afternoon due to movement by wind, predation, natural mortality, etc. FWS/UA documented that riparians greatly reduce their risk of being exposed to virulent cercariae as the day progresses.

SWIM WITH OFFSHORE WIND

FWS/UA scientists were able to show a strong correlation between wind direction (onshore, offshore, alongshore) with cercariae concentration (Rudko et al.⁵, 2018), with significantly higher concentrations found with onshore winds.

ADJUST SWIM LOCATION

Results from work done in 2018 (Project '18 Final Report⁶) show cercariae numbers increasing near shore with an onshore wind, with very high numbers found within 1 meter from shore. Very few cercariae were found in deeper water when samples were taken at regular intervals on a straight line transect from shore to deep water with either an offshore or onshore wind. Some find relief by traveling to and swimming in nearby waters where the parasites are absent or greatly diminished. Others find blow-up kiddie pools placed down by the water an acceptable alternative for infant to 3-year-olds.

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RESOURCES AVAILABLE TO BOARD MEMBERS

- QUESTIONS ABOUT ENROLLMENT OR MONITORING EQUIPMENT: JEAN ROTH MICHIGAN LAKE STEWARDSHIP, INC. 989-257-3715 JROTH@MLSWA.ORG
- QUESTIONS ABOUT AQUATIC PLANTS OR SAMPLE TURN-IN FOR ANY PARAMETER: DR. JO LATIMORE MICHIGAN STATE UNIVERSITY 517-432-1491 LATIMOR1@MSU.EDU
- QUESTIONS ABOUT DISSOLVED OXYGEN/TEMPERATURE METERS: MARCY KNOLL WILMES MICHIGAN EGLE 517-342-4348 KNOLLM@MICHIGAN.GOV
- **NORTHWEST MICHIGAN INVASIVE SPECIES NETWORK (ISN)**
[HTTPS://WWW.HABITATMATTERS.ORG/](https://www.habitatmatters.org/)
 QUESTIONS ABOUT ANYTHING ELSE: DR. PAUL STEEN HURON RIVER WATERSHED COUNCIL
 734-769-5123 X601 PSTEN@HRWC.ORG

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CD³ Wayside Solar Specifications
Waterless Cleaning System

Clean. Drain. Dry. Dispose. CD³ Systems use behavioral science to empower the public to increase compliance with invasive species rules and regulations.

| USER OPERATED EQUIPMENT | PUBLIC EDUCATION AND INSTRUCTIONS | SITE SOFTWARE ANALYTICS |
|--|---|---|
| <ul style="list-style-type: none"> • High public approval • Free public use • Low maintenance costs | <ul style="list-style-type: none"> • Easy to follow prevention steps • Web Hub for public resources, maps and videos • Graphics and kiosk are customizable | <ul style="list-style-type: none"> • Internet connected for real-time data • Software monitors functionality • Automatic tool tamper alert |

CD³ Wayside Solar

- Waterless, free, user-operated cleaning equipment that includes wet/dry vacuum, blower system, tethered hand tools, & lights.
- Off-grid, 450 watt solar array with battery storage provides use for ~10 hours (~85 boats/day).
- Precast base option for easy installation reducing permitting & contracting issues.
- Unit and base bolt together and weighs ~1900 lbs.
- Vacuum tank emptied by satellite toilet vendor after ~400+ uses.

SALE OR LEASE CONTACT:
stop@cd3station.com | 612-467-9441
cd3station.com

EVERYBODY LIKES A CLEAN BOAT™
PATENT PENDING | MADE IN MINNESOTA, USA
© 2018 CD³

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NEW TECHNOLOGIES FOR LAKE MANAGEMENT

THE GLADLA HAS BEEN WORKING WITH OTHER LAKE ASSOCIATIONS AND LOOKING INTO NEW TECHNOLOGIES FOR;

- **NEW STRATEGIES FOR SHORELINE AND AQUATIC GARDEN MAPPING**
 - USING AERIAL DRONE TECHNOLOGY TO IDENTIFY POSSIBLE INVASIVE AREA TESTING
- **UNDERWATER DRONE** [HTTPS://WWW.YOUTUBE.COM/WATCH?V=IHCUTZHF7WU](https://www.youtube.com/watch?v=IHCUTZHF7WU)
- **BURLAP BLANKETS TO COVER INVASIVES**
- **DASH**

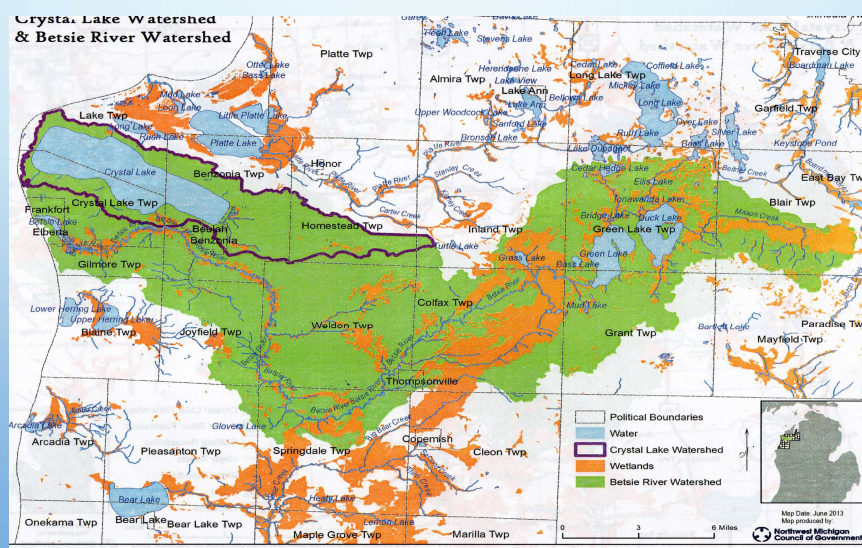
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WATER LEVELS –

THE WATERSHED IS MORE THAN JUST THE PIECE WE CAN SEE WHEN WE LOOK AT THE LAKE. EVERY DROP OF WATER THAT FALLS INSIDE THE GREEN AREA THAT DOESN'T EVAPORATE WILL EVENTUALLY GO DOWN THE BETSIE RIVER TO LAKE MICHIGAN AT FRANKFORT. WITHIN THAT AREA ARE A NUMBER OF LAKES THAT ARE QUITE DIFFERENT. MOST LAKES HAVE WATER COMING IN AND GOING OUT. WHEN MEASURED, A "FLUSHING RATE" CAN BE DETERMINED WHICH MEANS HOW LONG IT TAKES TO HAVE THE VOLUME OF WATER IN THE LAKE REPLACED BY INCOMING WATER. DUCK LAKE HAS A "FLUSHING RATE" OF 1.9 YEARS, GREEN LAKE IS 2 YEARS BUT CRYSTAL LAKE IS OVER 20 YEARS! VERY LITTLE WATER IS COMING IN AND VERY LITTLE GOING OUT. THE SURROUNDING WETLANDS AND SPRINGS MAKE A BIG DIFFERENCE FOR GREEN AND DUCK LAKES

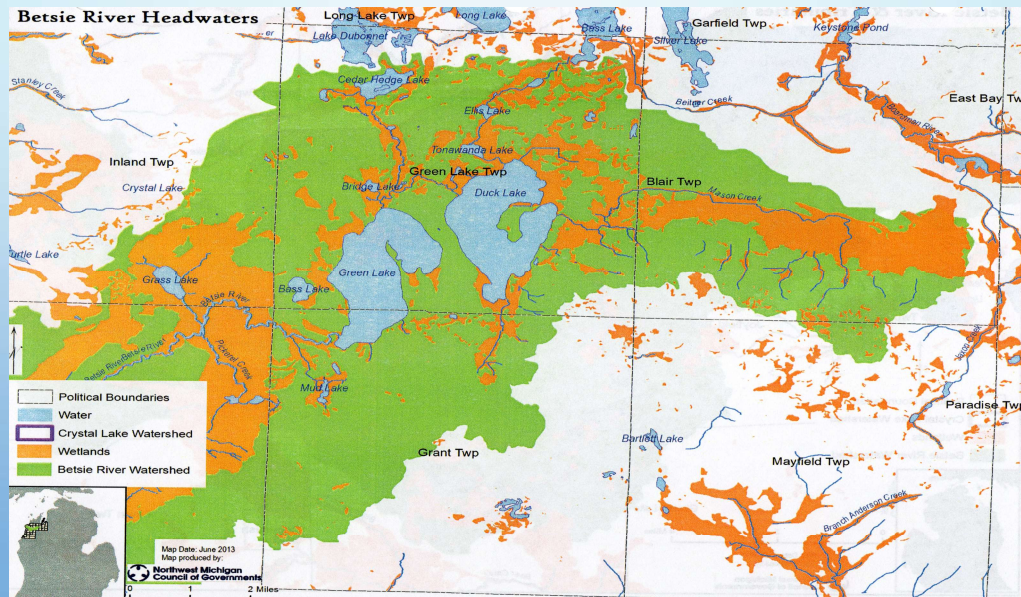
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OUR WATERSHED



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WE ARE THE HEADWATERS OF THE BETSIE



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DAMS AND LAKE LEVELS

- THE SAME WETLANDS AND SPRINGS THAT WE ENJOY KEEP OUR LAKE LEVELS RELATIVELY STABLE.
- EVEN WITH A VERY DRY SUMMER THE WETLANDS, (THINK "SPONGE") SUPPLY ENOUGH TO KEEP LEVELS WITHIN THE NORMAL RANGE.
- THE OTHER VARIABLE IS A DAM WE HAVE TWO, ONE ON THE LITTLE BETSIE ON THE SHORELINE OF DUCK LAKE AND THE OTHER BELOW GREEN LAKE AT THE GRASS LAKE AREA
- THE NUMBER OF BOARDS IN OR OUT OF THE DAMS, YEAR AROUND AND READINGS TAKEN AT THE BETSIE RIVER OUTLET ON THE LAKE WERE LOGGED AND THE IMPACT, IF ANY, WAS NOTED.
- OBSERVATIONAL STUDIES SHOW THAT THE EFFECT OF LOWERING DUCK LAKE IN THE FALL HAD ALMOST NO IMPACT ON THE LEVEL OF GREEN LAKE AFTER A COUPLE OF WEEKS. BUT WE NEED MORE SOPHISTICATED MEANS TO MEASURE (WE HAVE NO DEFINITIVE DATA)
- THE SAME WAS TRUE WHEN THE BOARDS WERE REPLACED IN THE SPRING GREEN LAKE DIDN'T DROP AS THE WETLANDS GAVE UP WATER TO KEEP THE FLOW RATE THE SAME.
- THE GRASS LAKE DAM HAD NO IMPACT AS IT IS TOO LOW TO RAISE THE LAKE LEVEL IF THE BOARDS ARE PUT IN AND HAS A FIXED SPILLWAY TO HANDLE ANY HIGH VOLUME OF WATER.
- THE BOTTOM LINE IS WE HAVE NO CLEAR DATA TO DETERMINE WHETHER THE DUCK LAKE DAM HAS ANY CONTROL OVER GREEN LAKE WATER LEVELS. THE DUCK LAKE DAM DOES CONTROL THE LEVEL OF THAT LAKE AS IT WAS DESIGNED TO DO. 837.3 FEET FALL & 837.6 FEET SUMMER WAS SET BY COURT ORDER WHICH HAS WORKED PRETTY WELL BY LOWERING THE LEVEL IN THE FALL TO AVOID ICE DAMAGE AND RAISING IT IN THE SPRING FOR THE BOATING AND PENINSULA CANAL NEEDS. THE DAMS AND THEIR IMPACT ON LAKE LEVELS APPEAR TO BE ONE OF THOSE RARE OCCURRENCES WHERE MOTHER NATURE HAS FORGIVEN US FOR GETTING INTO HER BUSINESS!

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Ed

Thanks for the hospitality last week during my introduction to your Association.

I just wanted to let you know that I'll be adding boards to slow the release of water this week. The graph below shows we are on the mark and with the drought... we will lose more water with evapo-transpiration as the summer progresses. This morning's rain will cause a slight rise... but we will not likely see that in lake levels for a few days.

Thanks again,

--
Andrew Smits, PE



Drain Commissioner
GRAND TRAVERSE
COUNTY

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TREASURER'S ANNUAL REPORT

BY

EMILY ANDERSON

TREASURER

PRESENTED BY ED DEWEY

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| Duck Lake Annual Treasures Report 2022 | | | |
|--|------------|------------|------------|
| | 2020 | 2021 | 2022 YTD |
| INCOME | \$5,272.00 | \$1,350.00 | \$3,231.25 |
| EXPENSES | \$3,977.60 | \$1,578.42 | \$2,934.24 |
| WATER TESTING | \$440.00 | \$834.21 | \$834.21 |
| PRINTING/COPY | \$395.70 | \$79.00 | \$155.03 |
| MAILING SUPPLIES | \$67.00 | \$0.00 | \$0.00 |
| POSTAGE | \$143.00 | \$55.00 | \$46.40 |
| PO BOX | \$23.00 | \$0.00 | \$0.00 |
| STATE OF MICHIGAN FILING FEE | \$10.00 | \$0.00 | \$0.00 |
| BANK FEES | \$23.00 | \$30.00 | \$17.50 |
| GREEN LAKE & DUCK LAKE MEETING | \$0.00 | \$0.00 | \$0.00 |
| TECHNOLOGY & COMMUNICATIONS | \$279.95 | \$39.73 | \$68.56 |
| ONLINE PROCESSING | \$34.14 | \$15.48 | \$0.00 |
| EDUCATION/COMMUNITY AWARENESS/SUPPORT | \$0.00 | \$500.00 | \$98.00 |
| LEGAL FEES | \$2,350.00 | \$0.00 | \$288.75 |
| BOARD INSURANCE | \$0.00 | \$0.00 | \$116.00 |
| MISC INVASIVE SPECIES TREATMENT | \$61.82 | \$0.00 | \$0.00 |
| MEMBERSHIPS ML&SA | | | \$200.00 |
| TIP OF THE MITT WATERSHED Misc | | | |
| Paid Members | 89 | 52 | 42 |
| Balance - Operating Funds | | | 15,961.87 |
| Balance - Reserve Funds (Invasive Species Fund) | | | \$7,565.18 |

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| Green Lake Annual Treasures Report 2021 | | | |
|--|------------|------------|-------------|
| | 2020 | 2021 | 2022 YTD |
| INCOME | \$7,466.00 | \$2,955.00 | \$2,552.00 |
| EXPENSES | \$8,316.07 | \$1,232.79 | \$1,232.79 |
| WATER TESTING | \$366.47 | \$400.00 | \$0.00 |
| PRINTING/COPY | \$604.73 | \$177.58 | \$364.83 |
| MAILING SUPPLIES | \$67.00 | \$0.00 | \$0.00 |
| POSTAGE | \$187.00 | \$55.00 | \$46.40 |
| PO BOX | \$23.00 | \$0.00 | \$0.00 |
| STATE OF MICHIGAN FILING FEE | \$10.00 | \$0.00 | \$0.00 |
| BANK FEES | \$23.00 | \$20.00 | \$17.50 |
| GREEN LAKE & DUCK LAKE MEETING | \$0.00 | \$0.00 | \$15.36 |
| TECHNOLOGY & COMMUNICATIONS | \$279.97 | \$39.73 | \$68.56 |
| ONLINE PROCESSING | \$43.08 | \$15.48 | \$0.00 |
| EDUCATION/COMMUNITY AWARENESS/SUPPORT | \$0.00 | \$500.00 | \$98.00 |
| LEGAL FEES | \$2,350.00 | \$0.00 | \$288.75 |
| BOARD INSURANCE | \$0.00 | \$0.00 | \$116.00 |
| MISC INVASIVE SPECIES TREATMENT | \$4,211.82 | \$0.00 | \$75.00 |
| MEMBERSHIPS ML&SA | | | \$200.00 |
| TIP OF THE MITT WATERSHED Misc | | | \$0.00 |
| Paid Members | 122 | 77 | 86.00 |
| Balance - Operating Funds | | | 102,690.24 |
| Balance - Reserve Funds (Invasive Species Fund) | | | \$33,838.00 |

Submitted by
Emily Anderson
Treasurer

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DONATION CATEGORIES AND USES

- **PER OUR ASSOCIATION BY-LAWS ALL MONIES DIRECTED TO A SPECIFIC LAKE CAN ONLY BE USED IN SUPPORT OF THAT LAKE. BALANCES ARE MAINTAINED INDEPENDENTLY FOR EACH LAKE**
- **LAKE DESIGNATED MEMBER DUES/DONATIONS**
 - **USED TO SUPPORT THE OPERATIONAL BUDGET – DETAIL ON SUBSEQUENT SLIDE**
- **LAKE DESIGNATED INVASIVE SPECIES FUNDS**
 - **USED TO SUPPORT AIS EDUCATIONAL OUTREACH, SIGNAGE, (AVAS AND LAKE MANAGEMENT GREEN LAKE)**
- **LAKE DESIGNATED GIFTS MEMORANDUM HONORARIUM UNLESS OTHERWISE DIRECTED**
 - **USED TO SUPPORT THE OPERATIONAL BUDGET – DETAIL ON SUBSEQUENT SLIDE**
- **NON DESIGNATED DUES, DONATIONS, GIFTS ETC.**
 - **SPLIT EVENLY BETWEEN THE LAKES AND USED TO SUPPORT THE OPERATIONAL BUDGET**

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DONATION CATEGORIES AND THIS YEAR GLADLA HAS RECEIVED TWO GIFTS AND A MATCHING DONATION

- **IN HONOR OF ANNE WARREN AND HER LOVE AND CONCERN FOR GREEN LAKE – GIVEN BY TOM AND LINDA MCCARTHY**
- **IN MEMORY OF TAMMY HUBSCHNEIDER GIVEN BY KURT HUBSCHNEIDER**
- **MATCHING DONATION FROM SCOTT LUNDEEN BY JOHNSON & JOHNSON**

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WHY SUPPORT GREEN AND DUCK LAKES ASSOCIATION?

For over 48 years this association has been, and continues to be, the guardian of the lakes looking out for the interest of riparian owners and all those who use and enjoy the lakes. All money collected by GLADLA serve all the waterfront owners in our quest to keep our lakes and rivers healthy and protected through stewardship of the lakes watershed. **We have no paid employees just volunteers**, so please join. Contact us at greenducklakes2021@yahoo.com if you would like to volunteer to help in our stewardship activities

HERE'S WHAT YOUR MEMBERSHIP/DONATION SUPPORTS:

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WHAT YOUR DOLLARS WILL HELP US TO CONTINUE TO PROVIDE

- ANNUAL WATER TESTING – CHECKING PHOSPHORUS, E-COLI
- ANNUAL MEMBERSHIP IN MLSA, TIP OF THE MIT, AND CLMP TRAINING
- ANNUAL PLANT SURVEY PROGRAM – SAMPLING AQUATIC GARDENS IN EACH LAKE FOR INVASIVES
- AN EXTENSIVE REPORT ON THE HEALTH OF BOTH LAKE DONE BY A PROFESSIONAL LAKE MANAGEMENT COMPANY
- BI-ANNUAL NEWSLETTER
- EDUCATIONAL PROGRAMS – SIGNAGE, BOAT WASHES, SPEAKERS AT ANNUAL MEETING
- WATERSHED PROTECTION ADVOCACY – REPRESENTING INTERESTS OF THE ASSOCIATION MEMBERSHIP AT TOWNSHIPS, BENZIE CONSERVATION DISTRICTS, DNR, EGLE HEARINGS, MEETINGS, CONFERENCES TO PROTECT THE WATERS OF GREEN AND DUCK LAKES
- WEBSITE MAINTENANCE AND HOSTING WITH TESTING RESULTS, INFORMATION, STATE LAWS, CURRENT EVENTS AFFECTING OUR WATERSHED, ETC.
- WE LOOK FORWARD TO CONTINUING TO SERVE ALL MEMBERS IN THE QUEST TO KEEP OUR LAKES AND RIVERS HEALTHY AND PROTECTED

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Monitors Well Being of Duck and Green Lakes

Lake Water Quality Monitoring --To measure and help control pollution monitoring the health of the lakes through water testing for both chemical and biological changes including testing the rivers and streams connected to the lakes for contaminants and attempt to eliminate the source, posting results on our website.

Invasive Species Monitoring --To operate programs that protect our lakes from Aquatic Invasive Species and monitor native growth. The Association conducts plant sampling at various spots around the lake at least twice a year.

Information and Education

Education and Outreach --To work with MSU, DNR, EGLE in support of Clean Boats Clean Waters and AIS blitz programs. Erect signage at boat launches promoting water safety, provide "Good Lake Neighbors Etiquette" fliers, work with other lake associations to share best practices, attend educational conferences, host MSU's mobile boat wash to educate boaters on spread of AIS. Develop a brochure to promote donations and membership.

Distribute Information to Members --To publish and distribute newsletters, and keep the public informed about key issues affecting Green & Duck Lakes

Website/Facebook --To communicate and to make online operations more convenient for members. To share information about Green and Duck Lakes with the online community.

Monitor Fiscal and Civic Matters

Work with Township, County, and State Government s, DNR, EGLE, State, and Other Lake Associations --To work cooperatively with DNR, EGLE, Conservancies, and other Michigan Lake Associations.

Membership Funds --To accumulate funds to ensure the protection of Green and Duck Lakes through visionary stewardship of the Lakes Watershed, set aside money for treatment of invasive species.

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PUBLIC COMMENT RULES

- ANY PERSON SHALL BE PERMITTED TO ADDRESS A MEETING OF THE GLADLA BOARD WHICH IS REQUIRED TO BE OPEN TO THE PUBLIC UNDER THE PROVISION OF THE MICHIGAN OPEN MEETINGS ACT. PUBLIC COMMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH THE FOLLOWING BOARD RULES AND PROCEDURES:
- ANY PERSON WISHING TO ADDRESS THE BOARD SHALL STATE HIS OR HER NAME AND ADDRESS. NO PERSON SHALL BE ALLOWED TO SPEAK MORE THAN ONCE ON THE SAME MATTER, EXCLUDING TIME NEEDED TO ANSWER BOARD MEMBER QUESTIONS, IF ANY. THE CHAIRPERSON SHALL CONTROL THE AMOUNT OF TIME EACH PERSON SHALL BE ALLOWED TO SPEAK, WHICH SHALL NOT EXCEED THREE (3) MINUTES. THE CHAIRPERSON MAY, AT HIS OR HER DISCRETION, EXTEND THE AMOUNT OF TIME ANY PERSON IS ALLOWED TO SPEAK.
- PUBLIC COMMENT WILL BE SOLICITED DURING THE PUBLIC COMMENT PERIOD. HOWEVER, PUBLIC COMMENT MAY BE RECEIVED AT ANY TIME DURING THE MEETING REGARDING A SPECIFIC TOPIC CURRENTLY UNDER DISCUSSION BY THE BOARD AT THE DISCRETION OF THE CHAIR PERSON. MEMBERS OF THE PUBLIC WISHING TO COMMENT SHOULD RAISE THEIR HAND OR PASS A NOTE TO THE SECRETARY TO BE RECOGNIZED, AND SHALL NOT ADDRESS THE BOARD UNTIL CALLED UPON BY THE CHAIRPERSON

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GUEST SPEAKER – BREANNE GRABILL

Bre Grabill began working for PLM in 2002 and is a graduate of Michigan State University with a Bachelor's Degree in Environmental Studies and Applications. At MSU, Bre focused her studies on watershed management and limnology, studying water resources not only in Michigan but across the world in Antarctica. She currently works as our Northern Lakes Manager. Growing up on an inland lake in Newaygo County, Bre has a personal and professional interest in proper lake management, aquatic plant control and the environment. As Senior Regional Manager, Bre's division spreads over the entire Northern part of the Lower Peninsula as well as Upper Peninsula and works directly with lake associations, residents, townships, and lake boards in managing their waterbodies on some of the largest lakes in the State of Michigan. Bre is actively involved with numerous organizations and in her spare time enjoys spending time with her family on the lake.