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To Protect, Preserve and Enhance the Quality of Higgins Lake and Its Surrounding Watershed

In this edition:

Photo courtesy of Jackie Alderman

President's Message

Hello again from Higgins Lake. Your HLPOA had a very productive summer in our efforts to preserve the quality of our waters now and for generations to come. I am pleased with the energy, commitment, and initiatives of our Board of Directors, membership, and volunteers. Peruse this newsletter for updates on the HLPOA activities.

Dedicated to Preserving the Quality and Beauty of Higgins Lake. Charlene Cornell, President HLPOA.

Update on Data Collected in Big and Little Creeks

The HLPOA has studied the levels of pollution found in Big and Little Creeks that flow into the Northwest part of the lake. The levels of the most concerning pollutant, *Escherichia coli, E. coli,* bacteria, increased through the summer months until August. This bacterium comes from the fecal waste of warm-blooded hosts, including people, birds and various other animals in the watershed.

For levels of *E. coli* between 235 and 1000 MPN/100 milliliters, mls, of sample, the Michigan Public Health Department may issue an Advisory recommending that no swimming be allowed. MPN is an abbreviation for Most Probable Number of cultivated colonies in a standard method of analysis defined by the US EPA. The following results were recorded from our study, as analyzed by the EPA-regulated Raven Laboratory in Roscommon and are posted on our website.

	Mouth of Big Creek	Mouth of Little Creek
June	22 MPN	26 MPN
July	218 MPN	179 MPN
August	721 MPN	573 MPN

Clearly, by the end of August, the beaches near the mouths of the two creeks could have been posted with Public Health Department Swimming Advisories.

As the result of this information, HLPOA consulted with the Roscommon Public Health Department and requested their assistance in locating and identifying the sources of this pollution. Conversations were held between the HLPOA Environmental Committee and Steve King, Regional Director, Mark Jarsky, Environmental Supervisor, and Elly Saxton, Environmental Sanitarian, of the Central Michigan Public Health Department. Subsequently the Environmental Committee met with Mark and Elly at the Creeks to reconnoiter the site and to discuss a future sampling program to be carried out by the Health Department. The current plan is for this study to be done in the summer of 2021, and their results will be posted on our website when complete.

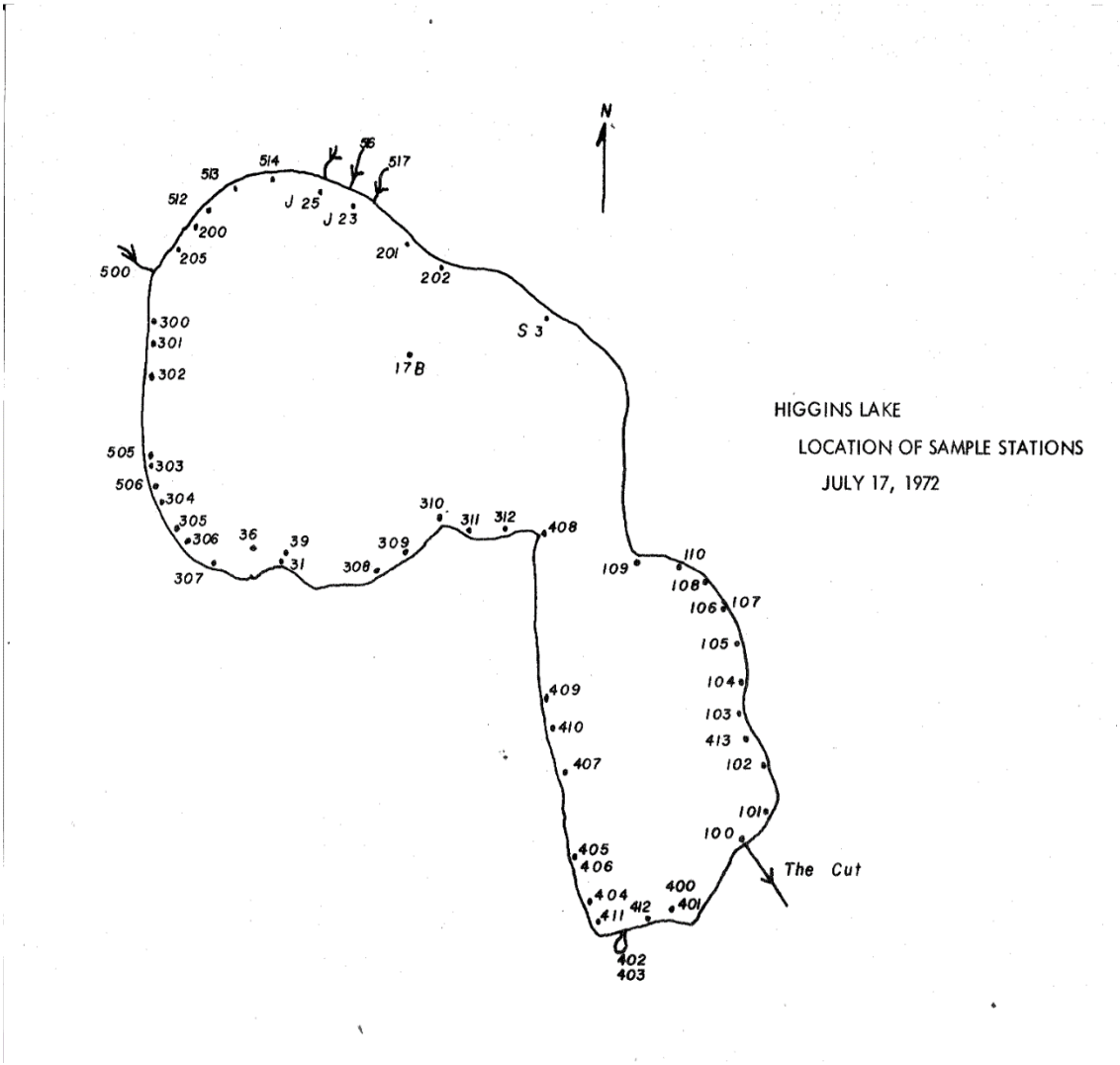
Comparing the Past to the Present: Higgins Lake's Historical Water Quality

As most of us during the pandemic isolation, I spent a lot of time sorting through stuff. My in-laws and their parents were big savers, like three trunks and several cardboard boxes full of family items. The Watson side of the family was active in the Higgins Lake community including being founding members of the Almeda Beach Association and longtime members of the HLPOA. Among the family letters, photos, church and work histories and associations documents, one gem I found was a 1972 water quality report for Higgins Lake. I thought this would be a wonderful opportunity to see how things have changed and stayed the same after nearly 50 years.

Water Quality Concerns in 1972

In September 1972, the HLPOA mailed a report to all members titled "Higgins Lake Water Quality Study Field Work Conducted on July 17, 1972" and included a cover letter sounding alarm at the results, including the opener "Shocking conditions of POLLUTION right here on our beautiful Higgins Lake?" The Roscommon County Board of Commissioners appointed the Higgins Lake Board in 1970 which funded the water quality study.

Dr. C. R. Humphrys and 9 students from Michigan State University did the field work, analyses, and report. They collected 57 water samples in July 1972 and analyzed these for total coliform, fecal coliforms, and streptococcus, considered at that time potential indicators of human waste. The following map shows the sampling locations.



Of the 57 samples, 40 were positive for fecal streptococcus, and these positive samples were distributed around the shoreline of the entire lake. Elevated levels of fecal coliform were detected in samples near Kennedy Beach, Cottage Grove, Chicago Beach, the middle West side of the South basin, Detroit Point, and American Legion Camp. Samples from Big Creek and another drainage ditch near the MacMullen Conference Center showed elevated levels of total and fecal coliforms and were positive for streptococcus.

Current Water Quality Results

Monitoring for water quality has evolved in the past 50 years so that past results compared to current results need to be considered in context of the testing available at the time. The 1972 water quality study used streptococcus, and total and fecal coliforms as an indicator of human waste. Today, the U.S. Environmental Protection Agency recommends *Escherichia coli (E. coli)* as the most reliable indicator of human fecal contamination.1 They found that streptococcus and fecal coliforms are not as reliable an indicator for human waste, as they are carried by warm-blooded animals and may also come from other sources in the environment.

Today, we look for *E. coli* bacteria as the reliable indicator of potential human waste contamination in water as they are a type of fecal coliform that is not generally found growing in the environment. The *E. coli* standards developed for the Great Lakes in Michigan and may be used for inland beaches are:

- If the *E. coli* count is greater than 1000 MPN/100 ml, the beach is closed.
- If the *E. coli* count is greater than 235 MPN/100 ml, but less than 1000 MPN/100 ml, an advisory is issued.
- If the *E. coli* count is under 235 MPN/100 ml, the beach has no advisories or warnings issues.

The Roscommon High School students have worked with Raven Analytical to sample sites around Higgins Lake for several water quality parameters, including *E. coli*. Though students were unable to conduct sampling in 2020, others did the sampling work on August 27, 2020. We have these results in Table 1. The results are the Most Probably Number (MPN) of *E. coli* colonies per 100 milliliters grown on Beach Plates, giving an estimate of viable *E. coli* in a water sample. Overall, it appears from these samples that the occurrence of *E. coli* in these locations currently was quite low.

Table 1 *E. coli* Results from August 27, 2020 Higgins Lake Water Samples

Location	**MPN of *E. coli* colonies**
Gerrish Township Marina	7
South State Park	19
Cut river	12
Sam-O-Set	13
DNR boat launch	6
Gold Coast	12
North State Park	13
B&B Marina	5
Camp Curnalia	10
Treasure Island – 1	24
Treasure Island – 2	11
Kennedy Beach	11
Flag Point	9

1 https://archive.epa.gov/water/archive/web/html/vms511.html

The Environmental Committee focused efforts on Big Creek and Little Creek in 2020 to understand the effects these tributaries may have on Higgins Lake Water Quality. We sampled from the stream outlets and from culverts on Military Road that were not likely to be impacted by groundwater near septic systems. Sampling from January through August showed rising levels of *E. coli* (Table 2). More importantly, the levels of *E. coli* in the outlets of Big and Little Creeks in August exceed the advisory standard for Great Lakes in Michigan (> 235 MPN/100 ml and <1000 MPN/100 ml).

Based on the water temperature dropping in Big Creek as it flows to the lake and increased flow amount between Military Road and the outlets, it is likely that a significant amount of groundwater flows into Big Creek and Little Creek between Military Road and the lake. The amount of flow probably varies with several factors including precipitation. If the groundwater is uncontaminated, it would likely dilute any contaminants that may be present. Conversely, if failing septic systems in the area are impacting the groundwater that flows into the streams, it is possible that the bacterial load in the stream could increase. Based on the August results, it would probably be wise to not allow children to play in these streams later in the summer. To understand the potential impact on the Higgins Lake nearshore waters from the inputs of Big Creek and Little Creek, we would need to do additional testing of these near shore waters to understand the potential for dilution or concentration of the bacteria in the lake. More work to be done next year.

Table 2. *E. coli* Results from 2020 Water Sampling of Big and Little Creeks

Location	**1/20/20**	**4/1/2020**	**7/2/2020**	**8/26/20**
Big Creek Outlet	18	22	218	721
Big Creek Military Road Culvert		5	105	960
Little Creek Outlet		26	179	574
Little Creek Military Road Culvert		0	1,011	1,011

How do we compare results?

The 1972 studies analyzed streptococcus and total and fecal coliforms while testing in 2020 analyzes for *E. coli*. Because the 2020 analysis is for a species of bacteria rather than a group (e. g. fecal or total coliforms), it can be much more precise about whether the contamination may be from warm-blooded animals, including us. Around the lake testing in 2020 shows us that fecal contamination from warm-blooded animals at the time and location where the sample were taken does not appear to be a problem. Conversely, sampling of Little and Big Creeks later in the summer shows that there is potential fecal contamination from warm-blooded animals that enters Higgins Lake. How much of an impact these streams have on lake water quality is unknown without further testing.

Solution Then and Now

In 1972 with the testing available, the HLPOA members had good reason to be concerned with the bacterial levels detected in the lake. Even then they saw the need to move forward with an area-wide sewer system to resolve the water quality issues. In July 1972 at the 42nd annual meeting of the HLPOA, the members passed a resolution to urgently request that the Higgins Lake Board and Gerrish and Lyon Township Boards implement a sewer system around Higgins Lake. This is at a time when the HLPOA included riparian and back lot owners. The members could see from the water quality studies that human waste was likely impacting the lake and an area-wide approach was warranted for the area-wide problem.

So here we are 48 years later, still concerned about water quality and working together on an area-wide solution. Your Environmental Committee will continue to work with our partners to understand and monitor water quality issues for Higgins Lake. Check out the sewer system feasibility study at http://hlpoa.org/wp-content/uploads/2019/11/2019-10-Public-Mtg-Presentation.pdf. Hopefully, we will have the momentum and support to make an equitable and affordable solution so we can preserve the beauty of Higgins Lake for future generations.

Melanie Brown is a HLPOA member. She serves on the Environmental Committee and Higgins Lake Swimmers Itch Organization (HLSIO).

Higgins Lake Microplastics Study Update

In the winter HLPOA newsletter, we had an article on microplastics in water (http://hlpoa.org/wp-content/uploads/2020/01/2019_2020-Winter-Newsletter.pdf). Microplastics in marine and fresh waters are becoming a worldwide concern and is a potential water quality concern for Higgins Lake. We are excited to be partnering with the Roscommon High School Science program on a microplastics study of Higgins Lake. On September 21, 2020, members of the HLPOA Environmental Committee met with Roscommon High School science teacher Chuck Schepke to provide materials and enthusiastic support for this study. We gave him zebra mussels collected at 6 locations around the shore of Higgins Lake and test tubes, cytometer slides, and a microscope cell phone camera adapter. Zebra mussels, over their lifetime, filter substantial amounts of water to feed and are known to trap microplastic particles in their tissues[2]. Mr. Schepke is working with several AP Chemistry students to analyze zebra mussel tissues for microplastics. The students will do a procedure similar to a microplastics study by a Minnesota student in 2019[3]. The procedure includes digestion of the zebra mussels in potassium hydroxide solution, then removing the plastics that float to the top of the solution. The samples are put on a microscope slide so the students can count and describe the type of plastics they see. As of early October, the students were practicing the art of using the cytometer slides provided by the HLPOA to count particles and should have results available this winter. Stay tuned for their findings.

Melanie Brown is a HLPOA member. She serves on the Environmental Committee and Higgins Lake Swimmers Itch Organization (HLSIO).

HLPOA Shoreline Erosion Survey Results – 2020

There was a total of 83 responses to the survey which represents about 16% of our current HLPOA members. Respondents were requested to identify the extent of shoreline erosion at their property as serious, minor or insignificant. Responses are discussed below under those three headings.

Serious, 23% Nineteen responses identified erosion as serious for their property. Seventeen of the 19 responses were from the North end of the lake, primarily on the North, Northeast, and East side. Only two were from the South end. Water level was indicated as the primary cause followed closely by spring ice and wind (waves). Relative to these three causes, boat wake and sea walls were minor issues.

Of the respondents, 13 of the 19 requested information about shoreline protection and 12 would appreciate a call from an Environmental Committee member. Ten of the respondents currently protect their shoreline with seawalls, rip-rap or rocks. The other nine depend on vegetation or have no protection.

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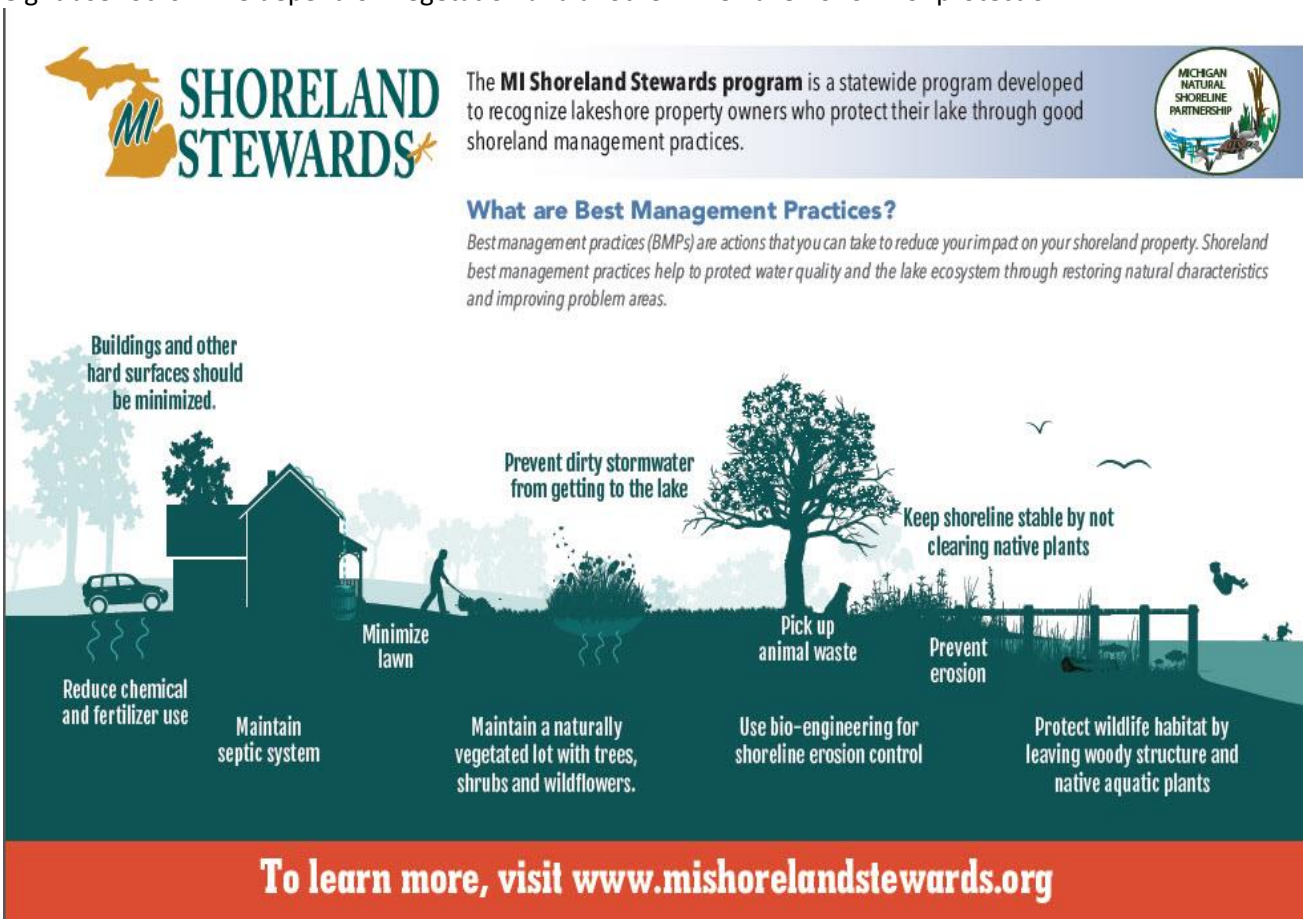
2 https://oceanservice.noaa.gov/podcast/sep20/nop40-microplastic-mussels-part-two.html#:~:text=And%20we%20also%20know%20that%20the%20invasive%20zebra,but%20they%20hadn%E2%80%99t%20yet%20been%20analyzed%20for%20microplastics.

3 https://mymlsa.org/part-2-middle-school-students-use-zebra-mussels-to-measure-microplastic-pollution-in-lakes/ and http://hlpoa.org/wp-content/uploads/2020/10/Summer-Newsletter-Final.pdf

Minor, 28% Twenty-three responses identified erosion as minor for their property. Thirteen of the 23 responses were from the North end of the lake. Spring ice and wind (wave) were indicated as the primary causes with boat wake and lake level of significantly less concern.

Twelve of the 23 respondents requested information about shoreline protection and five asked for a call back. Seven of the respondents protect their shoreline with rocks and three have seawalls. Seven depend on vegetation for protection and two have no protection.

Insignificant, 49% Forty-one of the responses identified erosion as insignificant for their property. Twenty-two responses were from the North end of the lake and 21 from the South. Spring ice was listed as the primary cause followed by wind (wave), water level and boat wake all at less than half of that level of cause. Two of the respondents requested additional information and only one wanted a call back. Eleven protect their shoreline with a seawall and eight use rocks. Nine depend on vegetation and another nine have no form of protection.



CHECKOUT SOME OF THESE RESOURCES

For examples of natural shorelines and landscapes with natural plants, subscribe to “Shoreline Living Magazine” go to http://midwestglaciallakes.org/resources/shorelineliving

Have some time on your hands to take a class about lakes? This course covers everything you would like to know about lakes. To find more information about the Michigan State University course, “Introduction to Lakes Online”, go to https://www.canr.msu.edu/introduction_to_lakes_online/ The course starts January 2021. Put your name on their list for registration information.

Helping you enjoy and protect your lake with healthy shorelines go to mishorelinepartnership.org

Books to add to your reading list:

Blue Mind, Wallace Nichols – science shows being near, on or underwater makes you healthier and happier.

Beyond Walden, Robert Thorson – the geology, ecology and cultural history of kettle lakes from Maine to Montana (Higgins Lake is a kettle lake).

Riparian Committee Report

The Riparian Committee recently met with local law enforcement officials as part of our ongoing series of spring and fall meetings. Some of the more interesting points from the meeting follow.

The County Marine Patrol was able to be on Higgins Lake seven days a week because of donations from HLPOA, Higgins Lake Foundation and others in spite of a shortage of deputies. There were no drownings or boat collisions during the summer and no serious injuries reported to the patrol in spite of the high level of boating activity on the lake. The radar gun previously donated by HLPOA proved useful in speed control on the lake.

- There continues to be reports of illegal overnight mooring and anchoring at some road ends. These infractions are punishable by police citations up to a level of $500 under PA 56. Additional signs to warn offenders will be installed along with the current Public Notice signs at selected road ends.
- There have been several complaints this summer about behavior at road ends by guests at short-term rentals. Often these guests are unaware of the road end restrictions and neither Gerrish nor Lyon townships have ordinances dealing with short-term rentals. However, Gerrish Township will contact landloards advertising on Airbnb, VRBO and other similar notice boards to remind renters of road end regulations.
- There have also been complaints by HLPOA members about extreme water safety and offensive, close-to-shore partying. These incidents should be reported to Central Dispatch at 989-275-0911 including MC numbers if they can be safely identified. Reporting is important even if a Marine Patrol or County Police deputy is not available to respond at the time. Future reports of repeat offenders will receive higher priority attention.

Milkweed

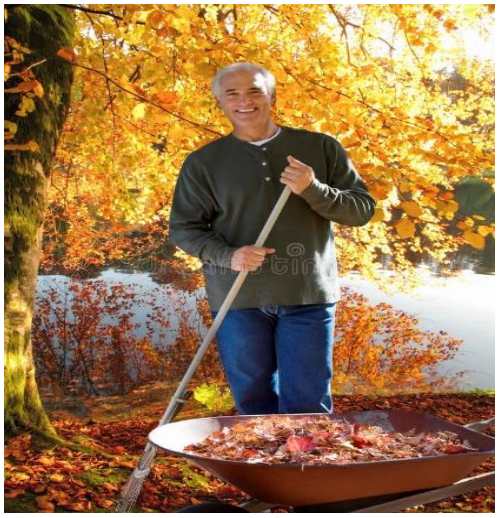
I love Monarch butterflies! As the Monarch population is declining, I planted a pollinator plot to help. We printed an article in our Spring newsletter titled "Plant a Pollinator Garden". Board member and avid bee-keeper Becky Gibson gave me pods of milkweed that I planted last November. (Yes, winter is the best time to plant these seeds!) Common milkweed is not so common anymore, primarily due to roadside herbicides. *Asclepias syriaca* (common milkweed) is the sole Monarch butterfly host plant. Note the soft gray-pink flowers, characteristic of this plant. Now that the milkweed has taken root, I plan to add some flowering perennials soon, which were listed in the Spring article. Monarch butterflies have flown near my young plants and I hope to see many more next summer!

Kathleen Barger is the HLPOA Administrative Assistant

Did you Know?

When leaves fall, they decompose and restock the soil with nutrients and organic matter. However, when they are raked into the lake, they decompose and feed unwanted algae growth and weeds the next summer. They use up oxygen that fish and native plants use.

Let's do our part and not rake or blow leaves into the lake.



Oak Wilt is a fungus fatal to red oaks (oaks with pointy tips). Sap-feeding beetles move the spores of **Oak Wilt**. Spores in a fungus act like seeds of a plant. Beetles move the spores from an open wound of a tree from one tree to the next when the tree is trimmed or cut. **Oak Wilt** fungus survives on live oak tissue. The disease is easily transported in logs and firewood.

The safest time to harvest or trim lake trees reducing the spread of **Oak Wilt** is November 1 - March 14. The greatest risk of spreading **Oak Wilt** is April 15 - July 15.

To report **Oak Wilt** on your property go to:
https://midnr.maps.arcgis.com/apps/webappviewer/index.html?id=aa4075c218ad4b968f15f14f84b37387
Sources:
"Protect Your Oaks! Prune in late fall and winter" www.MichiganOakWilt.org
"Oak Wilt Disease", Michigan State University Extension

Do You Have A Story To Tell?

Preserving life stories and memories is important. Whether your family has been coming to Higgins Lake for generations or you are a relative newcomer, do you have memories or experiences that you would like to share about Higgins Lake? We would like to hear your stories and with your permission to share in upcoming newsletters. Contact the office at hlpoa0@gmail.com or call (989-275-9181) and we will be happy to talk with you.

Calling for your healthy shoreline photos

Spend some time now to go through your summer photos. Select a few shoreline photos to share with other Higgins Lake Property Owners Association Members in future newsletters. Please submit your healthy shoreline photos to **bkygibson@gmail.com**. Before and after pictures would be helpful, but are not necessary.

Communication is the Key

It is the goal of Higgins Lake Property Owners Board Members to keep you informed about Higgins Lake issues. Many of our communications to our members are sent via email. Please provide the Higgins Lake Property Owners Association Office hlpoa0@gmail.com with a current email address to receive email blasts and up to date information.

Sincere Thanks

The following have generously donated funds to support the HLPOA and its endeavors:
ENVIRONMENTAL FUND: Almeda Beach Association & Camp Curnalia
LEGAL Fund: Almeda Beach Association
Thanks to member Patti Haight for her assistance folding membership letters and more. Watch your mail and be ready to renew your membership!

2019-2020 HLPOA Board: President - Charlene Cornell, Vice President - Greg Semack, Secretary - Herb Weatherly, Treasurer - Bruce Carleton. Directors: Wayne Brooks, Becky Gibson, Mark Lutz, Bob McKellar, John Ogren and Fred Swinehart.
Administrative Assistant - Kathleen Barger.