



# Platte Lake Improvement Association

Keeping Platte Lake Clean for 42 Years

**ANNUAL  
REPORT  
2020**

*We are a grassroots, non-profit association of individuals committed to insuring that Platte Lake is a healthy and beautiful body of water to be enjoyed now and in the future.*

If you own property on Big Platte Lake you know the value of your investment is directly tied to the water condition of the lake. It is not hard to imagine the terrible impact on the quality of your lake life if the present day beautiful sky-blue water of our lake was replaced with a foul, gray-green lake with huge algae blooms.

That is exactly the situation homeowners found themselves in 40 years ago. Almost overnight they saw what can happen if there are no stewards for the lake. Thousands of pounds of phosphorous loading from the fish hatchery upstream had essentially fertilized the entire lake. Because phosphorous is such an effective fertilizer, with a single pound creating 500 pounds of algae, the lake quickly deteriorated to that algae ridden, gray-green nightmare. The native plant and animal species began to disappear. The fishing, historically very good, was literally dying. Property values were falling. Discussions with the MDNR proved to be protracted and unproductive.

In response, homeowners, like you, banded together to reverse the destruction of Platte Lake and formed the Platte Lake Improvement Association (PLIA). In September 1986, the PLIA, at its own expense, filed an environmental protection lawsuit against the MDNR in Ingham County Circuit Court. In October, 1986, the Court issued a preliminary injunction





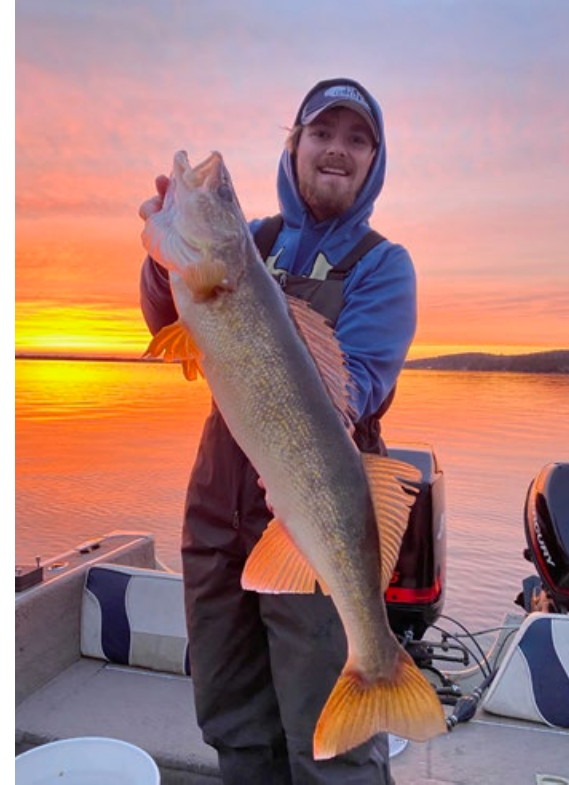
which sought to minimize any potential adverse environmental impact by limiting hatchery activities.

In July, 1988, the Court found in favor of the PLIA in all respects and established a maximum permissible phosphate concentration for the lake. In 2000, a Settlement Agreement permanently established how much phosphorous the hatchery can discharge annually.

The PLIA began working immediately with the hatchery to achieve these discharge limits. Fish are now fed a low phosphorous diet on a strict feeding schedule to maximize fish health and growth while minimizing food usage and waste. All hatchery wastewater is now treated to decrease phosphorous content. All solid waste from the hatchery is transported outside the Platte River watershed. As a consequence of these efforts, the hatchery phosphorous discharge dropped from over 4000 pounds annually to less than 150 pounds.

It has taken decades to restore Platte Lake to its present condition. Many homeowners might not even be aware of the destruction this lake faced in the past. We know that without close monitoring our lake could easily regress to what it was 40 years ago. Every bit of contamination upstream in the Platte River will end up in Platte Lake. There are still tons of phosphorous from the original contamination that are buried in the bottom settlement of the lake, like a sleeping giant. Upstream development is increasing every year. Ongoing testing and vigilance are critical.

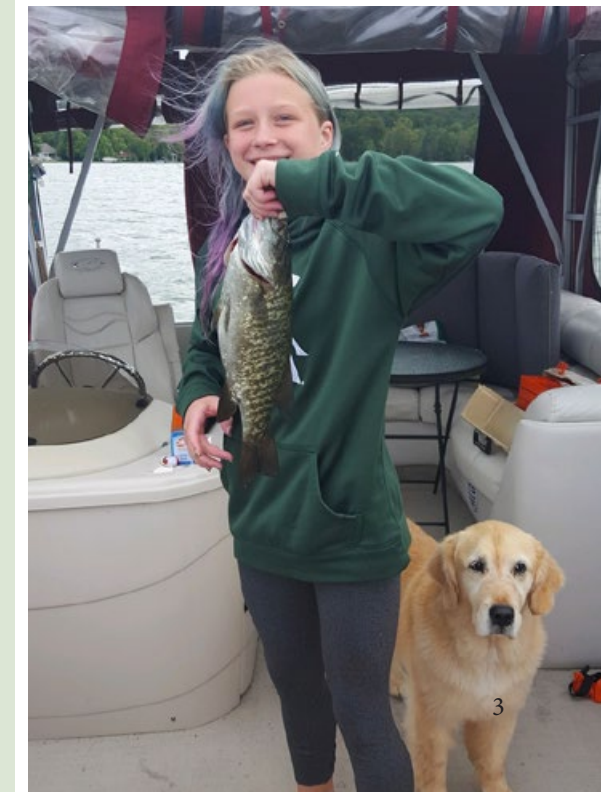
The PLIA is the only guardian of this lake. We are responsible for 100% of the testing costs for the lake and river tributaries, phosphorous analysis and data monitoring. We are a grassroots, non-profit 501-c3 organization that cannot exist without the ongoing support of its membership. If you are a lakeshore property owner and not a member of the PLIA you should join and support the volunteers who have worked hard to restore the lake so it can be enjoyed now and to help to protect it for future generations.



**We need your help. It is important to understand the link between the water quality of the lake and the value of your property. If you are not a member of the PLIA, join and support your neighbors who have made this lake as beautiful as it is today.**

## What we've been doing this year.

- Sustained our ongoing river and lake monitoring program with sampling occurring every two weeks. This data is used to ensure compliance with the 8.0 ug/liter phosphorous standard that was set in the 2000 Settlement Agreement. This data is available on our website [plattelake.org](http://plattelake.org). In 2019, 714 water samples were collected and analyzed for phosphorous.
- Ensured that the MDNR Platte River State Fish Hatchery was in compliance with its yearly phosphorus discharge limit of 150 pounds. For 2019 that discharge was only 60 pounds and in 2020 through April it was only 2.75 pounds. No Hatchery fines (\$500 per pound for each pound over the limit) for non-compliance were issued in 2019.
- Insured the Hatchery was compliant with the lower Platte River weir fall upstream fish passage limitations. No more than 20,000 adult Coho and 1000 adult chinook salmon can pass through the weir. In 2019 18,993 adult Coho and 31 adult chinooks were passed. No Hatchery fines (\$500/fish over the limit) were issued in 2019.
- Updated the PLIA organizational Articles of Incorporation and By-laws to insure they continue to be compliant with Michigan law and IRS regulations.
- Commissioned Dr Ray Canale to update the watershed database and create a forecasting capability that allows us to quickly determine how any increase or decrease in upstream phosphorus loading will impact the lake and our ability to achieve the 8.0 ug/liter standard. This gives the PLIA and its members the best watershed database and analytical tools in the State of Michigan. Check it out on our website: [plattelake.org](http://plattelake.org).
- Continued to work with the MDNR, MEGLE and Benzie Conservation District to monitor the Section 13 Homestead Township site which represents one of the most significant contributors in non-compliance with Platte Lake phosphorus standard. In 2018 The Packaging Corporation of America agreed to stop depositing papermill sludge at that site
- Contracted with Freshwater Solutions to conduct a comprehensive assessment of swimmer's itch in Platte Lake using DNA analysis techniques. Details of that engagement and findings can be read in this annual report.
- Continued the Platte Lake aquatic plant survey partnering with the Benzie Conservation District and Michigan State University.
- Participated in boat washing events sponsored by the Benzie County Conservation District designed to increase public awareness of an inexpensive and effective method of preventing invasive species from entering Platte Lake.





## Using high tech strategies, PLIA monitors invasive plants species.

Platte Lake is also susceptible to invasive plant species such as Eurasian Water Milfoil, Curly Leaf Pondweed and Purple Loosestrife. These plants can crowd out native species and alter the ecology of the lake. In other lakes, these invasive species have gotten so out of hand that they required eradication by chemicals that specifically target these plants.

It is extremely important to precisely locate where invasive species are so we can identify the scope of the problem and, if needed, effectively target them for treatment. It's often difficult to find these plants to determine how far they have spread, but utilizing a drone that provides aerial images can make this process much easier. In 2018, PLIA contracted with a consultant to undertake an extensive Platte Lake aquatic plant survey using a drone.

The bird's eye view that is provided flying 131 feet above the water surface provided images that were

assembled with computer software to create an orthomosaic, or 3-D reconstruction of the vegetation patterns on the bottom of the lake. 57.5 acres of suspected milfoil beds were identified.

PLIA and the Benzie Conservation District have partnered and will complete their detailed process of sampling and validating that 2018 survey data this year. With 57 sites sampled, it appears that the milfoil beds that were investigated contained a mixture of plants and were not 100% Eurasian Milfoil. Both Eurasian Milfoil and Curly Leaf Pondweed were found last year in the lake with some areas of heavy density of Eurasian Milfoil along Birch Point.

This project represents another example of the ongoing vigilance provided by your PLIA to keep Platte Lake a healthy ecosystem. These efforts take time and cost money. Your membership allows us to continue these important projects.



**Garlic Mustard** is alive and well in Benzie County. It is a very invasive weed and PLIA members are urged to pull it out of their yard and neighborhood. It was first introduced from Europe as food or a medicinal herb in 1868. By 1991, this exotic plant had spread to 28 midwestern and northeastern states. The roots exude a chemical that inhibits other plants from growing and each plant can produce up to 5000 seeds which remain viable in the soil for five years or more. It's best initially to pull during flowering, before the plants produce seed. Pull at the base of the plant and try to remove the entire root. Pulled garlic mustard material will still complete flowering and set seed – do not leave it on the ground! Place it in black garbage bags and take them to a designated disposal dumpster.

## Oak Wilt

Do you have towering beautiful oak trees on your property? Then you need to protect them from Oak Wilt. Oak Wilt is caused by a fungus and can kill your trees within 2 months. It is transmitted to an uninfected area by sap-feeding beetles, particularly between April 1 and July 15. The beetles are attracted to the sap produced by tree wounds that can be caused by nature, pruning, or tree cutting. Once infected, a red oak is doomed and there is no cure. Oak trees form root grafts with other oak trees and create an easy avenue for the fungus to spread from oak to oak. Thus, once the disease is present in an area you can expect widespread loss of oak trees which means you can easily kill your neighbor's trees as well as your own.

Fortunately, much of the problem is caused by human beings and is easily preventable. First, avoid trimming or removing oaks between April 1 and July 15. This is the period of highest danger of introduction into an uninfected area. If you must prune, treat the wounds with a latex paint. Second, deal only with reputable tree removal companies. Ask about oak wilt. Ethical companies will agree to cut your tree only during periods of reduced threat. Unethical companies will cut anytime.



## The Platte Lake Improvement Association is monitoring the quality of your lake all year long.

Keeping an eye on Platte Lake is a never-ending job. Every hour, about 3.5 million gallons of water flow into it. There are 50 other lakes in the Platte River watershed. Platte Lake will always be vulnerable to whatever comes into it from the upper Platte River or what swims into it from Lake Michigan.

Despite the COVID-19 pandemic, twenty-six times a year, every two weeks, specialists from Benzie Conservation District are sampling water from Platte Lake and the rivers and streams that flow into it. There are 22 billion gallons of water in the lake. Since we can't measure everything, everywhere, we identified the optimal sites at eight different locations for the sampling process to provide a comprehensive picture of the water that enters the lake.

Even in the dead of winter, water samples are obtained through the lake ice. If the ice is unstable, a sheriff's airboat is used to get on the lake to obtain the samples. Where the water is the deepest, off Birch Point in the north west basin of the lake, water is sampled using a specialized instrument that measures temperature, depth, dissolved oxygen, conductivity, oxygen reduction potential and pH at various depths all the way down to the bottom, 90 feet below.

The Platte River State Fish Hatchery in Honor was once the single worst contributor of the phosphorus that polluted Platte

Lake. Today, because of its sophisticated modern processes, the hatchery has evolved into a fish production facility with an attached water treatment plant. Working closely with the PLIA the Hatchery has developed nearly real-time information on the performance which gives hatchery personnel the ability to take corrective action quickly if the process falls out of compliance.

Since phosphorus was the primary culprit polluting our lake it remains the primary focus of our analysis. The analysis of the water samples obtained from all of the sites occurs at the hatchery. Elemental phosphorus must be extracted from various compounds to be accurately measured. This is done by a device called the "Digester" which has an appetite for breaking these compounds down using acid and heat. The phosphorus concentration, now calculated by a spectrophotometer, is directly loaded into the PLIA database.

This data is reviewed by members looking for short term fluctuations or long-term trends that could potentially affect the water quality of Platte Lake. The PLIA has recently identified that the discharge to the Platte River from Section 13 Homestead Township represents the current most significant factor for phosphorus discharge into the watershed.



This ongoing partnership, between the Fish Hatchery, the Benzie Conservation District and the Platte Lake Improvement Association has resulted in a beautiful lake with excellent water quality and provides a management and surveillance model for watersheds across the nation.

**It costs over \$30,000 a year to fund this monitoring process.**

## Update on Swimmer's Itch

Swimmer's Itch is now confirmed as a part of the Platte Lake ecosystem. qPCR is a method used to look for DNA and it is so sensitive that it can even distinguish between different species of schistosomes that cause Swimmer's Itch. Partnering with Fresh Water Solutions, the PLIA has found DNA evidence that the Lake has the "Itch". Most residents already knew that and at the Annual Meeting last year an informal study showed that the north shore had the most complaints of cases. What did we learn about the extent of Swimmer Itch in Platte Lake from this ongoing study?

First, a little background on what Swimmer's Itch is. Swimmer's Itch in humans is only skin deep, but it can be a real nuisance and can last for days in some people. If you understand the cycle of the parasite that causes the problem it will help to establish the strategies you can use to avoid seeing your family and friends covered in dozens of red, raised bumps on their legs and feet.

That rash has a medical name "cercarial dermatitis" and is the consequence of being the unintended target of a small parasite called a schistosome. It wasn't looking for you. It was trying to find a key host in its life cycle, a bird.

Historically the Merganser has been incriminated as the major culprit as they have the highest rate of infectivity and our analysis showed that of the 13 Mergansers tested on Platte Lake, 12 were infected.

But that's not the entire story. These parasites are very adaptable and are not limited to just mergansers. They can infect other bird species such as Canadian geese, Mallards, Red winged blackbirds,

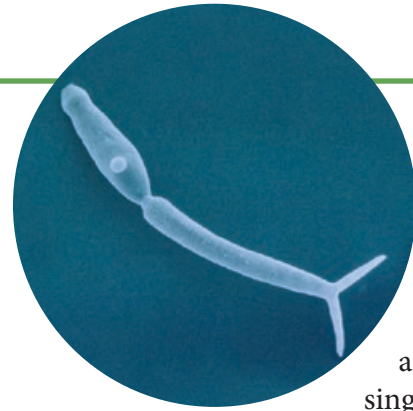
even canaries.

In fact, the most common waterfowl on our lake is the Mallard and unfortunately 4 of the 28 tested were positive. The Mallard population also increases during the summer season as the Mergansers and other birds migrate increasing from about 61% of the bird population in early June to over 90% by late July. In summary, from the Freshwater Solutions report "we can confidently conclude that both summer resident mallards and common mergansers are the definitive hosts for at least some of the schistosomes causing Swimmer's Itch on Platte Lake."

Understanding that fact is important because it undermines one of the most popular strategies for controlling Swimmer's Itch recently, the relocation of the Mergansers. That may be one reason that despite extensive control efforts on a number of lakes in Northern Michigan, some relocation programs have not been effective at reducing the snail infection prevalence or the number of schistosome cercariae in the water.

The schistosome that causes swimmers itch has two hosts that it cycles between, birds and snails. Parasite eggs are released from the birds in their feces. The eggs hatch within an hour in the water and liberate a miracidium. That miracidium has about 24 hours to find and attach to the proper snail host before it runs out of energy and dies.

Once inside the snail, it develops further into a cercariae. Cercariae



are released, often by multiple snails at the same time and are designed like a microscopic torpedo, 1/80th of an inch long, with a singular objective: Find a host bird and penetrate its skin so it can continue its life cycle.

Because cercariae do not have any way to feed, they rarely live longer than a day. Most of them are released in the early morning and the number of them actively swimming drops as the day progresses. By 4 pm, only 20% of the cercaria are still present. They are not very strong swimmers and are pretty fragile. Their head can be easily disrupted from their forked tail.

So what did our analysis show about the other primary host, the snail population in Platte Lake? First, the most common snail that resides in our Lake, the Pleurocera sp. Snail, is immune to the parasite. Platte Lake does not have a diverse community of snails, but rather is dominated by one species (one that does not harbor avian schistosomes). Of the over 250 snails collected, only one of the snails was infected.

So now, let's look at the parasite itself for possible solutions. We know that the parasite is a lousy swimmer, swims at the surface, gets blown around in the water, prefers a morning swim and it has a tendency for its head to fall off in turbulent water. Freshwater Solutions has studied these vulnerabilities and has found that creating long swim baffles that extend about a foot into the water creates an effective

barrier and can reduce infection if you swim on the leeward side. They created and studied a device called the "Smasher" that causes water turbulence and decapitates the schistosome as well as a surface rake that can remove the parasite from the surface water. All of these worked to decrease the parasitic DNA in the swim area.

Combating Swimmer's Itch is a work in progress. Some of these solutions may actually be employed on a wide scale in the future. If a lake has swimmers itch, it does not mean that lake is polluted. In fact, the opposite is true. A healthy lake promotes a high diversity of species, including the birds and snails that are the hosts for the causative agents of swimmer's itch.

There is no cure for Swimmers Itch, yet. For now, there are only strategies you can employ to reduce your risk. However, because this is such an important issue, with new methodologies like qPCR DNA testing, etc. being employed, the PLIA will continue its partnership with Freshwater Solutions to help our members stay on the cutting edge on the status of our lake and Swimmer Itch.

### Knowing more about the parasite will help you avoid getting Swimmers Itch.

- Don't feed the ducks, geese or swans. Attracting these birds increases their fecal droppings and you know what that means.
- The cercariae swim on the surface of the water; after all, that's where the birds are. They can float a long way on the surface, so you probably want to avoid swimming in areas where swimmer's itch is a known problem and when there is an onshore wind. Definitely avoid floating for prolonged periods of time in an inner tube with your body partially submerged.
- Swim in the afternoon.
- Children are particularly sensitive to Swimmer's Itch. They usually spend more time in the water, have more sensitive skin, and have a greater tendency to play in shallower water where cercariae most often concentrate.
- Towel off with vigor when you come out of the water. It takes time for cercariae to penetrate the skin and you can crush their tiny bodies. Showering shortly after leaving the water also might help.
- People have also noted that waterproof sunscreens and lotions reduce the infections by discouraging the cercariae from penetrating the skin.
- You may want to consider full body UV swimsuits if you are particularly sensitive to the parasite.
- If you decide to go in the water when and where Swimmer's Itch larvae are present, stay clear of plants growing in the lake.
- Swimming rather than playing or wading in shallow water will reduce exposure. Swim offshore if possible.

**The 2000 Settlement Agreement between the Platte Lake Improvement Association (PLIA) and the Michigan Department of Natural Resources (MDNR) established tight controls on the Platte River Fish Hatchery's operation and allowed the MDNR to proceed with an upgrade of the hatchery. Those upgrades dramatically reduced the hatchery's environmental impact on Platte Lake and improved the quality of our water.**

**This original agreement and subsequent amendments are significant in that they define a legally binding management path forward that will insure the long-term health and preservation of Platte Lake and the Platte River.**



## How can you legally protect your shoreline?

Record high water levels have caused some lake residents to be concerned about erosion and undercutting of their shoreline. Environmental restrictions have eliminated the seawall construction of years gone by. Homeowners are still able to legally protect their shoreline. One method is placement of large rocks that allow a natural lake/shoreline interaction and represents a compromise solution. No doubt, if you want to resist ice damage, the bigger the boulders the better.

As you boat around the lake you will see several of these projects. Permits are required from the state (EGLE), and the county Soil Erosion Dept. Contractors doing this type work will assist in the application process.



It may not be as environmentally desirable as a completely natural shoreline, but if your property is endangered, it is at least allowed as

the most environmentally neutral solution. Besides, it makes great homes for crayfish.



**Platte Lake  
Improvement Association**

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[plattelake.org](http://plattelake.org)

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