

Muskellunge Lake

A Journey Controlling Eurasian Water Milfoil

A Recap of our Efforts

Muskellunge Lake Profile

- Located midway between Eagle River and St Germain. Muskellunge lake is 1 of 3 lakes in the town of Cloverland's 22 lakes with a public landing. This is a popular lake for visiting fishermen.
- 270 acres. A largely shallow lake with max depth of 19 feet. The water is quite fertile and naturally high in Phosphorous. Water clarity (secci) is 4 feet and algae is common in late summer. An outlet creek goes into Little St Germain east bay <5 miles west.
- 5 large shallow bays encompass most of the acreage. Most of the bays are muck bottom. Most shorelines are muck covered bottom over sand. Less than 20% of the shorelines have sandy bottom.
- There are 119 properties and <5% of the shoreline is undeveloped. 90% of owners belong to the MLA (Muskellunge Lake Assn).
- Aquatic plants grow out to about 7 feet deep as sunlight is the limiting factor. Most bays are dense with what is considered good fishing weeds. Cabbage, coontail, and various pondweeds. Lilly pads are common in the shallow areas in the back of muck bays.
- A shallow rocky center bar is a common target for new fisherman on the lake.
- DNR Lake Map is attached.

Our Timeline Highlights: Eurasian Water Milfoil (EWM)

2016

- First EWM discovery on center bar by a resident. <400 sq.ft.
- Began MLA board and member education on identification of EWM.
- Ongoing efforts of CBCW at the landing for the prior 6 years have failed as the first discovery is located where nonresident fishermen generally head to first.

2017

- MLA board recognizes the threat of EWM and actively engages in communication efforts to secure owner understanding.
- Began exploring the possible solutions and the steps necessary to begin EWM control.
- EWM in single area on center bar now grows to 1 acre.
- Organized MLA member-based manual pulling events. 1st event – 20+ people, 2nd event- 7 people. 3rd event-3 people. Apathy and the ineffectiveness of this manual effort meant that MLA must now seek solutions now costing significant monies.
- EWM rebounded in all areas that were pulled by end of summer.

2018

- EWM continues to expand. Now 5 acres.
- Secured Rapid Response Grant from WDNR for some of the contracted expenses.
- Contracted professional divers to manually pull EWM. 2 full days. \$20k. <2 acres pulled.
- EWM rebounded and expanded in all areas that were pulled by end of summer.

2019

- Meander surveys and point intercept study show EWM areas expanding and new zones developing. EWM now covers 10+ acres in mostly two areas.
- Contracted 2 DASH (Diver Assisted Suction Harvesting) events to target densest areas. 2 full days. \$25k each. < 2 acres harvested.
- Poor water clarity reduced the effectiveness of diver actions.
- Late season survey indicated that EWM had redeveloped in all areas treated with DASH.

2020

- MLA board votes to stop manual efforts to control EWM due to ineffectiveness.
- Fragmentation from boating, fishermen and harvest events are causing new infestations in many places. The EWM is expanding faster than any manual efforts can contain.
- Pursued understanding the steps necessary to secure approval to use herbicides to control EWM expansion. Begin writing a comprehensive LMP (Lake Management Plan) that included as an objective to eliminate EWM by using herbicide. A very long effort with lots of effort and iterations. Consultancy cost for the prerequisite Lake Management Plan over \$50K.
- Surveyed and interviewed a few lake associations that used herbicides to control EWM.

2021

- Secured final approval of lake management plan. This allowed us to apply for a permit and grants for an herbicide treatment plan.
- Meander surveys and detailed GPS mapping of significant EWM areas. In prep for treatment. Full Lake Point Intercept
- End of June, Treatment of EWM. 20 acres in 3 separate areas. (see attached) Permitted use of ProcellaCOR approved, one of only a few lakes in Vilas to be granted the use of ProcellaCOR.
- Within 1 week, there was no signs of EWM in the treatment areas. Little impact to native plants.
- Late summer, Sub Point intercept study of treated areas and a full lake point intercept survey completed. No EWM found. Minimal impact to native plants.

2022

- Biweekly meander surveys by MLA board members from ice out to Labor Day. Each board members assigned a region to survey.
- Labor Day weekend. Full lake point intercept study 384 Points and treatment zone sub point intercept on treated areas 135 points. Done by MLA board.
- Success! No EWM was discovered in Muskellunge Lake in 2022. Native plants are recovering in all treated areas.

2023 Plans

- Continue education and CBCW efforts to prevent reintroduction.
- Continue fund raising efforts, as grant funding will likely not be available.
- Continue active meander surveys regularly to find new invasives early.
- Investigate enhanced prevention at the landing to minimize chances of reinfestation.

DNR Requirements for Control

- No permits are necessary for manual pulling. Permits are required for any control involving any mechanical, DASH, or chemical controls.
- DNR did issue us a rapid response grant (\$25k) after we completed and lake wide Point intercept study. Our grant request included detailed plan as well as contractors involved.
- The grant and associated permit were only for manual pulling or DASH intervention.
- Discussions about the use of herbicides were met with significant stall and obstacles.
- DNR required a new comprehensive Lake Management Plan to be written. This was in addition to 3 earlier LMP's. (USGS, Blue Water Science, Onterra)
- The LMP plan could define the use of herbicides for EWM control but could not be the sole purpose of the LMP.
- An approved LMP was a prerequisite of any grant or control permit requests.
- Many rewrites and edits involving DNR based reviews. The work on this document led to significant data and scientific reports to create an action-based plan to resolve a problem.
- Upon acceptance of our LMP we were then able to apply for a control grant. We then could apply for a herbicide control permit. This permit included the herbicide application plan and dosing of a ProcellaCOR application. (See Attached)
- In general, the DNR was not helpful and put many obstacles in the way. The DNR has an aversion to the use of any herbicides. The DNR believes that ProcellaCOR is still experimental even though its use in Minnesota is easily approved and regularly used.

Selection of ProcellaCOR as our Herbicide Control Plan

- Our Consultant (Joe Pallardy, EOR Inc.) had prior experience with using ProcellaCOR in Minnesota. Discussed with the MLA the effectiveness and case studies.
- ProcellaCOR is a selective herbicide that targets only Eurasian Water Milfoil. Some collateral impact to Northern Milfoil is to be expected.
- The alternative herbicide is 2,4-D which is a broad-spectrum herbicide. Any plant in contact with 2,4-D will be impacted.
- We interviewed several area lakes that had used ProcellaCOR and discussed their approach, problems, and successes. (Little St. Germain, North Twin)
- We reviewed and explored the use of weevils on our lake with Cathy Higley, Vilas Co Invasives coordinator. A weevil control plan is in place at nearby Buckatabon lake.
- We reviewed case studies of area lakes treated with 2,4-D.
- EWM is quite selective in what bottom content it is likely to proliferate. Very heavy muck areas and very sandy or gravely areas are not conducive to EWM proliferation. A silt layer over hard substrate is the most conducive to EWM growth.
- EWM will crowd out most native plants growing in these areas. Canopied areas of EWM make boating near impossible.

Results

- We applied (via licensed contractor Clarke Aquatic) ProcellaCOR to 3 GPS defined treatment areas totaling 20 acres the last week of June 2022. Most of the areas were dominated by surface matted or very visible EWM.
- By the 4th of July weekend, the dense EWM in the treatment areas had disappeared.
- Rake sampling of the treatment zones where EWM was most dense, indicated the EWM had died and sunk to a black matted mass on the bottom.
- Meander surveys and rake sampling in the treatment zones indicated that EWM was gone. By late summer, some native plants had begun to regrow where EWM was most dense. In less dense areas, pond weeds began to again dominate those areas.
- We had to take multiple residual water samples over many days after treatment and send them to a special lab that could test to parts per trillion.
- A late summer full lake Point Intercept Survey found no evidence of EWM.

Education of the Owners / Visitors

- We invested significant communication efforts educating owners about EWM very early on. This included Identifying EWM, where it is likely to grow, where we are currently finding it (Map) and what may eventually happen if EWM proliferates in our lake.
- We engaged many people with our manual pulling efforts. This secured a buy in of the problem and difficulty in its eradication.
- We had the MLA board become the stewards of EWM control efforts. They became our experts and led our identification and survey efforts.
- We trained a number of people in aquatic plant identification, and this became the study team for the multiple Point Intercept studies.
- We regularly communicated our status of various reports and grant efforts. We published maps of EWM affected areas and communicated how EWM spreads via fragmentation. We encouraged avoiding these areas.
- As a part of the LMP, we surveyed all owners on 36 issues regarding EWM control, the use of herbicides and the desires for lake improvements.
- We communicated the reality of the financial situation for control both with and without grants.
- We communicated to long term and ongoing reality of EWM in our lake. We likely are not done with this.
- We posted several notices and maps at the boat landing to remind visitors of EWM locations and CBCW efforts.

Advice to other lake associations:

- Get after invasives aggressively upon discovery.
- Secure professional help to secure grants, write plans, and secure permits.
- The DNR is not that helpful. They will encourage further study, academic analysis and stall the immediacy of solving the problem. They are generally frustrating to work with.
- Over communicate with property owners and secure their stake in solving the problem.

- Develop champions on the lake to lead the efforts.
- Secure sampling rakes and train lake volunteers on plant identification and to be an active part of the work.
- While ProcellaCOR was very successful and of little impact to the native plants, the DNR is overly cautious on any herbicide use.
- Funding for various grants will be limited. Develop other sources of funding.

Q: Questions that the MLA had to answer that came from owners.

A: Response

Q: While I can see where the EWM is, what happens if we do nothing?

A: The current EWM areas are more than doubling each year. It is likely that EWM could find its way into every area out to about 8 feet of depth. The recreational uses on the lake will become very restricted.

Q: The EWM is not in front of my place, why should I care and spend the money?

A: Even if it never shows up in front of your place, the proliferation across the lake will make the lake less desirable. Ultimately this will affect the value and salability of your property.

Q: Doesn't the DNR or Vilas County take care of this sort of stuff?

A: While they stand in the path of securing and approving any plans for control, they do not initiate any actions. They do not do the work. They do not fund projects.

Q: It seems we know what must be done, why do we need to hire an expensive consultant?

A: The requests for information, management plans, grants and permits are reviewed by a group of academic bureaucrats. The format and content of these documents is very complex. Without the professional expertise, our simple request will not be credibly reviewed.

Q: What is the purpose of the Lake Management Plan?

A: Some have said it is the DNR keeping the consulting industry busy. The LMP is like a business plan. It is filled with historical and current data and background. It defines specific problem statements. It then describes specific objectives, planned actions, and expected results. It is generally wide in scope and specific in planned goals and subsequent actions. Like any research term paper, all assertions must be backed up with specific data, supporting bibliography, and appendix exhibits. An approved LMP is a prerequisite by the DNR to any requests for grants or permits.

Q: Isn't there grant monies from the state that are available for this?

A: While some grant monies may be available, they are always matching grants. The funding each year is limited and as time go on, more lakes are competing for these limited funds. Even if our plan is self-funded, we still must go thru the same processes and approval gates. We were only 1 of 4 lakes to secure a herbicide control grant in Vilas Co. in 2021.

Q: My boat never leaves this lake, why should I care about CBCW and boat inspections?

A: Education and inspections at the landing are vital to prevent new infestations of any invasive on our lake. Our original infestation was not likely a resident who only uses the landing one time in the spring and again in the fall. While EWM may be gone for now, it is likely it will be reintroduced at some point.

Q: I read that the Eagle River chain is near EWM free and using only manual efforts to control. Why can't we continue to just manually pull EWM here?

A: The Eagle River chain has been controlling EWM with aggressive herbicide controls (2,4-D) for nearly ten years. It is only more recently that the EWM volume is now low enough that manual diver-based controls can once again be effective. The ER chain has the advantage that the water is significantly clear allowing diver visibility down to 10 feet.

Q: I don't like the idea of adding herbicides to the lake. Are they safe and how will you protect Me?

A: The ProcellaCOR fact sheet states that there are no restrictions on treated water use or eating fish or drinking. EPA states there have been no identified risks to human health. The EPA further indicates there has been no demonstrated toxicity to any terrestrial or aquatic animal species. We advised all owners and posted in public access areas when the herbicide application was to occur. Our advisory cautioned against swimming, water sports for 24 hours. It also cautioned against watering or irrigating plants on shore for the same time period. The half-life of this herbicide is very short. Our post treatment water sampling in the middle of each treatment area indicated negligible evidence of any residual material after 24 hours. By comparison, 2,4-D remains active and in the water column for weeks in most situations and has a higher toxicity.

Q: ProcellaCOR seems experimental, why are we not using what everyone else has used in the past?

A: ProcellaCOR is commonly used and approved in many other states. It commonly used in many Minnesota lakes with EWM problems. WDNR is generally against any herbicide use in our northern lakes area. They have been slow to widely adopt approval of ProcellaCOR. 2,4-D has been the herbicide of choice for years. The MLA decided the targeted action of ProcellaCOR had the benefits of little secondary impact of non-targeted plants and overall lower toxicity.

Q: I have discovered some good fishing adjacent to the EWM stands, why don't we just leave them there?

A: There are not more fish in the lake because of EWM. The density of EWM may move the fish onto the edges of the weed beds making the fish easier to target.

Q: Why are you asking me for more than the usual amount for MLA dues?

A: Your \$40 annual dues doesn't go very far when dealing the expenses of EWM control. Over the last 5 years with the aid of several grants the MLA has spent over \$100k to get to this point.

Our backup savings accounts have been impacted. Our ability to secure future grants will be very limited. It has been stated that the grant bus won't be coming by Muskellunge Lake any time soon. This is why we have asked everyone to voluntarily commit to an extra \$200 to a specific Lake Improvement Fund while we rebuild our ability to deal with future issues with our own funding sources.

Q: Not every one of my neighbors belong to the MLA. Why can't you bill them too?

A: The MLA is a lake association, and its charter is volunteer based only. We cannot require anyone to belong or require of them a certain amount for dues. A lake district can tax each owner a share of these kind of expenses. A lake district is government type entity it has many other encumbrances as well. It is not a good alternative for the size and population of our lake. Any lake district governess in our area has on average \$500 levied on their property tax annually.

Q: The EWM is gone. Thank-you. Why are you continuing to ask me for money?

A: The work is not done. Regular intercept studies, monitoring and prevention measures will need to continue. It is only a matter of time before EWM or another invasive finds a home in Muskellunge Lake.

Q: If we rediscover EWM again, will we need to go through all this again?

A: The scope and context of the current LMP will not need to be redone. The process of data gathering and applying for permits will all need to be repeated.

Q: What is the MLA doing to prevent new EWM or any invasive from coming here?

A: We will need to continue to have volunteers man our landing at peak times doing CBCW education and inspections or hire the resources to do it. We will continue to enhance our signage and awareness for visitors. We continue to support the actions of the Vilas County invasive control efforts.

Q: How will my property values be impacted by any of these planned actions?

A: Eliminating EWM will not directly impact your property value, not controlling it will make the suitability of the lake unattractive to many. As this happens the resale value of your property will certainly decline. Compare the value of the several hundred dollars we ask for and the impact of dozens of MLA volunteers to your investment in your lake property. Your support is essential for all of us.

Q: Water clarity, high speed boating, phosphorous control, rental properties, few walleyes, winter aerator... are all problems as well. When are you going to deal those issues?

A: All of these issues are defined as ongoing goals in our LMP. As we get a handle on our EWM situation we will turn our attention and funding to other objectives. Your feedback from earlier survey responses helped define these goals.

Continue to bring any concerns to any MLA board member. We all benefit from your support.

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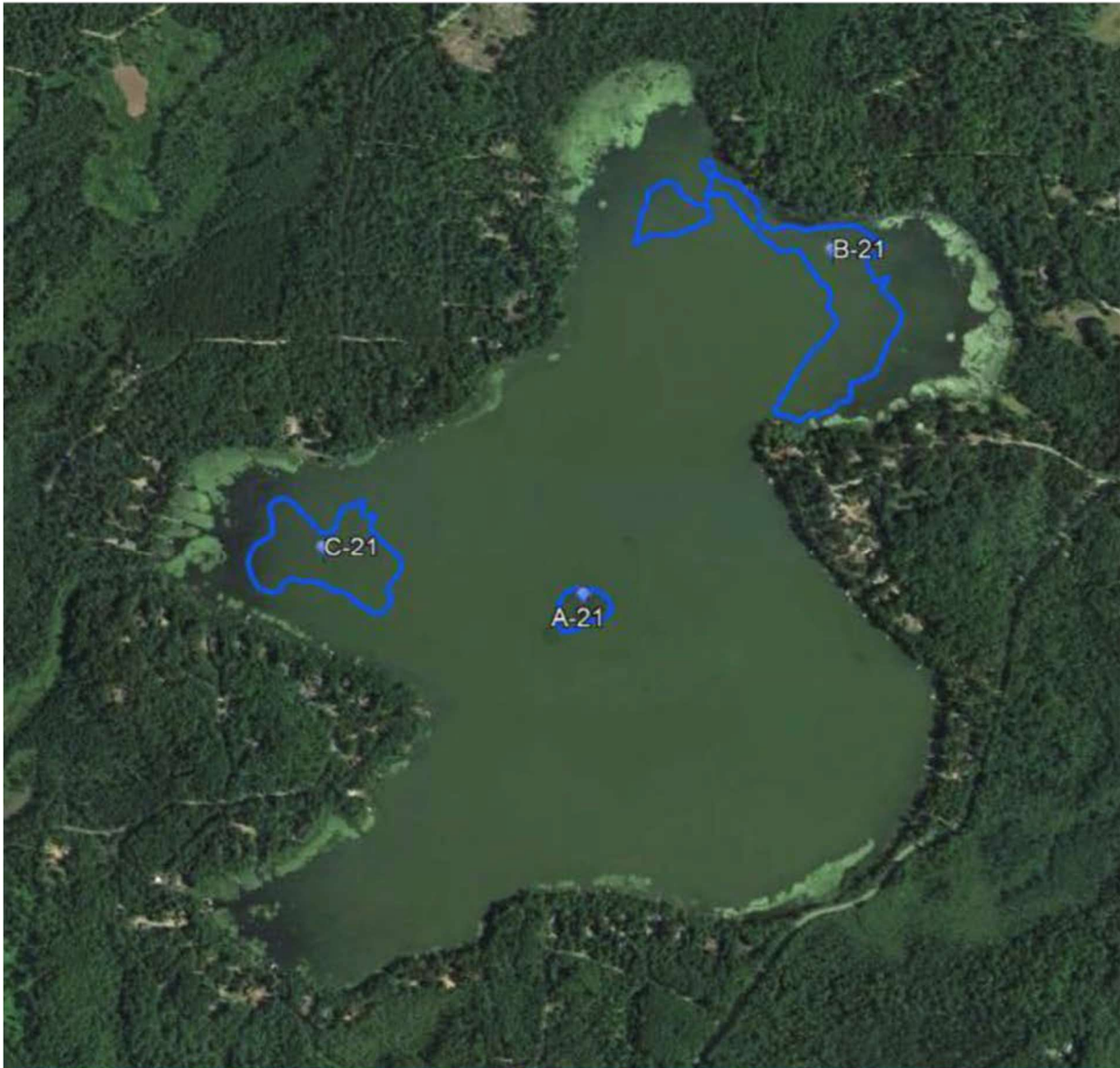
EWM Center Bar Before – Area A



EWM Center Bar After – Area A



EWM Treatment Areas

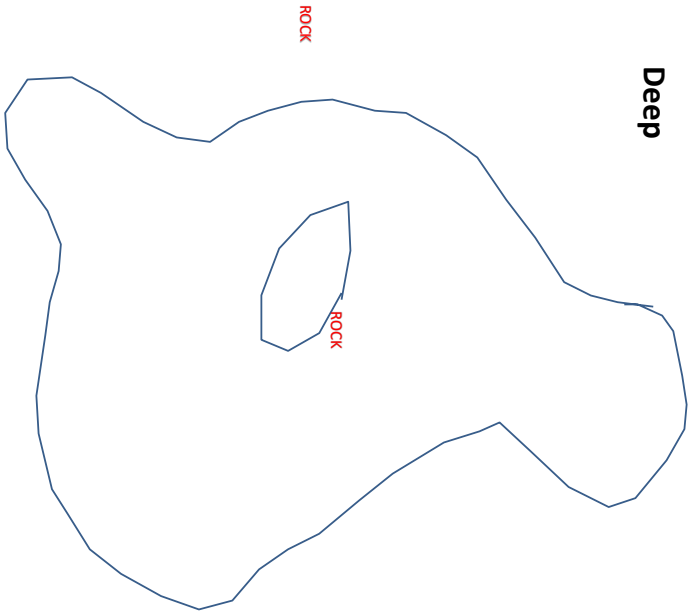


2021 Muskellunge Lake EWM Treatment Site/Herbicide Rate Data				ProcellaCOR EC Liquid florpyrauxifen-benzyl		
EWM Site	Surface Acres	Mean Depth	Volume	Rate	PDU Per Acre	Total PDU
A-21	1.1	6.0	6.6	4.0	24.0	26.4
B-21	11.6	4.6	53.4	3.0	13.8	160.2
C-21	7.1	4.2	29.8	3.0	12.6	89.4
Totals	19.8		89.8			276.0

Danger

Shallow

Deep





Muskellunge Lake Association

The Muskellunge Lake Association welcomes you to the lake. Your neighbors/our members would like to share some common courtesies to consider while visiting our neighborhood. Its fishery, wildlife and people will all appreciate it.

Boating and No Wake

- This is a public lake, and all Wisconsin boating, fishing and game laws apply here.
- Slow no wake is necessary when within 100' of shore, piers, other watercraft, and people in the water.
- By town ordinance, please observe slow/no wake hours between 6:00 PM and 9:00 AM. Please respect these quiet times by limiting your boating speeds during that time.

Boat landing

- Minimize Power Loading at the boat ramp. Too much power in the shallow water is pushing sediment out past the pier and digging out the bottom supporting the concrete ramp pieces. Use your winch please.
- Invasive species. Please follow all the Clean Boats Clean Waters guideline when entering or leaving the lake. We have had to deal with and invasion of Eurasian Water Milfoil. Controlling it is very expensive, preventing it is your obligation.

Courtesy while boating in shallow waters

- Muskellunge lake is a very fertile and shallow lake. Phosphorus is the primary nutrient in this lake. Much of this phosphorus is contained in the sediment that comes from the decaying plants and algae in the lake. When your prop wash stirs up this sediment, you are remixing the fertilizer back into the water column.
- Reduce your speeds in the shallower water to reduce the disturbance of the lake bottom. Watch how deep your stern is squatting and look behind you. If you are stirring up the muck, slow down.
- Reduce your speeds to minimize the cutting of plants. Native plants are an indicator of a healthy lake and will help control invasives like Eurasian Water Milfoil. No one appreciates the mess on their shoreline or the time it takes to clean up after others.
- Muskellunge lake is naturally quite cloudy, and our aquatic plants normally only grow out to only 7' to 10' of depth. Please keep your high-speed water sports out in the deeper water. Use your locator or a lake map as your guide. See the map on the reverse as a general guide.

For More Information

Check or website for more details of the Muskellunge Lake Assn and some history of the lake.
www.muskellungelake.org
Email – muskyboard@gmail.com

In Case of Emergency

Fire, Medical, Police, 911
Vilas Co. Sheriff, 715.479.4441
WI DNR Warden, Tim Price 715.892.0054
Vilas County Forestry, 715.479.5160