Why Don't We Just Use Chemicals to Kill Eurasian Water-Milfoil (EWM) in Lake Lucerne?

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Spring 2026 LLAA Newsletter

The question of whether to use herbicides to treat EWM, before it becomes widespread, has come up in conversations.

President Mark Orlovsky and I attended the Lakes & Rivers Convention in Stevens Point April 15-17. We had the opportunity to discuss our circumstances with several WDNR EWM experts, other lake organizations with EWM management experience, and people who are in the business of managing EWM. The short answer is "NO" -- here is why.

Every lake is chemically different. Differing nutrient levels mean that it is difficult to predict how well EWM will grow in each lake. Lake Metonga is different than Lucerne. At this point it is unknown whether EWM in Lake Lucerne will be a major problem or a plant that may coexist with native vegetation in what is a relatively oligotrophic lake. (Lucerne does not have abundant aquatic plants compared to a mesotrophic lake with more nutrients and plants). Plum Lake in Vilas County is an example of a EWM coexistence lake.

The unpredictability of EWM growth in Lucerne, argues for using management strategies that remove EWM without also damaging other aquatic plants that can help contain EWM overgrowth by competition for available nutrients and sunlight. A scientific study by WDNR fish biologists Greg Sass and Greg Matzke (our local fish biologist) has shown collateral ecosystem damage caused by 2,4-D, when used for longer term control of EWM, to native plants and the food chain of micro-organisms that a thriving fishery depends upon.

A WDNR aquatic plant survey done in 2019 did not find EWM in Lucerne. I have been looking for years and did not find it until July 2024 on the north end. Rick Hermus found it by Water's Edge the next week. EWM has probably been present for at least a few years prior to that, maybe longer.

Lake Lucerne is a large and deep lake which means we have a very large volume of water. Most of Lucerne is deeper than the 20+ feet beyond which aquatic plants do not grow in Lucerne, except for the shallow south end. Our EWM, aside from the Water's Edge boat landing and the northeast corner of Lucerne, is quite spread out in the 4 areas. Even if one does not consider all the environmental reasons to not use chemicals like 2,4-D, it would be extremely hard to achieve EWM-killing concentrations of herbicide through out the lake. The physics of putting a chemical into solution means that it will very rapidly dissipate to spread itself out in the volume available. This results in non-lethal concentrations that are more likely to select for resistance than kill a EWM plant unless you use curtains to contain herbicide in sufficient concentration. Use of granular 2,4-D puts the 2,4-D at the base of the plant. The herbicide is only active at the growing

tips of a plant that take up the chemical. As the herbicide is released, it is rapidly diluted in the water to less lethal concentrations, and that selects for resistance.

Treatment of smaller, shallow lakes with widespread EWM is a different story. If these lakes are treated with 2,4-D, a large amount of the chemical is used to raise the level to EWM-killing concentrations in the whole lake, also killing native aquatic vegetation. Risks include aggressive EWM rebound, hybridization, 2,4-D resistance, loss of native vegetation, and progression to use of other more expensive chemicals.

Chemical EWM treatments require WDNR permits. Agency permitting decisions have evolved as experience with herbicides has been gained. Applying for, and receiving, a permit for application of aquatic herbicide currently requires several conditions:

1) A completed Lake Management Plan (LMP) in which the LMP consultant and property owners have decided that herbicidal treatment is warranted.
2) A lake has large stands of EWM that are impairing navigation through the lake and/or access from shoreline to deeper water.
3) A lake has large dense stands of EWM of several acres. EWM-killing concentrations of herbicides in large lakes can only be achieved by using curtains or relying upon the density of the EWM to hold sufficient concentration of the chemical in solution. The result is "donut holes" of dead EWM, with the periphery of EWM stands being more prone for future chemical resistance over time. The remaining EWM would need to be manually pulled or mowed with a weed harvester.

What is our current EWM strategy?

We currently search for and remove EWM by hand pulling. It is an effective method for removing the plant, and preventing the natural spread of EWM when it auto-fragments in late summer/fall. It doesn't have negative environmental consequences. This is being done by LLAA volunteers coordinated by Jim Wienser and other property owners. LLAA is contracting with our LMP consultants White Water Associates to look for EWM, and Aquatic Plant Management to remove it using a DASH boat (Diver Assisted Suction Harvesting) in deeper water or a team of snorkelers in shallower waters. In 2025, the cost of these efforts was paid for by WDNR grants. In 2026, this effort is being paid for by LLAA funds. After our LMP is completed in late 2026, LLAA can apply for competitive WDNR EWM control grants beginning in 2027 if EWM control is a goal in our LMP, and/or we continue to raise funds to pay for these services.

What can you do?

Monitor your shoreline. Learn to recognize and hand pull EWM! It is essential to remove both the plant and roots. Avoid boat activity that will fragment/uproot EWM in the areas where it is growing on the NE corner of Lucerne, and in the vicinity of Water's Edge Lodge boat landing. If you have questions, contact Jim Zach, Jim Wienser, or Mark Orlovsky.

Consider financial contributions to LLAA to help cover EWM detection and removal. LLAA is a 501c3 organization, contributions may be tax deductible for you.

More information regarding EWM including identification and research:

https://dnr.wisconsin.gov/topic/Invasives/fact/EurasianWatermilfoil