

Pike Chain of Lakes

EWM Control Project Update – Fall 2016

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First documented in 2004 within the Twin Bear-Hart Lake channel, Eurasian water milfoil (EWM) has since spread to all six of the Pike Chain of Lakes. The Iron River Pike Chain of Lakes Association (IRPCLA) and partners have engaged in an aggressive battle against EWM during this period, through direct control with spatially targeted herbicide spot treatments and hand-removal. Although annual (seasonal) success may have been gained, the herbicide treatment strategy has not been effective at keeping the EWM population from increasing within the chain.

During the winter of 2015/2016, Onterra proposed a different form of herbicide treatment for the Pike Chain of Lakes – a whole-lake treatment. This would include herbicide being applied to the target EWM colonies, but with the goal of the herbicide reaching a low target concentration when it equally distributes throughout the entire mixing volume of the respective lake. In the past, IRPCLA utilized spot-treatments with target concentrations been between 3.0 and 4.0 ppm 2,4-D. The whole lake treatment concentration, as mentioned above, would be very low at 0.3 ppm 2,4-D. Data suggest that the herbicide will mix evenly within the entire lake, reaching an equilibrium concentration as early as two days after treatment with the herbicide reducing over time as it becomes degraded by microbial activity. Although variable, the herbicide breakdown typically takes 21-35 days to be below detection limits.

In general, whole-lake treatments have become more favorable by lake managers as they impact the entire EWM population all at once. This minimizes the need for repeatedly exposing the lake to annual herbicide applications. Predicting success (EWM control) and native plant impacts from whole-lake treatments is also better understood than for spot treatments. Some native plants are quite resilient to this herbicide use pattern, whereas others can be impacted and take a number of years to recover. Whole-lake treatments have financial costs, as well as can have potential secondary impacts to the lake. Therefore, whole-lake EWM treatments are typically postponed until the population exceeds approximately 10-15% in order to balance these factors.

Figure 1 shows a subset of whole-lake 2,4-D treatments that have targeted EWM for control. If target herbicide concentrations are met, the EWM population is often greatly impacted the year of the treatment and low EWM levels are maintained for 4-5 years following the control action. Many lake groups initiate a whole-lake herbicide strategy with the intention of implementing smaller-scale control measures (herbicide spot treatments, hand-removal) when EWM begins

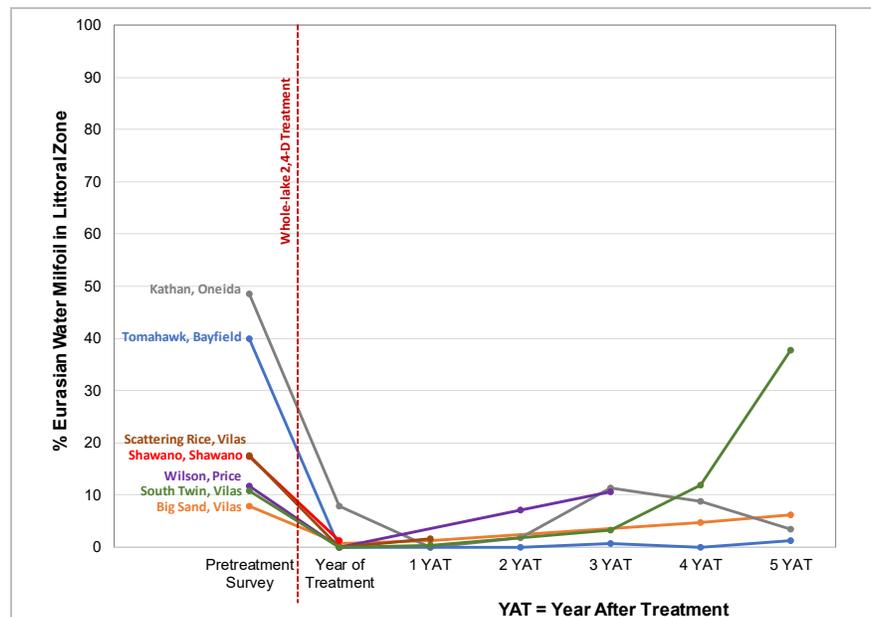
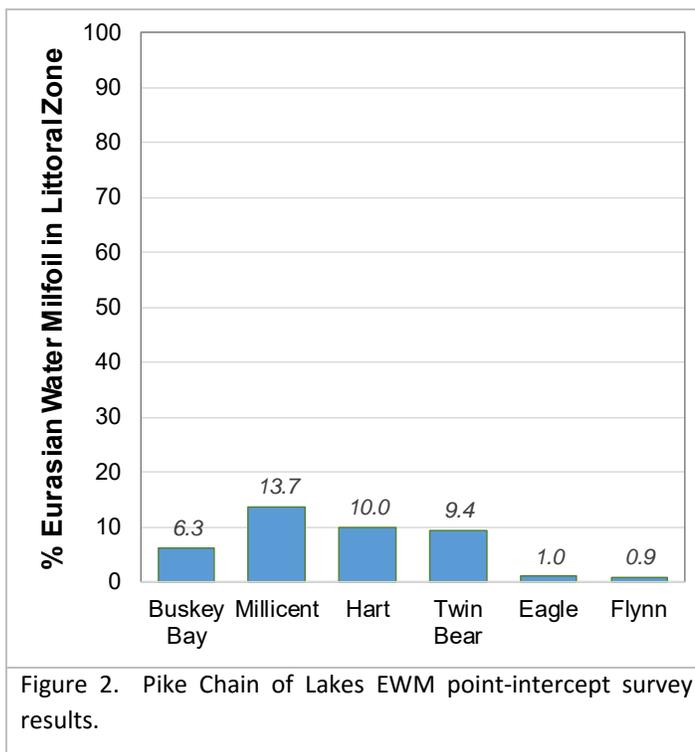


Figure 1. Whole-lake 2,4-D treatment results. Data from Onterra and WDNR point-intercept surveys.

rebounding. Occasionally, the EWM rebounds in a fashion that does not lend well to these methods and the lake groups then tolerates the EWM to until it again exceeds 10-15% littoral frequency of occurrence (or other predefined threshold) to trigger another whole-lake treatment.

During the spring of 2016, the IRPCLA secured Wisconsin DNR (WDNR) grant funding to address the growing EWM population within the chain and further investigate the potential of a whole-lake herbicide treatment strategy. The project started with point-intercept surveys being conducted on all the lakes this past summer. Figure 2 shows the percent of the littoral zone of each of the lakes that contains EWM based upon these surveys. As previously discussed, whole-lake treatments are often implemented when EWM populations exceed 10-15% of the littoral zone. These data suggest that the EWM population may be approaching levels on some of the lakes where a whole-lake herbicide treatment may be considered.



Additional planning steps are required to implement a whole-lake treatment. This includes an accurate survey of the lake's depth contours (bathymetry) and water exchange patterns (vertical mixing and horizontal flow patterns). An acoustic survey of the chain will occur this fall to develop a new bathymetric model of the system. On the Pike Chain of Lakes, water flows from one lake into another; compounding the difficulty of determining the appropriate amount of herbicide to apply to each lake. Continued investigation into this aspect will occur to understand if it is appropriate to target multiple lakes at a time or if the control project will need to span multiple years with a single lake being treated each year.

The overarching goal is to control EWM within the Pike Chain of Lakes in order to keep the exotic plant from impacting the ecology of this unique waterbody. While there are definite ecological risks in allowing EWM to continue to spread and increase in density; there are also ecological risks to consider when implementing an herbicide control strategy. Careful planning is critical in reducing the risks associated with herbicide use.

As mentioned above, the IRPCLA has received state funding for continued monitoring and control actions on the Pike Chain of Lakes. The grant provides a 50% cost-share with the remaining 50% coming from the association in the form of cash and volunteer in-kind time; therefore, everyone's contribution is very important in the success of the project and in the protection of the Pike Chain of Lakes.