

Invasive Watermilfoil (EWM vs Hybrid) Testing Project

Photo 1 shows a cross-section of a whorl of four EWM leaves. One of the primary ways to distinguish between different species of watermilfoils is to count the number of leaflets on each leaf. As shown on Figure 1, northern watermilfoil (green triangles) typically have leaflet counts under 23 whereas EWM typically has leaflet counts over 25. Hybrid watermilfoil (HWM) leaflet counts overlap with both these ranges, making field identification difficult. While leaflet counts can be a relatively definitive way to differentiate between EWM and northern watermilfoil, this method is less definitive in distinguishing HWM from EWM and northern watermilfoil. DNA testing is required to determine if a system has EWM vs HWM, often times having both.

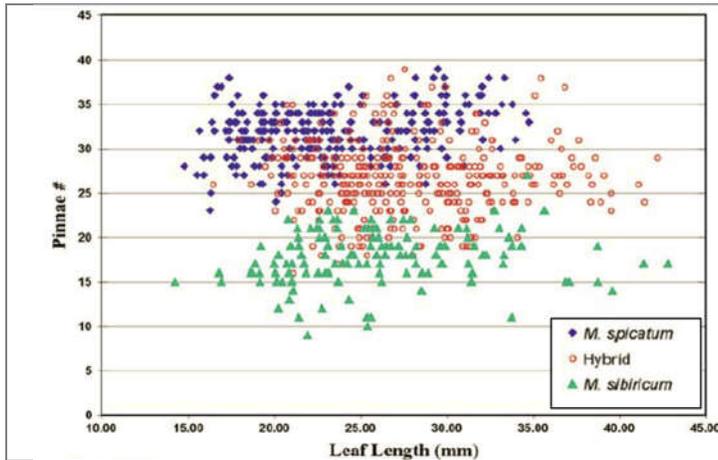


Figure 1. Pinnae (leaflet) counts from three watermilfoil species. Extracted and modified from Moody & Les, 2007. Leaf length spreads out the data but is not important here.

Photo 1: EWM leaflet.

In 2014, the WDNR sent in invasive watermilfoil samples from the Minocqua Kawaguesaga system to Grand Valley State University (Dr. Ryan Thum) for genetic testing using a Rapid Assay Method (ITS). This test indicates whether the sample is northern watermilfoil, EWM, or HWM. One sample from Minocqua was confirmed as HWM and one sample from Kawaguesaga was confirmed as EWM. It is likely that here is a mix of EWM and HWM throughout the system considering the high traffic in/out of the lakes.

In general, we know that some strains of HWM grow faster, are more invasive, and are less responsive to some herbicides than pure-strain EWM. We also know that some strains of EWM are more robust and tolerant of herbicides than other strains. On many lakes, previous herbicide management may have killed off the weaker watermilfoil strains, leaving behind the more robust strains to repopulate. As a result the population can become more invasive and less responsive to herbicides. It is possible that this has taken place on this system.

Invasive watermilfoil genetic testing has advanced in recent years, and now we can actually understand what different strains of EWM/HWM exist in the lake. Now at Montana State University, Dr. Thum and I have developed a research project that would be applicable to Minocqua and Kawaguesaga. The project will systematically collect EWM/HWM from the June 2020 pretreatment point-intercept survey of 2020 ProcellaCOR treated Sites E-20, F-20, & G-20. The WDNR has supported this initial investigation and will allow partial funding through the existing WDNR grant.

While further discussions would occur, we propose to also collect any samples from these sites during late-August that were not killed by the ProcellaCOR treatment. This would help us understand what the composition of the remaining population. If it is all one strain, perhaps that is a tolerant strain to ProcellaCOR. Further, we could choose a few additional sites that will be slated for treatment in 2021 and sample them in a similar manner. Over time, we would know more about the invasive watermilfoil population on this system than arguably any other lake in the state, being at the forefront of research on the subject.