

Effectiveness of milfoil weevil for controlling Eurasian watermilfoil

Background

This project aimed to test the effectiveness of stocking milfoil weevils for controlling Eurasian watermilfoil, and examined the relationship between past herbicide use and weevil populations.

Research Methods

- Researchers conducted field surveys on four northern Wisconsin lakes (Fig. 1) during June and August for three years (2013-2015). Within each lake, supplemental weevil populations were stocked at several sites in attempts to increase weevil density and improve EWM control.
- Field surveys measured plant diversity, biomass, and weevil abundance. Results were analyzed to look for relationships between weevil density and both native and invasive plant biomass.
- A concurrent study examined weevil densities across 36 lakes to compare weevil densities in lakes which had recent chemical herbicide treatments for aquatic plant control (within the past 10 years) to lakes which had not.



Eurasian watermilfoil (EWM)

Eurasian watermilfoil is a non-native aquatic plant found in waterbodies throughout Wisconsin. In some lakes, it can form dense mats on the surface, affecting recreational lake users as well as native plants and animals. EWM is listed as a restricted species under ch. NR 40.

Photo Credit: Paul Skawinski, UW-Extension Lakes



Milfoil weevil (*Euhrychiopsis lecontei*)

Milfoil weevils are small native aquatic beetles that feed on EWM and native milfoil species. They are commonly found in many Wisconsin lakes.

Photo Credit: Robert L. Johnson, Cornell University

Summary of Results

- The stocking of additional weevils to augment existing populations did not significantly affect EWM or native plant biomass. However, researchers encountered some issues with stocking due to changes in availability from suppliers during the study, and only stocked weevils the first year of the study.
- Higher density of weevils was associated with more damage to EWM and lower EWM biomass. There was high variability observed in EWM biomass within study plots and between lakes.
- Average weevil density in lakes that had recent herbicide treatment was only one-fifth of that in comparable lakes without a recent history of herbicide control.

Future applications:

While attempts to augment weevil populations did not have a significant effect on EWM control in this study, the results can help us better understand the relationship between weevil density and EWM biomass and can inform the design of future studies. Both this research and other previously published research studies have identified many conditions that could potentially negatively impact weevil populations and their success as biocontrol mechanisms, including populations of fish that feed on them and the availability of adequate shoreline habitat for overwintering.

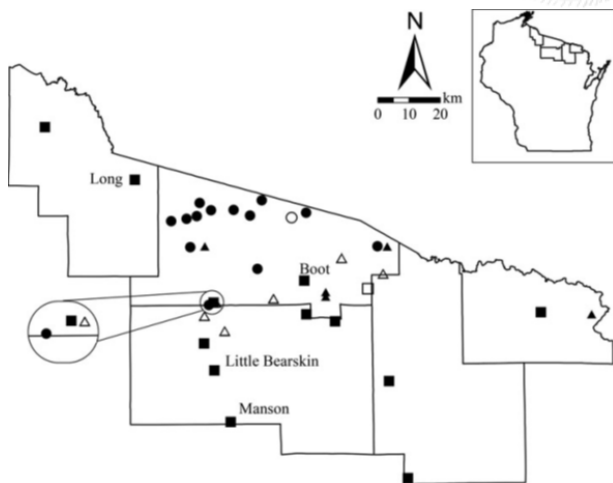


Figure 1. Map of lakes used in the weevil studies. Each lake has an established population of EWM.

Related Publications and Resources

- Havel J.E., S.E. Knight, and K.A. Maxson. 2017. A field test of the effectiveness of milfoil weevil for controlling Eurasian watermilfoil in Wisconsin lakes. *Hydrobiologia* 800(1):81-97.
- Havel J.E., S.E. Knight, and J.R. Miazga. 2017. Abundance of milfoil weevil in Wisconsin lakes: Potential effects from herbicide control of Eurasian watermilfoil. *Lake and Reservoir Management* 33(3):270-279.
- Presentation by Susan Knight and John Havel, 2016 Wisconsin Lakes Partnership Convention, Stevens Point,

This project was supported through donations to aquatic invasive species research. To learn more or donate, visit www.dnr.wi.gov/lakes/sayyestolakes

