Non-Chemical Control

The Wisconsin Department of Natural Resources conducts and supports a variety of projects that improve our understanding of aquatic invasive species (AIS) and the ways we manage them.

Background

The department and its grant-funded partners have conducted research on ways to manage aquatic invasive species without the use of chemical pesticides. While some of the innovative techniques described here may not yet be feasible for widespread use in Wisconsin, these types of field and laboratory studies can help us refine future research questions and better understand all of our potential options for AIS control. Results can also provide insight into ways to use new techniques in combination with more traditional treatments, to manage invasive species as effectively and efficiently as possible.

Eurasian watermilfoil (EWM)

Research scientists from UW-Madison and Missouri State University conducted experiments to understand the effectiveness of using native aquatic beetles (milfoil weevils) to control EWM under realistic field conditions. The team looked at the relationship between weevil density and EWM biomass. Results indicated that higher weevil density was associated with lower EWM biomass, however stocking of additional weevils at several sites did not appear to increase EWM control efficacy when compared to unstocked sites. Researchers noted many environmental factors that can affect the density of weevil populations, which may inform future attempts to use this type of biocontrol.

Top: Eurasian watermilfoil, credit: Peter M. Dziuk, MinnesotaWildflowers
Bottom: Milfoil weevil, credit: Robert L. Johnson, Cornell University

Rainbow smelt

A project conducted by UW-Madison researchers studied a novel approach to controlling non-native rainbow smelt (*Osmerus mordax*) in Crystal Lake, Vilas County. Researchers tested a technology that vertically mixes lake water, eliminating the cold-water habitat needed by these invasive fish. After mixing, the smelt showed significant changes in behavior, and scientists observed more than a two-fold increase in smelt mortality. However, some adult smelt survived, and this approach did not result in complete eradication of the species from the lake. While this novel technique is unlikely to completely eradicate populations of invasive fish on its own, the results increase our understanding of how fish respond to water temperature changes, and provides guidance on developing and testing other innovative lakewide management tools.

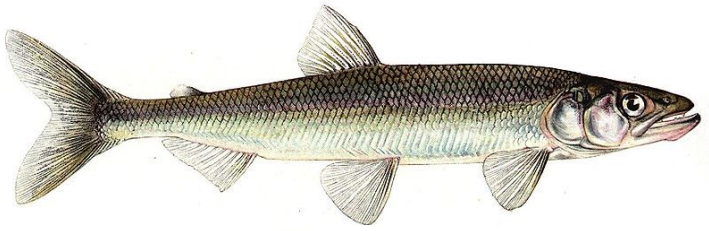

Photo credit: Wisconsin DNR

Invasive Crayfish

Research scientists from the University of Florida are looking to identify and characterize pathogens (viruses bacteria, fungi, and worms) in native and invasive crayfish that are present or pose an invasion threat to Wisconsin (i.e., rusty crayfish and red swamp crayfish). The study aims to analyze trends across lakes where rusty crayfish have invaded and have reached various levels of abundance, and test the hypothesis that pathogens are more common in lakes where rusty crayfish densities remain low. The study also aims to evaluate whether pathogens identified can be transmitted to each crayfish species by conducting transmission, survival, and behavioral laboratory experiments. The study will also identify pathogens in red swamp crayfish collected from surrounding states to assess risk of this species invasion into Wisconsin.

These projects were supported through donations to aquatic invasive species research. To learn more or donate, visit www.dnr.wi.gov/lakes/sayyestolakes