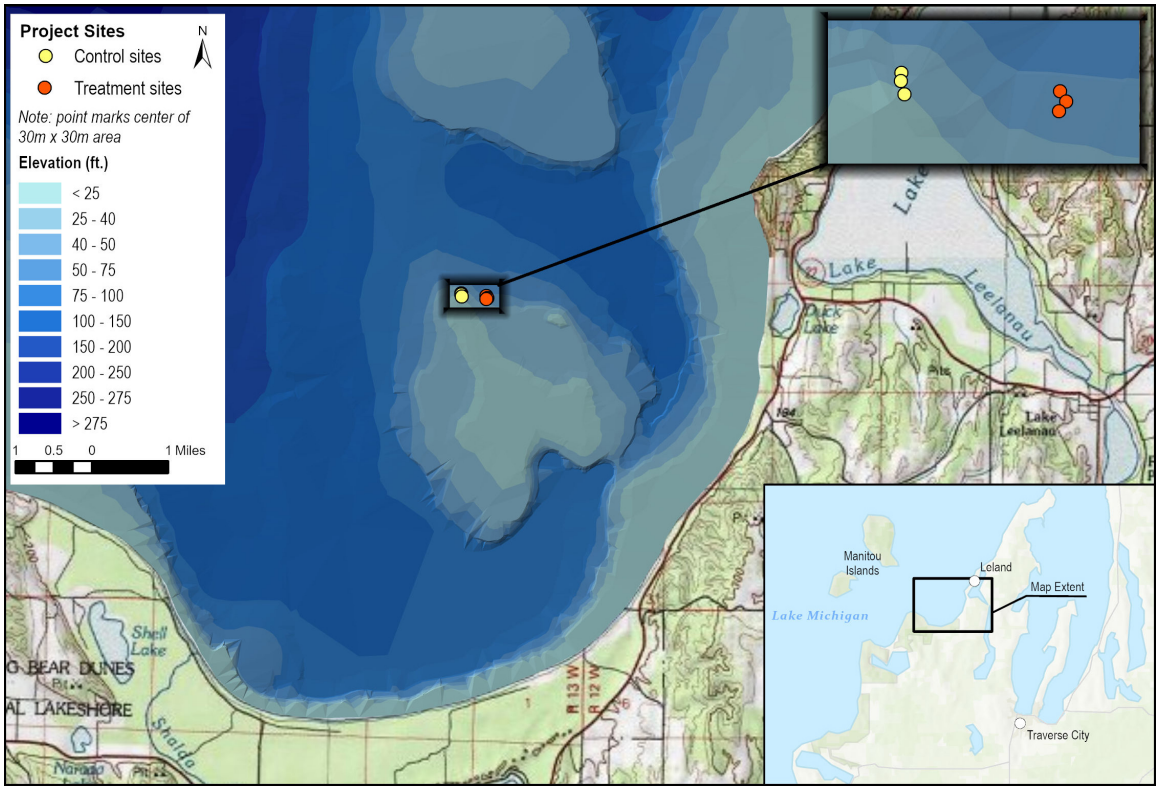
Invasive Mussel Collaborative

Dreissenid Mussel Control Demonstration Project

Summary

- This project seeks to understand the effectiveness of a new treatment option for invasive zebra and quagga mussels and evaluate its effects on a Great Lakes coastal reef
- The trial treatment will use Zequanox®, a compound designed to specifically target invasive mussels, under a containment barrier covering a small area of the reef
- The project will take place in Good Harbor Bay near Sleeping Bear Dunes National Lakeshore, an important spawning and nursery habitat for native fish species that is jeopardized by invasive species, algal growth, and the botulism toxin
- The results of this project will help make future restoration efforts and invasive mussel treatments more effective in Good Harbor Bay, the Great Lakes Basin, and beyond
- This project is supported by the Invasive Mussel Collaborative (IMC) – the go-to forum for identifying priority actions to help solve persistent invasive mussel problems in the Great Lakes



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Background

Zebra and quagga mussels are two aquatic invasive species (AIS) causing ecological and economic damage to the Great Lake. These invasive mussels have impacted Great Lakes fisheries, clogged up water intakes for industrial and municipal water users, degraded beaches, crowded out native species and disrupted the aquatic food web. Lake Michigan is heavily infested with quagga mussels, and research shows that quagga mussels contribute to algae growth in Lake Michigan and Good Harbor Bay.

Effects of Zequanox® application
A colony of zebra mussels attached to a native mussel. The native mussel survives the application of Zequanox®; the zebra mussels do not.

The negative impacts of invasive mussels extend to the Sleeping Bear Dunes National Lakeshore, where dead algae and mussel shells are creating a nuisance and a hazard for park visitors when they wash up on beaches. In addition, the area has experiences problems with the botulism toxin – likely driven by dead algae and introduced into the food web by invasive mussels – leading to the death of fish and water birds. To understand and address these concerns, the National Park Service has been leading an effort to remove quagga mussels in Good Harbor Bay by hand and evaluate how their removal impacts the algae growth, fish and other wildlife, and toxin-producing microbes.

This new project complements the National Park Service's ongoing work by using a different control method, the highly selective toxicant Zequanox®. Zequanox® is a U.S. EPA registered molluscicide that is specific to zebra and quagga mussels, is approved for use in open water lakes, and has been safely used in multiple lakes across the Great Lakes region. This project will utilize an innovative method of applying Zequanox® by injecting it underneath a series of anchored tarps placed directly on the reef. This would be the first time this method of treatment would be used on a coastal reef. The goal of the project is to better understand the effectiveness of this control method and the potential for ecological benefits.

Invasive Mussel Collaborative

The IMC was established in 2015 to share information, identify regional research and management priorities, and advance scientifically sound technologies for invasive mussel control. Founding members include the Great Lakes Commission, U.S. Geological Survey, the National Oceanic and Atmospheric Administration and the Great Lakes Fishery Commission. The IMC *Strategy to Advance Management of Invasive Zebra and Quagga Mussels*, released in 2018, offers a roadmap to improve invasive mussel control. This project is aligned with the IMC's 2018 strategy.

Partners

Invasive Mussel Collaborative, Great Lakes Commission, U.S. Geological Survey, National Park Service, National Oceanic and Atmospheric Administration, Great Lakes Fishery Commission, Michigan Department of Natural Resources, Michigan Department of Environment, Great Lakes, and Energy, University of Wisconsin-Milwaukee, University of Michigan, The Nature Conservancy, LimnoTech, Marrone Bio Innovations, and Underwater Construction Corporation

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