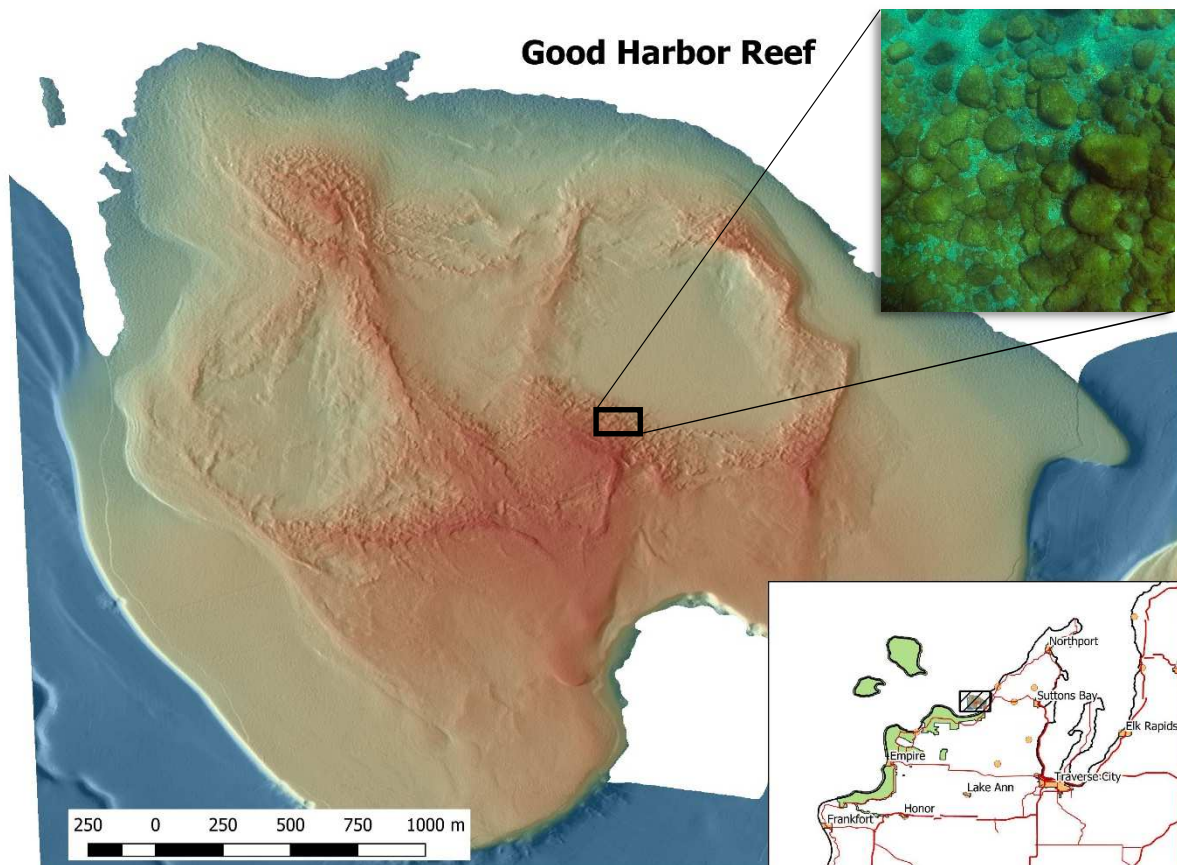


Good Harbor Reef Fisheries Monitoring and Mussel Removal



Background

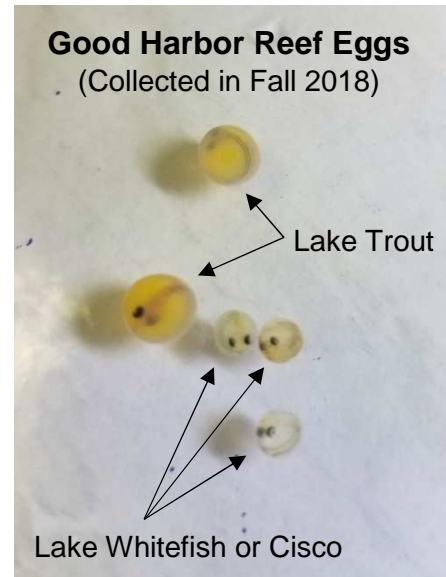
- Good Harbor Reef is a large rocky shoal located in Good Harbor Bay.
- The bay and its rocky shoals currently support populations of Lake Trout, Lake Whitefish, Cisco (Lake Herring) and many other species which provide important recreational and/or commercial fishing opportunities in the area near Sleeping Bear Dunes.
- These populations were historically more abundant but have suffered major declines due to over fishing, negative impacts of invasive species such as Sea Lamprey, and habitat degradation.
- In some instances, progress toward restoration of these populations is slowed by poor natural reproduction or survival of fish eggs and larvae.
- The rocky shoals around Good Harbor Reef may provide important spawning and nursery habitats necessary for restoration.



Ongoing Research

- Fish population surveys have been conducted in Good Harbor Bay for several decades and provide a great deal of information about fish stocks present in this region. These surveys have included gillnet assessments, as well as creel and charter fishing census data.

- In 2018, Michigan Department of Natural Resources (DNR) partnered with the National Park Service and the University of Wisconsin-Milwaukee to better characterize habitat on Good Harbor Reef.
- Surveys to collect eggs deposited by spawning fish were used to identify specific spawning locations and critical habitat areas.
- Visual and genetic identification of eggs will be used to determine which species are spawning over the reef, as well as the relative abundance of eggs each species has deposited over specific habitat types.
- Efforts to collect and quantify fish fry hatching from the reef began in the spring of 2019.



Mussel Removal Project

- Quagga Mussels (closely related to the more well-known Zebra Mussels) have invaded most of Lake Michigan and have achieved very high abundance on rocky shoal or reef habitats, altering the physical characteristics of the habitat as well as the associated biological communities.
- It is not well understood how changes in physical habitat and biological communities caused by Quagga Mussels have affected the success of fish spawning and egg/fry survival on these shoal habitats.
- Quagga Mussel removals will be conducted on Good Harbor Reef by the Invasive Mussel Collaborative (includes DNR and partners) in 2019 to determine feasibility of large-scale Quagga Mussel removals and identify potential changes in the physical habitat as well as the biological community associated with removal areas.
- Large-scale removals offer an opportunity to evaluate differences in fish egg deposition and egg/fry survival on key habitat areas with and without Quagga Mussels.

