



# The 2012 Little Traverse Bay Mercury Project



## ***Introduction***

Toxic contaminants are a threat to human and ecological health in the Great Lakes region, are of concern for the Little Traverse Bay Bands of Odawa Indians and have been identified as priority pollutants by the Little Traverse Bay Watershed Protection Plan. Among these toxic contaminants, mercury is a neurotoxin that can accumulate in humans through consumption of contaminated fish and may cause cognitive disabilities in children and contribute to memory loss in adults.

During 2012, LTBB acquired a grant from the Petoskey-Harbor Springs Area Community Foundation's *Little Traverse Bay Watershed Protection Fund* to examine mercury in fish from Little Traverse Bay. The study had two objectives:

1. Determine the concentration of mercury in target fish species (Lake Trout, Lake Whitefish, and Yellow Perch, Walleye, and Chinook Salmon) from Little Traverse Bay and near Sturgeon Bay.
2. Measure mercury concentrations in a bio-indicator species (Round Goby) to identify sites where mercury contamination is high and prioritize restoration and remediation activities.

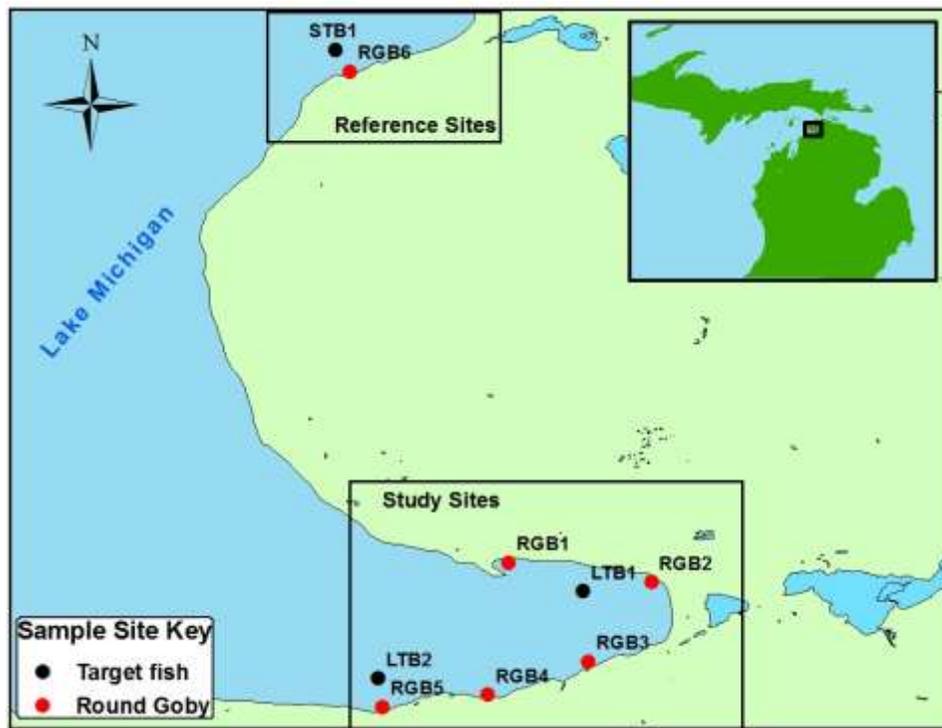


Figure 1 Study Sites selected for the 2012 Little Traverse Bay mercury study. Red dots represent Round Goby collection sites. Black dots represent target species collection sites.

## Target Fish Species



Throughout the summer of 2012, we collected a total of 30 Lake Trout, 26 Lake Whitefish, and 30 Yellow Perch from 3 study sites in northern Lake Michigan. In addition, we collected 10 Walleye from the Bay Shore site and 5 Chinook Salmon from the Bear River as part of a separate study. Chinook salmon had the highest mercury concentrations followed by Walleye and Yellow Perch. Lake Trout and Lake Whitefish mercury concentrations were lowest.

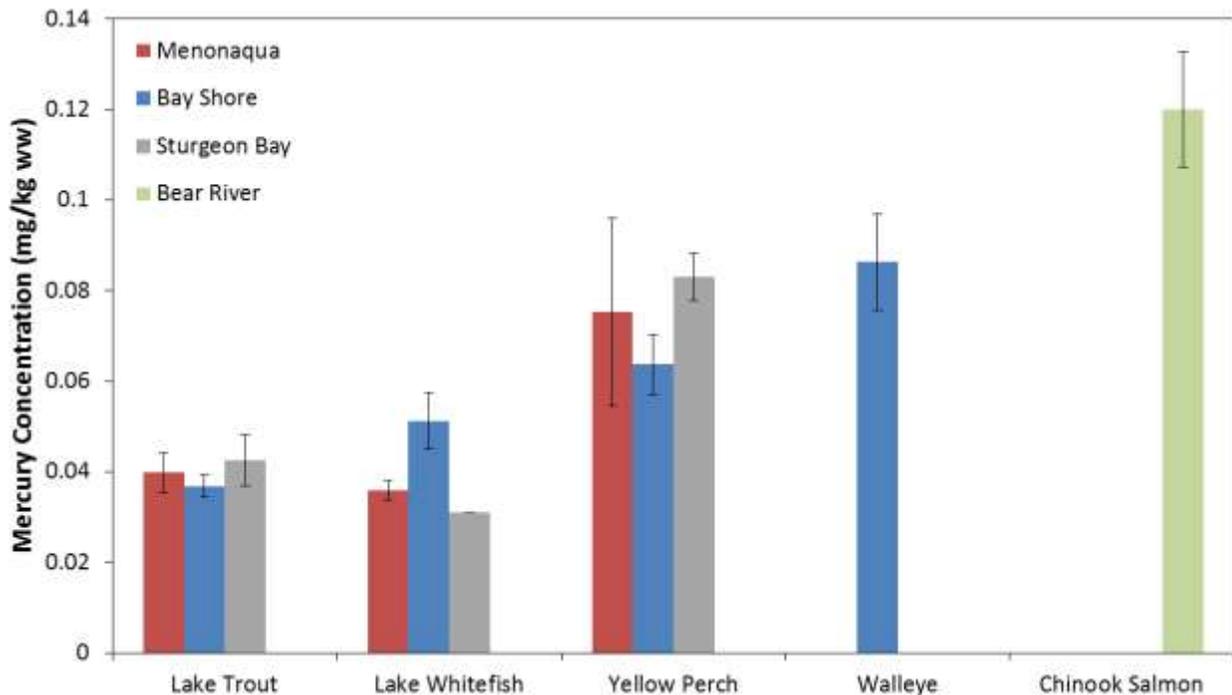


Figure 2 Average mercury concentrations of Lake Trout, Lake Whitefish, Yellow Perch, Walleye, and Chinook Salmon collected from two sites in Little Traverse Bay (Menonaqua and Bayshore), one site in Sturgeon Bay, and from the Bear River during summer 2012.

### *Changes in Mercury Through Time – Lake Trout*

We compared mercury concentrations of Lake Trout collected during this study to concentrations of trout collected from Little Traverse Bay in the past. Mercury concentrations in Lake Trout filets collected during this study were low relative to specimens collected in the past suggesting that mercury concentrations in northern Lake Michigan may be declining through time.

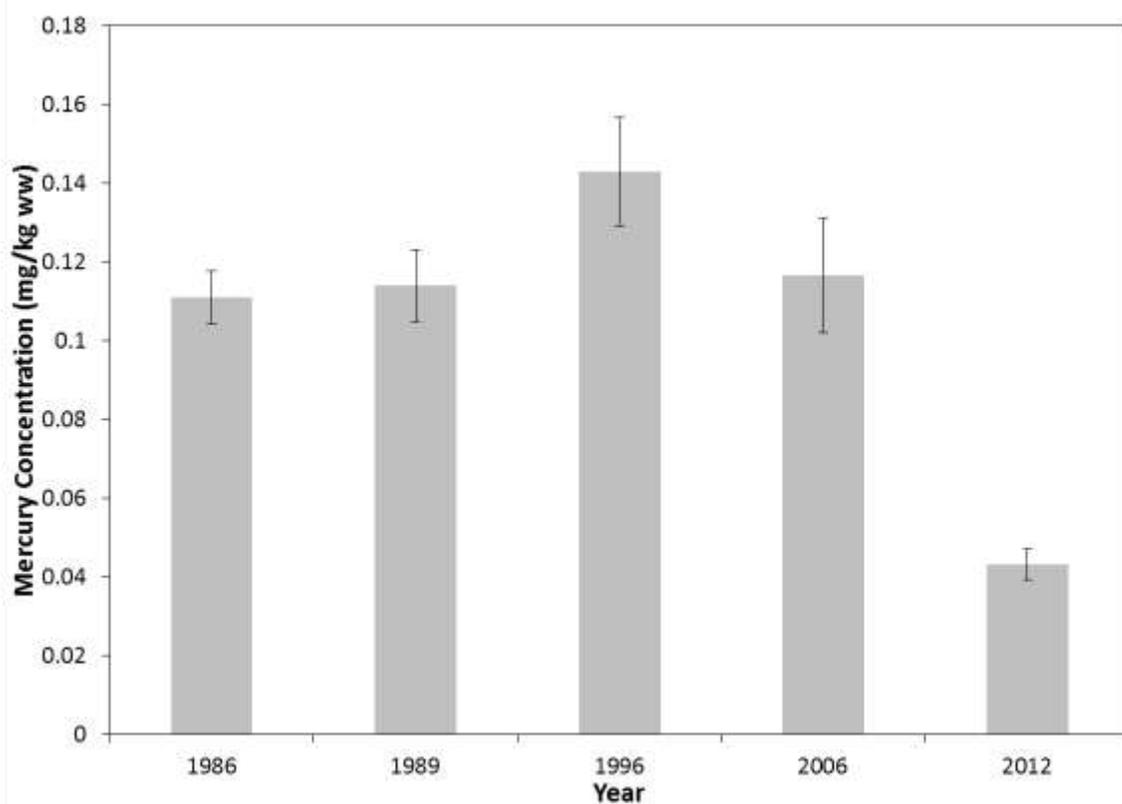


Figure 3. Mercury concentrations in Lake Trout from Little Traverse Bay through time.

### ***Bio-indicator Species - Round Goby***

We selected round goby as a bio-indicator species because they are known to have relatively small territories and are likely to have mercury concentrations that are reflective of the site at which they are caught. We collected Goby from 5 sites in Little Traverse Bay and one site near Sturgeon Bay. Mercury was most concentrated in goby collected near the Bay Harbor golf course and was moderate to low at other sites. These results suggest that contaminant remediation may be needed near the Bay Harbor site.

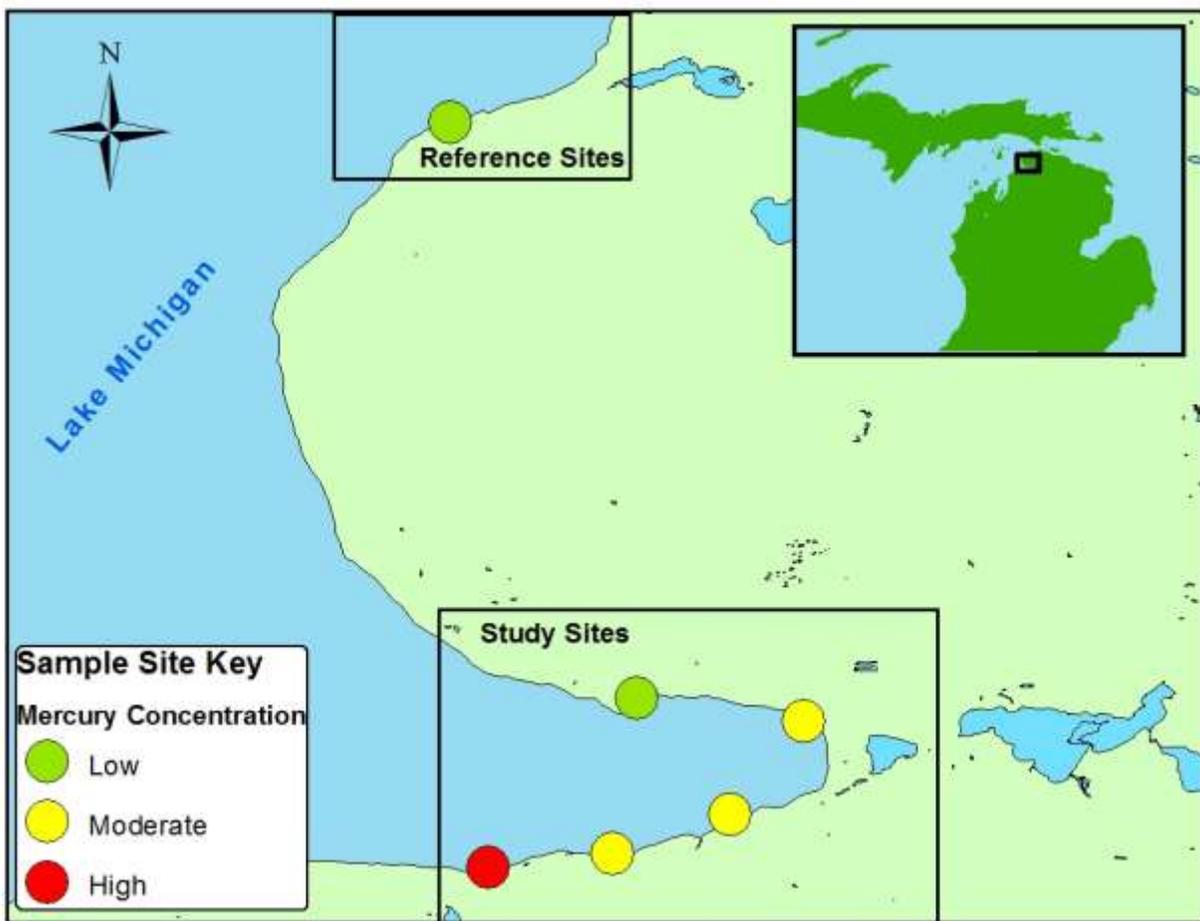


Figure 4. Average mercury concentrations of Round Goby collected from sites in Little Traverse and Sturgeon Bays during summer, 2012.

### ***Acknowledgements***

This work would not have been possible without the hard work of the Great Lakes Fisheries Program staff, financial support from the Petoskey-Harbor Springs Area Community Foundation via the Little Traverse Bay Watershed Protection Fund, and logistical support by the Little Traverse Bay Bands of Odawa Indians Natural Resources Department.