

## Evaluating the need for spatially-explicit assessment modeling of North-Moonlight Bay and Green Bay (Lake Michigan) lake whitefish stocks

The goal of this project is to explore the need to develop spatially-explicit assessment modeling based on likely changes in relative productivities and occupancy of North-Moonlight Bays and Green Bay lake whitefish stocks in recent years.

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### TIMELINE

Launch: July 2019

Completion: June 2022

### FUNDING

Federal Aid in Sportfish  
Restoration

### DNR PARTNER BUREAU

Fisheries Management

### EXTERNAL STAKEHOLDERS

US-Fish and Wildlife Service

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Stock-based management is intended to protect spawning populations by assessing and managing fisheries at spatial scales appropriate for ensuring the sustainability of individual populations. In Lake Michigan, the distribution and movement patterns of lake whitefish have changed over the last 20 years as their preferred prey has declined.

Currently, lake whitefish assessment and management in Wisconsin waters of Green Bay and Lake Michigan is based on the assumption that all the fish originate from the North-Moonlight Bays spawning stock.

Recent tagging and genetic data strongly suggest that fish harvested in the Green Bay and Lake Michigan commercial fisheries originate from two separate stocks (a North-Moonlight Bays stock and a Green Bay stock), with limited intermixing between the two spawning populations – hence the need to explore the development of spatially-explicit assessment modeling.

Spatially-explicit modeling of the lake whitefish fisheries can be used to annually estimate abundances at age of fish, forming the basis for evaluating existing management regulations and allocations of quotas among the different zones.



### Key Points

- » This study benefits commercial and recreational fishers by developing new spatially-explicit assessment model(s) for North-Moonlight Bay and Green Bay lake whitefish stocks.
- » Catch-at-age model development will include data from trap net and gill net fishery, as well as recreational ice fisheries and available survey data.
- » It is important to understand the extent of changes in distributional patterns of lake whitefish in Lake Michigan and adapt assessment and management approaches accordingly, as this can have major consequences for sustainability of the lower productivity North-Moonlight Bay stock.

### SPOKESPERSON

Iyob Tsehaye, PhD

Great Lakes Fisheries Research Scientist

Iyob.Tsehaye@wisconsin.gov

(608) 221-6359

