U.S. Fish & Wildlife Service

Lower Great Lakes Fish and Wildlife Conservation Office

Aquatic Invasive Species Program - Early Detection and Monitoring

High Priority Location Survey Design: **Grand Island, NY**

Overview

The Lower Great Lakes Fish and Wildlife Conservation Offices Aquatic Invasive Species Program implements a Early Detection and Monitoring (EDM) Program that surveys the lower Great Lakes (Lake Erie and Ontario) for novel aquatic invasive species (AIS). This program is apart of a larger U.S. Fish and Wildlife Service (USFWS) Great Lakes basin-wide strategy with a *Strategic Framework for the Early Detection of Non-native Fishes and Select Benthic Macroinvertebrates (Bivalves, Gastropods, and Amphipods) in the Great Lakes* identifying early detection as a priority action. Therefore, the programs objective is finding newly introduced AIS early in their invasion where eradication or management efforts are feasible.

Survey Design Methodolgoy

The framework defines how the USFWS will carry out early detection efforts in high priority locations (HPL). HPLs are generally harbors, rivers, embayements, and connecting channels along the Great Lakes that were selected based on their increased likelihood for potential AIS invasion. Survey efforts focus on these HPLs as the result of a risk-based prioritization framework for AIS in the Great Lakes. Gear allocation may differ depending on the HPLs phase. Phase 1 HPLs are new locations that have no historic survey data associated with them and therefore are undergoing a 3-year even gear distribution (ex. 33% electrofish, 33% fyke net, and 33% gill net) that will be analysed after that cycle and adjustments may be made for subsequent years. Phase 2 HPLs are locations that have been surveyed for longer than 3-years and there is adequate data to make gear allocation adjustments from an even distribution. However, a phase 2 gear allocation will maintain the ratio for 3-years in which further adjustments may be made after analysis.

Survey location selection is based on a stratified random design with a subset of fixed survey sites. If a HPL has not been surveyed prior, all survey locations are generated randomly with stratification determined by the gears appropriate habitat (shallow, deep, and open water). If a HPL has been surveyed previously and adequate species richness data is available, then 15-20% of the allocated effort by gear (electrofish, fyke net, gill net, sweep net, and metabarcoding) is conducted at fixed locations. Fixed locations were chosen at sites within an HPL with the highest species diversity as determined by a heat map of species richness which identified those spatial locations. Total amount of effort by gear at an HPL can be found within the 2025 EDM programs implementation plan.

Survey Location Maps

Below are map(s) showing the locations were surveys may occur by their respective gear type. These georeferenced sites will be used by field crews when conducting the surveys.
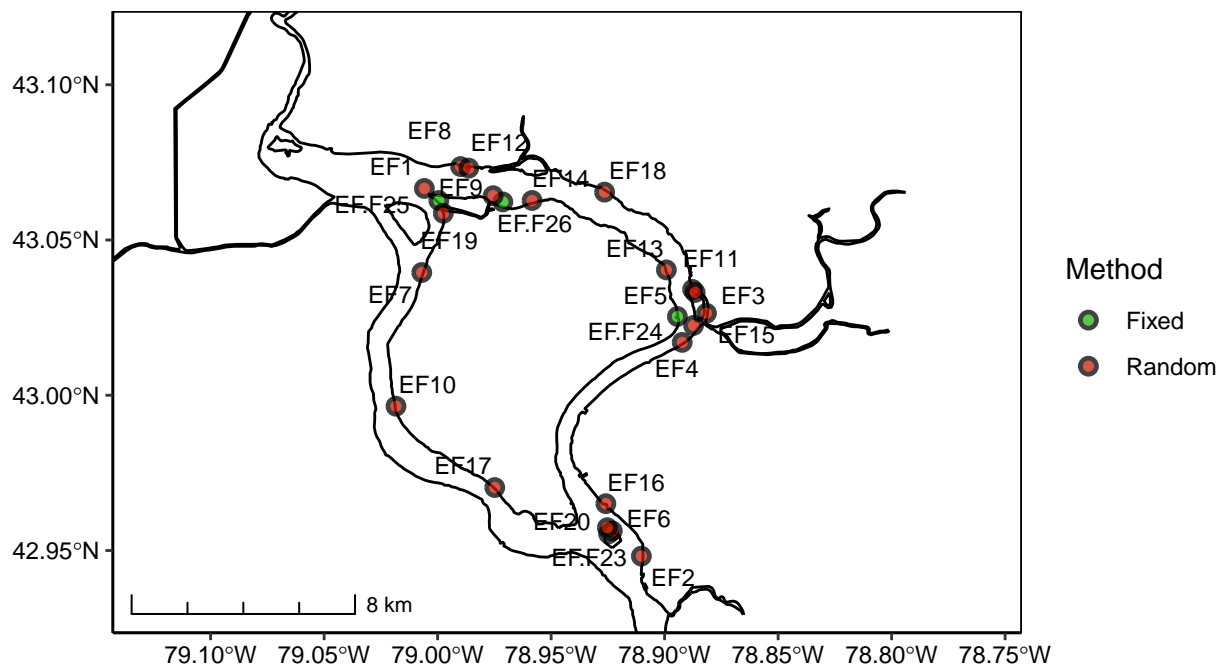
Figure 1: Map showing anticipated electrofishing survey locations during the 2025 field season. Points represent both randomly selected locations (red) and fixed locations (green). The labels indicate the location identifier.
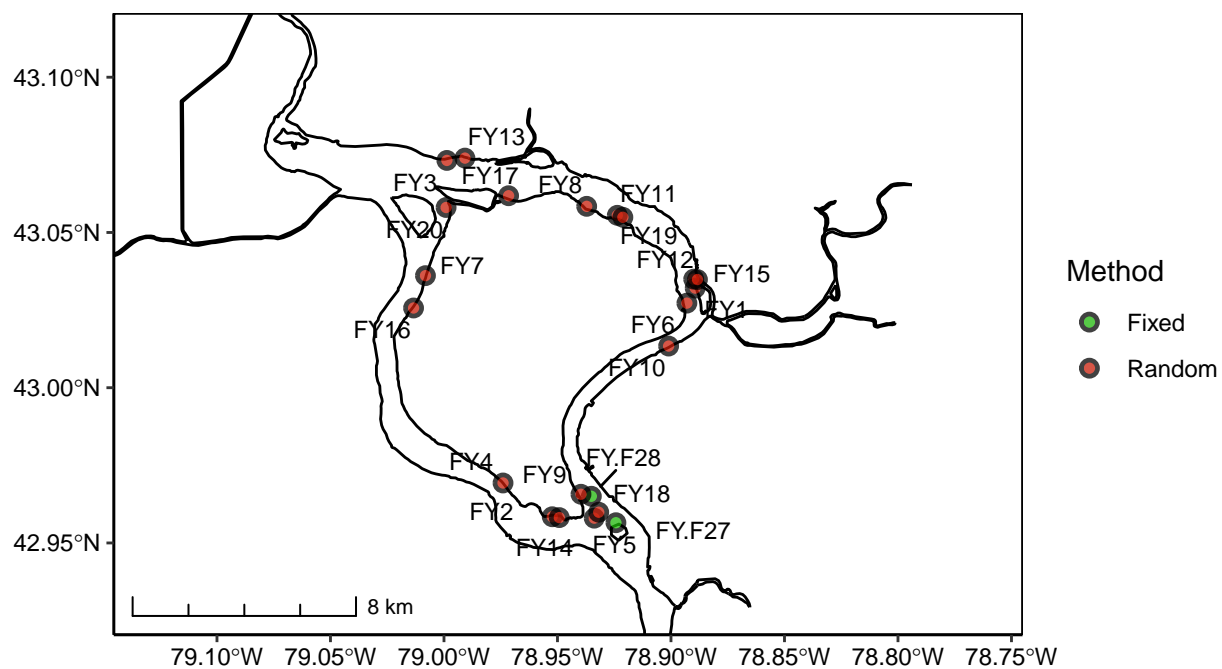
Figure 2: Map showing anticipated Fyke Net survey locations during the 2025 field season. Points represent both randomly selected locations (red) and fixed locations (green). The labels indicate the location identifier.
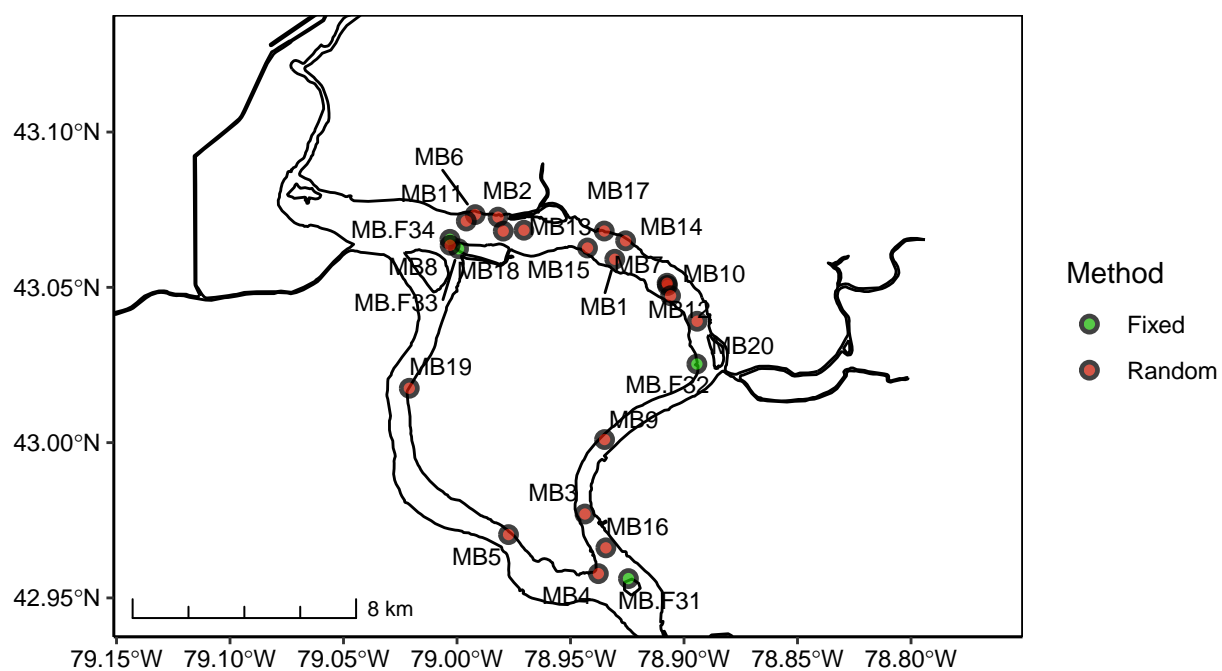
Figure 3: Map showing anticipated Metabarcoding survey locations during the 2025 field season. Points represent both randomly selected locations (red) and fixed locations (green). The labels indicate the location identifier.