Jun 20th, 3:00 PM - 3:15 PM

Landscape Approaches: Balancing Connectivity with Sea Lamprey Control in the Great Lakes

Jessica Barber
U.S. Fish and Wildlife Service

Balancing connectivity with sea lamprey control in the Great Lakes

Jessica Barber

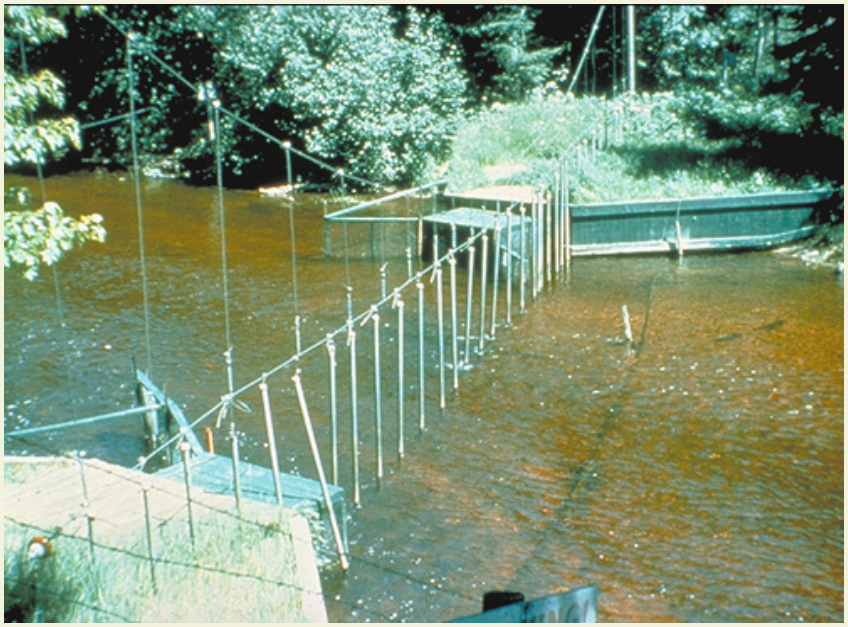
U.S. Fish and Wildlife Service

Sea Lamprey Control Program

- Sea lampreys are a parasitic fish native to the Atlantic Ocean; Welland Canal
- Spread throughout the Great Lakes by the late 1930s
- Decimated native lake trout populations by the early 1960s (2% of average annual catch)
- Sea Lamprey Control Program created under the Great Lakes Fishery Commission

Sea Lamprey Control Program

- Program relied exclusively on electric barriers in its infancy; high mortality rate, safety concerns
- Research other forms of control
- TFM developed in late 1950s; effective control
- Renewed barrier interest in 1980s to reduce reliance on TFM



Sea Lamprey Barrier Program

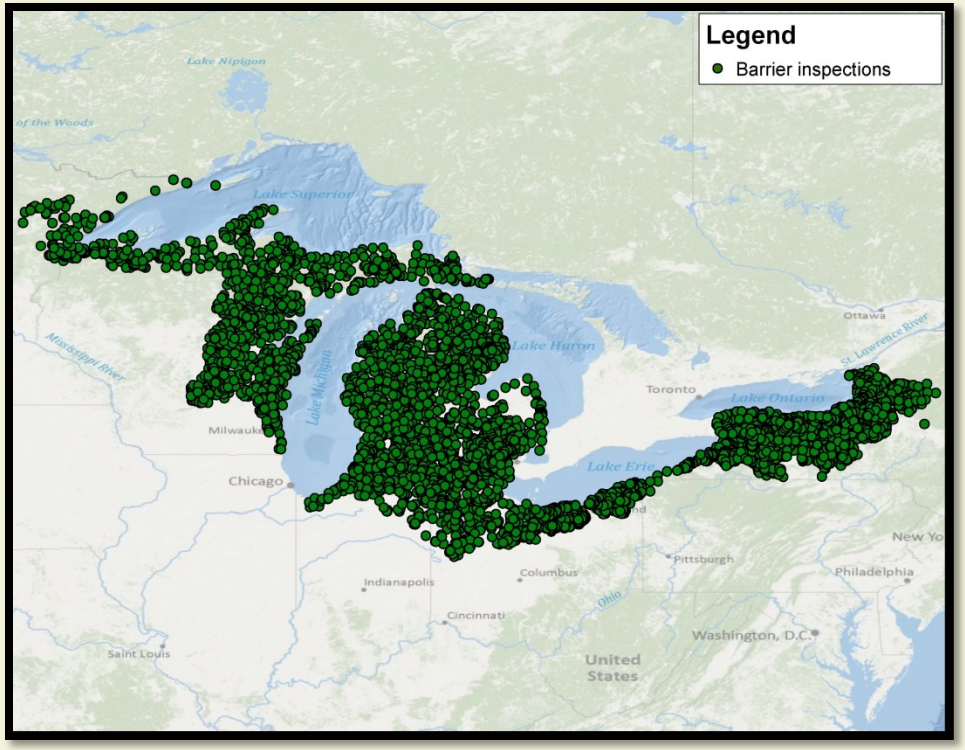
- Barriers are the backbone of the Program
  - Reduce or eliminate stream miles requiring treatment
  - Eliminate need to treat in difficult areas
  - Eliminate need to treat where endangered or threatened species are present
  - Reduce recruitment through trapping

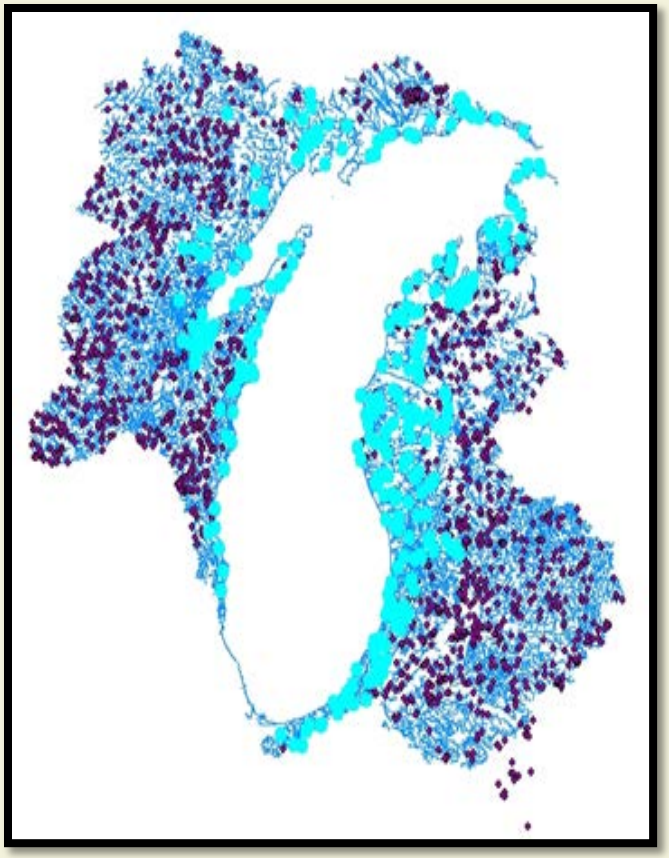
Sea Lamprey Barrier Program

- 73 Program structures
- Thousands of existing structures that function as sea lamprey barriers
- Prevent or reduce passage of other fishes
- Connectivity impediment
- Tradeoffs – value or importance
- Compromise

Sea Lamprey Barrier Program

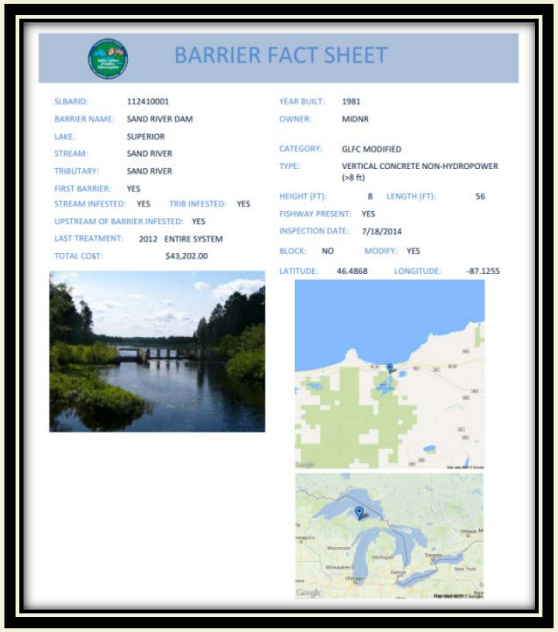
- GLFC invested effort to inventory and catalog existing structures throughout the Great Lakes





Sea Lamprey Barrier Program

- Creation of a barrier database
- Approximately 9,000 barriers
- 1,000 of which provide protection against upstream sea lamprey migration
- Focus monitoring/repair efforts on the important barriers

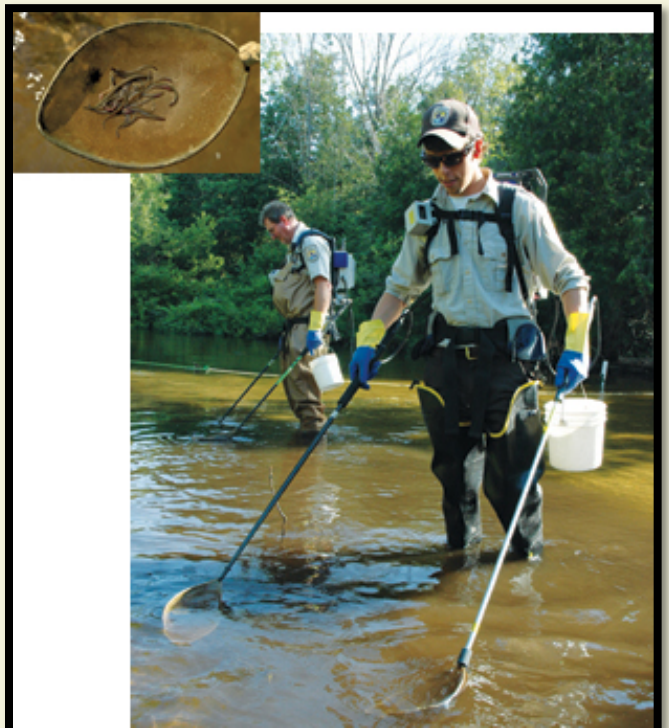


Sea Lamprey Barrier Program

- Removal scenarios
- Production potential field studies
  - Limited information upstream of barriers
  - Habitat assessment
  - Larval density estimate

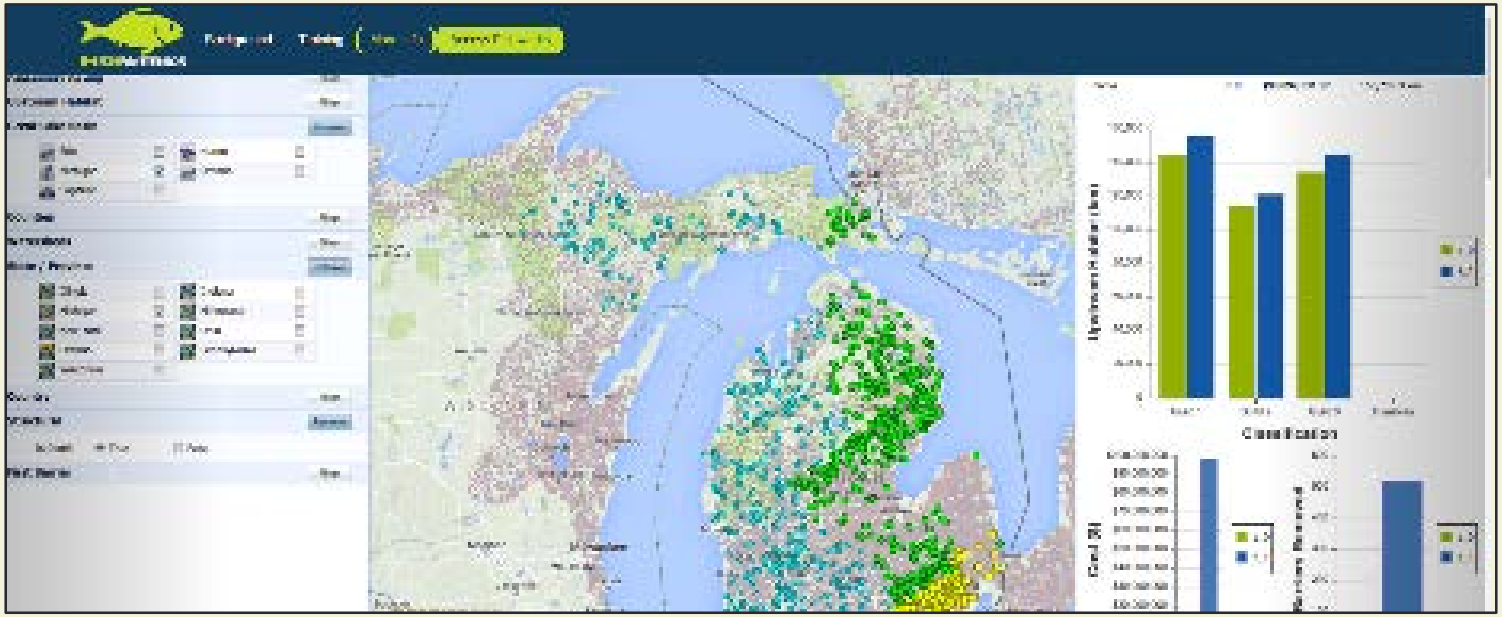
Sea Lamprey Barrier Program

- Native lamprey densities used as a surrogate for sea lampreys
- Estimated larval abundance
- Treatment costs, migrants
- Information used to respond to connectivity project requests
- Ranking projects



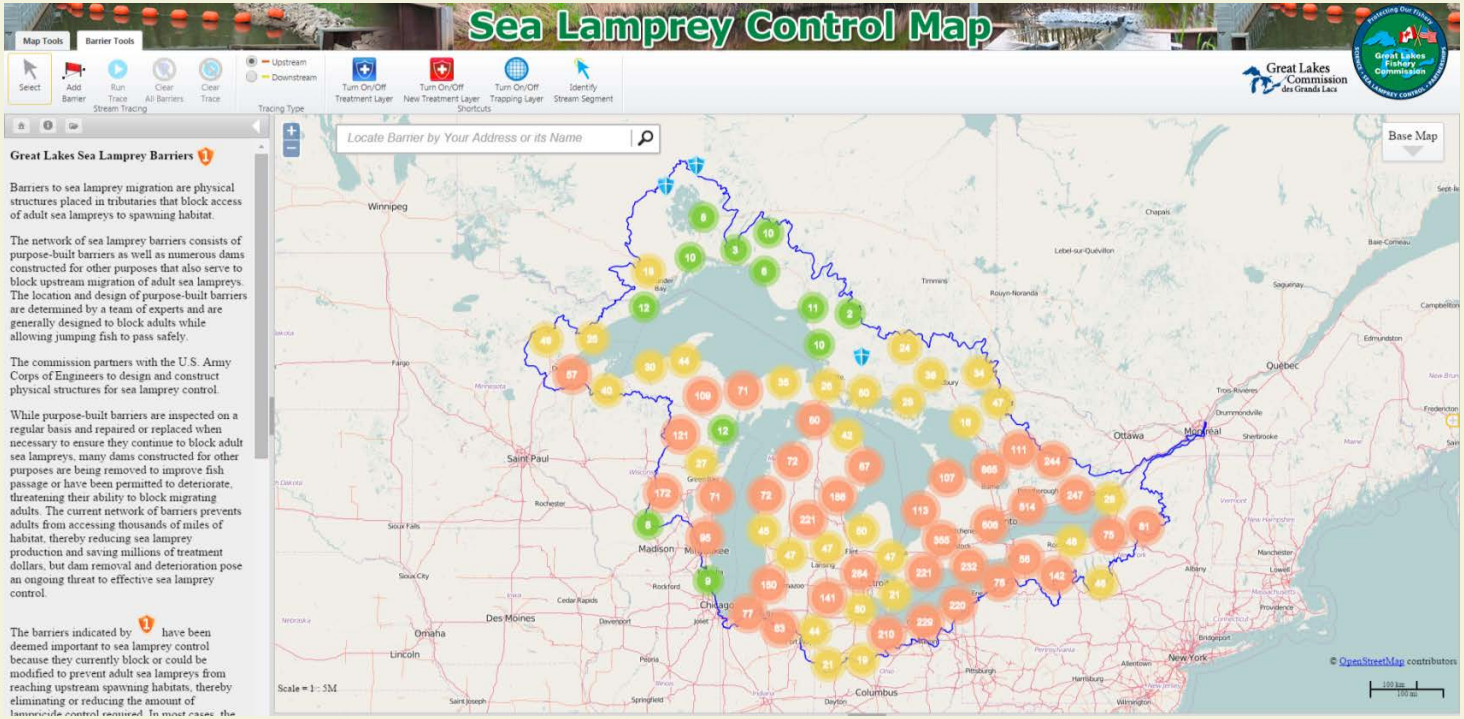
Connectivity Tools

- FishWerks – UW Madison (McIntyre Lab)
  - Optimization tool to target candidate barriers aimed at maximizing the return on investment
  - Incorporates sea lamprey control information such as lampricide control costs, historical infested length, first barriers



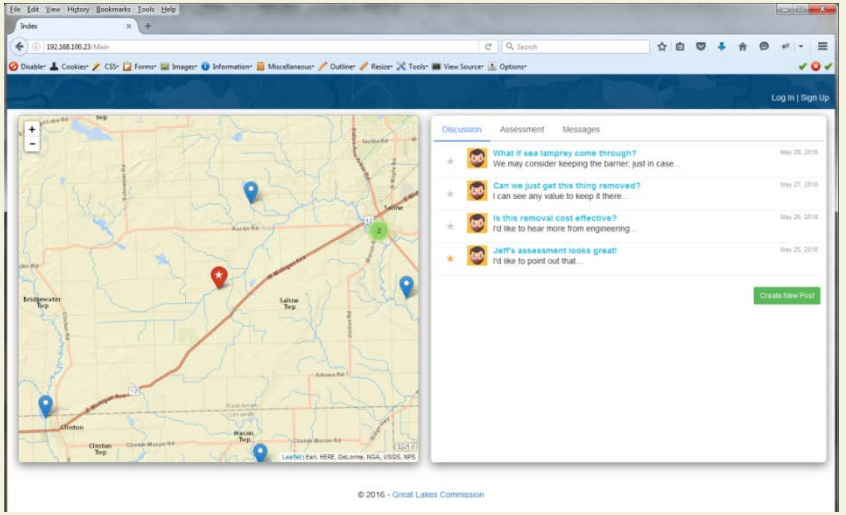
Connectivity Tools

- Barrier Mapping Tool – Great Lakes Fishery Commission
  - Linked to Sea Lamprey Control Program databases
  - Impact tool to add/remove barriers to determine number of impacted stream miles



Connectivity Tools

- Barrier Removal Collaborative Suite – Great Lakes Commission
  - Focuses on communication, data sharing, and consensus
  - Propose a barrier removal project, describe benefits
  - Develop user-defined ranks/scores for relevant project criteria
  - Share it with others for review and comment



Connectivity Tools

- Many other tools

Connectivity Tools

- Selective Fish Passage – Great Lakes Fishery Commission
  - Develop and implement selective bi-directional fish sorting technology as an adaptive management experiment
  - Determine protocols and methods for implementation
  - Set solutions in a global context so the approach can be used broadly

Summary

- Sea Lamprey Control Program uses multiple tools to control the abundance of sea lampreys
- Barriers remain the backbone of the Program
- Investigating tradeoffs between control and connectivity
- A number of tools available to assist with that task
- Selective fish passage is the future

Questions?