Performance of Shoreline Restoration Sites in the St. Clair-Detroit River System, USA

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Great Lakes Connecting Channels

- St. Marys River
- SCDRS (Huron-Erie Corridor)
  - St. Clair River
  - Lake St. Clair
  - Detroit River
- Niagara River
- St. Lawrence River
Great Lakes Connecting Corridors
Valuable Ecosystems

Multiple Uses...

- Recreation
- International Trade
- Migratory bird flyway
- Waste Disposal
- Wetlands

Economic, Ecologic, and Societal Value

- Fishing
- Shoreline Development
- Boating
- Navigation
- Industry
- Water Withdrawals

International Trade
Commonalities

- Complex aquatic habitats
- Inter-jurisdictional governance
- Large-scale anthropogenic influences
St. Clair-Detroit Rivers System

160 km long
International border
Key trade route
Major industrial & metropolitan centers
A Vibrant Ecosystem Currently Exists

- World-class musky, smallmouth bass, walleye.
- Increasing evidence of lake sturgeon, lake whitefish, rare and endangered species.
- Bald Eagles
- Migratory waterfowl
- Continued recovery
A Renaissance for Large Rivers

• Reviving resilient functional ecosystems and economies.

• Support multiple wise uses.

• Restore a sense of place, heritage, & tradition.
Shore Zone Restoration Monitoring
Nearshore restoration sites

• Port Huron North
  – 93m of shoreline
  – Mixed rock
  – Native shrubs and grasses on the bank

• Port Huron South
  – 150m of shoreline
  – Seawall removed
  – Large woody debris added
Nearshore restoration sites

- **Blue Water River Walk**
  - 1100m of shoreline softened
  - Mixed rock and large woody debris added
  - Native plants and river walk incorporated

- **Marysville Living Shoreline**
  - 400m of shoreline softened
  - Mixed rock and large woody debris
  - Native plants and river walk incorporated
Nearshore restoration sites

• Cottrellville
  – 152m of shoreline
  – Cobble and large woody debris
  – Native plantings
Assessment Techniques

• Egg Mats and Egg Pumping

• Light Traps

• Minnow Traps

• Backpack Electrofishing and Gillnets
Assessment Techniques

• Egg Mats and Egg Pumping

• Light Traps

• Minnow Traps

• Backpack Electrofishing and Gillnets
Fish use of nearshore restoration sites
Port Huron North

- **Minnows**
  - Emerald Shiner
  - Hornyhead Chub
  - Spottail Shiner

- **Cottidae**
  - Mottled Sculpin

- **Gobiidae**
  - Round Goby

- **Catostomidae**
  - White Sucker

- **Sunfishes**
  - Rockbass

- **Percids**
  - Logperch
  - Iowa Darter
  - Rainbow Darter
  - Yellow Perch

- **Native**
- **Invasive**
- **Sportfish**
Port Huron South

- **Minnows**
  - Emerald Shiner
  - Hornyhead Chub
  - Spottail Shiner

- **Catostomidae**
  - White Sucker

- **Percid**
  - Logperch
  - Yellow Perch
  - Iowa Darter

- **Sunfish**
  - Green Sunfish
  - Rockbass

- **Cottidae**
  - Mottled Sculpin

- **Gobiidae**
  - Round Goby

- **Native**
- **Invasive**
- **Sportfish**
Bluewater River Walk

- Minnows
  - Bluntnose Minnow
  - Emerald Shiner
  - Hornyhead Chub
  - Spottail Shiner

- Sunfish
  - Green Sunfish
  - Blugill
  - Largemouth Bass
  - Rockbass
  - Smallmouth Bass

- Salmonidae
  - Brown Trout

- Cottidae
  - Mottled Sculpin

- Ictaluridae
  - Stonecat

- Percidae
  - Rainbow Darter
  - Logperch
  - Yellow Perch

- Clupiidae
  - Alewife

- Catostomidae
  - White Sucker
  - River Redhorse
  - Shorthead Redhorse

- Gobiidae
  - Round Goby
  - Tubenose Goby
Marysville Living Shoreline

- **Minnows**
  - Emerald Shiner
  - Hornyhead Chub
  - Pugnose Minnow

- **Sunfishes**
  - Bluegill
  - Green Sunfish
  - Largemouth Bass
  - Rockbass
  - Smallmouth Bass

- **Salmonidae**
  - Brown Trout
  - Rainbow Trout

- **Cottidae**
  - Mottled Sculpin

- **Esocidae**
  - Northern Pike

- **Cottidae**
  - Round Goby
  - Tubenose Goby

- **Percidae**
  - Rainbow Darter
  - Yellow Perch

Native Invasive Sportfish
Cottrellville

- **Minnows**
  - Bluntnose Minnow
  - Hornyhead Chub
  - Spottail Shiner

- **Sunfishes**
  - Green Sunfish
  - Largemouth Bass
  - Rockbass
  - Smallmouth Bass

- **Clupidae**
  - Gizzard Shad

- **Escoidae**
  - Muskellunge

- **Osmerdiae**
  - Rainbow Smelt

- **Catostomidae**
  - Shorthead redhorse

- **Gobidae**
  - Round Goby
  - Tubenose Goby

- **Pericdae**
  - Logperch
  - Walleye
  - Yellow Perch

Native **Invasive** Sportfish
Richness Across Collections

- Port Huron North
- Port Huron South
- Blue Water River Walk
- Marysville Living Shoreline
- Cottrellville

Electrofishing
Richness Across Collections
Richness Across Collections

![Bar Chart showing richness across collections for different methods and locations.

- Port Huron North
- Port Huron South
- Blue Water River Walk
- Marysville Living Shoreline
- Cottrellville

Methods:
- Electrofishing
- Gillnet
- Minnow-Trap]
Mudpuppy use of nearshore restoration sites

- Cottrellville
Summary

• Restoration efforts appear stable/successful

• Habitat use by multiple lifestages and multiple species

• Continued monitoring/assessment will aid in determining performance and longevity
Thank You