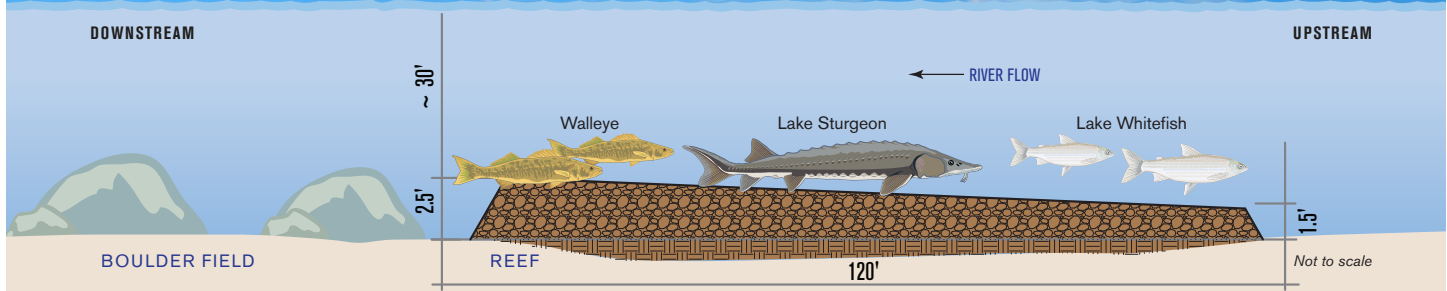


RESTORING FISH HABITAT IN THE ST. CLAIR RIVER

MIDDLE CHANNEL REEF PROJECT



The goal of this project is to enhance fish reproduction and help rebuild native fish populations. Project partners will restore an acre of fish spawning habitat by constructing and studying nine rock reefs in the Middle Channel of the St. Clair River.

REBUILDING NATIVE FISH COMMUNITIES

The Middle Channel reefs are designed to benefit several fish species that are threatened or endangered in Michigan, including lake sturgeon, mooneye, northern madtom catfish and river redhorse sucker. Popular sport fish walleye and commercially important lake whitefish will also benefit. Many of these fish migrate great distances from where they are born, therefore the Middle Channel reefs will enhance fish communities in lakes St. Clair, Erie and Huron.



Construction of the Livingstone Channel in the Detroit River.

In the early 1900s, the rivers connecting lakes Huron and Erie were straightened, widened and deepened to create shipping channels for large freighters. Dredging and disposal of excavated material in the river damaged fish spawning sites, which led to population declines. To compensate for the loss of natural limestone

reefs, project partners have previously facilitated two reef projects in the Detroit River and will construct a third reef in the Middle Channel of the St. Clair River in fall 2011.

The rivers of the Huron-Erie Corridor continue to support the largest remaining population of lake sturgeon in the Great Lakes. Sturgeon are known to spawn in just a few places in the Huron-Erie Corridor, including one area near Algonac, Mich. The Middle Channel reefs will be close to this existing spawning site, which makes biologists hopeful that sturgeon will find and use the new reefs.

PROJECT OBJECTIVES

- Construct one acre of fish spawning reefs connected to 14 square miles of nursery area in the St. Clair Delta.
- Enhance the reproduction of native fish.
- Restore fish habitat and help delist the St. Clair Area of Concern.
- Improve understanding of fish communities and habitat restoration.



WHAT IS A SPAWNING REEF?

During spawning season, fish seek out specific environments and structures before depositing and fertilizing their eggs. Many fish spawn on reefs, including rock outcrops, limestone shelves, coral reefs or piles of loose stone. This project aims to restore the preferred spawning habitat of sturgeon, walleye and whitefish by building a series of artificial reefs – essentially long underwater mounds of loose rock.

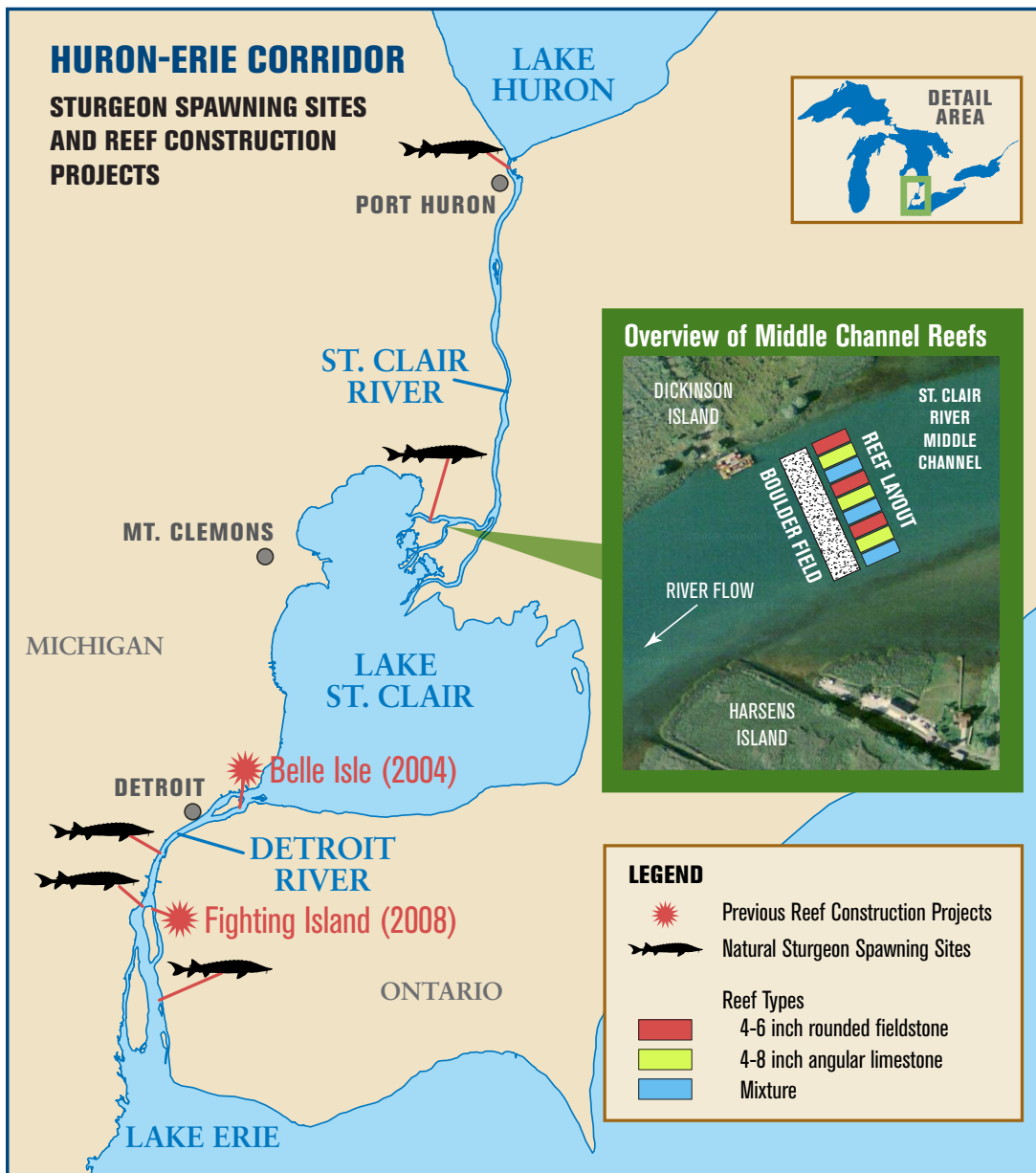
REEF CONSTRUCTION

The location and design of the Middle Channel reefs were chosen based on studies of fish populations and lessons learned during previous reef projects. Considerations include:

Reef Location: The Middle Channel of the St. Clair River has clean, fast flowing water that will keep fish eggs well oxygenated. The reefs will be 25 to 30 feet below the water — deep enough to prevent plant growth and interference with boat traffic even if water levels fluctuate. Downstream are large wetlands that can serve as a nursery for young fish.

Reef Design: Each of the nine reefs will be approximately 40 feet wide, 120 feet long and about 2 feet high. The height will slope gradually to ensure steady flows across the top of the reef that will naturally wash away sediment (see drawing). Two hundred boulders will be placed downstream of the reef, providing a safe place for fish to gather before spawning.

Rock Types: The reefs will be made of loosely piled rocks. Fish eggs stick to stone and remain protected by the gaps between the rocks. Rock size is important. Intermediate sized rocks were selected for this project because small rocks can be used by invasive sea lamprey, and large rocks can be colonized by invasive round gobies. This project will evaluate fish preferences for three types of reef material: angular limestone (4-8 inches), rounded fieldstone (4-6 inches) and a mixture of the two stones.



PROJECT PARTNERS

Michigan Sea Grant

Jen Read
Project Lead
jenread@umich.edu

Lynn Vaccaro
Project Coordinator
Lvaccaro@umich.edu

Jim Diana
Juvenile Fish Assessment
jimd@umich.edu

U.S. Geological Survey

Greg Kennedy
Egg Deposition and
Physical Assessment
gkennedy@usgs.gov

Ed Roseman
Larval Fish Assessment
eroseman@usgs.gov

Bruce Manny
Planning and Technical Guidance
bmanny@usgs.gov

JJR

Doug Dennison
Permitting and Design
Doug.Denison@jjr-us.com

Joe Wywrot
Project Engineer
Joe.Wywrot@jjr-us.com

U.S. Fish and Wildlife Service

Jim Boase
Adult Fish Assessment
James_Boase@fws.gov

Michigan Department of Natural Resources

Mike Thomas
Juvenile Fish Assessment
ThomasM4@michigan.gov

Faust Corporation

Marc Faust
Reef Construction
marc@faust-corp.com

Michigan Wildlife Conservancy

Dennis Fijalkowski
Project Support
wildlife@miwildlife.org

National Oceanic and Atmospheric Administration

Terry Heatlie
Sponsor and Technical Monitor
terry.heatlie@noaa.gov

ASSESSING THE IMPACT

Project partners will assess fish use of the area before and after reef construction. Fisheries biologists will evaluate the impact of the reefs on different stages of the fish life cycle, including:

- **Adult fish** – Do fish congregate near the new reefs during spawning season?
- **Eggs** – Which fish species deposit eggs on the reefs?
- **Larval fish** – Do the eggs produce healthy larvae? How far do the larvae travel after emerging?

- **Juvenile fish** – Are juvenile fish using nearby wetlands as nursery areas? Did the new reefs increase the numbers of fish?

Team members will use a variety of sampling techniques, including mats to catch eggs as they settle, plankton tows to capture larval fish, minnow traps, fishing nets and lines, underwater video and sonar. This information will improve future efforts to construct fish habitat and restore fish communities.

GREAT LAKES RESTORATION

The Middle Channel reef project is supported by grants from the National Oceanic and Atmospheric Administration and the U.S. Fish and Wildlife Service through the Great Lakes Restoration Initiative. Led by Michigan Sea Grant, this project is part of a long-term collaboration among federal, state and private groups interested in studying and restoring the Huron-Erie Corridor.

