



Power of partnership

Restoring natural habitats in a highly urbanized river is challenging and requires a range of expertise and support. Each Belle Isle project involves a diverse coalition of partners. The roles of different partners are described below.



FUNDERS: Under the federally funded Great Lakes Restoration Initiative, the National Oceanic and Atmospheric Administration, National Fish and Wildlife Foundation, and the U.S. Environmental Protection Agency provide grants for Belle Isle habitat restoration.



MATCHING AND IN-KIND SUPPORTERS: A number of partner organizations provide in-kind support and direct cash contributions to Belle Isle restoration efforts, including DTE Energy and the Michigan Department of Natural Resources (DNR).



PROJECT COORDINATORS: Friends of the Detroit River and Michigan Sea Grant manage restoration grants, coordinate restoration teams, and engage interested stakeholders.



LOCAL LEADERSHIP: Priorities for Belle Isle restoration efforts are identified by the Public Advisory Council for the Detroit River Area of Concern and Belle Isle state park managers.



SCIENTISTS: Scientists from the U.S. Geological Survey Great Lakes Science Center study fish eggs and larvae to guide project design and evaluate impacts. Researchers from University of Michigan, Wayne State University, and University of Toledo tackle emerging issues.



DESIGN ENGINEERS: SmithGroupJJR, Environmental Consulting Technology, and other engineering and design firms develop construction drawings and specifications.



CONSTRUCTION FIRMS: Local contractors, including Faust Corporation, Durocher Marine, and Z-Contractors, do the construction work for habitat projects. Other firms help with plantings and invasive species control, including Weed Eraser, PlantWise, and PLM.



ADVISERS: Many people lend their expertise to these projects, including scientists who study water and sediment movement in the river and stakeholders who understand the needs of commercial vessels and anglers.



FISHERY AND LAND MANAGERS: The Michigan DNR and U.S. Fish and Wildlife Service provide input at all stages of project planning to ensure that plans support fishery and park management priorities. These agencies lead long-term monitoring of sport fish and threatened fish species.



BI-NATIONAL COORDINATION: The St. Clair-Detroit River System Initiative coordinates research and management efforts across the U.S. and Canada to collectively advance science-based restoration and management of the bi-national river ecosystem.



A river's shifting role

The Detroit River has supported vibrant human activity for thousands of years — long before European settlement. During Detroit's early years, the river became an important transportation corridor. As the region developed, residents filled wetlands, dug shipping channels, and built up the shorelines. During the Industrial Revolution, pollution flowed freely into the river. The 1987 Great Lakes Water Quality Agreement designated the Detroit River as one of 43 “Great Lakes Areas of Concern,” or contaminated sites.

The Detroit River is an integral part of southeast Michigan's economic and cultural vitality. River restoration projects set the foundation for Michigan's future economy by supporting outstanding outdoor recreation opportunities, clean water, healthy neighborhoods, and a high quality of life. These factors help attract new businesses and retain talented workers. In addition, shoreline restoration can raise property values and a city's tax base, reduce drinking water costs, and create new opportunities for tourism.

With funding from the Great Lakes Restoration Initiative, a number of partners are working hard to restore fish and wildlife habitat on Belle Isle. Read on to learn about some of these projects.

BELLE ISLE STATS

- 4 million visitors came to Belle Isle in 2016.
- 5.7 million residents live within an hour's drive.
- 4,000 commercial vessels traversed the Detroit River in 2015.
- 47.8 million tons of cargo were shipped on the Detroit River in 2015.
- 64 fish species live in the Detroit River, including 16 that are threatened or endangered.
- 328,443 hours were dedicated to sport fishing on the river system in 2015.
- \$10.4 million was spent on Belle Isle restoration since 2010.
- 300 acres of habitat have been restored on Belle Isle.
- 920 lake sturgeon eggs were collected on new Belle Isle reefs in 2017.



1 LAKE OKONOKA

FUNDED BY: National Oceanic and Atmospheric Administration
GRANT AMOUNT: \$4,975,520; match: \$70,000
PROJECT PERIOD: Aug. 2014 – Dec. 2018

Making Lake Okonoka more accessible to spawning fish is one major step in improving fish habitat at Belle Isle. The lake will be linked to Blue Heron Lagoon on one end and the Detroit River on the other, allowing Great Lakes water and fish to pass between the bodies of water. Ideally, Lake Okonoka will become a high-quality haven for young fish to find shelter until they're large enough to survive in the Detroit River.

Additional improvements to the lake include adding gravel spawning beds and digging channels and deep holes to give fish safe passage when water levels are low. Humans will benefit from this project as well; a new bridge on Lakeside Drive will allow paddlers to pass easily between the lake and Blue Heron Lagoon.

2 SOUTH FISHING PIER

FUNDED BY: U.S. Environmental Protection Agency
GRANT AMOUNT: \$497,634; match: \$30,655
PROJECT PERIOD: Oct. 2010 – Aug. 2013

Without an existing area of calm water, the South Fishing Pier fish nursery and spawning habitat had to be created from scratch. Shoals (rocky underwater ridges) were built using chunks of native limestone. One shoal runs parallel with the fishing pier to dissipate waves created by passing freighters. More shoals run perpendicular to the shore to slow the river current. Deeply dredged holes and shallow areas provide habitat for spawning fish.

3 BLUE HERON LAGOON

FUNDED BY: U.S. Environmental Protection Agency
GRANT AMOUNT: \$1,428,994; match: \$30,655
PROJECT PERIOD: Oct. 2010 – Aug. 2013

In 2013, Blue Heron Lagoon was opened to the river at Belle Isle's eastern point, allowing Great Lakes fish to access and reproduce in 40 acres of calm, shallow water. Soil excavated to create a deep-water area was used to build a new peninsula for nesting turtles. Amphibians and reptiles — particularly the threatened eastern fox snake commonly sighted in this area — benefit from new vernal pools and snake hibernacula (hibernation dens). Since the project's completion, the Michigan Department of Natural Resources (DNR) has documented a significant rise in fish populations within the lagoon.

4 FISH SPAWNING REEFS

FUNDED BY: U.S. Environmental Protection Agency
GRANT AMOUNT: \$2,350,000
PROJECT PERIOD: Oct. 2014 – April 2018

The Belle Isle fish spawning reefs are part of a long-term effort to restore rocky habitat where fish — including lake sturgeon, walleye, suckers, and catfish — can deposit their eggs. Belle Isle now has three new reef beds covering four acres of river bottom. Each reef is about two feet thick, made of 4-8-inch chunks of quarried limestone heaped on the river bottom. The spaces between the rocks create safe places for fish eggs. The reef beds sit in deep, fast-flowing sections of the river near the head of Belle Isle, where strong currents wash away sand and bring oxygen to the eggs. In spring of 2017, the restoration team found large numbers of sturgeon eggs on all three reef beds — a clear sign of the project's success. Researchers will continue monitoring how fish use the reefs to hatch healthy, successful young.

5 FLATWOODS FOREST

FUNDED BY: National Fish and Wildlife Foundation
GRANT AMOUNT: \$525,000; match: \$22,500
PROJECT PERIOD: July 2014 – Sept. 2018

The Michigan DNR is currently assessing Belle Isle's 200-acre flatwoods forest and developing restoration and engineering plans to address current threats. The forest quality is degrading due to road and trail construction, invasive plants, human-made changes to Belle Isle's internal waterways, the invasive emerald ash borer beetle, and a fungal disease called oak wilt.

Belle Isle's forest is considered a "wet-mesic flatwoods" and is the largest remaining example of this unique habitat in Michigan. The flatwoods forest is moderately wet and includes upland and lowland hardwood trees and vernal pools that support many species of reptiles and amphibians, along with resident and migratory birds.

6 INVASIVE SPECIES CONTROL

FUNDED BY: U.S. Environmental Protection Agency
GRANT AMOUNT: \$471,079; match: \$96,916
PROJECT PERIOD: Feb. 2014 – Nov. 2016

Invasive plant species can crowd out native plants and make life more difficult for fish and other wildlife. Belle Isle restoration efforts have included a targeted campaign to protect the island's diverse ecosystems by removing plants such as common reed grass — also known as *Phragmites* — reed canary grass, purple loosestrife, and Japanese knotweed. The three-year removal and monitoring program has brought invasive plant populations to a far more manageable level.

The program provided job opportunities for area youth and strengthened ties between local stewardship groups. Grant funds supported a wide range of educational programming, exhibits, and informational handouts about aquatic invasive species. These resources are available at the Belle Isle Nature Center and the Belle Isle Aquarium.