

A SOUND INVESTMENT



These stories of success highlight the critical role that the National Park Service plays in restoring the Great Lakes, safeguarding public health, creating and supporting jobs, and protecting our national parks for this, and future generations.

Sleeping Bear Dunes National Lakeshore
Credit: ©Delcroix Romain | Shutterstock

Restoring the Great Lakes in our national parks

The National Park Service plays a critical role in restoring the Great Lakes, in and around the 10 national parks along the shores. Since the Great Lakes Restoration Initiative (GLRI) was established, the park service has received approximately \$59 million through this important funding source to combat invasive species, clean up toxic sites, restore wetlands, and improve the land and water for people, plants, and wildlife.

These national parks, that see millions of visitors every year, need more funding from GLRI to meet the ever-mounting challenges of protecting the Great Lakes, the unique landscapes, and its wildlife from the impacts of pollution and an ever-changing climate.



☎ 312.263.0111

✉ midwest@npca.org

www.npca.org/midwest

Great Lakes Region: Chicago, Michigan, Minnesota, and Ohio



Krejci Dump Clean-Up/Restoration, Cuyahoga Valley National Park
 Credit: NPS/Chris Davis



Removing Toxins From Lands and Waters

Six Great Lakes National Parks

Before Great Lakes national parks were established, these landscapes were subject to uses and development based on human wants and needs. The history of the Great Lakes region is based on industrial development, logging, mining, and shipping due to the proximity of land to navigable water. When these national parks were established, the National Park Service accepted the responsibility of remediating and restoring the landscapes for people and other forms of life. The GLRI has provided necessary funding to identify and clean up contaminated sites decades sooner than NPS could do without the GLRI.

Goals: To investigate, plan, and remediate where possible, 21 contaminated sites within six Great Lake parks. Identify pollution sources and if investigations determine remediation and restoration is possible, develop plans to restore these sites immediately.

Key partners: U.S. Army Corps of Engineers - Omaha District, University of Wisconsin – LaCrosse, Michigan Technological University, and a host of other partners at Apostle Islands National Lakeshore (WI), Indiana Dunes National Park (IN), Keweenaw National Historical Park (MI), Isle Royale National Park (MI), Sleeping Bear Dunes National Lakeshore (MI), and Pictured Rocks National Lakeshore (MI).

Approximate project cost:	\$6,800,000*
National Park Service, GLRI	\$6,300,000
National Park Service, other funds	\$500,000

**This was a multi-year effort across multiple parks with multiple revenue sources. Project cost reflects NPS only.*

Type of jobs supported: Environmental engineers, excavators, construction workers, hazardous waste handlers, environmental consultants, remediation contractors, project managers, field crews and others.

Results: Among the results of this important GLRI project are:

- Six sites with fuel spills cleaned up at Apostle Islands and Isle Royale;
- Six light stations soil investigation and clean-up at Apostle Islands and Pictured Rocks;
- 10 million cubic yards of contaminated sediment removed;
- More than 60 acres within and adjacent to national parks restored;
- 36 miles of river has been improved for fish migration and aquatic life habitat.

Most of the 21 contaminated sites are remediated or investigated, with remediation plans in place. GLRI has provided the park service with the opportunity to make these landscapes safe for our enjoyment and restored for all forms of life that our national parks protect.



Fish Monitoring for Contaminants
 Credit: NPS / Lauren Savidusky

“Toxins and contaminants left behind are an environmental risk if not mitigated or removed. GLRI provided the capacity for NPS to address these risks decades faster than we could have otherwise in these parks that welcome more than 6.5 million visitors a year.” - JIM CONROY, RETIRED ENVIRONMENTAL ENGINEER, NATIONAL PARK SERVICE



Restoring History

Keweenaw National Historical Park

Goals: To clean up contaminants and restore the Quincy Smelting Works, the best-preserved copper smelter site in the U.S., and open the site to visitors.

Key partners: U.S. Army Corps of Engineers, Keweenaw National Historical Park Advisory Commission, Franklin Township, Quincy Smelter Association, Quincy Mine Hoist Association, Michigan Technological University, and Bristol Environmental Services.

GLRI funds*:	\$650,000
National Park Service	\$650,000

*Other funding sources were combined with GLRI to clean and restore the smelter.

Types of jobs supported: Environmental engineers, excavators, construction workers, hazardous waste handlers and field crews.

Results: Quincy Smelting Works is successfully remediated. The building and grounds are restored and included removing many soil and water contaminants. NPS and partners are now providing tours at the site.





Indiana Dunes National Park
Credit: © Marsha Williamson Mohr | iStock

Restoring the Great Marsh

Indiana Dunes National Park

More than a century ago, hundreds of geese, ducks, and wading birds congregated in the Great Marsh that stretched 12 miles along the Lake Michigan shoreline and was the largest interdunal wetland in the watershed. But the impacts of farming and ditching, and the construction of roads, levees, factories, and houses have changed the hydrology and greatly reduced the Great Marsh. Over time, the Marsh, which once encompassed nearly 2,500 acres, has been less than 1,000, at Indiana Dunes, has shrunk and invasive species have taken over.

Goals: To restore hydrology and native plantings to 1,600 acres of the Great Marsh so that native wildlife and plants will return and thrive, and the wetland system will once again effectively filter pollutants before they reach the lake.

Key partners: U.S. Geological Survey, Town of Beverly Shores, Indiana Lake Michigan Coastal Program, Wisconsin Conservation Corps, National Parks Conservation Association, The Nature Conservancy, Save the Dunes, Student Conservation Association, Shirley Heinze Land Trust, Dunes Acres Civic Improvement Foundation, National Park Foundation, Northern Indiana Public Service Company and hundreds of volunteers.

Approximate project cost:	\$10,045,051
National Park Service, GLRI	\$8,654,225
National Park Service other funds	\$1,000,000
National Park Foundation	\$170,000
Save The Dunes	\$80,000
NIPSCO	\$70,000
Lake Michigan Coastal Program	\$29,900
The Nature Conservancy	\$29,963
Shirley Heinze Land Trust	\$8,000
Dune Acres Civic Improvement Foundation	\$2,963

Types of jobs supported: Soil scientists, land surveyors, plant propagators, fisheries specialists, hydrologists, botanists, invasive plant eradicators, and environmental assessment processors.

Results: To date, 600 acres of the Great Marsh have been fully restored. After 100 years, native waterfowl, including coots, wood ducks, kingfishers, and green herons have returned to the national park. In some areas, water depth now ranges from saturated soils to two feet at the edge of modified roadbeds. This helps filter pollutants from water run-off before it flows into Lake Michigan. When the project is complete, the entire Great Marsh will include native plant communities and hydrology that were present more than a century ago.



Students Doing Restoration
Credit: © Susan Kirt



Great Marsh Indiana Dunes National Park
Credit: NPS / Dan Mason



Piping Plover, Sleeping Bear Dunes National Lakeshore
Credit: © Susan Kirt

Saving Great Lakes Shore Birds

Sleeping Bear Dunes National Lakeshore

For more than a decade, the National Park Service has been trying to solve and address a mystery – why are shore birds dying along Lake Michigan at Sleeping Bear Dunes National Lakeshore? In 2006, thousands of dead birds started washing up in Good Harbor Bay and other shoreline areas in the park. Since then, NPS and a large and diverse group of partners have been monitoring, surveying, and implementing restoration techniques to understand and prevent birds from dying and restore reef ecosystems.

Because of GLRI, this work continues to uncover the truth behind the shore bird die-off, putting this national park at the center of a project focused on the impacts of a changing climate.

Goals: To monitor, share and collaborate, develop and implement successful reef management practices and reduce the impact of aquatic bacteria on fish and shore birds.

Key partners: U.S. Geological Survey, University of Wisconsin Milwaukee, Michigan Department of Natural Resources, Michigan Sea Grant, Northwestern Michigan College, University of Michigan, Common Coast Research & Conservation, Invasive Mussel Collaborative, National Parks Conservation Association, Scuba North, and community volunteers.

Approximate project cost:	\$2,600,000*
National Park Service, GLRI	\$1,500,000
U.S. Geological Survey, GLRI	\$984,000
National Park Service, other funds	\$95,000

**Partial project cost, reflecting only NPS and USGS funds. Other partners contributions not reflected here.*

Type of jobs supported: Ecologists, hydrologists, biotechnicians, aquatic biologists, volunteer coordinators, project managers, certified divers, and field crews.

Results: NPS and partners have uncovered the causes behind bird die-offs. Invasive quagga mussels, densely populated in areas where bird die-offs occur, filter a liter of water daily. Filtering clears the water column, increases light, and creates prime conditions for formation of Cladophora, a nuisance alga. Cladophora breaks down, releasing a toxic bacterium. Fish consume the bacteria; birds eat the fish; bacteria sicken the birds and many die.

Citizen science volunteers survey the shoreline weekly collecting data. A citizen dive team monitors key areas during the off-season. A newly deployed weather buoy in Good Harbor Bay helps understand the impact of weather and wave conditions.

GLRI supported monitoring and integrated management is proving successful for reducing quagga mussels and restoring reef habitat. The data, collaboration and integrated management methods show promise for reducing invasive mussel abundance and in turn, the die-off of the birds that call Sleeping Bear Dunes home.

“GLRI provides support for us to harness the expertise of a diverse set of partners to understand why our shore birds are dying and to figure out how to minimize future die-offs. This work gives me hope for the future health of the Great Lakes and for Sleeping Bear Dunes.”

JULIE CHRISTIAN, NATURAL RESOURCES DIVISION
MANAGER, NATIONAL PARK SERVICE



Citizen Science Dive
Credit: NPS / Erica Plesha

Learning Across the Water, Agaaming Aki

Grand Portage National Monument

Place-based education deepens our connections with the earth, and where better to sustain the next generation of stewards than in and around national parks. GLRI provides opportunities for hands-on experiences in Great Lakes national parks to learn the power of intertwining traditional ecological knowledge (TEK) and western science.

Goals: To provide an opportunity within the Great Lakes and at Grand Portage Monument for youth to learn about Ojibwe TEK.

Key partners: Grand Portage Band of Lake Superior Chippewa Trust – Lands and Natural Resource Management Department, 1854 Treaty Authority, Fond du Lac Tribal and Community College Environmental Institute, Minnesota Sea Grant, Grand Portage State Park, Minnesota Public Schools, and Great Lakes Research and Education Center.

Approximate project cost:	\$2,120,000
National Park Service, GLRI	\$2,120,000

**Place-based education is a multi-park effort; approximate project cost reflects 7 years of investment in five Great Lakes national parks*

Type of jobs supported: Outdoor education coordinators, ecologists, wildlife biologists, aquatic and wetland biologists, interpreters, field, and ferry crews.



Minnesota Sea Grant Extension Educator Marte Kitson
Credit: Megan Gilles/MNSG

Results: In 2019, approximately 100 people participated in a unique education experience at Grand Portage National Monument. Participant feedback shows understanding of environmental concepts. The education program is renewed as Agaaming Aki, “land across the water” in Ojibwe, building on the Grand Portage Bands of Lake Superior Chippewa’s ancestral connection to Isle Royale and their co-management with NPS of Grand Portage.

Recovering an Endangered Coastal Dweller

Apostle Islands National Lakeshore

Apostle Islands National Lakeshore is an archipelago of 21 islands in Lake Superior and is the traditional homeland of the Anishinaabeg people. These lands house a rich diversity of wildlife with over 800 species of plants, unique forests wetlands, breeding grounds for migratory birds, and small mammals, including the American marten. The marten, endangered in Wisconsin, is vital to manage prey, disperse native seeds, and maintain health of the wetlands. Thought to be extinct in the Apostle Islands since the 1930s, a marten was seen in 2014, launching efforts to restore the population.

Goals: To determine the importance of island habitat for the marten, identify needs for long-term protection, management, and restoration of this state endangered species.

Key partners: Great Lakes Indian Fish and Wildlife Commission, Red Cliff Band of Lake Superior Chippewa Indians, Wisconsin Department of Natural Resources, University of Wisconsin, Northland College.

Approximate project cost:	\$447,000
National Park Service, GLRI	\$447,000

Types of jobs supported: Field workers, biological technicians, and wildlife biologists.

Results: Trail cameras posted at Apostle Islands revealed the presence of the state-endangered American marten at 11 of the national park’s 21 islands. NPS and Tribal, academic, and state agency partners, gathered data on the marten’s distribution, habitat, and diet and surprisingly found that the Apostle Islands are serving as a population source to the mainland. Martens migrate over winter ice corridors that will become less viable as our changing climate reduces winter ice. But the protected status of 21 of the islands provides a safeguard for this species restored habitat to thrive.



American Marten
Credit: © mtnmichelle | iStock

Halting Coastal Invasive Species

Perry's Victory and International Peace Memorial

The Bass Islands in western Lake Erie are a migratory stopover for many birds and provide unique coastal forest and wetland habitat to water and land-based wildlife. Wetlands function as natural sponges that trap and slowly release rain, snowmelt, groundwater, and flood waters, but if wetlands are choked with invasive plant species, they no longer perform their role in Great Lakes restoration. This was the case at Bass Islands where phragmites and other invasives all but wiped-out habitat for threatened and endangered wildlife.

Goals: To remove invasive species from coastal wetland areas in the Bass Islands around Perry's Victory, providing natural habitat for migratory birds, endangered reptiles, and other wildlife and to educate visitors about this Great Lakes ecosystem.

Key partners: The Ohio State University Stone Laboratory, Ohio Department of Natural Resources, Put-in Bay Township Park District, and Lake Erie Islands Conservancy, AmeriCorps, and EnviroScience.

Approximate project cost: **\$65,000**
National Park Service, GLRI **\$65,000**

Types of jobs supported: Wetland biologists, botanists, invasive species managers, and field crews.



Put-in-Bay, South Bass Island
Credit: © SF photo | Shutterstock

Results: Partners removed invasive species from 22 acres of parkland and phragmites from wetlands adjacent to Perry's Victory. By restoring these lands in the national park and Western Lake Erie landscape, migratory birds and native species will thrive, including the federally threatened Lake Erie water snake. Visitors to Perry's Victory and Put-in Bay Township Park better understand the complexity and importance of protecting Great Lakes wetlands.

"The GLRI grant through NPS gave us an opportunity to work on something we could not have done otherwise. Our partnership will result in an intact forest and wetland habitat here on the islands."

LISA BROHL, CHAIR, LAKE ERIE ISLANDS CONSERVANCY, AND CHAIR, PUT-IN BAY TOWNSHIP PARK DISTRICT



Great Lakes National Parks impact in the region:

9.5M annual visitors

\$754M annual economic impact

1M acres of lands along the shores

\$59M GLRI grants received *but the need is increasing*

TOP LEFT: NPCA in the Field, Credit: ©NPCA BOTTOM LEFT: NPCA in the Field, Credit: ©NPCA
RIGHT: Sleeping Bear Heritage Trail, Credit: ©NPCA

Charting the Course

Apostle Islands, Pictured Rocks, and
 Sleeping Bear Dunes National Lakeshore;
 Isle Royale and Indiana Dunes National Parks

The beauty, splendor and magnitude of the Great Lakes bring millions of visitors annually to national parks on Lakes Michigan and Superior. People enjoy the beaches, but what lies beneath the lake's surface is a mystery. There are many submerged Great Lakes shipwrecks that can answer questions from the past, create habitat for fish and aquatic life, play a role in sediment and erosion control, and detect and control invasive species.

Goals: To inventory, map, and monitor natural and cultural resources within and near the submerged lands of Great Lakes national parks.

Key partners: National Oceanic Atmospheric Association (NOAA), U.S. Army Corps of Engineers, Wisconsin Department of Natural Resources, Northwestern Michigan College, Front Range Community College, Michigan State University, Michigan Technological University.

Approximate project cost:	\$2,830,000
National Oceanic Atmospheric Association, GLRI	\$1,430,000
National Park Service, GLRI	\$1,400,000



Sun Rises Above Lake Superior, Isle Royale National Park
 Credit: © Hank Erdmann | Shutterstock

Type of jobs supported: Ecologists, hydrographic surveyors, boat operators, geospatial analysts, boat captains, aquatic biologists, and field crews.

Results: Lake bottom habitats are mapped now in the area around four Great Lakes national parks. Mapping has identified highly active, yet sensitive, lake trout fish spawning areas near Apostle Islands and Isle Royale. These areas are prioritized for early invasive mussel surveys and the project has doubled the efficiency of where and how these surveys are conducted. These maps will assist in identifying areas prime for reef restoration, and areas of nuisance algal deposits, and in predicting coastal erosion and sediment movement.

Breathing Life into Stanford Run

Cuyahoga Valley National Park

Waters within the Cuyahoga Valley have struggled to heal due to pollution from the Industrial Revolution. About half of the miles that make up the Cuyahoga River are designated as a Great Lakes Area of Concern. Stanford Run is a stream in the national park that feeds the Cuyahoga, recharging the reaches upstream. However, an undersized culvert created a flow barrier building up harmful sediment, blocking fish and aquatic migration, and disconnecting the river from its floodplain.

Goals: To restore Stanford Run by replacing the undersized culvert with one that is the right scale, re-align the historical streambed, improve streamflow, and reconnect the stream with its floodplain.

Key partners: U.S. Army Corps of Engineers Buffalo District, Ryba Marine Construction Co., Armitage Architecture, P.C.

Approximate project cost:	\$1,600,000
U.S. Army Corps of Engineers Buffalo District and National Park Service, GLRI	\$1,340,000
In-kind and other partners	\$260,000

Type of jobs supported: Engineers, contractors, wetland and aquatic biologists, restoration ecologists, botanists, surveyors, geotechnical specialists, and field crews.



Chris Davis of National Park Service at Stanford Run
 Credit: © Peter Krouse/cleveland.com

Results: Stanford Run now runs freely for the first time in 30 years. Harmful sediments are removed exposing sand and gravel critical to fish spawning and aquatic life. Reaches of the stream are realigned to historic water routes and to minimize flows, preventing future flooding. Within the project reach, the floodplain has been reconnected providing filtration and reducing the chance of flooding downstream. Native vegetation is emerging along the streambanks while swamp white oaks, sycamores and box elders take hold. More than 2,200 feet of waterfront has been restored and detrimental impacts upstream and downstream controlled.

