

A SOUND INVESTMENT



Restoring the Great Lakes In Our National Parks

This report highlights the successful and critical role that the National Park Service plays in restoring the Great Lakes, safeguarding public health, creating jobs, and protecting these special places belonging to all Americans.



National parks are windows to our past, homes to some of our rarest plants and wildlife, and places where every American can go to find inspiration, peace and open space.

Our national parks protect more than 620 miles of Great Lakes shoreline including beautiful estuaries, beaches, dunes, and wetlands. These parks hold tremendous biological, historical, and recreational value to more than six million visitors each year. And these national parks are economic generators for Great Lakes communities. According to the National Park Service, every dollar invested in park operations generates about \$10 to local communities, and every two Park Service jobs yields one outside the park.

But our national parks are home to invasive species, falling water levels, eroding shorelines, and contaminated lakes and rivers. The National Park Service is responding to these threats and to the importance of improving Great Lakes water quality with help from the Great Lakes Restoration Initiative (GLRI).

The GLRI provides the National Park Service with critical funding to respond to ecosystem needs in eight of our Great Lakes parks. To date, more than \$18 million of GLRI funding has been allocated to the Park Service, and at a time when operational funding to our national parks has been cut, the GLRI has provided much-needed jobs for both the National Park Service and local communities to clean rivers and streams, remove invasive species, and restore shoreline wetlands.



0 24 48 72 96 120 miles

Federal land in the Great Lakes region

SPREADING THE WORD

These 8 national parks touch more than 6 million people each year



RECONNECTING WATERWAYS

Indiana Dunes National Lakeshore

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. It is the largest interdunal wetland in the Lake Michigan watershed. But the impacts of farming and ditching, and the construction of roads, levees, factories, and houses have greatly reduced the size of the Great Marsh and have subdivided its single contiguous watershed into three disconnected ones. Water levels in the marsh are either too high or too low, allowing invasive species to thrive.

Goals: To restore 400 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: Dunes Acres Civic Improvement Foundation, Indiana Lake Michigan Coastal Program, National Parks Conservation Association, Shirley Heinze Land Trust, Student Conservation Association, Town of Beverly Shores, United States Geological Survey, and hundreds of volunteers.

Approximate project cost: \$2,650,070 GLRI

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

Results: To date, 55 acres of the Great Marsh have been fully restored. After 100 long years, native waterfowl, including coots, wood ducks, kingfishers, and green herons have returned to the National Lakeshore. In some



areas, water depth now ranges from saturated soils to two feet of water at the edge of modified roadbeds. This helps filter pollutants from the water before it flows into Lake Michigan. When the project is complete, the entire Great Marsh will include native plant communities which were observed more than a century ago by Europeans and American Indians.

Above: Aerial view of Cowles Bog Wetland Complex Restoration at Indiana Dunes National Lakeshore ©Constantine Dillon/NPS.

“Doing restoration in an urban landscape like this is akin to maintaining an old house. There is constant upkeep and continuing costs.”

— Dan Mason, Botanist, Indiana Dunes National Lakeshore



College students from 13 institutions have helped with the Cowles Bog Wetlands Restoration Project at Indiana Dunes National Lakeshore. As a result, many native plants and birds are thriving. All photos ©Kelly Lenard/NPCA and NPS



PROTECTING LAKE SUPERIOR FROM INVASIVE SPECIES

Isle Royale National Park

Invasive species, such as the zebra and quagga mussel and the round goby, have entered the Great Lakes through the ballast water of ocean-going ships for many years, but few of these invaders have reached Lake Superior, and fewer still have reached Isle Royale National Park. In addition, ballast water is responsible in part for spreading Viral Hemorrhagic Septicemia (VHS), a disease deadly to native fish in the Great Lakes. Through the GLRI, the first permanent ballast water treatment system on a Great Lakes freshwater ship was installed on the Park Service's Ranger III, which takes visitors from Houghton, Michigan, to Isle Royale National Park. The treatment system will keep the ship from transporting invasive species between the port at Houghton and Isle Royale.

Goals: To better protect Lake Superior and the waters at Isle Royale National Park from harmful aquatic invasive species and fish diseases like VHS. To develop a protocol to treat ballast on the Ranger III that meets applicable discharge standards and serves as a test vehicle for the approval of freshwater treatment systems for small, ballasted vessels in the U.S.

Key partners: Fraser Shipyard, The Glisten Associates, Grand Portage Band of Lake

Superior Chippewa, Michigan Technological University, National Parks of Lake Superior Foundation, Northern Machining and Repair, Inc., Schwartz Boiler Shop.

Approximate project cost: \$600,000

National Park Service, GLRI	\$500,000
Great Ships Initiative	\$50,000
Other	\$50,000

Types of jobs created: Chemists, biologists, marine engineers and general laborers.



Results: The ballast water treatment system tested by the National Park Service and its partners and installed on the Ranger III will prevent the Ranger III from transporting aquatic invasive species between Isle Royale and the port at Houghton, Michigan. The field guide developed with GLRI funding will assist other vessels in preventing the spread of invasive species in the Lake. The results of the project are informing the U.S. Environmental Protection Agency and U.S. Coast Guard ballast regulatory programs.*

Above: Ranger III at Isle Royale National Lakeshore ©NPCA

*Thanks to the Healing Our Waters Coalition for information.

“The GLRI funds were critical to this project. The considerable increase in protection from invasive species through the installation of this system would not have happened without GLRI support.” — **Phyllis Green, Superintendent, Isle Royale National Park**

RESTORING A CRITICAL STREAM

Cuyahoga Valley National Park

Stanford Run is a tributary of the Cuyahoga River in the Cuyahoga Area of Concern. It is currently severely silted in with sediment and isolated from the river because of failed culverts that once carried the water under the Ohio and Erie Canal. At one time, the Cuyahoga River, which travels through the Cuyahoga Valley to Lake Erie, was one of the most polluted in the country. Over the past 40 years much of the river has been restored, but there is still work to be done. The restoration and recovery of Stanford Run is critical to enhance Lake Erie water quality, provide fish and wildlife habitat, and increase recreational and educational experiences for visitors to Cuyahoga Valley National Park.

Goals: To restore the stream connection of Stanford Run where it meets the Cuyahoga River in order to clean the water as it flows into Lake Erie. This entails removing sediment and excavating the stream channel, installing a footbridge on the Ohio and Erie Canal Towpath, controlling invasive plants, and restoring native plants.

Key partners: Lord, Aeck & Sargent

Approximate project cost: \$172,826 GLRI \$1.1 million estimated construction cost

Types of jobs created: Architecture/engineering contractor, civil and structural engineers, landscape architects, wetland biologists, surveyors and geotechnical specialists.

Results: The Park Service has completed a site survey, hydrologic and hydraulic models, architectural evaluation of historical culverts, wetland delineation, alternative development



and evaluation, and conceptual designs. Final designs, construction drawings and permits will be complete in June 2013. Then on-the-ground restoration of the stream connection to the river and Lake Erie will begin. This project will ultimately enhance Cuyahoga River and Lake Erie water quality, provide better habitat and increase fish populations and improve conditions in the Cuyahoga Area of Concern.

Above: Stanford Run Restoration in Cuyahoga Valley National Park ©NPS

“Funding for restoration planning and design is rarely available through our usual fund sources. GLRI funding has allowed us to generate an attractive ‘shovel-ready’ project that can be easily implemented with the help of partners.” — **Kevin Skerl, Ecologist, Cuyahoga Valley National Park**

SAVING GREAT LAKES SHOREBIRDS

Sleeping Bear Dunes National Lakeshore

In recent years, thousands of birds have perished from botulism that is erupting in the water along Lake Michigan's eastern shore at Sleeping Bear Dunes. But scientists are not sure why. Species impacted include the common loon, mergansers, double-crested cormorants, and the piping plover, an endangered shorebird that summers on portions of the Great Lakes. Native algae is flourishing at an unprecedented rate in Lake Michigan, creating piles of rotting organic matter that provide the perfect environment for Type E botulism to thrive. Through the food chain, birds contract the botulism, creating waves of die-offs in the summer months. Scientists are studying the central role of invasive quagga mussels in this puzzle in order to determine if actions can be taken to break this cycle ultimately stem the bird die-offs.

Goals: To better understand the connection between aquatic invasive species and bird die-offs in Lake Michigan, to reduce the numbers of birds dying as a result of Type E botulism outbreaks, and to alter how the National Park Service manages coastal ecosystems in the Great Lakes.

Key partners: Common Coast, Michigan Tech Research Institute, Northern Michigan University, Northwestern Michigan College Great Lakes Water Studies Institute, Science Museum of Minnesota, USGS Great Lakes Science Center, USGS Michigan Water Science Center, USGS National Wildlife Health Center, and University of Wisconsin-Milwaukee, and numerous park volunteers.

Approximate project cost: \$1,979,000
National Park Service, GLRI \$900,000
U.S. Geological Survey, GLRI \$984,000
National Park Service, other funds \$95,000

Types of jobs created: Biological science technicians, biologists, boat captains, deck hands, and boat operators, National Park Service internships, university research assistants, and hydrographic survey technicians.

Results: The National Park Service and partners have established a comprehensive nearshore monitoring station to investigate botulism outbreaks linked to local environmental conditions; mapped substantial



portions of the Lake Michigan shoreline and identified likely toxin production hotspots; and, are closer to understanding botulism drivers in order to stem the die-off of thousands of shorebirds each year. Ultimately, scientists' work will improve Lake Michigan water quality and shorebird habitat by confirming the link between invasive species and bird die-offs and developing new ways to manage the resources at this national park.



Top: Piping Plover ©Paul Tessier/ISTOCKPHOTO.
Above: Researchers test Lake Michigan Waters at Sleeping Bear Dunes. ©NPS

“Our GLRI-funded work at Sleeping Bear Dunes is critical to protecting the Lake Michigan shoreline.

It's important to understand the ecosystem changes and impacts of these changes—like botulism outbreaks—and how we can best protect the Lakeshore's resources for park visitors.”

— Chris Otto, Biologist, Sleeping Bear Dunes National Lakeshore

LAKE MICHIGAN JOBS GENERATOR

Sleeping Bear Dunes National Lakeshore

Goal: To bolster wetland restoration, fight the spread of invasive plants, protect the endangered piping plover, and restore shoreline woodlands damaged by the tree-killing emerald ash border.

Approximate Project Cost:
\$891,225, GLRI

Jobs Created:
50 biological technicians and 10 laborers

“Our participation in the Great Lakes Restoration Initiative has given us a terrific opportunity to do restoration work in all of our Great Lakes national parks that might never have been accomplished otherwise, and on a scale that can really make a difference.”

— Michael T. Reynolds, Midwest Regional Director, National Park Service

GLRI In Our National Parks

\$18.7

Total GLRI funding (million) to 8 of the 13 national parks in the Great Lakes watershed.

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More than 6 million visitors to these parks each year benefit from Great Lakes restoration projects.



EDUCATION AND OUTREACH

10 Great Lakes National Parks

The National Park Service produced an award-winning film series, “Little Things, Big Problems,” to educate millions of national park visitors about the dangers of invasive species in the Great Lakes and how the public can help stem the spread of these invaders. Find these award-winning films on YouTube.

With these GLRI funds, the NPS also developed innovative tools to explain the range of threats that invasives pose to our Great Lakes National Parks, including installing 55 boot brush stations, distributing 240,000 posters, and pledging thousands of Junior Rangers to help stop the spread of invasive species.

Project cost: \$1,550,000 GLRI

Audience impact:

More than 15,000 online views; thousands more viewed the films at 10 national parks
More than 6 million people visit these 10 Great Lakes national parks each year

“It is so important for people to understand the kind of damage invasive species pose to natural areas and to the Great Lakes. Together we can work towards saving those places that are special to every one of us. It all starts with an open mind, and willingness to do our part to be better stewards.”

— **Laura Thompson,**
Biological Science Technician,
Indiana Dunes National Lakeshore



Left: Indiana Dunes National Lakeshore has about 2 million visitors each year. ©Steve Geer/ISTOCKPHOTO; Junior Ranger are sworn in at Perry’s Victory and International Peace Memorial. ©NPS; Students collect water samples from Chippewa Creek at Cuyahoga Valley National Park. ©Ted Toth/NPS.



Midwest Regional Office

8 S. Michigan Ave., Suite 2900
Chicago, IL 60603
www.npca.org/midwest