



# LAKE HURON BINATIONAL PARTNERSHIP

## 2014 Annual Report

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### What is the Lake Huron Binational Partnership?

The Lake Huron Binational Partnership (LHBP) was formed in 2002 to meet commitments in the Canada-United States Great Lakes Water Quality Agreement for lakewide management. The Partnership facilitates information sharing, sets priorities, and assists in coordinating binational environmental protection and restoration activities. In the future, the Partnership will develop and implement a Lakewide Action and Management Plan for Lake Huron.

The U.S. Environmental Protection Agency (us epa), Environment Canada, Michigan Departments of Environmental Quality and Natural Resources, the Ontario Ministry of Environment and Climate Change, and the Ontario Ministry of Natural Resources and Forestry form the core of the Partnership.

The Partnership promotes a flexible membership which may include all levels of government, Métis, Tribes, First Nations, environmental non-government organizations and the public. These broader partnerships take on initiatives that cannot be accomplished by individual agencies alone.

### Overview

Lake Huron has over 30,000 islands, the longest shoreline and drainage basin of the Great Lakes and the largest island (Manitoulin) of any freshwater lake on earth. Lake Huron coastal wetlands account for almost 30% of total wetland area in the Great Lakes. This is an ecologically rich and internationally significant ecosystem with globally and nationally rare habitat types and species. Invasive species, shoreline hardening, dredging and other forms of alteration, climate change, dams and barriers to water flow and diffuse sources of pollution from urban and agricultural sources are critical threats to Lake Huron’s biological diversity. Conserving this precious resource is important to maintaining its enormous social, recreational, and economic benefits.

The Lake Huron Binational Partnership’s 2014 Annual Report provides information and updates on:

- Lake Huron coastal wetland monitoring activities
- Efforts to rehabilitate lake trout populations
- Watershed programs to study and reduce non-point source pollution

The priorities of the Partnership are to continue to study, report on, and address key issues such as contaminants in fish and wildlife, biodiversity and ecosystem change, fish and wildlife habitat, and localized domestic water quality issues including beach closings and algal fouling.

### Canada-U.S. Great Lakes Water Quality Agreement (GLWQA) of 2012

Continual improvements to lakewide management are being made. Current areas of focus are the lake ecosystem objectives, outreach and engagement plans, Lakewide Action and Management Plans, and management of the nearshore waters. More information can be found at [www.binational.net](http://www.binational.net). ♦



Northwinds Beach, Craigeith Ontario. Credit: Environment Canada.



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## Accomplishments

### Monitoring Coastal Wetlands

Over the last four years, the Great Lakes Coastal Wetland Consortium and 11 partners from government, academia, and environmental organizations have been assessing wetland health in all five Great Lakes. To complete this five-year project, one more year of sampling and analysis is planned, followed by an assessment of wetland health and changes over time. The Consortium will also develop a website to provide information on each wetland sampled.

Monitoring, protecting and restoring coastal wetlands are priorities of the *Lake Huron Binational Biodiversity Conservation Strategy*. Information will be used to evaluate the success of wetland restoration projects and to prioritize future conservation efforts.

### Rehabilitating Lake Trout Populations and Habitat

Conserving populations of native fish species such as lake trout, and their habitats, is a priority for LHBP partners.

Recently, lake trout have been showing signs of significant improvement. In 2013, a revised *Lake Trout Rehabilitation Plan* for Ontario waters was released that responds to calls for a reduction or halt to stocking in several locations, and recommends stocking only strains that reproduce most successfully in the wild. In the U.S. waters of Lake Huron's main basin, signs of lake trout recovery are even more convincing, prompting similar consideration of reduced stocking.



Lake Trout Spawning Reef at Thunder Bay, Michigan.

Credit: Courtesy of Wayne Lusardi, Michigan Department of Natural Resources, Thunder Bay Underwater Preserve.

Recent monitoring of specially-built reefs near Thunder Bay, MI shows that the number of spawning wild lake trout using the site increased rapidly in 2012 and 2013. The complex of 28 new reefs totals 1.5 acres (0.61 ha) and was constructed between 2009 and 2011. Invasive mussels have also been slow to colonize the reefs. These findings may help to inform ongoing efforts to create artificial spawning habitats for other species, or at other locations in Lake Huron and Georgian Bay.

### Reducing Non-Point Sources of Pollution

Reducing non-point sources of pollution is a priority for LHBP partners, and agencies and local participants are working together to address the issue in both Canada and the United States. In Canada, over the past thirty years, there has been a significant increase in the presence and amount of algae visible in nearshore areas throughout the southeast shore.



Stream rehabilitation project.

Credit: Ontario Ministry of the Environment and Climate Change.

Now in its fourth year, the *Healthy Lake Huron – Clean Waters, Clean Beaches Initiative* is continuing to address the problem between Sarnia and Tobermory. So far, work completed in five priority watersheds has included: septic system inspection and improvement, tree planting, retirement of fragile agricultural lands, and planting streamside buffers. Over 200,000 trees have been planted in the Pine River watershed alone. Berms have been constructed and cover crops planted to reduce soil erosion from farms. Water quality monitoring and research continues to pinpoint sources of non-point source pollution and measure the effectiveness of management practices. One highlight of the project's outreach activities is the completion of a new video: <http://ruralstormwater.com/page.php?page=videos>.

In the United States, there have been significant investments in restoration activities at Saginaw Bay, MI, including the allocation of over US\$10 million from the US EPA's Great Lakes Restoration Initiative (GLRI). More information is needed on the relationship between land-based conservation actions and the local river and bay ecosystems, in order to identify the best nutrient reduction approach. This is the goal of the Saginaw Bay Optimization Decision Tool, which is developing a science-based, system-wide integrated framework to help guide investments in nutrient management practices and restoration projects. A major component of the project is the development of priorities to guide conservation practice selection and locations. For more information, go to: <http://graham.umich.edu/media/files/watercenter-tier2-karpovich.pdf>. ♦



## Addressing Challenges

### *Invasive Mussels Affect Nutrient Cycling*

Invasive quagga and zebra mussels have caused profound changes to water quality and the aquatic food web, even without significant changes in nutrient inputs from point and non-point sources. The relationship between invasive mussels and nutrient cycling is not fully understood, but scientists believe that mussels are trapping nutrients on the lake bottom – making them unavailable to many forms of aquatic life. This severely limits the overall productivity of the lake, greatly alters nutrient cycling, and affects the fish community.

To better understand how mussels impact nutrient cycling, a major study was done during the 2012 Lake Huron Cooperative Science and Monitoring Initiative (CSMI). Results show that nutrient levels declined to low levels from offshore waters to the shallow nearshore zone. The decrease was most evident during the spring and is linked with declines in plankton abundance. This is important because the spring is a critical time for growth and survival of many juvenile and prey fish, and plankton is their main food source.

Fisheries studies by Michigan resource management agencies show sharp declines in whitefish reproduction in the nearshore waters since 1995 – a grave concern to commercial fisheries. A major challenge is to identify and implement measures that promote the growth of native species, while minimizing (or ideally avoiding) benefits to nuisance or invasive species.

To further understand nutrient cycling and the impacts of invasive species on the food web, the Lake Huron Binational Partnership will assemble and summarize the findings of scientific studies to date and organize a workshop in 2015 to discuss key information gaps and identify science and monitoring priorities for the 2017 year of intensive study.

### *Saginaw Bay Muck Integrated Assessment*

In several regions of the Great Lakes, including Saginaw Bay, Michigan, the proliferation of organic debris or “muck” has been negatively affecting water quality and the local economy. Excess nutrient loads are likely a significant contributor to the problem. Through the Integrated Assessment Framework, a team of researchers and state/federal agencies will work together to summarize current state of knowledge on the causes and negative impacts of muck on the shores of Saginaw Bay. Researchers will also assess the public perception of muck-related issues and identify a series of management actions to address the impact. The results of the assessment will also provide stakeholders with a shared understanding of the current state of knowledge related to muck and the options for effectively managing its impacts. ♦

## St. Mary's River Update

The St. Mary's River is a Great Lakes Area of Concern (AOC), or location that has experienced environmental degradation. Several beneficial use impairments (BUIs) exist in the River, such as bird and animal deformities and degradation of aesthetics. Recently there has been significant progress in understanding the current condition and management needs to restore these BUIs in both Canadian and U.S. sections of the AOC.

On the Canadian side, the results of a three-year wildlife health assessment by Environment Canada looked at gull and tern chicks. Findings show little evidence of deformities and reproductive impairments that were caused by contaminants.

On the U.S. side, fish and wildlife deformities were no longer an issue and the aesthetic condition of the River improved to the extent that they were removed from the U.S. list of BUIs in early 2014. In that same year, additional actions to advance the restoration of the St. Marys River included: analysis of management options for contaminated sediment; water quality surveys to evaluate aesthetics and eutrophication/undesirable algae; a study on agricultural impacts on water quality; completion of a bird population study, and several fish studies (tumours, population dynamics, and fish contaminant levels).

The National Oceanic and Atmospheric Administration is overseeing the design and implementation of a habitat restoration project that will restore historic fish habitat to an area known as ‘Little Rapids’ on the U.S. side of the river. When completed, this US\$5.9 million dollar Great Lakes Restoration Initiative project will allow the removal of degradation of fish and wildlife populations and the loss of fish & wildlife habitat to be removed from the U.S. list of BUIs.

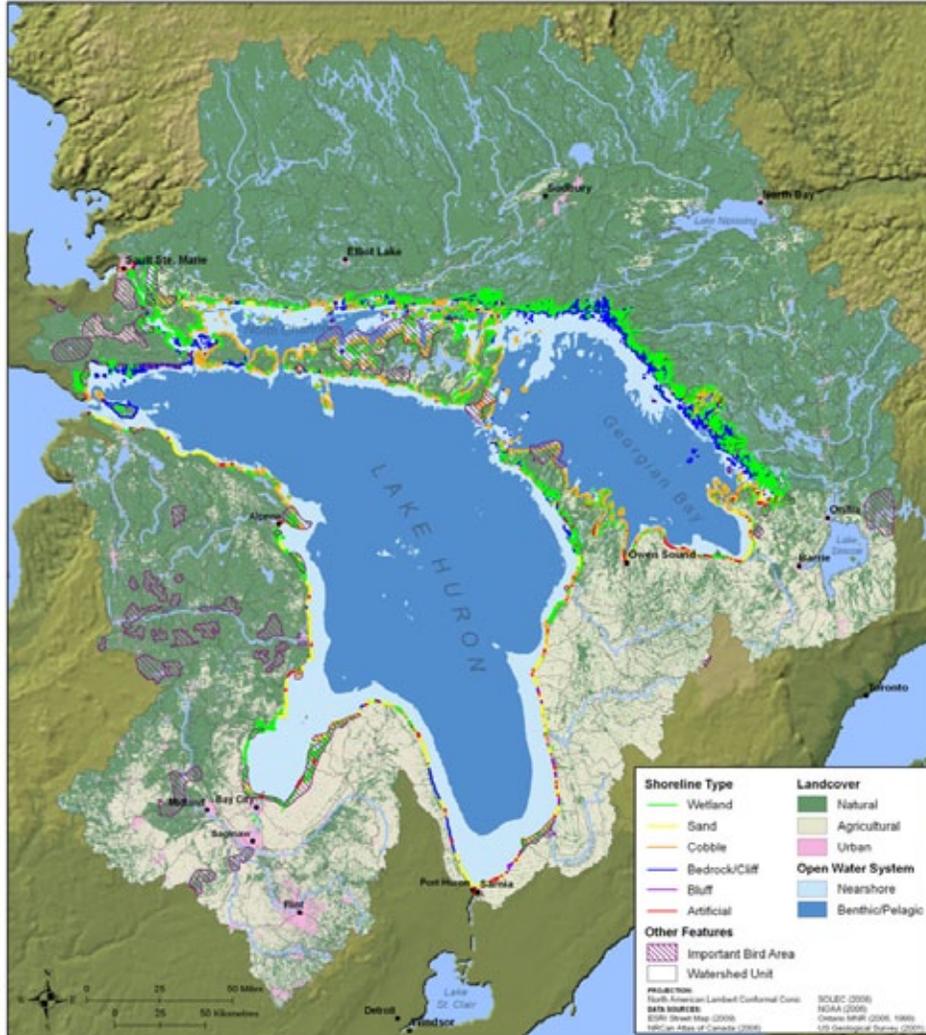


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## Watershed Map

Effective management of Lake Huron's open and nearshore waters, coastal wetland and coastal terrestrial ecosystems, islands, aerial migrants, and native migratory fish will ensure the conservation of its native biodiversity.



Map credit: The Nature Conservancies of the United States and Canada.

## Contact Information

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