



LAKE HURON LAKEWIDE ACTION AND MANAGEMENT PLAN

2016 Annual Report

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What is the Lake Huron LAMP?

Under the 2012 Great Lakes Water Quality Agreement, the governments of Canada and the United States have committed to restore and maintain the physical, biological and chemical integrity of the waters of the Great Lakes.

In 2016, the Lake Huron Partnership will develop a Lakewide Action and Management Plan (LAMP) with the intent of restoring, enhancing, and protecting the Lake Huron ecosystem. The LAMP will be implemented by the Lake Huron Partnership, which is led by the U.S. Environmental Protection Agency and Environment and Climate Change Canada and which facilitates information sharing, sets priorities, and assists in coordinating binational environmental protection and restoration activities.

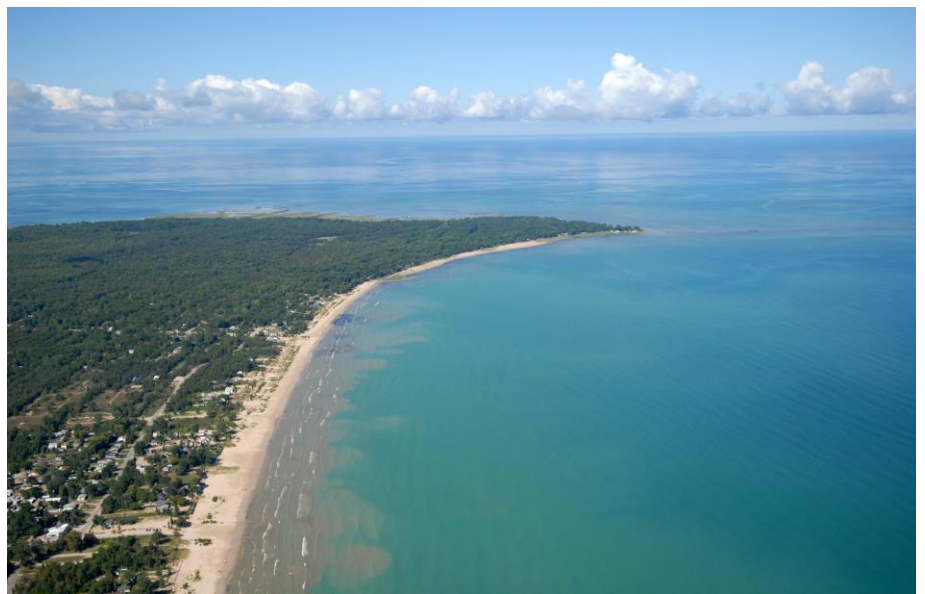
This 2016 annual report highlights accomplishments and progress in achieving LAMP goals during the past year and identifies LAMP-related activities including outreach, monitoring, protection and restoration actions.

Overview

When the early French explorer, Étienne Brûlé, first discovered Georgian Bay in 1615, he could not have known the cultural and ecological significance that Lake Huron would represent to its current residents and visitors. Lake Huron is the fourth largest freshwater lake on earth with the longest shoreline and largest watershed of all the Great Lakes. Every hour, roughly 8 billion litres (2 billion gallons) of water flows from Lake Superior into Lake Huron and the watershed adds another 5.4 billion litres (1.4 billion gallons) from the land and streams. There are more islands in Lake Huron than any other Great Lake, including Manitoulin Island, the largest island in any freshwater lake in the world. Deep below the lake’s surface, there are more than 1000 shipwrecks, an underwater forest of 7000-year-old petrified trees, and evidence of a network of animal herding structures and hunting blinds made by early Indigenous peoples roughly 9,000 years ago.

The Lake Huron Partnership’s 2016 Annual Report provides information and updates on:

- Watershed Nutrient Management Initiatives;
- Coastal Conservation Efforts;
- Nearshore Assessments and River Restoration, and
- Lake Huron Open Water Science and Monitoring.



Kettle Point located along the southeast shores of Lake Huron. Credit: Ausable Bayfield Conservation Authority.



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Accomplishments

Watershed Nutrient Management Initiatives

A Canadian federal-provincial Great Lakes Agricultural Stewardship Initiative is helping Ontario farmers from the southeast shores of Lake Huron to identify priority actions that will improve soil health, reduce soil and nutrient loss, and improve pollinator health.

In south-eastern Georgian Bay, the Government of Canada's Lake Simcoe/South-eastern Georgian Bay Clean-up Fund is supporting projects that reduce nutrient and sediment pollution and conserve aquatic habitat. This fund enabled the Nottawasaga Valley Conservation Authority (NVCA) to identify 'hotspots' of nutrient sources, potential climate change impacts and methods of protecting ecologically sensitive land. In 2015, the NVCA worked with 75 landowners to divert 747 kilograms (1,646 pounds) of phosphorus and 145 tonnes (160 tons) of sediment from receiving waters by installing over 3,500 metres (11,482 feet) of livestock fencing. More than 100,000 native plants, trees and shrubs were planted by 1,000 volunteers.



Installation of an earthen berm with drain and grassed waterway. Credit: Pine River Watershed Initiative Network.

Michigan's Department of Agriculture and Rural Development administers a voluntary, proactive Michigan Agriculture Environmental Assurance Program (MAEAP) that targets the agricultural industry to ensure that producers are engaged in cost-effective pollution prevention practices in compliance with environmental regulations. Recent figures indicate that over 400 farms have been certified under the MAEAP program within the Saginaw Bay watershed alone. Over the past few years, the Great Lakes Restoration Initiative has provided over US \$18 Million to implement 45 phosphorus control projects within the Saginaw Bay watershed. As a result of these

projects, approximately 21,407 hectares (52,900 acres) were enrolled in various conservation practices (e.g., residue management, grass waterways, filter strips) with an estimated reduction of 38,102 metric tons (42,000 tons) of sediment and 50,394 kilograms (111,100 pounds) of phosphorus diverted from streams.

Coastal Conservation

Some of the greatest biodiversity within the Lake Huron watershed is located within the coastal and shallow water zones. Efforts to protect and restore this ecologically rich area are ongoing within Ontario and Michigan. In Ontario, the Lake Huron Centre for Coastal Conservation is working with federal and provincial agencies and community groups to develop a 'Huron Fringe Coastal Action Plan' for the area between Sarnia and the Bruce Peninsula.



The Huron Fringe coastal system and the Ausable River Channel. Credit: Ausable Bayfield Conservation Authority.

Invasive species, including the Common Reed (*Phragmites*), continue to be of significant concern to the public and resource managers as they displace native species and habitat and threaten the social, cultural and economic interaction with the coast. The Kettle and Stony Point First Nation of Sarnia, Ontario began a two-year control effort involving spraying, rolling, burning and cutting *Phragmites* along the shore and drainage ditches. Success is evident as a number of species at risk, including the Least Bittern and the Eastern Musk Turtle, have returned to some of these areas. The Ontario *Phragmites* Working Group and the Ontario Invasive Species Plant Council provide technical support to groups throughout the province who map, remove and control *Phragmites* through an integrated approach, including the Bruce Peninsula Biosphere Association and the NVCA.



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In Michigan, a Comprehensive Invasive *Phragmites* Management Planning Program provides regional, long-term strategic management and restoration of *Phragmites*-infested coastal wetlands and coastal habitats in Saginaw Bay. More than 293 hectares (725 acres) are targeted for treatment using an integrated, adaptive approach. The Upper Peninsula *Phragmites* Coalition is also training stewardship groups to control *Phragmites* on 242 hectares (600 acres) of land including locations within the Lake Huron Watershed.



Invasive *Phragmites* threatens the nearshores and terrestrial biodiversity. Credit: Ausable Bayfield Conservation Authority.

Nearshore and Tributary Assessment and Restoration

With the lower productivity of the open waters, nearshore and tributary fish populations are of increasing importance to natural resource managers. Shoreline development and alteration, aquatic invasive species, dams and barriers, and climate-related water level change are responsible for much of the degraded water quality and habitat conditions found in these areas. Both Canada and the U.S. have ongoing initiatives that are addressing nearshore water quality and habitat in Lake Huron.



Walleye spawning habitat restoration project Key River, Ontario. Credit: Eastern Georgian Bay Stewardship Council.

In Ontario, the Eastern Georgian Bay Stewardship Council recently received Government of Canada support to work with resource managers, First Nations and local community groups to assess spawning, nursery, and foraging habitat for migrating fish species. Fish habitat significance, function and connectivity assessments are underway to improve the understanding of tributary conditions and identify priority restoration sites within Eastern Georgian Bay. In 2015, approximately 400 square metres (4,305 square feet) of Walleye spawning habitat were enhanced at two sites on the Key River and a second restoration project will take place in 2017.

In Michigan, the Upper Midwest and Great Lakes Landscape Conservation Cooperative (UMGL/LCC) is initiating a collaborative process to understand the current state of coastal wetland conservation and facilitate the identification of regional coastal wetland conservation goals. Through a Landscape Conservation Design process, the UMGL/LCC is bringing together the coastal wetland conservation community (including federal, state, and local government agencies, and non-government organizations) to identify high priority coastal wetland conservation projects. The geographic extent of this initiative extends from northern Saginaw Bay, south to western Lake Erie. This conservation design process is also intended to help conservation agencies, organizations, and funders target resources to these high priority sites.

Addressing Challenges

The story of Lake Huron is one of dramatic ecological change. Nutrient levels, lake productivity and overall biological diversity of the open waters have significantly declined over the years, due in part to invasive filter-feeding Dreissenids (zebra and quagga mussels) and other invasive species like the spiny water flea and round goby. In the fall of 2015, the Lake Huron Partnership hosted a meeting in Alpena, Michigan with 100 participants to share scientific information and discuss ecosystem condition, trends and science priorities. Participants agreed that additional science and monitoring is needed to better understand the flow and cycling of nutrients within the lake, and how the flow of nutrients is influenced by invasive species.

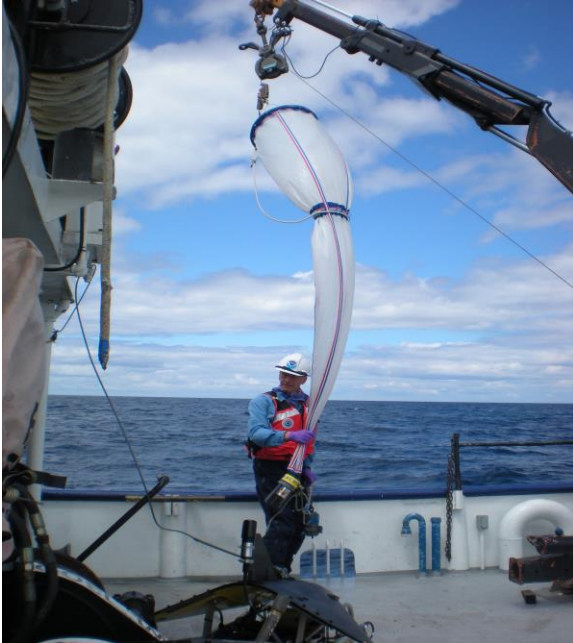
In 2016, National Oceanic and Atmospheric Administration (NOAA) will sample sites within Saginaw Bay every two weeks from June to October to measure water temperature, clarity, nutrients, phytoplankton and algae. A Realtime Coastal Observations Network buoy will be deployed in Saginaw Bay to



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measure wave energy, meteorological conditions, currents, and water quality conditions at the surface and bottom of the Bay.



The next year of cooperative science and monitoring on Lake Huron will occur in 2017. Credit: NOAA Great Lakes Environmental Research Laboratory.

The Lake Huron Partnership will work with its partners to develop additional research and monitoring plans for Lake Huron through a Cooperative Science and Monitoring Initiative scheduled for 2017.

Contact Information

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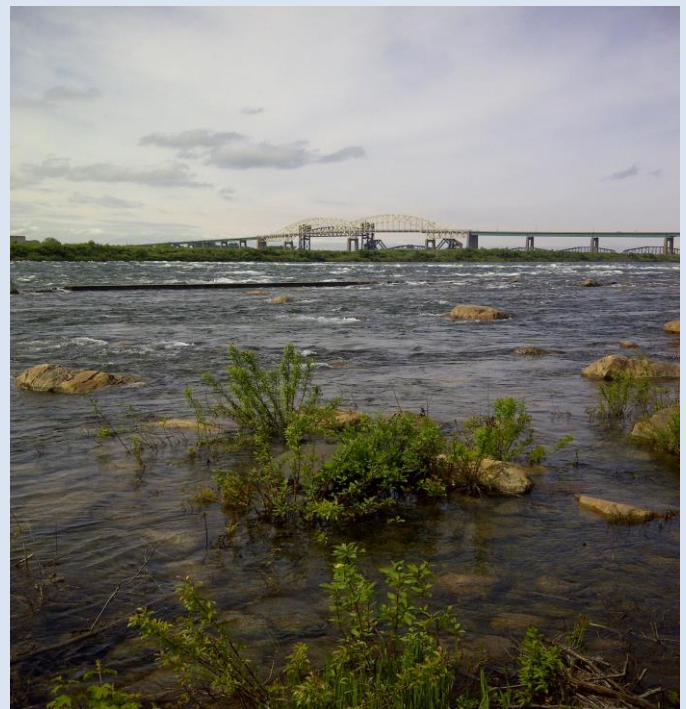
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Update on the St. Marys River Area of Concern

On the Canadian side of the St. Marys River Area of Concern (AOC), a multi-year colonial waterbird study found low contaminant concentrations and no physical deformities or reproductive problems for waterbirds within the AOC (similar to elsewhere in the North Channel and Lake Huron). As a result, Canada and Ontario officially redesignated *the Bird or Animal Deformities or Reproduction Problems* beneficial use impairment (BUI) to “not impaired”.

A water quality study has been underway since mid-2013 to evaluate aesthetic, physical and chemical parameters of the St. Marys River. Monitoring data to date show that the conditions originally leading to the impaired status no longer exist, as there is no evidence of oxygen stress, large quantities of algae, or high levels of nutrients and characteristics associated with degraded aesthetics.

The Little Rapids Habitat Restoration Project crossed a major milestone this spring as the project officially moved into the construction phase. Construction is anticipated to be complete by the fall of 2016. When complete, this habitat restoration project will allow the *Degradation of Fish and Wildlife Populations* and the *Loss of Fish and Wildlife Habitat* BUIs to be removed from the U.S. side of the AOC.



Rapids of the St. Marys River from Whitefish Island, Sault Ste. Marie, ON. Credit: Mark Chambers.