



LAKE HURON



2020 ANNUAL REPORT

LAKEWIDE ACTION AND MANAGEMENT PLAN

Bruce Peninsula. Source: Parks Canada.

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What is the Lake Huron LAMP?

Under the [2012 Great Lakes Water Quality Agreement \(GLWQA\)](#), the governments of Canada and the United States committed to restore and maintain the physical, biological and chemical integrity of the waters of the Great Lakes.

The Lake Huron Lakewide Action and Management Plan (LAMP) is an ecosystem-based strategy for protecting and restoring the water quality of Lake Huron, including the St. Marys River. The Lake Huron Partnership, led by the U.S. Environmental Protection Agency (U.S. EPA) and Environment and Climate Change Canada (ECCC), develops and implements the LAMP and facilitates information sharing, priority setting and coordination of multinational protection and restoration activities. This 2020 Annual Report provides an update on the state of Lake Huron, successful management actions, and explains how challenges to the Lake environment continue to be addressed.

OVERVIEW

In 2020, the Lake Huron Partnership assessed progress of the Lakewide Action and Management Plan (LAMP) actions being taken to protect and restore Lake Huron and the St. Marys River. Further, the Partnership initiated development of the 2022–2026 Lake Huron Lakewide Action and Management Plan and provided the first public opportunity for input. We encourage you to learn more about the [Lake Huron LAMP call for public input](#).

We will also be participating in the [2022 Great Lakes Public Forum](#) in September 2022 in Windsor, Ontario. The Forum is held every three years to engage the public on the state of the Great Lakes, progress achieved over the past three years, and priorities to guide the science and actions for the next three years.

The Lake Huron watershed is currently home to 3 million people (approximately 1.4 million in Ontario and 1.6 million in Michigan). We continue to recognize the inherent natural, social, spiritual and economic value of the Lake Huron Basin ecosystem, which is in fair condition.



Flower Pot Island. Source: Don Wilkes.

Lake Huron continues to be a source of high-quality drinking water. The beaches and nearshore areas continue to provide opportunities for swimming and recreational use. In the following sections of this annual report, the Lake Huron Partnership provides updates on our activities to reduce chemical contamination, manage nutrients and algae, prevent and control invasive species, and restore and protect habitat.

REDUCING CHEMICAL CONTAMINATION

Lake Huron continues to be a good source of high-quality drinking water. Although concentrations of toxic chemicals are much lower compared to the 1970s, fish consumption advisories continue to be in effect.

Chemicals such as mercury and PCBs can accumulate in fish tissues and may harm human health if consumption advisories are not followed. Efforts to reduce impacts of chemicals in Lake Huron are continuing through innovative approaches and at contaminated site remediation projects. Continued efforts in the Areas of Concern have resulted in improvements in Beneficial Use Impairments (BUIs).

Exploring Innovative Approaches to Reduce the Release of Chemicals of Mutual Concern (CMCs)

As part of the [Great Lakes Protection Initiative](#), Environment and Climate Change Canada (ECCC) has supported innovative approaches that pilot technologies to help reduce the release of [Chemicals of Mutual Concern](#) to the Great Lakes.

One such project, funded by ECCC, studied the benefits of adding filters to household washers and dryers to divert chemicals (such as PCBs and PFAS) and microfibers (tiny strands of plastic pollution) that come off your clothes during laundering. These filters can prevent these pollutants from entering the Great Lakes.

There can be up to 700,000 microfibers per load of laundry depending on the amount of synthetic materials in the clothes washed. Although

wastewater treatment plants capture some contaminants and the bulk of microfibers, final effluent from the plant can still discharge these substances directly into the lake. Preliminary results from this project suggest that the washer and dryer filters were effective at reducing some of these unwanted substances from entering Lake Huron. Find out what you can do to reduce [chemicals](#) and [plastics](#) from entering the Great Lakes.



Innovative filter technology to reduce CMCs and microfibers in the Lake Huron Basin. Source: Sam Athey.

Restoration of the Flint, Michigan Waterfront

Decades of industrial activity in Flint, Michigan affected a 60-acre (24-hectare) riverfront site known as “Chevy in the Hole,” located three blocks from the downtown area.

Since 2005, a coalition of federal, state and local partners including the U.S. Environmental Protection Agency, the Michigan Department of Environment, Great Lakes and Energy, City of Flint, Genesee County Land Bank Authority (GCLBA) and Genesee County Parks has completed targeted cleanups across the Flint waterfront to reduce contamination, fill old drains and sewers, and install a soil and vegetative green “cap” over the contaminated area. This work is transforming the site into a community green space known as “Chevy Commons” as part of a broader Flint River restoration project.

The GCLBA and the City of Flint used Great Lakes Restoration Initiative (GLRI) funds from the United States Department of Agriculture

(USDA) Forest Service to plant over 3,300 trees across the Chevy Park waterfront site between 2011–2020.

In the first stage, about 18 acres (7 hectares) were planted with selected fast-growing trees, such as willow and poplar, to create a green buffer that captures contaminants in soil and water, a process known as [phytoremediation](#). Another 20 acres (8 hectares) of the site included a variety of native trees, shrubs, prairie plants and no-mow grass for a low-maintenance cap that provides wildlife habitat and natural stormwater storage.

These efforts reduced runoff into the Flint River, improved soil and groundwater quality, and slowed the movement of contaminated groundwater.



Before and after photos of “Chevy Commons”. Source: Genesee County Land Bank Authority.

Now that the 60-acre (24-hectare) redevelopment is nearly complete, the site includes grasslands, woodlands and wetlands interlaced with recreational trails. The local community now has more opportunities to interact with and enjoy the natural environment, and benefits from an

increased quality of life through better air, land and water quality. For more information, visit [Flint Waterfront Restoration](#).

MANAGING NUTRIENTS AND ALGAE

Lake Huron has beaches and nearshore areas that continue to provide good opportunities for swimming and recreational use. Nutrient issues in the lake continue to be a challenge as phosphorus concentrations are very low in the offshore waters, limiting productivity, but are high enough in some nearshore areas to cause nuisance algae.

Healthy Lake Huron: Broadening Partnerships

Healthy Lake Huron: Clean Water, Clean Beaches Initiative (HLH) is a collaboration of government, public health, conservation agencies, agricultural producers, rural landowners and community groups working together to improve Lake Huron water quality. Traditional stewardship outreach focuses on farmers and other landowners.

This project broadened communication and outreach to other expert resources not involved in the environmental field, but who already had relationships to the target audience. These expert resources include bankers, municipal leaders, science educators, contractors, agribusinesses and other landowners. By educating them on stewardship opportunities, existing business relationships could be used to help spread the information in a cumulative effort.

The project also helped identify the gaps in the programs from a different perspective. This initiative was called a “stewardship cluster”, symbolizing the collaborative nature of the program. This year, HLH has focused on teaching new communication skills and creating new products and events, including new videos, articles and social media posts (#HealthyLakeHuron #LandtoLake) in order to appeal to a larger audience.

An [evaluation of these programs](#) compared the successes and challenges to existing

stewardship initiatives. Organizations throughout the Healthy Lake Huron watersheds are implementing a wide variety of programs for soil health, erosion control, agricultural best management practices (BMPs), habitat restoration and other stewardship activities with varying degrees of success. Those organizations that had the most success encouraged peer-to-peer learning, had demonstration components, and/or held conferences with experts on various topics.

Nutrient and Sediment Loading from Agricultural Fields to the Saginaw River

The Saginaw Bay Watershed contributes significant quantities of nutrients and sediment that degrade the water quality of the Saginaw Bay and Lake Huron, resulting in nuisance algal blooms, eutrophication and sedimentation

In 2010, the Saginaw Bay Watershed was identified as a Priority Watershed with the goal of reducing the amount of phosphorus reaching the Great Lakes through funding from the Great Lakes Restoration Initiative (GLRI).

Nutrients, sediment and flow are being monitored by the United States Geological Survey (USGS) at the edge-of-field and in two headwater streams within the Saginaw Basin. Monitoring on privately owned agricultural fields is coordinated with local conservation staff and participating farmers in order to determine if conservation practices intended to reduce nutrient and sediment runoff are working.

Data collection has been ongoing since 2012 and includes calculating volumes of water running off of the field through tile drains and surface slopes, collection and chemistry analysis of this runoff, and monitoring of precipitation associated with each storm and soil metrics (such as soil temperature and soil moisture).

In 2015, a [Soil and Water Assessment Tool \(SWAT\) model](#) was developed for the Alger Creek Basin (a subbasin within the Saginaw Bay Watershed) to simulate the effects of best management practices (BMPs) on nutrient loadings in the Alger Creek subbasin. This model also helps demonstrate the potential benefits

BMPs have in reducing nutrient loading from agricultural fields.

In addition, a data release of nutrient and sediment concentrations, loads, yields and rainfall characteristics is being published in 2021. This data release highlights all the USGS edge-of-field data collected in the Upper Midwest, including the GLRI sites within Wisconsin, Michigan, Indiana, Ohio and New York. Current activities include continued monitoring at the study locations as well as evaluations of conservation effectiveness. Publications will be produced describing these findings. For more information visit [USGS's Edge-of-Field monitoring project](#).

PREVENTING AND CONTROLLING INVASIVE SPECIES

Invasive species continue to be a challenge to Lake Huron. Quagga Mussels are contributing to the low productivity in offshore waters and increased nuisance algae in some nearshore waters. The invasive Sea Lamprey is a continuing threat to large predator fish such as Lake Trout. Invasive aquatic plants such as Phragmites and European frog-bit are negatively affecting shorelines, nearshore areas and coastal wetlands.

Controlling European Frog-bit Invasive Species

European frog-bit (*Hydrocharis morsus-ranae* L.; EFB) is an aquatic invasive plant that forms dense floating mats in mixed plant communities. EFB reduces light, dissolved oxygen and nutrient availability, which impacts the growth and diversity of native submerged vegetation, invertebrates and fish. These ecosystem changes could alter the habitat and food resources of other vertebrates.

Floating mats can also reduce aesthetic values of waterbodies and interfere with recreational water usage. A large collaborative effort among many State of Michigan agencies, universities and local partners to remove and control EFB is taking

place in various locations in Michigan.

More projects are being implemented in high priority locations to continue removal and control actions of EFB, with the goals of evaluating the effectiveness of multiple control methods and developing a state-wide adaptive management strategy.



Removal of EFB in Lake Huron nearshore, state of Michigan. Source: State of Michigan–EGLE.

In 2020, fieldwork included investigating the effects of EFB on ecosystem characteristics and biotic communities, and evaluating the success of ongoing control efforts. This research will be used to inform future management actions and best management practices. Visit the [Michigan Invasive Species website](#) for more information about how to recognize EFB and what you can do to help control the spread.

Management of Invasive Species in Two Canadian National Parks

Invasive Phragmites (*Phragmites australis* subsp. *australis*) control is a priority for invasive management at three Parks Canada sites on Lake Huron. Considered one of Canada's worst invasive species, the plant out-competes native species for water and nutrients, spreading quickly and decreasing biodiversity.

In 2020, Parks Canada staff at Bruce Peninsula National Park and Fathom Five National Marine Park continued their treatment of multiple small patches of invasive Phragmites and continued early detection rapid response efforts.

The sites have seen positive results over the past two seasons as high-water levels have drowned several patches along the Lake Huron coast and several in-land infestations have decreased in size from management efforts.

Georgian Bay Islands National Park's "Impede the Reed" project made significant headway in managing several priority invasive Phragmites patches around Beausoleil Island, removing a total of 1.3 hectares (3 acres) using mechanical and hand pulling methods.



Photo of a barge used to transport the cut biomass and the floating boom installed to prevent the spread of Phragmites during removal at Georgian Bay Islands National Park. Source: Parks Canada.

In 2021, Parks Canada plans to use a Truxor, an amphibious vehicle that cuts Phragmites stems below the water level to drown them, to tackle some of their larger invasive Phragmites stands and support other management efforts in the region.

In addition to the control efforts, Parks Canada has partnered with Trent University to test known stands of native Phragmites for the presence of the hybrid form. In 2020, all native Phragmites samples came back negative for hybridization; additional stands will be tested in 2021. For more information about this management project visit the [Great Lakes Phragmites Collaborative website](#).

PROTECTING AND RESTORING HABITAT AND NATIVE SPECIES

Many intact, high quality habitats, including many coastal wetlands, are found in the Lake Huron ecosystem. Urbanization and agricultural stressors contribute to habitat degradation, which can negatively affect native fish populations and Lake Huron ecosystem health. Continued efforts to address habitat degradation and barriers to natural fish passage are important restoration efforts that can improve ecosystem health.

Fish Passage Restored in Two Locations in Northern Michigan

In collaboration with the U.S. Fish & Wildlife Service, Conservation Resource Authority, Emmet County Road Commission and U.S. Department of Agriculture–Natural Resources Conservation Service, the Little Traverse Bay Bands completed two road-stream crossing projects in 2018–2019 in northern Michigan.



Before and after road-crossing improvements, Carp River (Gill Rd). Source: LTBB.

Twin undersized and failing culverts were removed from Van Creek at Reed Road and the Carp Lake River at Gill Road. Timber bridges were constructed in place of these culverts to restore fish passage, decrease roadway flooding, reduce erosion and improve aquatic connectivity. The Van Creek project added over five miles of upstream habitat in the Lake Huron Basin. Future plans include replacing two more culverts in downstream sections.

The Carp Lake River project created opportunity for the federally endangered Hungerford's Crawling Water Beetle to move upstream of the installed timber bridge. Initial surveys have not documented any Hungerford's Crawling Water Beetles upstream of the crossing improvement, but future surveys are anticipated to yield beetles in the coming years. Two more culvert replacements occurred upstream of the Gill Road crossing in 2020 through efforts from our partners, concluding all road crossing improvements needed for the Carp Lake River.

Nottawasaga River Restoration Program

The Nottawasaga River is the largest tributary of Georgian Bay that drains from the agricultural and rapidly urbanizing southern Ontario region.

The Nottawasaga River Restoration Program (NRRP) is a strategic initiative with the goal of managing the high-quality water source and coldwater fish habitat in the Niagara Escarpment World Biosphere Reserve and extending these resources downstream into the agriculturalized Simcoe Lowlands. This goal is being achieved by completing stream bank stabilization with a strong instream habitat component, floodplain construction, stream-side tree planting and livestock exclusion fencing.

This project provides large-scale opportunities for fisheries enhancement. The proposed river restoration work will benefit sport fisheries for Chinook Salmon, migratory Rainbow Trout and resident Brown Trout. Anticipated habitat improvements will also benefit many native fish including Northern Brook Lamprey and river resident Lingcod.

In 2020, a 400 m (1312 ft) long reach of the Nottawasaga River was restored through 355 m (1164 ft) of bank stabilization, 2,970 m² (5,379 ft²) of floodplain creation and the planting of 1,325 native trees and shrubs. The work was coordinated by the Nottawasaga Valley Conservation Authority and Nottawasaga Futures, with help from the Ontario Trillium Foundation, Fisheries and Oceans Canada, Patagonia–Tides Foundation and HJ McDonald Foundation.



Photo of Bank stabilization using discarded Christmas trees & soil anchors. Source: NVCA.

OUTREACH AND ENGAGEMENT

GLWQA Engagement Opportunities

You can keep up to date on GLWQA engagement opportunities in the [Engagement](#) section of [Binational.net](#). Information on many of our partner organizations' upcoming outreach and engagement opportunities can also be found at the Great Lakes Commission's "[Great Lakes Calendar](#)".

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