



# 2021 Annual Report

# LAKE HURON

## LAKEWIDE ACTION AND MANAGEMENT PLAN



Kettle Point Ontario. Source: Environment and Climate Change Canada

### In this Issue

- Reducing Chemical Contamination and Pollution .....2
- Managing Nutrients and Algae .....2
- Preventing and Controlling Invasive Species .....3
- Protecting and Restoring Habitat and Species .....4
- Outreach and Engagement .....5

### 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.

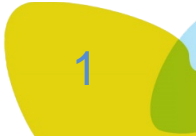
The Lake Huron Lakewide Action and Management Plan (LAMP) is an ecosystem-based strategy for protecting and restoring the water quality of both Lake Huron and the St. Marys River, a connecting river system. The Lake Huron Partnership, led by the U.S. Environmental Protection Agency (U.S. EPA) and Environment and Climate Change Canada (ECCC), develops and implements the LAMP and facilitates information sharing, priority setting and coordination of multinational protection and restoration activities.

## OVERVIEW

Over the past year, the Lake Huron Partnership agencies have cooperated to protect and restore the lake’s water quality through targeted actions and programs. These actions include tracking progress under the 2017-2021 Lake Huron Lakewide Action and Management Plan (LAMP), drafting a new 2022-2026 LAMP for the next five years (to be released in 2022) and planning for the 2022 intensive field year of the [Cooperative Science and Monitoring Initiative](#).

The Lake Huron Partnership will also participate in the 2022 [Great Lakes Public Forum](#), which is currently planned for September in Niagara Falls, Ontario. The Forum is held every three years to engage the public on the state of the Great Lakes, progress achieved under the GLWQA over the past three years, and priorities to guide the science and actions for the next three years.

Lake Huron continues to be in “fair” condition. The lake is a source of high-quality drinking water, with beaches and nearshore areas continuing to provide opportunities for swimming and recreational use. Protective and restorative actions are necessary, however, to prevent and address threats to ecosystem health. In the following sections of this Annual Report, the Lake Partnership provides updates on activities to reduce chemical contamination and pollution, manage nutrients and algae, prevent and control invasive species, and restore and protect habitat and species.

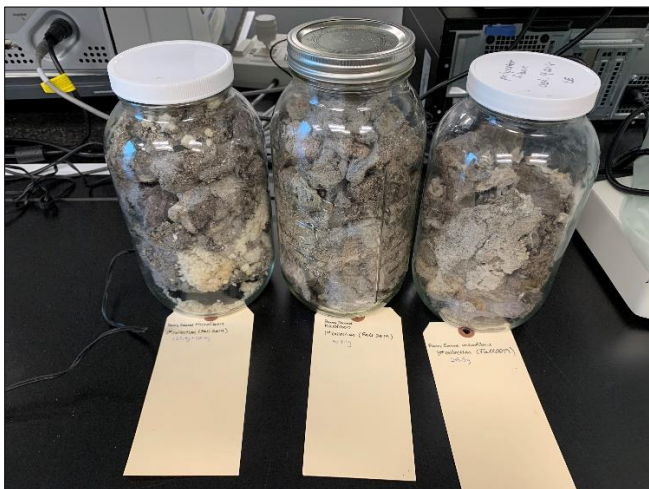


## REDUCING CHEMICAL CONTAMINATION AND POLLUTION

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 PCBs, mercury, and dioxin, can accumulate in fish tissues and may harm human health if consumption advisories are not followed. New and emerging chemicals or pollutants such as microplastics are also a concern to Lake Huron. Efforts to reduce impacts of chemicals in Lake Huron are continuing through innovative approaches and issuance of fish consumption advisories to reduce human exposure.

### Innovative Approaches to Reduce Microplastics from Entering the Great Lakes

Washing clothes can release microfibers (tiny strands of plastic pollution) into the Great Lakes, and once released to the environment, they are difficult to remove. Results from an innovative and collaborative initiative, funded by ECCC, demonstrated that adding after-market filters to washing machines is highly effective at capturing and reducing microfibers that shed from clothes during laundering, resulting in improved water quality. It is estimated that 934 million to 14.1 billion microfibers could be diverted from wastewater treatment plants annually, based on the 97 households in the Georgian Bay area that participated in this study alone. Capturing microfibers in filters diverts these substances from being discharged to wastewater, and may also reduce the release of some [Chemicals of Mutual Concern](#) (e.g., PBDEs) to Lake Huron and other local waterbodies. The results from this project supported proposed Ontario legislation that would require new washing machines to be equipped with a filter for removing microplastics. For details about the study, see [Washing Machine Filters Reduce Microfiber Emissions](#).

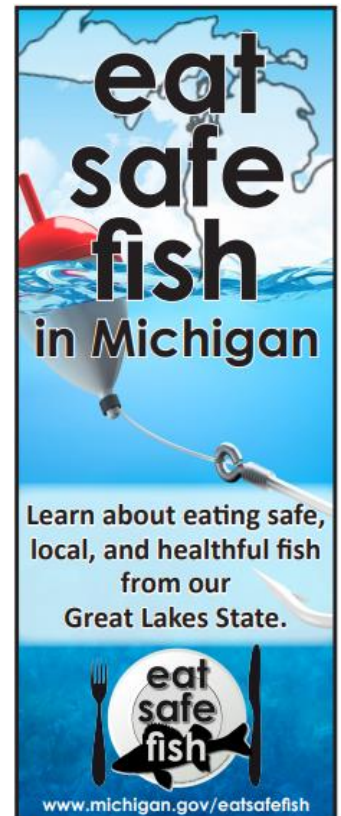


Samples of microfibers removed by washing machine filters. Source: Georgian Bay Forever

### Fish Contaminant Monitoring: Eat Safe Fish Guide

Michigan regularly analyzes fish from Lake Huron to determine whether contaminant levels pose a risk for human consumption. Fish consumption advisories are reviewed and updated based on the data and are made available through Michigan's Eat Safe Fish guide. The guide provides advice to help protect everyone who eats fish on a regular basis.

Contaminants analyzed include mercury and a standard suite of halogenated organic contaminants, dioxin, PCBs, and per- and polyfluoroalkyl substances (PFAS). In 2018 and 2020, Lake Huron Atlantic Salmon, Yellow Perch, Rock Bass, Smallmouth Bass, and Lake Trout were collected from various locations in Lake Huron and its tributaries. Michigan reviewed the data and updated the advisories in the Eat Safe Fish guide. The current advisory for Lake Huron carp is "Do Not Eat" due to PCBs and dioxins. The guidance for catfish, Lake Trout over 24 inches long, and White (Silver) Bass from Lake Huron is "Limited," which means that children under age 15 and those with certain health conditions should avoid eating these fish, and others should limit consumption to 1-2 times per year. To help you and your family make safe meal choices, visit [www.michigan.gov/eatsafefish](http://www.michigan.gov/eatsafefish).



## MANAGING NUTRIENTS AND ALGAE

Nutrient and algae 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 growth. These issues are being addressed through actions, research, and programs at the local, state, provincial, and federal levels, with some focus on Saginaw Bay and Georgian Bay. Beaches and nearshore areas continue to provide good opportunities for swimming and recreational use; healthy watersheds and shorelines are a critical component of maintaining water quality for those (and other) uses.



## Lake Huron Community Forest Acquisition

Forests and wetlands with healthy, natural vegetation help to regulate nutrient cycling and sustain fundamental hydrologic processes, including infiltration of rainwater. With Great Lakes Restoration Initiative (GLRI) funding through the U.S. Forest Service, the Superior Watershed Partnership acquired and will permanently protect, sustainably manage, and provide public access to a parcel of land in the St. Marys Watershed.



Lake Huron Community Forest. Source: Superior Watershed Partnership

Located in an area where coastal development pressures are at an all-time high, the parcel will help to preserve important coastal ecosystems and their beneficial impacts to water quality by reducing soil erosion and the transport of nutrients to Lake Huron in the future. The land includes 17 acres (6.9 hectares) of coastal wetland and 1700 feet (518 meters) of Lake Huron shoreline near De Tour Village in Chippewa County, Michigan. The parcel includes about 4% forested upland with both early successional aspen-birch forest and later-successional northern hardwoods. The remaining 96% of the parcel is comprised of forested, emergent, and rare fen coastal wetland types, as well as Lake Huron sand beach. Forested wetlands include dune and swale habitat with white and red pine and red oak. The community forest will also provide educational and recreational opportunities for area residents and tourists. Teachers and students from local schools will have the opportunity to experience forest-based learning and to gain hands-on experience in environmental restoration and management with the forest. Nearby Lake Superior State University professors and students will have the opportunity to use the forest for research purposes and to conduct field tasks including restoration and long-term monitoring.

## Lake Huron-Georgian Bay Community Action Initiative

The [Lake Huron-Georgian Bay Community Action Initiative](#) was created in 2007 by a multi-stakeholder group led by Canadian federal and provincial agencies

who developed a vision and strategy to improve collaboration and integrated ecosystem management for the Canadian portion of the Lake Huron-Georgian Bay watershed. In 2021, community groups throughout the watershed undertook community-based environmental actions through support from the Initiative. These actions include:

- An initiative by the [Severn Sound Environmental Association](#) to engage the Lake Huron community of citizen science volunteers in collecting valuable information such as local water quality in Severn Sound and its watershed, learning about their local environment and providing empowerment to protect it;
- The [Lake Huron Coastal Centre's Green Ribbon Champion](#) program which provides support, resources, and advice to Lake Huron shoreline residents, and recognizes and rewards landowners who have made exceptional contributions to the health of the shoreline; and
- Efforts by the [Nottawasaga Valley Conservation Authority](#) (NVCA), which decommissioned the Petun Dam and naturalized an 80-meter section of Black Ash Creek, which flows directly into Georgian Bay. This work was done to improve aquatic habitat, particularly for native brook trout. For details about additional success stories, see <https://lakehuroncommunityaction.ca/success-stories/>.

## PREVENTING AND CONTROLLING INVASIVE SPECIES

Over 100 non-indigenous species have become established in Lake Huron, causing direct and indirect impacts to the ecology and water quality of the basin. Once established, invasive fish, plants, and other organisms are very difficult to eradicate. Invasive aquatic plants such as *Phragmites* negatively affect shorelines, nearshore areas, and coastal wetlands by reducing available habitat for other species and by outcompeting native species for sunlight and other resources. Efforts to detect and eradicate invasive species are ongoing.

### Aquatic Invasive Species Early Detection Efforts in Lake Huron

Aquatic invasive species are a pervasive issue in Lake Huron and across the Great Lakes. Early detection and monitoring for aquatic invasive species are important to allow managers to take steps to address the detrimental species or remove them before they become established. Since 2013, the U.S. Fish and Wildlife Service has conducted annual early detection and monitoring in U.S. waters of Lake Huron and U.S. - Canadian waters of the St. Marys River for aquatic invasive fish that are new to the Great Lakes basin.

No new invasive species were identified at Lake Huron locations during 2021, where a total of 60,028 fish were examined at 8 locations from Saginaw Bay to the St. Marys River. Sampling for target invasive invertebrates was also conducted at the mouth of the Saginaw River.



Locations sampled for early detection of aquatic invasive species. Source: U.S. FWS

Funded by the GLRI, ongoing sampling is conducted in partnership with the Sault Ste. Marie Tribe of Chippewa Indians, Canadian Department of Fisheries and Oceans, and the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry. Learn how to spot invasive species and what you should do if you find them: <https://www.michigan.gov/invasives/>, or <http://www.invadingspecies.com/invaders/>.

### Phragmites Management along the Western Collingwood Shoreline

*Phragmites australis subsp. australis* (European Common Reed) is an invasive perennial grass that poses a significant threat to the western shoreline at Collingwood, Ontario. This reach of shoreline along Georgian Bay hosts globally rare coastal marshes that are home to a diversity of species, including species at risk, and is part of the larger Provincially Significant Silver Creek Wetland Complex. Invasive *Phragmites* infestation along the shoreline has driven community interest around ecosystem degradation, shoreline aesthetics, and property values. With support from community volunteers and partners, including Blue



NVCA staff helping to control invasive *Phragmites*. Source: D. Featherstone, NVCA

Mountain Watershed Trust, World Wildlife Fund, ECCC, Georgian Bay Forever, and Town of Collingwood, the NVCA mapped *Phragmites* stands and selectively cut *Phragmites* to minimize impact to wetland habitat. As part of the cutting efforts, NVCA hosted annual “Fight the Phrag” volunteer workdays. This community day accounted for almost half of total volunteer recruitment and 37% of the total area of *Phragmites* cut in 2019. [Learn more](#) about how to identify the invasive *Phragmites* and what you can do to help.

## PROTECTING AND RESTORING HABITAT AND SPECIES

Many intact, high-quality habitats, including many coastal wetlands, are found in the Lake Huron ecosystem. Hard infrastructure, such as dams and parking lots, degrades habitats and can negatively affect native species populations, biodiversity, and resilience to climate change. Continued efforts to catalogue, protect and restore habitat are important for improving and maintaining ecosystem health.

### Habitat Restoration at Singing Sands in Ontario

Restoration work has been ongoing at Singing Sands in Bruce Peninsula National Park, Ontario to remove a parking lot built on top of a coastal dune habitat and to re-establish native species and habitat. The Singing Sands restoration, which began in 2018, continues to be actively monitored by park staff to observe plant growth and dune stability, control invasive species colonization, and ensure that the fen (wetland homes to rare species) and coastal dune habitats are reconnected. Native species that have been planted and are growing in the restoration include a mixture of trees, shrubs, grasses, and wildflowers, including Common Milkweed, Canada Wild Rye, Columbine, Jack Pine, and Beach Sand Cherry. Parks Canada created an “off the beach” experience for visitors to enjoy the ecologically sensitive fen.

#### Steps to reconnect the fen and dune shoreline habitat

STEP 1: Remove existing road and parking lot, revealing native sand underneath.



STEP 2: Install sand fence, sow native seed, and plant native grasses, shrubs, and trees. The sand fence helps dune to re-form by trapping sand and slowing onshore wind, while the plants add stability.



STEP 3: Closely monitor plant growth and control invasive alien species colonization as the fen and coastal dune habitats are reconnected.

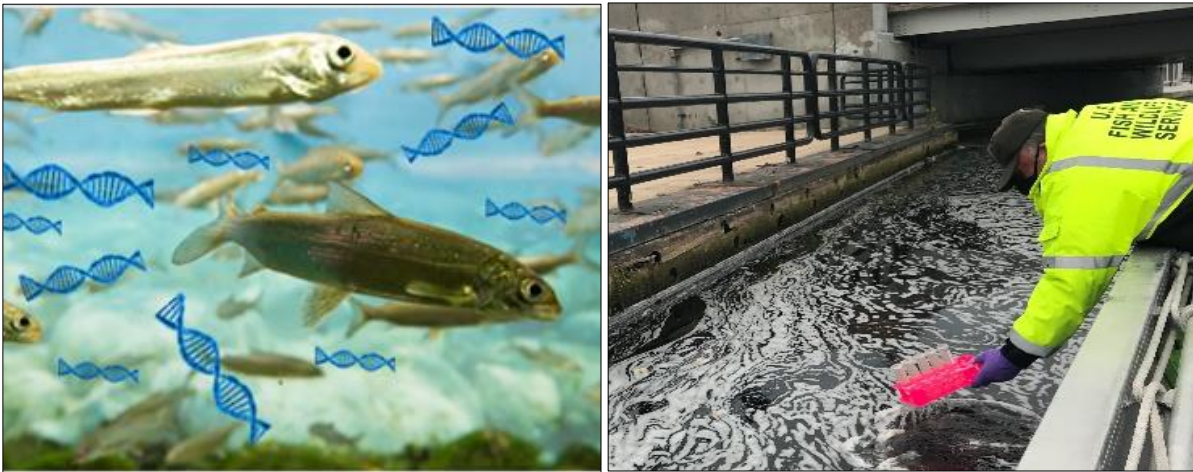


Phased stages of a habitat restoration project at Singing Sands in Bruce Peninsula National Park. Source: Parks Canada



## eDNA Tracking of Lake Whitefish

In 2021, the U.S. Geological Survey, U.S. Fish and Wildlife Service, Bay Mills Indian Community, and Sault Ste. Marie Tribe of Chippewa Indians collaborated on a pilot project that used environmental DNA (eDNA) to evaluate tributary spawning by coregonines (Lake Whitefish and Cisco) in lakes Huron and Michigan. eDNA techniques can detect fish DNA drifting through the water as an indirect method of identifying species. Tributary habitats once contributed to the diversity and sustainability of Lake Whitefish populations and fisheries, but habitat degradation has eliminated considerable spawning habitat. Commercial yields of coregonines declined greatly over the past hundred years, but Cisco specifically have started to increase in Lake Michigan. Recent evidence suggests that Whitefish are using tributaries for spawning in the bay of Green Bay, Wisconsin. The pilot project aims to demonstrate that eDNA can detect these fish more easily than labor intensive conventional sampling methods (such as electrofishing). The partners intend to expand the eDNA technique across the Great Lakes, including Lake Huron, to assess coregonine spawning locations across a broader geography and to set priorities for restoration and protection.



Left: Photo of Lake Whitefish. Source: M. Verch, Shedd Aquarium. Right: U.S. Fish & Wildlife biologists collect water samples for eDNA from Thunder Bay River, just downstream of the 2nd Avenue Bridge. Source: U.S. FWS

## OUTREACH AND ENGAGEMENT

### GLWQA Engagement Opportunities

The Lake Huron Partnership held two *Let's Talk Lake Huron* public webinars in 2021 to discuss topics such as chemicals contaminants and pollutants, including PFAS and microfibers. 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](#)".

## CONTACT INFORMATION

For more information, please visit [Binational.net](http://Binational.net) or contact:

### In Canada:

Paul Parete  
Environment and Climate Change Canada  
[ec.grandslacs-greatlakes.ec@canada.ca](mailto:ec.grandslacs-greatlakes.ec@canada.ca)

### In the United States:

Elizabeth LaPlante  
U.S. Environmental Protection Agency  
[LaPlante.Elizabeth@epa.gov](mailto:LaPlante.Elizabeth@epa.gov)