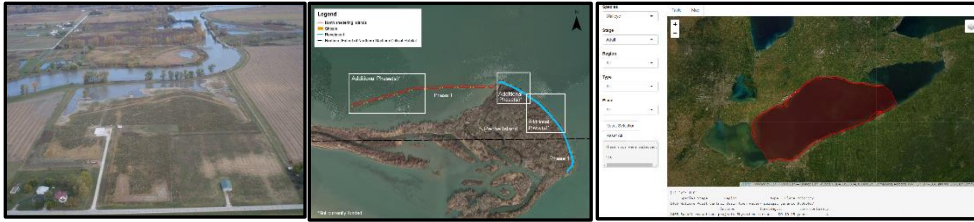


Report of the Lake Erie Habitat Task Group 2021



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Charges to the Habitat Task Group 2020-2021

1. Maintain a list of functional habitats and impediments for species specified by the LEC Fish Community Objectives (FCOs) that can be used to identify and evaluate status of:
 - a. Priority management areas (PMA) that support LaMP, LEC Lake Erie Environmental Objectives (LEEOs) and FCOs
 - b. Strategic research direction for the LEEOs
 - c. Documentation of key habitat and research projects as related to priority management areas.
 - d. Use GIS techniques to refine PMA mapping, coordination and scale.
2. Assist member agencies with the use of technology (*i.e.*, side-scan, GIS, remote sensing, *etc.*) to facilitate better understanding of habitat in Lake Erie, particularly in the Huron-Erie corridor, the nearshore, and other critical areas.
3. Support other task groups by compiling metrics of habitat use by fish.

Charge 1: Maintain a list of functional habitats and impediments for species specified by the LEC Fish Community Objectives (FCO's)

Charge 1a: Priority management areas (PMA) that support LaMP, LEC Environmental Objectives (LEEO's and FCO's)

In 2019 the HTG completed the first iteration of the PMA exercise as reported in the previous HTG report (2018/2019). Through 2020, the HTG has investigated further into entry deficient areas of the dataset and has identified completed projects. Over the next year the HTG will continue to evaluate the PMA dataset and investigate how the new FCO's (Francis et al. 2020) may require updates to the dataset.

Charge 1b: Strategic research direction for the LEEO's

In 2017, the LEC linked the HTG strategic research direction for the LEEOs to the development of PMAs. Efforts to investigate use of the PMA dataset to identify knowledge gaps that could then be used to develop a list of strategic research questions was begun in 2019 and continued through early 2021. Over the next year the HTG will continue to identify and prioritize those knowledge gaps to develop a list of strategic research questions.

Charge 1c: Documentation of key habitat and research projects as related to priority management areas.

Update of the ODNR Wetland Restoration within the H2Ohio Program
J. Kerns

In 2015, Ohio Lt. Governor Mary Taylor signed the Western Basin of Lake Erie Collaborative Agreement, which established a goal of reducing phosphorus loading to Lake Erie by 40% by 2025. Then in 2019, Ohio General Assembly invested \$172 million dollars into H2Ohio initiative proposed by Ohio Governor Mike DeWine to ensure safe and clean water through reducing phosphorus, creating wetlands, addressing septic systems, and preventing lead contamination. The Ohio Department of Natural Resources (ODNR) efforts within the H2Ohio program will focus on wetland creation and restoration using established and emerging technologies. This program includes a lot of focus in the Maumee River and Sandusky River watersheds which are two of the highest priority areas identified through the PMA exercise.

In H2Ohio's first year, the ODNR invested \$50 million in creating, restoring, and enhancing more than 5,500 acres of wetlands primarily focused in northwest Ohio in the western Lake Erie basin as well as upstream of inland lakes that have experienced harmful algal blooms in the past. Once the current projects are complete, approximately 80,000 acres of watershed will be filtered by H2Ohio wetland projects. Additional information on work to naturally reduce pollution and nutrient runoff through the H2Ohio initiative is available <http://h2.ohio.gov/odnr-announces-first-year-accomplishments/>.

To ensure a comprehensive, data-driven approach to improving Ohio's water quality, the ODNR has enlisted the [Lake Erie and Aquatic Research Network](#) (LEARN) to develop and implement H2Ohio wetland monitoring plan. The plan will assess the effectiveness and future role of implemented and planned wetland restoration projects under the H2Ohio Initiative. The program's monitoring plan will allow LEARN researchers from [Bowling Green State University](#), [Heidelberg University](#), [Kent State University](#), [The Ohio State University](#), [The University of Toledo](#), and [Wright State University](#) to sample across multiple wetland types either currently being constructed or planned for the near future.

This agency-guided university effort will take advantage of existing monitoring infrastructure, such as weather stations and [USGS](#) gauges, university resources like Heidelberg University's [National Center for Water Quality Research](#), existing collaborations with agencies, non-profit organizations and industry, as well as additional funding opportunities and new partnerships. ODNR and state scientists recognize that each wetland type will require different sampling approaches and

will likely vary in its capacity to reduce nutrient runoff. This comprehensive monitoring plan is designed to identify and capture these differences.

In addition to the monitoring plan, strategic communications and outreach will regularly connect the scientists with stakeholders, agency staff, elected officials and media outlets. This will include webinars, fact sheets, a website and workshops to share data and current findings.

Peche Island Fish Habitat and Erosion Mitigation Project – Detroit River

J. Serran¹ and S. Marklevitz

Peche Island is a 79-acre island located in the upper Detroit River near Lake St. Clair. The island is owned by the City of Windsor and is a municipal park that is accessible only by boat. The island and surrounding waters have high biodiversity, including 22 species of rare native plants (235 plant species documented in total), 2 rare reptile species, critical habitat for species at risk, freshwater clams and mussels, and numerous birds (including bald eagles) that utilize the island for multiple life stages. The marsh on the island has been deemed provincially significant and the entire island is designated as an environmentally sensitive area. Nearly a century of strong river currents and heavy wave action from Great Lakes freighter traffic has significantly eroded the island shoreline resulting in a loss of an estimated 17 acres of the island's area between 1931 to 2015. This project works towards some of the actions making the Detroit River a high priority through the PMA exercise and the Detroit River is also a high priority in the LEC environmental priorities.

The primary objective of the Peche Island Fish Habitat and Erosion Mitigation Project – Detroit River is to create a revetment on the northeast side and a series of off-shore sheltering islands on the north side of the island to protect from further erosion while providing fish refuge and the opportunity for the establishment of macrophytes. This project is being completed with the partnership of the City of Windsor, Essex Region Conservation Authority, the Detroit River Canadian Cleanup, Swim, Drink, Fish, Environment and Climate Change Canada (ECCC) and Ontario Ministry of Natural Resources and Forestry (OMNRF). Once completed this \$6.5 million project will include the construction of 9.25 offshore sheltering islands on the north side of Peche Island, a 607.9 m rock revetment on the northeast side of the Island and creation of approximately 10.5 ha of backwater habitat for fish (Figure 1).

¹ Jacqueline Serran, Remedial Action Plan Coordinator, Detroit River Canadian Cleanup, serran@detroitriver.ca

Phase one of the project began in October 2020 with approximately \$3 million in available funding. Construction of 4 of the 9.25 sheltering islands which has created approximately 4 ha of backwater fish habitat was completed in December 2020 (Phase 1, Figure 2). Approximately 210 – 250 m of the 607 m of revetment on the northeast side of the island is scheduled to be completed in Winter or late Summer 2021, depending on weather conditions. The plans and timing for subsequent construction phases will be dependent on availability of additional funding in the coming years.

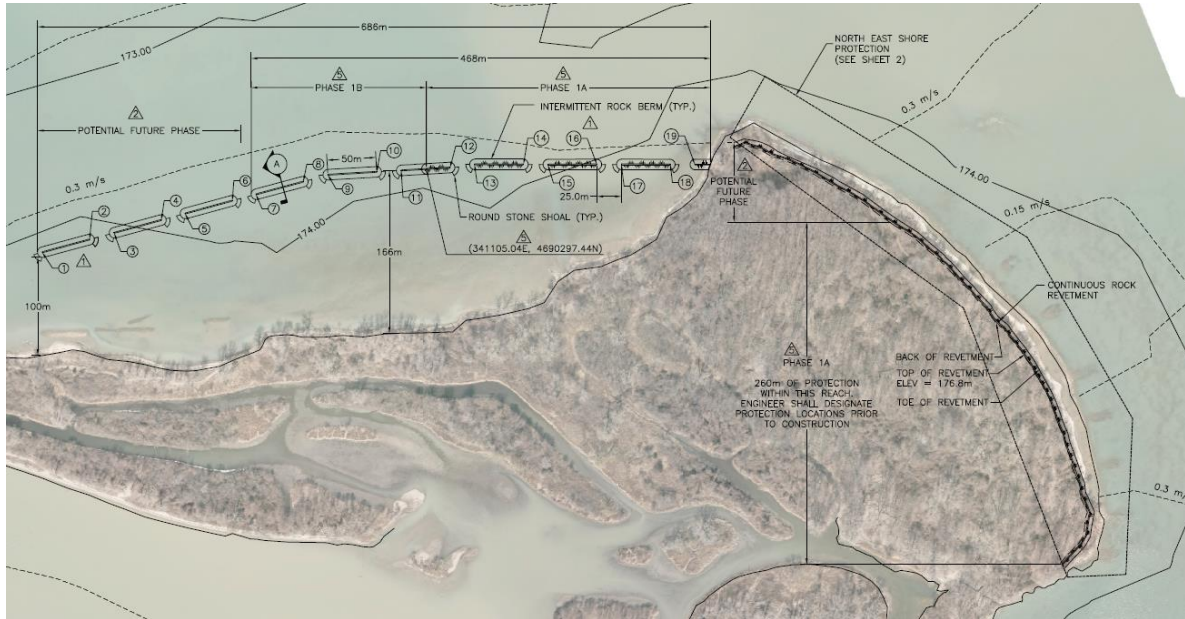


Figure 1. Engineering Drawings of Peche Island Project

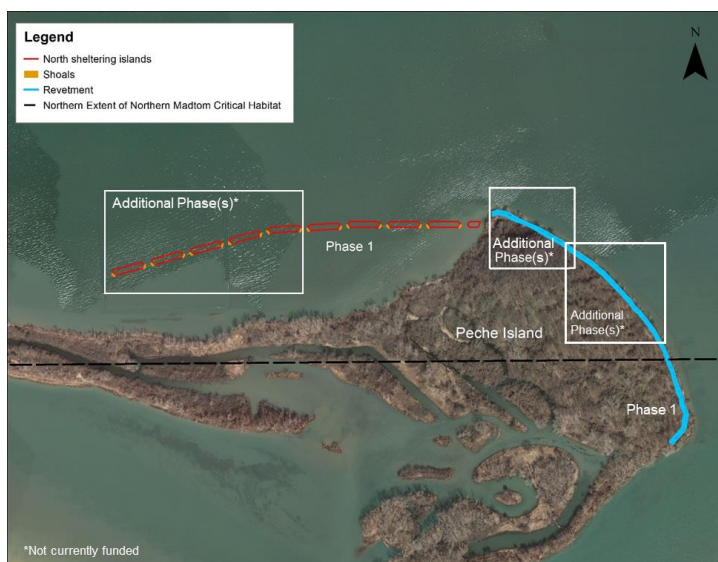


Figure 2. Phased construction of the Peche Island project

Niagara River Coastal Wetland Restoration Project

C. Burant² and S. Marklevitz

Over the past century the shorelines of the Upper Niagara River have been hardened and natural shoreline habitats removed. This has resulted in reduced complexity and the loss of nearshore fish habitats throughout the river. In recent years, there have been extensive efforts on both side of the boarder to restore these habitats while protecting shorelines from further erosions. The Niagara River is identified as a medium priority through the PMA exercise.

On the Canadian side, The Niagara Parks Commission (NPC) has extensively restored or naturalized the shorelines along the river including implementing a no-mow buffer on NPC controlled land, softening and restoration of natural slopes and terrestrial to aquatic transition zones. As part of this work, a 2016 MNRF survey identified and developed conceptual plans for 7 potential coastal wetland projects in the upper Niagara River (Figure 3). To date a partnership between NPC, MNRF and Environment and Climate Change Canada (ECCC) has completed 5 of 7 identified coastal wetland projects. In 2020-21 the Frenchman's Creek project is scheduled to be completed. The Miller's Creek project is unlikely to proceed due to archeological considerations at the site but plans at an alternative location are in development. Within each of these coastal wetlands, shorelines are softened by removing harden concrete shoreline while large woody debris and large rocks are anchored to create more complex in water structure. The intention of this work is to capture and retain natural sediments and native vegetation, to ultimately re-naturalizing the shoreline. These naturalized shoreline habitats are expected to provide critical habitat for various populations of plants, reptile, bird and fish species and enhancing recreational fishing opportunities in the upper Niagara River.

² Corey Burant, Niagara Parks Commission cburant@niagaraparks.com>

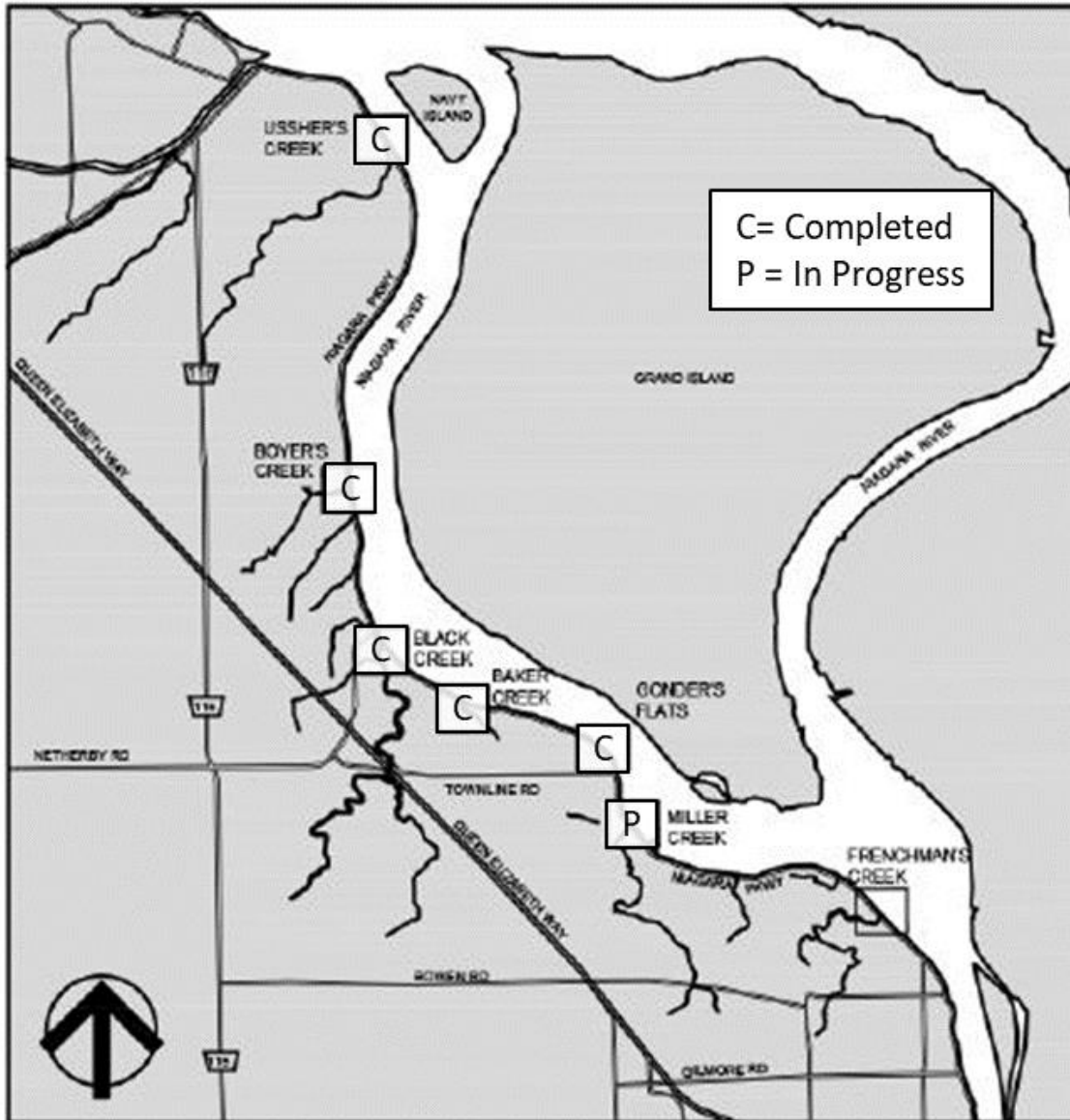


Figure 3. Seven potential coastal wetland projects in the upper Niagara River, identified in a 2016 MNRF survey.

Charge 1d: Use GIS techniques to refine PMA mapping, coordination and scale

In 2019, the HTG began collaborating with the Great Lakes Aquatic Habitat Framework project team to begin interpreting the PMA dataset into GIS layers. These efforts were continued in early 2021 to further develop the layers and transition the PMA dataset from a “flat file” spreadsheet to a spatial dataset. The work group has been able to develop conceptual layers for the functional habitats identified in the PMA dataset and begin development of a viewing tool that will allow users to see priorities in a variety of ways and scales. During 2021, the HTG will continue refining these layers and transition the dataset completely into a spatial dataset.

Charge 2. Assist Member Agencies with Technology Use

There was no new work towards this charge in 2020. There are ongoing efforts targeted at this charge which have been captured in prior reports. One such effort is the Real-time Aquatic Ecosystem Observation Network (RAEON; raeon.org). This program provides instruments, technical expertise, and data management for research on the Great Lakes. Through next year the HTG will continue to look for opportunities to assist agencies with the use of technologies.

Charge 3: Support other task groups by compiling metrics of habitat

There was no new work towards this charge in 2020. Like Charge 2, there are ongoing efforts reported on in prior HTG reports. One ongoing effort is the Experimental Lake Erie Hypoxia Forecast led by NOAA (https://www.glerl.noaa.gov/res/HABs_and_Hypoxia/hypoxiaWarningSystem.html). This system provides a forecast of bottom temperature and dissolved oxygen with the intent to alert users of hypoxic events (including upwelling events) in Lake Erie. The information collected and forecasted through this effort assists fisheries managers as well as many other stakeholders around Lake Erie. Over the next year, the HTG will continue looking for opportunities to compile habitat metrics which are beneficial for the goals and objectives of the LEC.

Protocol for Use of Habitat Task Group Data and Reports

- The HTG has used standardized methods, equipment, and protocol in generating and analyzing data; however, the data are based on surveys that have limitations due to gear, depth, time and weather constraints that vary from year to year. Any results or conclusions must be treated with respect to these limitations. Caution should be exercised by outside researchers not familiar with each agency's collection and analysis methods to avoid misinterpretation.
- All data provided from the PMA exercise is reported with the caveat that it is a working dataset based on the best available information. The intention, as designed, is for the HTG to continuously refine the data as new information becomes available and prioritizations are subject to change. Use of the PMA information should be done with this understanding and consultation with HTG co-chairs to ensure proper interpretation of the most recent dataset is highly advised.
- The HTG strongly encourages outside researchers to contact and involve the HTG in the use of any specific data contained in this report. Coordination with the HTG can only enhance the final output or publication and benefit all parties involved.
- Any data intended for publication should be reviewed by the HTG and written permission received from the agency responsible for the data collection.

Acknowledgements

The HTG would like to acknowledge and thank the many contributors to the work presented in this report. As this report is mostly an overview of projects underway in the Lake Erie basin, it is impossible to identify every project and every individual involved. If you are involved in a habitat-related project in the Lake Erie basin and would like your work to be represented in the project table, please contact a member of the Habitat Task Group.