# Detroit River Canadian Cleanup

## 2020-2021 Annual Report

## A MESSAGE FROM THE DETROIT RIVER CANADIAN PUBLIC ADVISORY COUNCIL

Ojibway Shores. Despite our hopes for a resolution, the wheels are still spinning. In the fall of 2020 Public Advisory Council (PAC) contacted the mayor and the CEO of the Windsor Port Authority to inquire whether the property could be sold outright by the Port. Both officials stated that the only way a deal can be made is through a land transfer. After two failed attempts to find a suitable riverfront site, a third possibility may be in the works. In the meantime, Ojibway Shores remains undisturbed under the care of the Port Authority.

The nature community eagerly anticipated the Ojibway Parkway Wildlife Crossing Class Environmental Assessment. Released in September 2020, the study calls for a fifty metre wide span connecting Tom Joy Woods to a landing spot next to the Essex Terminal tracks. With costs upward of $7.8 million, it's uncertain whether the City of Windsor will budget funds for its construction.

The site of the damage caused by the massive 2019 Revere Copper spill into the Detroit River on the U.S. side continues to be remediated.

Good news for the U.S. Great Lakes Restoration Initiative. President Biden and Congress upped spending from the present $300 million to $375m in 2022 peaking at $475m by 2026. Over $1.3m is earmarked for remediation of an eastern section on Belle Isle. On the Canadian side, ERCA in cooperation with the DRCC, continues to halt the erosion of Peche Island.

Hopefully 2021 will allow in person meetings once again. Good health to all. Thanks for the assistance provided by the DRCC crew, RAP Coordinator Jackie Serran and her Assistant Gina Pannunzio.

Tom Henderson, Chair
Public Advisory Council, DRCC

*The Detroit River Canadian PAC is a group of citizen volunteers and representatives from non-government organizations dedicated to improving the health of the Detroit River ecosystem. If you are interested in getting involved in the PAC, please contact the RAP Coordinator at postmaster@detroitriver.ca.*

**2**
**beneficial uses redesignated**

**2**
**Habitat restoration projects in progress**

**DRCC attended 10 virtual outreach events and engaged over 2,500 people!**

DETROIT RIVER
Canadian Public Advisory Council

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# Overview of Beneficial Uses

Under the Great Lakes Water Quality Agreement, 14 specific "beneficial uses" were established. These beneficial uses generally include recreational, ecological, and economic benefits that come from a healthy environment. When the quality of the environment is degraded and cannot support the intended beneficial uses, they are designated as "impaired" and cleanup actions are identified to restore the impairment. If there is insufficient data to make a determination of "impaired" or "not impaired", further assessment (e.g., scientific study) is recommended. As of the beginning of 2021, the Detroit River Canadian Area of Concern (AOC) has four remaining impaired beneficial uses, nine unimpaired (including eight whose status has been changed from 'impaired' to 'not impaired' since the start of the AOC program), and one requiring further assessment.

# Focus: Beneficial Use Redesignation

**We are excited to announce that the *Degradation of Benthos* and *Fish Tumours and Other Deformities* beneficial uses are officially no longer impaired for the Detroit River AOC!**

## Degradation of Benthos Redesignation

Historically, pollution discharges from the heavily urbanized and industrialized shorelines of the Detroit River have contributed to the significant ecological degradation of the benthos community. Benthos are a group of organisms made up of aquatic worms, insects, and other invertebrates, which inhabit the bottom of lakes and rivers. Many benthos are a key source of food for fish, frogs, and other wildlife. Over the past two decades a series of intensive investigations into the sediment quality and benthos health of the Detroit River were conducted. Results of these studies showed that sediment contaminants declined steadily between 1999-2013 and that the vast majority of the Canadian side of the Detroit River showed minimal benthos impairment and potential for bioaccumulation. These results indicate that the benthos communities are now considered to have recovered to a point where they are no longer impaired in the Detroit River.

## Fish Tumours and Other Deformities Redesignation

In the 1980s, internal and external tumours and deformities in fish in the Detroit River were found at elevated rates. These deformities can be caused by pollution and sediment contamination. Although contaminants are still present in sediments in the Detroit River Area of Concern (AOC), the prevalence of tumours in brown bullhead (our indicator species) are decreasing. In part, this is due to legislation introduced by both Canadian and U.S. authorities to restrict the discharge of many pollutants into the river. Researchers from the Great Lakes Institute of Environmental Research (GLIER) examined liver tumours in brown bullhead caught in the Detroit River. Results show that liver tumours in brown bullhead have decreased to less than 1% (1 of 112) - a rate that is lower than the Great Lakes background of 2%. These results indicate that liver tumours in the Detroit River are no more prevalent than other Great Lakes sites, and the Fish Tumours and Other Deformities beneficial use is no longer considered impaired for the Canadian side of the Detroit River.

**These are the seventh and eighth beneficial use re-designations for the Detroit River AOC and the DRCC looks forward to more BUI redesignations in the coming years.**

# Focus: Habitat

## Collavino Wetland

The management of the Collavino wetland project at the mouth of the Canard River is ongoing. The Collavino wetland is 30 hectares in size and is designated as a Provincially Significant Wetland. In 2019, with funding support from Environment and Climate Change Canada (ECCC), Essex Region Conservation Authority (ERCA) repaired the existing dyke and installed pumping infrastructure and water level control structures to manipulate water levels on the inside of the dyke. Further, a baseline wetland health assessment was conducted by ECCC prior to implementation of the management plan to evaluate the efficacy of restoration actions. In 2020, ERCA began executing the management plan for the wetland, which includes drawing down water levels and conducting a prescribed burn to reduce the invasive *Phragmites australis* in the wetland. The management plan is expected to increase native plant presence within the wetland to improve habitat use.

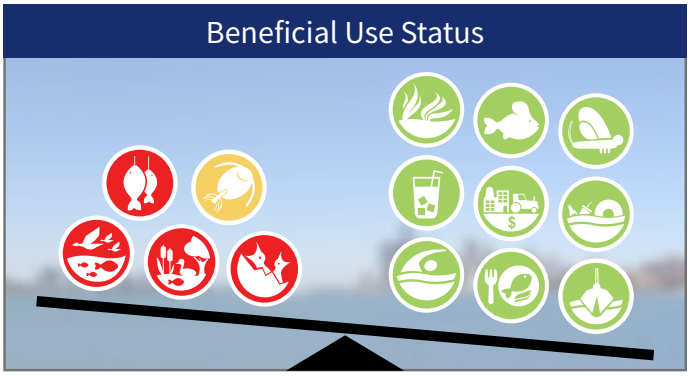
## Peche Island Erosion Mitigation and Fish Habitat Project

In 2020, ERCA obtained all permits required to begin construction of the Peche Island project. The project consists of a soft shoreline revetment on the northeast side of Peche Island and nine sheltering islands on the north side of Peche Island. Construction of the project began in mid October 2020 and four of the nine sheltering islands have been constructed to date. Once the nine sheltering islands are all constructed, the project will create a calm water embayment where aquatic plants are expected to establish and provide approximately 10.5 hectares of habitat for fish and aquatic wildlife. Calm water areas, such as the one created by this project, are rare in the upper Detroit River. This project was made possible through funding and cooperation from our project partners - City of Windsor, ERCA, ECCC, Swim Drink Fish, and the Ontario Ministry of Natural Resources and Forestry. The revetment and additional sheltering islands are expected to be constructed in Summer 2021. Monitoring of the backwater area for aquatic plant establishment and fish use by the Department of Fisheries and Oceans Canada is expected to occur in Fall 2021.

# Focus: Monitoring and Research

When beneficial uses require further assessment or are impaired, scientific studies and/or monitoring plans are designed and conducted to collect data which is used to determine if the beneficial use is impaired or not. Below is a summary of three scientific projects.

- Impaired
- Requires further assessment
- Not Impaired




More information on these beneficial use icons can be found at: http://detroitriver.ca/buis/

## Degradation of Phytoplankton and Zooplankton

From July to November 2019, scientists from the Department of Fisheries and Oceans sampled eight sites in the Detroit River to assess phytoplankton and zooplankton community composition in the water column. This work was done to determine the status of the Degradation of Phytoplankton and Zooplankton Populations beneficial use. Plankton are small (usually microscopic), floating organisms that live in freshwater and marine ecosystems. Phytoplankton are tiny plants including diatoms, desmids, and algae that require photosynthesis to live, while zooplankton are small animals that feed on those tiny plants. Together, phytoplankton and zooplankton make up an important part of the aquatic food web.

Key findings of this study were:

- Phytoplankton and zooplankton populations were low, but their levels were consistent with expectations of a fast flowing river environment, like the Detroit River.
- Despite the low phytoplankton populations, primary production rates (i.e., when plants make their own food and use that food to live and grow) were moderately high, indicating that the river supports viable phytoplankton populations.
- Zooplankton populations decreased significantly from upstream at Peche Island to downstream in Amherstburg and the community was predominantly comprised of small organisms suggesting the larger zooplankton are being readily consumed by fish in this stretch of the river.

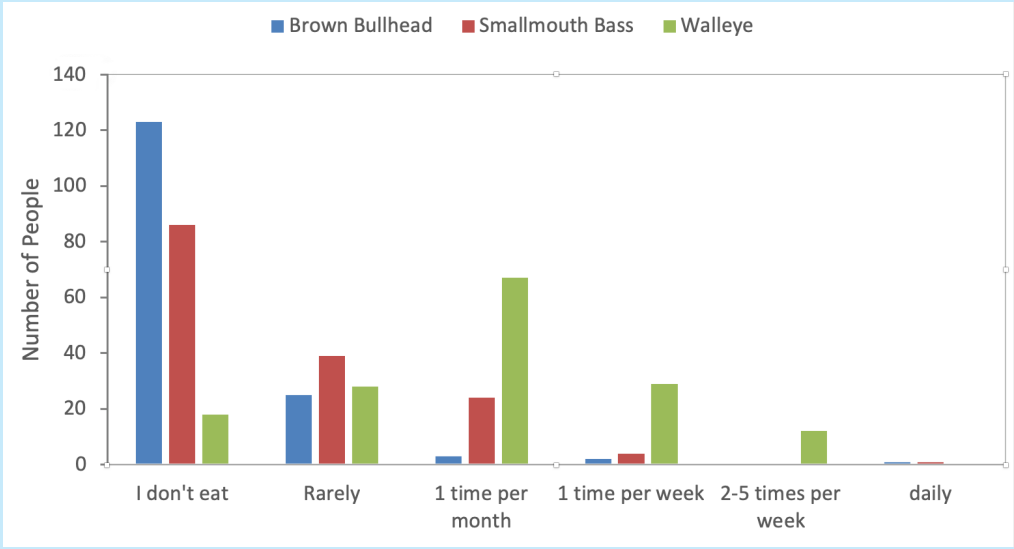
Based on the research results, there is no evidence of impairment within the phytoplankton and zooplankton communities of the Detroit River Area of Concern (AOC). As a result, the Detroit River Canadian Cleanup (DRCC) recommended the status of this beneficial use be designated as ‘not impaired’. The various DRCC work groups, the public, U.S. government agencies, and local Indigenous communities reviewed the status assessment report outlining the science to support this recommendation. No issues with the recommendation were identified, and the status report has been submitted to the federal and provincial governments for the official change in status of this beneficial use to ‘not impaired’.

# Restrictions on Fish Consumption

When contaminant levels, such as mercury and polychlorinated biphenyls (PCBs), are high in fish, consumption advisories (found in the Ontario Ministry of Environment, Conservation and Parks, Guide to Eating Fish), may recommend that people and sensitive populations (e.g., children, pregnant women) limit or avoid eating certain sizes and species of fish caught in specific areas of the Detroit River. Researchers from the Great Lakes Institute for Environmental Research at the University of Windsor have been conducting several studies to identify whether consumption advisories for sensitive populations for our indicator species (walleye, brown bullhead, and smallmouth bass) are similar to other non-AOC Great Lakes sites. This analysis is ongoing and expected to be completed in March 2022.

To provide another line of evidence for the assessment of this beneficial use, the DRCC continued with their fish consumption survey (launched in 2019) to collect data on what people catch and eat from the Detroit River. So far, the majority of anglers (67%) captured in the survey eat the fish they catch from the river. On average, anglers eat 4 to 8 oz of fish per meal, about 1 to 4 times per month. The majority of anglers (69%) prefer to pan fry the fish they catch and the most common fish consumed from the Detroit River according to the survey are walleye, yellow perch, smallmouth bass, and white perch.

**Frequency of Eating Indicator Species from the Detroit River**




# Bird and Animal Deformities and Reproduction Problems

Environment and Climate Change Canada's (ECCC) wildlife toxicologists have completed a three-year investigation into the reproduction and contaminant exposure in nesting colonial waterbirds in the AOC. A small colony of double-crested cormorants was studied on the U.S. side of the Detroit River as a surrogate colony for the Canadian side of the Detroit River. Freshly-laid eggs were collected from this surrogate colony, a downstream colony in western Lake Erie, and two reference colonies (one in eastern Lake Erie and one in Lake Huron), artificially incubated in the laboratory and assessed for embryonic survivability, embryonic deformities, and contaminant concentrations. Overall, the survivability for cormorants was 83% at the Detroit River colony and was similar to that found at the reference colonies in three study years combined. The percent of cormorant embryos that had deformities was 6% at the Detroit River colony compared to 4% at the downstream colony and 0% at the reference colonies. Based on published effect-level thresholds associated with adverse impacts on avian reproduction, concentrations of contaminants in cormorant eggs and embryos from the Detroit River colony were not sufficiently

elevated to adversely impact the reproductive success of cormorants nesting.

Since there are currently no nesting colonies of herring gulls in the Detroit River, two surrogate AOC colonies of herring gulls were studied in western Lake Erie, where productivity was assessed and 21-day-old chicks were examined for deformities. Herring gull hatching at the surrogate colonies exceeded levels required to maintain a stable population and no deformities were found in 21-day-old herring gull chicks in two study years.

These results support a recommendation of no impairment for reproduction associated with contaminant-induced effects in colonial waterbirds nesting in the AOC. Other stressors, such as loss of habitat and reduced food availability are likely more important factors in influencing successful nesting of colonial waterbird populations in the Detroit River.

## Loss of Fish and Wildlife Habitat

Since 2011, researchers have assessed the condition of coastal wetland habitat and communities at selected sites in the Detroit River watershed. In 2019, researchers looked at water quality, submerged aquatic vegetation, aquatic macroinvertebrates and breeding marsh bird communities at the Collavino wetland at the mouth of the Canard River and conducted marsh breeding bird surveys at five coastal wetlands. Here's what they found:

- Water quality scores for the Collavino wetland were considered "very degraded"
- Submerged aquatic vegetation and aquatic macroinvertebrate communities were in "fair" condition in the Collavino wetland
- Marsh bird communities ranged from "poor" to "fair". Sites that scored "poor" were situated offshore and had relatively little marsh habitat. Sites that scored "fair" contained larger patches of emergent vegetation that supported a greater number of marsh nesting species.

Further research is planned for summer 2021, so stay tuned for updated results! This information will help determine the status of both the fish and wildlife populations and habitat beneficial uses.

## Next Steps

- Review findings of both the assessment report and fish consumption surveys for the fish consumption beneficial use.
- Conduct modelling to determine potential increases in habitat through restoration projects and which types of habitat are needed in the Detroit River for the fish and wildlife populations beneficial use.
- Monitor wetlands and evaluate potential factors influencing the local marshbird community.
- Conduct tree swallow monitoring to support the bird and animal deformities and reproduction beneficial use.
- Implement fish and wildlife habitat restoration and enhancement projects in the Detroit River to address the loss of fish and wildlife habitat beneficial use.

# Focus: Pollution Reduction

## Pollution Reduction

The City of Windsor is currently planning a project to increase flow capacity in the Grand Marais Drain in cooperation with the Essex Region Conservation Authority. This project, located at the Howard Avenue and E.C. Row Expressway interchange, will help to reduce the on-going threat of flooding due to flow limitations in various reaches of the drain. Further, the project includes the remediation of contaminated sediments in the drain. The Grand Marais Drain is a major watercourse that drains approximately 3,500 hectares of the city of Windsor and the town of LaSalle, eventually discharging into the Detroit River from Turkey Creek. Construction on this project is expected to begin in late 2021 or early 2022.

# Focus: Community Outreach

**The Detroit River Canadian Cleanup (DRCC) participated in 10 events, presentations, and other engagement opportunities between the spring of 2020 and end of winter 2021. Most of these events were virtual due to the COVID-19 pandemic. Through these efforts, thousands of individuals celebrated ongoing restoration efforts, learned about Detroit River history, projects, the DRCC, and more!**

## e-Earth Day Pledge

The DRCC, with members of the Detroit River Coalition (a number of environmental groups in both the U.S. and Canada), hosted a virtual pledge to challenge individuals from Canada and the United States to choose one single-use plastic item they used frequently and share how they switched to recycled or reusable items for Earth Day. The pledge was successful in engaging 163 individuals who shared their replacement of a single use plastic item at home with a more sustainable option through social media.


## Ecohighway Film Screening

In March 2021, the DRCC hosted its 12th annual film screening virtually by showing the film Ecohighway. Ecohighway is a documentary featuring actions, challenges, and lessons learned in protecting species at risk in the construction of the Rt. Hon. Herb Gray Parkway in Windsor. By incorporating species at risk (SAR) protection and prairie restoration in the construction of the Parkway project, a natural corridor within the Detroit River watershed was created that plants, animals, and humans can use and enjoy.

Over 500 people have watched the virtual screening to date. The film was followed by a panel discussion with biologists who assisted in the protection of SAR during the construction of the Parkway. The panel included Dan Lebedyk, Biologist/Ecologist at the Essex Region Conservation Authority, Dr. Season Snyder, Ecologist, at Wood Environment and Infrastructure, and Russ Jones, who was the Lead Field Biologist during Parkway construction. Miss the film screening? Catch it here: https://bit.ly/3tr5p59

# Phytoplankton and Zooplankton Open House

In December 2020, the DRCC hosted a virtual open house to share research findings on the degradation of phytoplankton and zooplankton populations and the proposed change of status of this beneficial use to not impaired. Guests heard from Department of Fisheries and Oceans Canada scientists and learned about the research efforts undertaken to study these populations.


## Acronyms

| | |
|---|---|
| **AOC** | Area of Concern |
| **DRCC** | Detroit River Canadian Cleanup |
| **ECCC** | Environment and Climate Change Canada |
| **ERCA** | Essex Region Conservation Authority |
| **GLIER** | Great Lakes Institute for Environmental Research |
| **PAC** | Public Advisory Council |
| **PCB** | Polychlorinated Biphenyl |
| **RAP** | Remedial Action Plan |

## DRCC Partners

- Environment and Climate Change Canada
- Ontario Ministry of Environment, Conservation, & Parks
- Essex Region Conservation Authority
- Ontario Ministry of Natural Resources and Forestry
- Fisheries and Oceans Canada
- Canadian Wildlife Service
- City of Windsor
- Town of LaSalle
- Town of Amherstburg
- UNIFOR Local 200
- Citizens Environmental Alliance
- Essex Field Naturalists' Club
- Windsor Port Authority
- University of Windsor
- Brighton Beach Power
- Aamjiwnaang First Nation
- Caldwell First Nation

...and many dedicated citizens like you!

The Detroit River Canadian Cleanup is supported by two main funding agencies – Environment and Climate Change Canada and the Ontario Ministry of Environment, Conservation, and Parks

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