



RESTORING THE GREAT LAKES AREAS OF CONCERN

CANADIAN ENVIRONMENTAL
SUSTAINABILITY INDICATORS



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CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS RESTORING THE GREAT LAKES AREAS OF CONCERN

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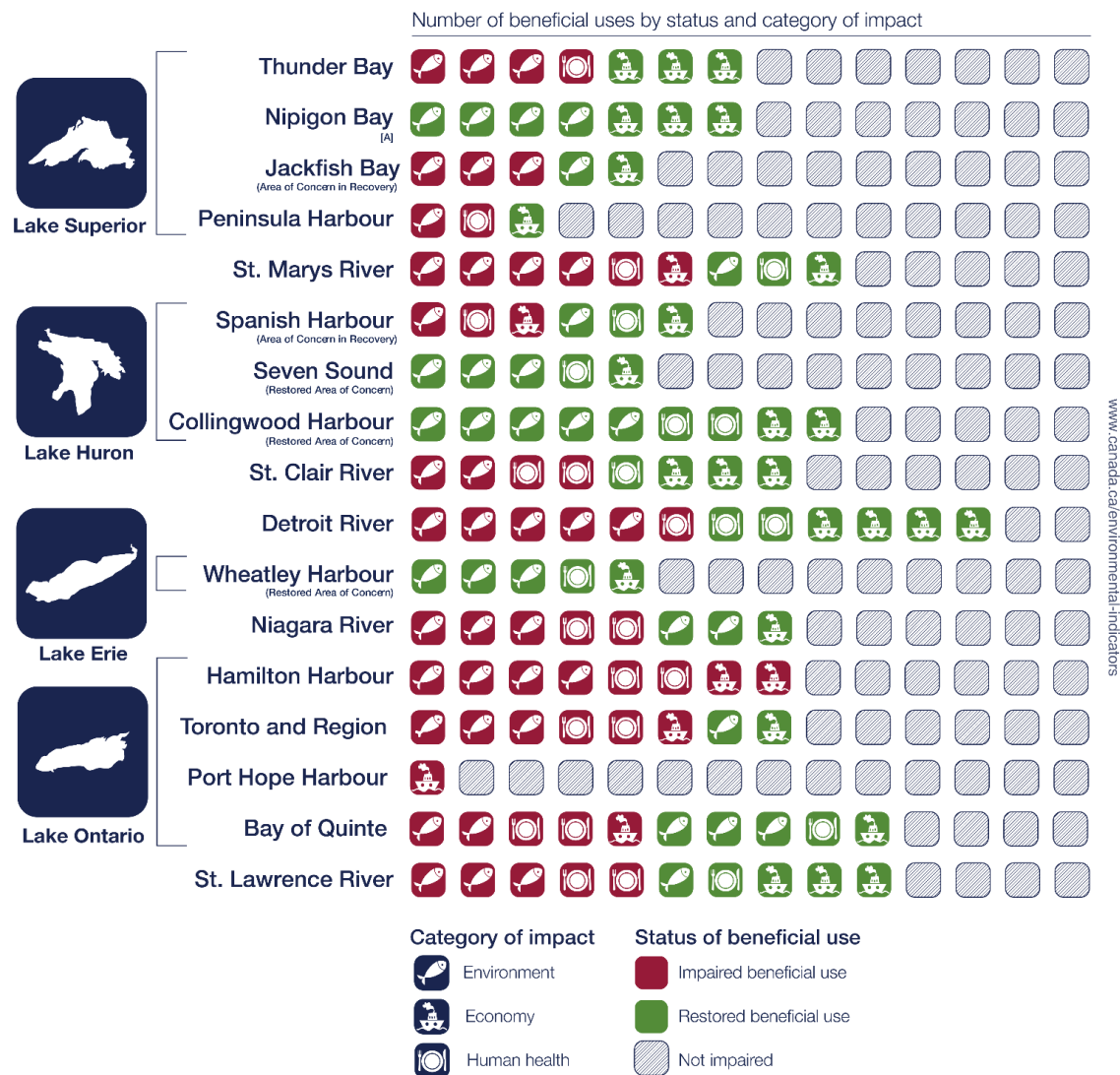
Restoring the Great Lakes Areas of Concern

The Great Lakes basin is Canada's most populated region. Its large population and extensive development places a strain on ecosystem health and benefits to people. This indicator assesses progress on restoring areas within Canadian waters and those shared with the United States that have high levels of environmental damage.

Key results

- Environmental quality in Canada's 17 Great Lakes Areas of Concern has improved since the restoration program began in 1987
- As of 2020, 3 Areas of Concern have had all impaired beneficial uses restored¹

Figure 1. Progress on Canadian Great Lakes Areas of Concern, 1987 to 2020



¹ The Nipigon Bay Area of Concern has had all impaired beneficial uses restored; however, it cannot be formally designated as a "Restored Area of Concern" until the final approval of its completion report.

Note: ^[A] The Nipigon Bay Area of Concern has had all impaired beneficial uses restored; however, it cannot be formally designated as a "Restored Area of Concern" until the final approval of its completion report. The initial assessment reports were published between 1988 and 1993, with the exception of Wheatley Harbour and Port Hope Harbour, which were produced in 1998 and 2003, respectively. The number of beneficial uses that are Impaired in 2020 is based on progress reported as of March 31, 2020.

Source: Environment and Climate Change Canada (2020) Great Lakes Areas of Concern Office.

In 1987, the Canada-United States Great Lakes Water Quality Agreement identified 43 Areas of Concern around the Great Lakes. Of these Areas of Concern:

- 26 were entirely in American waters and 4 have been restored: Oswego River (2006), Presque Isle Bay (2013), Deer Lake (2014) and White Lake (2014)
- 12 were entirely in Canadian waters
- 5 are shared with the United States

To date, considerable progress has been made towards the restoration of Canada's 17 Areas of Concern (including the 5 shared with the United States):

- 3 have been fully restored and delisted: Collingwood Harbour (1994), Severn Sound (2002) and Wheatley Harbour (2010)
- 1 more has had all impaired beneficial uses restored and community engagement will continue until it is removed from the list of Areas of Concern: Nipigon Bay (2016)
- 2 have been formally designated as Areas of Concern in Recovery, signifying that all remedial actions are complete and the natural recovery of the ecosystem will continue to be monitored: Spanish Harbour (1999) and Jackfish Bay (2011)
- efforts continue to restore the remaining 11 Areas of Concern: Peninsula Harbour, Thunder Bay, Bay of Quinte, Port Hope Harbour, Toronto and Region, Hamilton Harbour, St. Lawrence River, St. Clair River, St. Marys River, Niagara River and Detroit River

Figure 2. Status of the Canadian Great Lakes Areas of Concern, 2020



Note: The Nipigon Bay Area of Concern has had all impaired beneficial uses restored; however, it cannot be formally designated as a "Restored Area of Concern" until the final approval of its completion report.

Source: Environment and Climate Change Canada (2020) Great Lakes Areas of Concern Office.

About the indicator

What the indicator measures

This indicator assesses progress towards the restoration of Canada's 12 Areas of Concern and the 5 Areas of Concern shared with the United States.

An Area of Concern is a region in the Great Lakes that has experienced a high level of environmental damage from human activity. There are 14 beneficial uses that are considered in order to decide whether an area should be classified as an Area of Concern. Beneficial uses describe how an aquatic ecosystem benefits the economy, human health and the environment: they are the ecological services that are available to the population and the environment when the ecosystem is healthy (not impaired). An Impaired beneficial use has experienced enough changes to the chemical, physical or biological integrity of the area to restrict human use or to restrict the area's ability to support plants and animals.

The status of a beneficial use is determined by monitoring and conducting scientific studies in the Area of Concern. The study results are compared to the findings for reference sites and targets listed in the site's remedial action plan and other update reports.

Why this indicator is important

This indicator is used to provide information about the state of the Great Lakes and the Canadian environment. It tracks the work done to repair the environment at 17 Areas of Concern in Canada. In these areas, the degraded environment has disrupted fisheries, tourism and/or agriculture.



Pristine lakes and rivers

This indicator supports the measurement of progress towards the following [2019 to 2022 Federal Sustainable Development Strategy](#) long-term goal: Clean and healthy lakes and rivers support economic prosperity and the well-being of Canadians.

It is used to assess progress towards the short-term milestone: By the end of 2019, complete restoration actions that will assist in delisting 5 Canadian Great Lakes Areas of Concern. In the remaining 9 Areas of Concern, increase the number of restored beneficial uses from 18 in 2014 to 30 in 2019.²

In addition, the indicator contributes to the [Sustainable Development Goals of the 2030 Agenda for Sustainable Development](#). It is linked to the 2030 Agenda's Goal 6: Clean water and sanitation and Target 6.6: "By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes."

Finally, the indicator assesses progress towards the goals of the [Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health](#). Specifically, it measures progress towards restoring beneficial uses in 5 Canadian Great Lakes Areas of Concern (Nipigon Bay, Peninsula Harbour, Niagara River, Bay of Quinte, and St. Lawrence River) and in the remaining Areas of Concern (Thunder Bay, St. Marys River, St. Clair River, Detroit River, Hamilton Harbour, Toronto and Region, and Port Hope), with a target of increasing the number of beneficial use impairment re-designations from 18 in 2014 to 30 in 2019.

Related indicators

The [Phosphorus levels in the offshore waters of the Great Lakes](#) indicator reports total phosphorus levels in the offshore waters of the 4 Canadian Great Lakes.

The [Water quality in Canadian rivers](#) indicators provide a measure of the ability of river water across Canada to support plants and animals.

² The short-term milestone does not include the 3 Areas of Concern that have been fully restored and delisted: Collingwood Harbour (1994), Severn Sound (2002) and Wheatley Harbour (2010)

Data sources and methods

Data sources

Environment and Climate Change Canada's [Great Lakes Areas of Concern](#) program tracks the status of all beneficial uses in Canada's 17 Areas of Concern (including the 5 shared with the United States). This information is taken from progress reports, remedial action plans and stage reports published for each area. The most recent data available for each Area of Concern are used to calculate this indicator.

More information

The 2020 data were obtained from Environment and Climate Change Canada's Areas of Concern Office. Progress reports summarizing the status of all beneficial uses for all Canadian Areas of Concern have been compiled every 1 to 3 years since 2012. Prior to 2012, beneficial use classifications were taken from remedial action plans and update reports.

Data coverage for this indicator begins with Severn Sound's Stage 1 report published in 1988 and includes data up to March 31, 2020. The other Areas of Concern released their Stage 1 reports between 1989 and 1993, with the majority being released in 1991. Wheatley Harbour released a combined Stage 1 and 2 report in 1998.

The Port Hope Harbour Area of Concern is being restored through the Port Hope Area Initiative, launched in 2001. Canadian Nuclear Laboratories is implementing the Port Hope Project on behalf of Atomic Energy of Canada Limited, a federal Crown corporation because of the nature and scope of the contamination at this site. Only the progress reports compiled since 2003 were considered for Port Hope Harbour.

Description of the Areas of Concern process

The 1987 revision of the Canada-United States Great Lakes Water Quality Agreement identified 43 Areas of Concern in Canadian and American waters of the Great Lakes. All Canadian Areas of Concern, except the Port Hope Harbour Area of Concern, have a remedial action plan to guide restoration and protection efforts targeting specific beneficial uses.³

Table 1. Impaired beneficial use and category of impact

Impaired beneficial use	Category of impact
Restrictions on fish and wildlife consumption	Human health
Restrictions on drinking water consumption, or taste and odour problems	Human health
Beach closing	Human health
Tainting of fish and wildlife flavour	Economy
Restrictions on dredging activities	Economy
Degradation of aesthetics	Economy
Added costs to agriculture or industry	Economy
Degradation of fish and wildlife populations	Environment
Fish tumours or other deformities	Environment

³ For more information on what the beneficial uses are, please see: Environment and Climate Change Canada (2013) [2012 Great Lakes Water Quality Agreement: annex 1](#). Retrieved on May 1, 2020.

Bird or animal deformities or reproduction problems	Environment
Degradation of benthos	Environment
Degradation of phytoplankton and zooplankton populations	Environment
Eutrophication or undesirable algae	Environment
Loss of fish and wildlife habitat	Environment

In the former process, under the 1987 Protocol to the Canada-United States Great Lakes Water Quality Agreement, remedial action plans were developed and implemented in 3 stages.

- Stage 1 identified which of 14 beneficial uses were classified as Impaired or Not impaired, as well as the sources and causes of the problem.
- Stage 2 established the goals, objectives and actions required to restore the ecosystem to a healthy state.
- Stage 3 documented the successful restoration of the Area of Concern as measured against the objectives (delisting criteria) outlined in the Stage 2 Remedial Action Plan report.

When the beneficial uses were considered Not Impaired, and Stage 3 was complete, the Area of Concern was declared Restored and officially “delisted”. Typically, Canada waited to change the status of beneficial uses to Not Impaired in bunches (for example, with the release of a stage update report) or en masse (for example, with the completion of Stage 3).

Under the 2012 Canada-United States Great Lakes Water Quality Agreement, the process was modified and remedial action plans are now periodically updated to reflect restoration progress. That is, the Parties will not wait to change the status of beneficial uses en masse. Canada:

- will remove an Impaired beneficial use designation when established criteria have been met
- may elect to identify an Area of Concern as an Area of Concern in Recovery when all actions identified in a remedial action plan have been implemented and monitoring shows recovery is progressing as anticipated
- will remove the Area of Concern or Area of Concern in Recovery designation when environmental monitoring confirms beneficial use restoration criteria have been met

An Area of Concern in Recovery is an area originally identified as an Area of Concern where, on the basis of community and government consensus, all scientifically-feasible and economically-reasonable actions have been implemented and additional time is required for the environment to recover.

The reports prepared for each Area of Concern and additional information can be found at [Great Lakes: Areas of Concern](#).

Methods

The number of beneficial uses listed as Impaired was counted for all Stage 1 reports and all update reports conducted up to the end of March 2020. The results include the beneficial uses for Canada's 12 Areas of Concern, covering the 4 Canadian Great Lakes and their connecting channels, as well as the 5 Areas of Concern shared with the United States.

An Impaired beneficial use can be classified as Restored if all delisting requirements for that beneficial use impairment have been met. Delisting requirements for a beneficial use impairment are established in consideration of conditions that can be eventually achieved on a lake-wide basis.

Recent changes

In past reporting of the indicator, the designation "Area of Concern pending delisting" was used to categorize the status of the Nipigon Bay Area of Concern, where all impaired beneficial uses had been restored by 2016, and the official delisting (designating as a "Restored Area of Concern") was pending final approval of its completion report.

The category is not an official designation in the Canada-United States Great Lakes Water Quality Agreement and is no longer being reported in the indicator.

Caveats and limitations

This indicator does not show the continuous nature of the rehabilitation process for each Area of Concern because the status for each beneficial use impairment can only change when new reports are published and the party (Canada) has confirmed the status as per the provisions in Annex 1 of the Great Lakes Water Quality Agreement. With progress reports being updated annually, the staggered change is less evident.

Port Hope Harbour follows a separate program, the Port Hope Area Initiative that is being implemented by Canadian Nuclear Laboratories on behalf of Atomic Energy of Canada Limited.

Resources

References

Environment and Climate Change Canada (2013) [2012 Great Lakes Water Quality Agreement: annex 1](#). Retrieved on May 1, 2020.

Related information

[Great Lakes: Areas of Concern](#)

[Canada-United States Great Lakes water quality agreement](#)

[2019 Progress Report of the Parties](#)

Annex

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Progress on Canadian Great Lakes Areas of Concern, 1987 to 2020

Lake	Area of Concern	Initial assessment (number of beneficial use impaired)	Initial assessment year	2020 assessment year (number of beneficial use impaired by category of impact)	Total restored (number of beneficial use restored by category of impact)	Year and number of restored beneficial use	Beneficial use not impaired
Superior	Thunder Bay	7	1991	Environment: 3 Human health: 1	Economy: 3	2004: 1 2012: 1 2019: 1	7
Superior	Nipigon Bay ^[A]	7	1991	No impaired beneficial use	Environment: 4 Economy: 3	1995: 2 2016: 5	7
Superior	Jackfish Bay ^[B]	5	1991	Environment: 3	Environment: 1 Economy: 1	1998: 1 2010: 1	9
Superior	Peninsula Harbour	3	1991	Environment: 1 Human health: 1	Economy: 1	2012: 1	11
	St. Marys River	9	1992	Environment: 4 Human health: 1 Economy: 1	Environment: 1 Human health: 1 Economy: 1	2018: 3	5
Huron	Spanish Harbour ^[B]	6	1993	Environment: 1 Human health: 1 Economy: 1	Environment: 1 Human health: 1 Economy: 1	1999: 3	8
Huron	Severn Sound ^[C]	5	1988	No impaired beneficial use	Environment: 3 Human health: 1 Economy: 1	2002: 5	9
Huron	Collingwood Harbour ^[C]	9	1989	No impaired beneficial use	Environment: 5 Human health: 2 Economy: 2	1994: 9	5
	St. Clair River	8	1991	Environment: 2 Human health: 2	Human health: 1 Economy: 3	2012: 1 2016: 1 2018: 2	6
	Detroit River	12	1991	Environment: 5 Human health: 1	Human health: 2 Economy: 4	2010: 2 2014: 1 2016: 2 2019: 1	2

Erie	Wheatley Harbour ^[C]	5	1998	No impaired beneficial use	Environment: 3 Human health: 1 Economy: 1	2010: 5	9
	Niagara River	8	1993	Environment: 3 Human health: 2	Environment: 2 Economy: 1	2009: 2 2019: 1	6
Ontario	Hamilton Harbour	8	1992	Environment: 4 Human health: 2 Economy: 2	No restored beneficial use	No restored beneficial use	6
Ontario	Toronto and Region	8	1989	Environment: 3 Human health: 2 Economy: 1	Environment: 1 Economy: 1	2016: 2	6
Ontario	Port Hope Harbour	1	2003	Economy: 1	No restored beneficial use	No restored beneficial use	13
Ontario	Bay of Quinte	10	1990	Environment: 2 Human health: 2 Economy: 1	Environment: 3 Human health: 1 Economy: 1	2017: 1 2018: 3 2019: 1	4
Ontario	St. Lawrence	10	1992	Environment: 3 Human health: 2	Environment: 1 Human health: 1 Economy: 3	1997: 3 2007: 2	4
Total	n/a	121	n/a	58	63	63	117

Note: n/a = not applicable. Empty cells indicate a Great Lake tributary river. The number of beneficial uses that are Impaired for 2020 is based on progress reported as of March 31, 2020. For a complete list of the beneficial use impairments under each "Category of impact" see [Table 1](#) in the Data sources and methods. ^[A] All impaired beneficial uses have been restored in the Area of Concern; however, it cannot be formally designated as a "Restored Area of Concern" until the final approval of the completion report. ^[B] Area of Concern in Recovery. ^[C] Restored Area of Concern.

Source: Environment and Climate Change Canada (2020) Great Lakes Areas of Concern Office.

Additional information can be obtained at:

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