

Hamilton Harbour Remedial Action Plan (HH RAP) Beneficial Uses

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LOSS OF FISH AND WILDLIFE HABITAT



STATUS

2002 Status	Impaired	Requires Further Assessment	Not Impaired
2012 Status	Impaired	Requires Further Assessment	Not Impaired

APPROVED BY 2012 RAP STAKEHOLDER FORUM:

- Beneficial Use xiv status remain "impaired".
- Beneficial Use xiv delisting objective wording be updated as follows:
 Beneficial Use xiv will be considered not impaired when:
 - Emergent and submergent aquatic plants measure ≥ 500 hectares (230 ha in Hamilton Harbour + Windermere Basin and 270 ha in Cootes Paradise + Grindstone Creek Marshes).
 - Improved littoral shore (0-5 m depth) measures ≥ 15 kilometres.
 - Wildlife habitat measures ≥ 300 hectares.
 - Colonial nesting waterbird island habitat measures ≥ 1.5 hectares.
 - The quality and quantity of fish and wildlife habitat in Hamilton Harbour (including Windermere Basin, Cootes Paradise, and Grindstone Creek Marshes) improves to support the fish and wildlife populations identified in Beneficial Use iii.

2002 HH RAP Delisting Objective:

- Provide 500 ha of emergent and submergent aquatic plants in Hamilton Harbour, Cootes Paradise, Grindstone Creek delta, and Grindstone Creek marshes in accordance with the Fish and Wildlife Habitat Restoration Project (360 ha FWHRP sites + 140 ha littoral zone).
- Provide 15 km of littoral shore.
- Provide 300 ha of wildlife habitat.
- Provide 3 ha of colonial nesting bird habitat.

Why Update the 2002 HH Wording?

- Reasonable:** Updates based on local experience to refine targets to provide more specificity and to incorporate habitat quality. The recommended decrease in new habitat for colonial nesting waterbirds reflects the change to specifying island habitat.
- Achievable:** The vast majority of the habitat has already either been improved or is part of ongoing programs and projects to enhance and sustain fish and wildlife habitat.
- Measurable:** Various HHRAP partners carry out monitoring and modelling that allow for quantity and quality measurements of habitat.

BACKGROUND INFORMATION

What Was the Original Problem in Hamilton Harbour?

- Wetlands in Cootes Paradise and the mouth of the Grindstone Creek and the littoral shore of HH were severely degraded. 60% of wetland habitat in HH had been lost to filling for industry and the port. HH had lost most of its underwater reefs and shoals used by fish for spawning and nursery habitat. Colonial water-birds resident in HH were on port lands that were contaminated and slated for development.
- Contaminated sediment and low oxygen conditions in the hypolimnion of HH limited both the diversity and abundance of benthic organisms and resident fish and prevented coldwater fish species of Lake Ontario from using historically important coldwater habitat in Hamilton Harbour.

IJC Listing Guideline (1991):

When fish and wildlife management goals have not been met as a result of loss of fish and wildlife habitat due to a perturbation in the physical, chemical, or biological integrity of the Boundary Waters, including wetlands.

IJC Delisting Guideline (1991):

When the amount and quality of physical, chemical, and biological habitat required to meet fish and wildlife management goals have been achieved and protected.

Other AOC Comparisons:

This tends to be the most detailed of the Beneficial Uses for other AOCs with many specifically outlining a certain quantity and quality of hectares of habitat desired.

What Has Been Done?

- Programs to control carp, improve inflowing water quality, and decrease turbidity in order to return aquatic vegetation to the Cootes Paradise Marsh are ongoing. Similar programs are in place for the Grindstone Marsh system. Within HH, fish habitat has been constructed along the western shoreline and Bayfront Park, LaSalle Park and the north-eastern shoreline.
- A shoal was recently constructed in the north-east corner of HH to provide spawning habitat for existing littoral spawners (e.g. Walleye, Smallmouth Bass) and to encourage extirpated ones to return to HH (Lake Herring, Lake Whitefish).
- Colonial water-bird islands have been constructed north of the Canada Centre for Inland Waters. Wetland habitat is presently being constructed in Windermere Basin along with islands for common terns.

How Are Things Today?

	Aquatic vegetation (ha)	Littoral edge (km)	Wildlife habitat (ha)	Colonial nesting bird island habitat (ha)
Hamilton Harbour	239	8.7	32	1.3
Windermere Basin	15	2.3	30	0.2
Cootes Paradise Marsh	58	2.3	58	-
Grindstone Creek Marshes	20	2.1	20	-
TOTAL (enhanced/delisting)	332 ha / 500 ha	15.4 km / 15 km	140 ha / 300 ha	1.5 ha / 3.0 ha
Current Surplus or Deficit	- 168 ha	+ 0.4 km	- 160 ha	- 1.5 ha



What Still Needs To Happen?

- Continued restoring and sustaining of aquatic vegetation to the entire Cootes Paradise and Grindstone Creek Marshes.
- Restoration of the marshlands creates the prime ingredient required for improving the quantity and quality of wildlife habitat.
- Increase the dissolved oxygen in the hypolimnion to provide a 4 m deep layer of oxygenated water > 6ppm as described in BU viii. Planned tertiary improvements at the WWTPs will substantially reduce phosphorus and ammonia loadings to the Harbour which in turn should increase dissolved oxygen levels.
- Additional improvement to aquatic habitat will result from remedial actions related to toxic contaminants.

When Will The Status Change?

- Water quality is presently a major limiting factor in improving the quality and quantity of aquatic plants. As improvements are made to WWTPs, urban runoff, and rural runoff the quantity and quality of submergent aquatic habitat will also improve. Sustainability is likely during the decade following 2020.

Where Can I Learn More?

Lake Ontario Biodiversity Conservation Strategy Working Group. 2009. The Beautiful Lake. A Binational Biodiversity Conservation Strategy for Lake Ontario http://www.epa.gov/greatlakes/lakeont/reports/lo_biodiversity.pdf

Royal Botanical Gardens Science and Conservation website. 2012. <http://www.rbq.ca/Page.aspx?pid=333>

BARC. 2004. Toward Safe Harbours: Progress Toward Delisting – Fish and Wildlife

Fish and Wildlife Habitat Restoration Project Annual Reports (series dates back to 1995)

Most references can be provided by the HH RAP Office as a PDF upon request