LAKE ONTARIO LAKEWIDE MANAGEMENT PLAN (LaMP)

Annual Report 2010

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What is the Lake Ontario LaMP?

The Lake Ontario LaMP is a binational effort to restore and protect the health of Lake Ontario by reducing chemical pollutants entering the lake and addressing the biological and physical factors impacting the lake. The LaMP's activities are coordinated by Canadian and U.S. federal, state and provincial agencies.

The Lake Ontario LaMP includes ecosystem goals, objectives and indicators. Ecosystem objectives have been identified for aquatic communities, wildlife, human health and stewardship. The twelve indicators are designed to track progress towards achieving the ecosystem objectives.

Overview

The Lake Ontario LaMP Committee is continuing its efforts to restore and protect the lake's ecosystem. Through the work of the member agencies, significant progress has been made in Lake Ontario and levels of contaminants have decreased substantially in the last twenty years. The quality of the water has improved and populations and species under stress are recovering as a result of toxic reductions and habitat improvements.

This report will focus on the following key activities taking place on the lake:

- The release of the *Lake Ontario Binational Biodiversity Conservation Strategy*, a comprehensive assessment report identifying opportunities to conserve and protect Lake Ontario's biodiversity;
- The reduction of critical pollutants such as PCBs to the lake through on-going trackdown efforts in both Canada and the United States;
- The ongoing implementation of the Atlantic salmon restoration program;
- The adoption of a new suite of Lake Ontario coastal wetland indicators;
- The analysis and interpretation of information collected as part of the 2008 Lake Ontario cooperative monitoring year, and;
- The use of funds through the Great Lakes Restoration Initiative to support LaMP priorities and goals.

The LaMP Committee will also continue to track issues such as newly recognized chemicals of concern, invasive species, climate change and water level regulation.

A beautiful spring day at Sandbanks Provincial Park - Eastern Lake Ontario.
Photo Credit: Hans Biberhofer

Accomplishments

Development of the Lake Ontario Biodiversity Conservation Strategy

The Nature Conservancy and the Nature Conservancy of Canada – in consultation with 150 experts from over 50 agencies, universities, and organizations— have identified recommendations for priority actions to protect 24 significant coastal shorelines and watersheds across Lake Ontario. These shorelines and watersheds are the crown jewels of Lake Ontario's biodiversity and have the greatest value to the Lake's ecosystem.

The recommendations were a result of a two year assessment funded by the LaMP Committee. The final report, *The Beautiful Lake: A Binational Biodiversity Conservation Strategy [BCS] for Lake Ontario* was released in April 2009. The report identifies six recommendations: conserving critical lands and waters; reducing the impact of aquatic invasive species; restoring connections and natural hydrology; restoring native fish communities and native species; restoring the quality of nearshore waters, and; planning for and adapting to climate change.

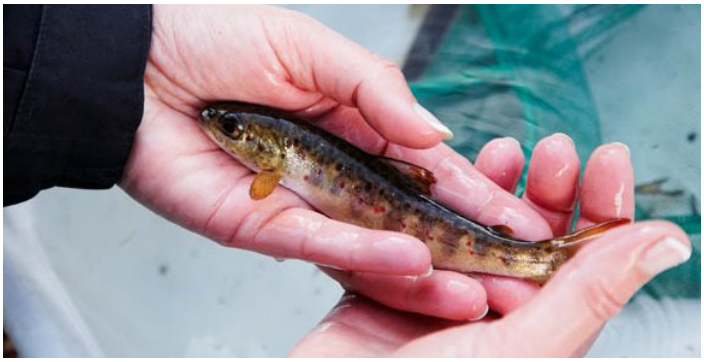
The LaMP Committee is reviewing the recommendations and will identify which ones can be formally integrated into the LaMP's biodiversity conservation implementation strategy. Given the broad diversity of stakeholders involved in this process, some of the report recommendations are outside the scope or mandate of the LaMPs government agencies. The full report is available on the web at *www.epa.gov/glnpo/loont/reports/lo_biodiversity.pdf*.

Atlantic Salmon are Coming Back to Lake Ontario

Decades of research helped set the stage for restoring Atlantic salmon to Lake Ontario. The Ontario Ministry of Natural Resources and the New York State Department of Environmental Conservation continue to stock various strains of Atlantic salmon at different life stages. Efforts are focused on best-bet streams, such as New York's Salmon River and the Credit River, Duffins Creek and Cobourg Brook in Ontario.

Milestones include the creation of a summer fishery in the Salmon River, recovery of wild juveniles from the Salmon River in 2009, significant returns of spawners to the Credit River in 2008-09, progress towards barrier mitigation and strong community support and involvement.

A common interest in bringing back wild populations of this heritage species has brought over 50 conservation-minded organizations and sponsors together in a unique partnership, co-led by OMNR and the Ontario Federation of Anglers and Hunters. To learn more about this program, please visit: *www.bringbackthesalmon.ca*.



Atlantic Salmon fry stocking
Photo credit: Ann Rocchi (Ministry of Natural Resources)

Cleaning up PCBs in the Lake Ontario Watershed

LaMP partners are continuing their polychlorinated biphenyls (PCBs) trackdown efforts on both sides of the lake in an effort to help eliminate the discharge of persistent toxic chemicals to the environment. The most recent success has been the identification of historical PCB contamination in Beaverdams Creek around Thorold, Ontario. The Ontario Ministry of the Environment identified an area of the creek that was highly contaminated from the past release of PCBs. The company responsible for the contamination voluntarily cleaned up 350 metres (1148 feet) of the creek during July to November, 2008. As part of the clean-up effort, more than 2610 cubic metres (92171 cubic feet) of sediment was removed. Further sediment removal on a downstream section of the creek is scheduled to occur in 2010.

Identifying PCB load levels in Lake Ontario

The USEPA and New York State have developed a PCB loading model for Lake Ontario that has been very useful in identifying necessary load reductions to achieve a safe Total Maximum Daily Load (TMDL) for PCBs in Lake Ontario. A TMDL is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. Currently PCB levels in Lake Ontario exceed the water quality standard of 1 picogram/l. By establishing a PCB TMDL for Lake Ontario, USEPA and New York State can further enhance their collaborative and regulatory activities to identify and reduce point and non-point PCB loadings as well as help inform Canada and Ontario's ongoing efforts to track down and eliminate remaining Canadian sources.

This is great news for Lake Ontario and builds on the successes of the Niagara River Toxics Management Plan and PCB trackdown activities that have drastically reduced PCB loadings. These initiatives all contribute to achieving the goal of resolving the fish consumption advisories in Lake Ontario.

Tracking the health of Lake Ontario's Coastal Wetlands

The LaMP includes a new set of measures to gauge the health of Lake Ontario's coastal wetlands. The indicators track: 1) the periodicity of low lake level events needed for the germination of native wetland; 2) changes in native wetland plant communities; and 3) changes in total wetland surface area.

The indicators are based on extensive research and modeling conducted by the International Joint Commission's Lake Ontario-St. Lawrence River Water Level Study that examined the impacts of lake level controls on coastal wetlands. The development of these indicators reflects the LaMP's increased emphasis on nearshore and watershed habitats, recognizing their importance to the overall functioning of the Lake's ecosystem.

Challenges

Algal Blooms have Re-emerged in Lake Ontario

In the 2008 Lake Ontario Update, the LaMP committee reported on the increase of blue-green algal blooms in Lake Ontario's bays and marshes and along the north shore of the St. Lawrence River. Since then, Hamilton Harbour, the Bay of Quinte, and the mouth of the Oswego River have experienced blue-green algal blooms. Factors implicated in the increase of these types of algal blooms include increased nutrient loads to the lake and invasive mussels.

Blue-green algae are known to produce toxins and thrive and grow rapidly in high temperature, high nutrient and low water circulation environments. In addition to aesthetic problems, the toxins potentially threaten the health of plants, animals and people that may come in contact with them, and persist until wind, wave or precipitation breaks up the surface layer.

A toxin-producing bloom of the cyanobacteria *Microcystics*. Photo Credit: Byron Keen (Bay of Quinte Conservation)

In light of these concerns the LaMP Committee will review the result of the Lakewide 2008 Nearshore Assessment to determine if these eutrophication problems require coordinated binational action, and determine how the changes in the phytoplankton community affect ecosystem objectives for the lake.

Next Steps

U.S. Great Lakes Restoration Initiative and the Canada-Ontario Agreement

In October 2009, U.S. President Barack Obama signed into law the Act that will provide $475 million in the next year for the Great Lakes Restoration Initiative (GLRI). More than $250 million of the $475 million is available for grants and project agreements to jump-start Great Lakes restoration efforts.

The Lake Ontario LaMP priorities will benefit from the funding of anticipated proposals for implementation of the Binational Biodiversity Conservation Strategy, developing coastal wetland indicators, improving nearshore water quality, reduction of sources and loads, trackdown of contaminants, and other LaMP goals. Detailed information on the GLRI can be found at: *http://www.epa.gov/greatlakes/glri/index.html*

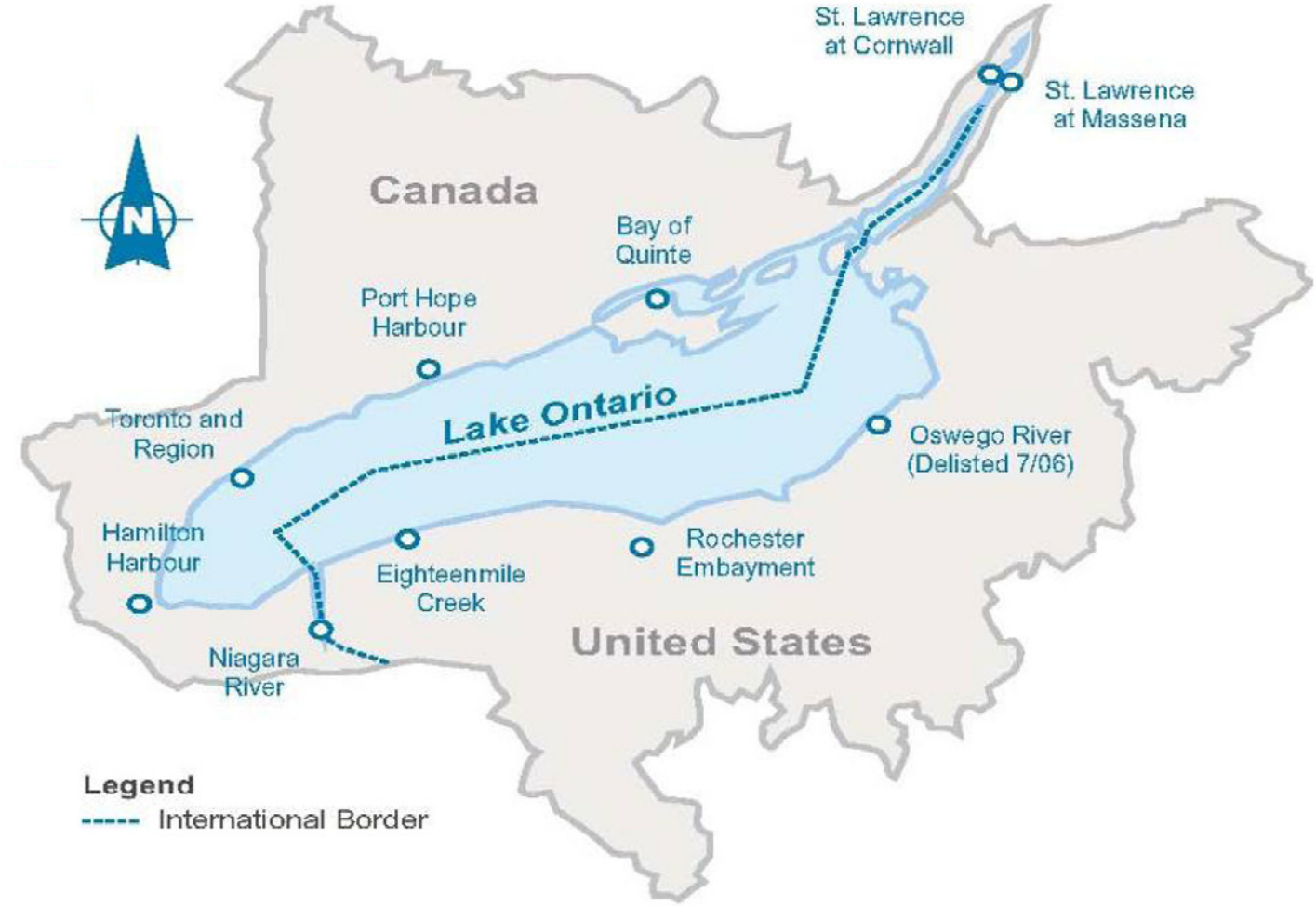
In Canada, the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) will continue to support the objectives of the LaMP. More information on COA can be found at: *http://www.ec.gc.ca/grandslacs-greatlakes*.

Reporting Lake Ontario Cooperative Monitoring Year Findings

The LaMP Committee, working with the Binational Cooperative Science & Monitoring Initiative (CSMI), conducted detailed studies on water quality, benthic organisms, zooplankton and fish populations in 2008 as part of the five-year Cooperative Monitoring Year cycle to better understand the Lake Ontario ecosystem. These extensive investigations were made possible through the collaboration of federal, state, provincial and local governments as well as academic experts. A major focus of these efforts was to understand how nutrients are transported from watersheds into nearshore waters and the open lake. Invasive zebra and quagga mussels appear to have interrupted the flow of nutrients from the nearshore waters to the open lake resulting in an apparent increase in nearshore eutrophication problems.

Lake Ontario Basin including Areas of Concern

Lake Ontario is the last of the chain of Great Lakes that straddle the Canada/United States border. Its shoreline is bordered by the Province of Ontario on the Canadian side and New York State on the U.S. side. Lake Ontario is the smallest of the Great Lakes, with a surface area of 18,960 km^2 (7,340 square miles), but it has the highest ratio of watershed area to lake surface area.



Special Events

International Association of Great Lakes Research (IAGLR) Conference Toronto – May 17-21, 2010!

Sessions include findings of the 2008 Lake Ontario Cooperative Monitoring Year, Lake Ontario coastal zone conditions, Bay of Quinte ecosystem and Hamilton and Toronto AOC issues. See the IAGLR website at *http://www.iaglr.org/conference* for more details.

Contact Information:

The Lake Ontario Lakewide Management Plan is a binational partnership of Environment Canada, Fisheries and Oceans Canada, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Ontario Ministry of Environment, Ontario Ministry of Natural Resources and New York State Department of Environmental Conservation.

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