LaMP UPDATE
LAKE ONTARIO • LAKEWIDE MANAGEMENT PLAN
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LAKE ONTARIO LAKEWIDE MANAGEMENT PLAN UPDATE '07

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The Lake Ontario LaMP - A Retrospective

20 Years of Working Together to Restore and Protect Lake Ontario

This year marks the 20th anniversary of the signing of the "Niagara River Declaration of Intent" by the Four Parties (U.S. Environmental Protection Agency, Environment Canada, New York State Department of Environmental Conservation, and Ontario Ministry of the Environment). The Declaration came about in response to the public concern for toxic pollutants entering the Niagara River and Lake Ontario. This Declaration included a commitment by the Four Parties to develop a Toxics Management Plan for Lake Ontario (LOTMP). The LOTMP defined the toxics issue in the lake, developed a remediation plan and implementation activities by both individual and joint agencies. So, what has been accomplished over the past 20 years?

Milestones

- In 1989, the LOTMP was first issued, defining the toxic pollution problems in relation to chemical-specific standards and criteria and indicators of ecosystem health. The LOTMP guided the primary toxic substances reduction activities for Lake Ontario and resulted in the development of mass balance models to relate toxic loadings to system responses; development of ecosystem objectives for Lake Ontario for wildlife, habitat, aquatic communities, human health, and stewardship; and development of a preliminary loadings matrix for the six priority chemicals.

Signing the Letter of Intent - 1996. Photo credit: Environment Canada

- In 1996, the Four Parties signed a "Letter of Intent" to expand the LOTMP in order to meet the 1987 amendment to the Canada-U.S. Great Lakes Water Quality Agreement (GLWQA) that directed the governments to develop Lakewide Management Plans (LaMPs) for each Great Lake.
- In 1998, the Stage 1 LaMP Report was issued, achieving a major requirement of the GLWQA. This report, developed by the Four Parties in consultation with the public and other natural resource agencies, incorporated all relevant LOTMP commitments into an ecosystem-based plan; identified four problems referred to as beneficial use impairments that existed lakewide (i.e., restrictions on fish and wildlife consumption, bird or animal deformities or reproductive problems, degradation of wildlife populations, and loss of fish and wildlife habitat); identified six priority chemicals that caused (or likely to have caused) three impairments; and proposed a binational strategy to coordinate source trackdown and pollution prevention activities. The priority chemicals included PCBs, DDT, mirex, dioxins/furans, mercury, and dieldrin. A fourth impairment, loss of fish and wildlife habitat, was attributed to a combination of factors such as the introduction of non-native invasive species, land use changes, and lake level controls.
- Between 1998 and 2002, the LaMP adopted a suite of eleven ecosystem indicators used to track progress in restoring the Lake Ontario ecosystem; updated knowledge of the sources and loadings of the critical pollutants; and discovered and remediated many significant in-basin sources of critical pollutants by using regulatory or voluntary actions. Despite this success, a LaMP assessment of the status of bottom-dwelling organisms (benthos) and microscopic aquatic plants (phytoplankton) concluded that benthos and nearshore phytoplankton populations are degraded, thus adding two more impairments (degradation of benthos and degradation of phytoplankton populations) to the list.
- In 2002, the LaMP established a formal partnership with the Great Lakes Fishery Commission's Lake Ontario Committee (LOC). This has lead to increased information sharing and the development of common aquatic ecosystem goals and objectives.

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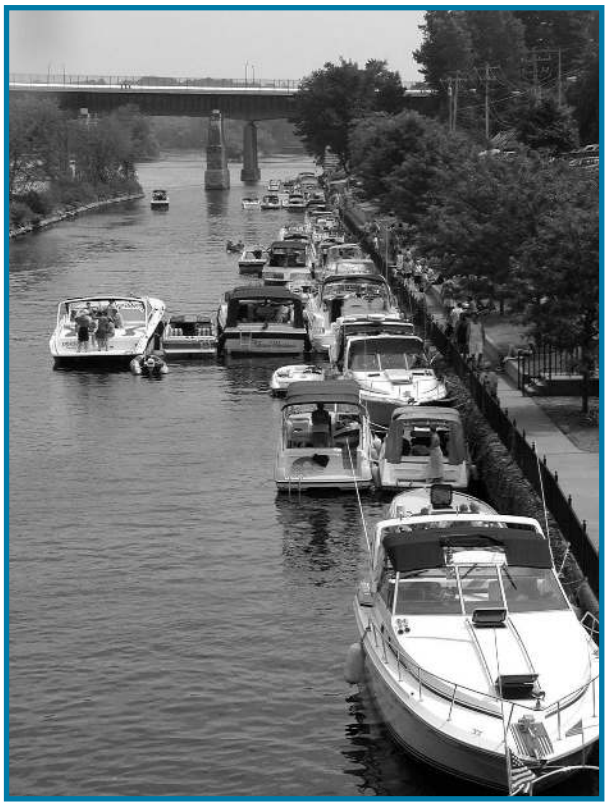
- In 2003, the LaMP and LOC initiated the "first of its kind" binational cooperative monitoring project for the lake to improve understanding of the impact of zebra/quagga mussels on the flow of nutrients and contaminants through the aquatic foodweb and to assess the amount of contamination entering the lake through air deposition.
- In 2004, with the LaMP expanding its focus to include the ecology of the lake system and the state of fish and wildlife populations, the LaMP membership was broadened to include Fisheries and Oceans Canada (DFO), the Ontario Ministry of Natural Resources (OMNR) and the U.S. Fish and Wildlife Service (USFWS).
- Also in 2004, a binational long-term monitoring protocol was developed using sediment core data to track progress in reducing contaminant inputs to Lake Ontario, and habitat protection and restoration strategies were begun.
- Today, significant activities are underway to protect and restore native aquatic species (i.e., lake trout, American eel), prevent the introduction of new non-native species, understand changes in the lower food web and nearshore zones, and respond to artificial control of Lake Ontario water levels.

Current Findings

- The management of critical pollutants has been effective in significantly reducing their presence in the environment. Fish and wildlife populations have responded positively to this improvement—especially bald eagles, colonial waterbirds, mink, otter, and snapping turtles. Healthy populations of these species now exist around much of Lake Ontario where habitat is suitable.
- The upstream Great Lakes are a major source of critical pollutants reaching Lake Ontario and are now equaled in magnitude by atmospheric deposition from emissions both within and outside the Lake Ontario basin.
- Significant ongoing issues include: the protection and restoration of native species (i.e., Lake trout, American eel); the prevention of introduction of new non-native species, such as Asian carp; the continuing colonization of the lake and connected waterbodies by non-native species such as zebra/quagga mussels, fishhook/spiny waterfleas, and round gobies; and artificial control of Lake Ontario water levels.
- Emerging issues include: potential water quality declines and habitat loss caused by the rapid urbanization of the western end of Lake Ontario (the Golden Horseshoe); emerging chemicals of concern such as PBDEs, PCNs, endocrine-disrupting compounds, pharmaceuticals, and personal health care products; fish and wildlife diseases; fish and waterbird deaths caused by Type E botulism; and harmful algal blooms.

Much progress has been made over the last two decades. Now, we must keep up the momentum both to protect and to continue improving the ecosystem so that future generations will be able to enjoy this natural treasure in the years to come.



Oswego River AOC. Photo credit: City of Oswego

Oswego River AOC

The lower Oswego River and Harbor is once again the crown jewel of the City of Oswego. Through coordinated efforts, the City of Oswego has revitalized the downtown area, the Port Authority has made many improvements, boating and fishing interests have grown, and water access and water quality have improved tremendously. On July 25, 2006, the Oswego River Area of Concern (AOC) was formally delisted. That means it no longer has a designation as a Great Lakes AOC. Oswego has set the stage for achieving progress with the AOCs in the United States.

See the Web site for more information: http://www.epa.gov/glnpo/aoc/oswego.html

Lake Ontario Fish Community–Changes in the Last 20 Years

The Lake Ontario fish community had already undergone profound changes prior to 1987, primarily due to overfishing, habitat destruction, and pollution. Lake sturgeon, lake herring, and lake whitefish numbers were very low, and Atlantic salmon, lake trout, blue pike and deepwater ciscoes were wiped out. By 1987, efforts initiated in the 1970s and early 1980s to restore the open lake fish community were showing success and some fish species, such as lake whitefish, were increasing in numbers on their own. Meanwhile in nearshore areas, a general decline in warmwater fish abundance was observed from the 1970s through 1990s.

In 1987, trends in the Lake Trout Restoration Program were approaching the goals outlined in the rehabilitation plan. The adult lake trout population was increasing and successful reproduction was first observed in 1986. Wild lake trout have consistently been collected in New York waters from 1994 through 2006. Sea lamprey control was successful in keeping sea lamprey wounding rates around the target for Lake Ontario. But reversals in these trends started in the late 1990s. Adult lake trout abundance began to decline in 1998 and has continued through 2006. Since 1997, sea lamprey wounding rates were often above target values putting additional stress on the reduced adult population. The need for changes in lake trout restoration has become apparent.

The appearance of the zebra and quagga mussels in 1989 and 1991, respectively, has led to major changes to the food web of Lake Ontario. Their filtering ability redirected food from the water column to the bottom of the lake, making it less available to prey fish. Coincident with the mussel colonization, several important bottom invertebrates declined including fingernail clams and the deepwater amphipod *Diporeia*, an important diet item for lake whitefish and young lake trout. *Diporeia* disappeared from the Kingston basin and nearshore areas by 1997, but were still present in deeper waters (> 80 meters) at lower numbers in the early 2000s. Following their decline, lake whitefish abundance and condition declined as well.

By the mid 1990s, the large stocked predator population was impacting prey fish abundance. The decline in alewife abundance prompted the New York State Department of Environmental Conservation and Ontario Ministry of Natural Resources to decrease stocking of all species by about half in 1993. Adult alewife abundance briefly increased in 2001 and 2002, but declined thereafter to lower levels again.

In 1987, the nearshore warmwater fish abundance had declined significantly since the 1970s, but appeared to be stabilizing. Further declines were observed in the early 1990s as zebra and quagga mussel abundance increased, but has remained relatively stable since. Smallmouth bass abundance was increasing in the eastern basin of Lake Ontario in the late 1980s, but then declined significantly from a peak in 1990. This decline coincides with documented increases in the number of double-crested cormorants, a predator of fish. Walleye is the only nearshore species to show a significant increase in abundance from 1987 through the 1990s, but it has also been declining in more recent years. There appears to be a slow recovery of lake sturgeon in a few areas around Lake Ontario, including the Niagara River and the Black River, and restoration efforts began in 2003 in the Genesee River.

In 1998, round goby were first recorded in Lake Ontario near the Welland Canal and in 1999 they were found in the Bay of Quinte. By 2005, they had spread throughout Lake Ontario. Their impact on the Lake Ontario fish community has yet to be documented, but in other parts of the Great Lakes they have displaced the native species, such as darters, sculpins, and logperch from their traditional habitat; fed on native fish eggs; and are themselves eaten by some of the native predatory fish. The discovery of the invasive species bloody red shrimp (*Hemimysis anomala*), near Oswego in 2006 could lead to further changes to the nearshore fish community. Fisheries & Oceans Canada and Ontario Ministry of Natural Resources together are implementing a monitoring program in the summer of 2007 to detect spread of this new invader in Lake Ontario. DFO's national Centre of Expertise for Aquatic Risk Assessment (CEARA) has given this new invader high priority for risk assessment in the near future.

The Lake Ontario fish community was fairly stable and improving in 1987 and through the mid 1990s. The impacts of zebra and quagga mussels, and the more recent introductions of invasive species into the Great Lakes, have resulted in a lakewide community that is not stable and shows signs of stress. This situation has prompted the Lake Ontario LaMP to change the fish population indicator from unimpaired to impaired.

Future fishery management initiatives for Lake Ontario are focused on restoration. The Lake Trout Rehabilitation Plan for Lake Ontario is being updated to respond to all the changes that have occurred in the last 20 years. Due to the relatively low abundance of alewife and smelt, developing a restoration plan for the deepwater ciscos has become a priority. Current research is focusing on their ability to grow in a hatchery and checking for evidence of disease. Although Atlantic salmon have been stocked over the years and some research has examined their restoration potential, a major restoration effort for Atlantic salmon is scheduled to begin in the Province of Ontario in 2007.

The American eel, a species mostly found in the nearshore areas, has declined dramatically in Lake Ontario. The commercial fishery annual eel harvest in 2004 declined more than 99% since the late 1980s. As a result, the commercial fishery in Canada was closed in April 2004 and the recreational fishery was closed in April 2005. American eel are proposed for listing as "special concern" under the Canadian Species at Risk Act and as "endangered"' under the Ontario Endangered Species Act. Plans to restore eel abundance are under development. Some actions to address the plans have already been implemented, but much more will need to be done in the future.

Binational Biodiversity Strategy for Lake Ontario - Next Steps

Lake Ontario is an ecosystem at a crossroads. On one hand, the lake still harbors significant biodiversity in its native fish, thriving populations of migratory birds, extensive coastal wetlands, and magnificent barrier beaches and dunes. On the other hand, it is threatened by hydrological alteration, nutrient enrichment, and continued invasive species introductions, which have vastly altered the food web.

Can we influence the evolution of the lake to preserve and restore as much of its native biodiversity as possible? Clearly, this question must be approached from a bi-national and multi-jurisdictional perspective.

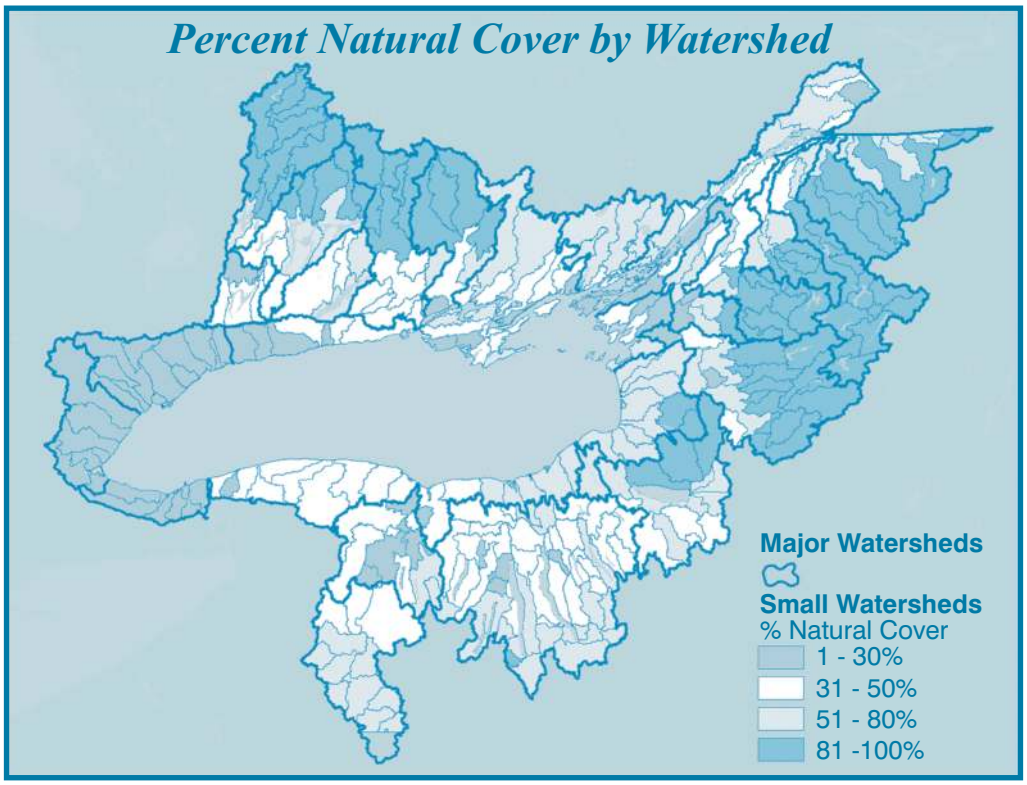
The LaMP, in collaboration with 25 agencies, universities, and non-profit organizations in the U.S. and Canada is developing a binational roadmap to protect and restore Lake Ontario's biological diversity. This process, which is being facilitated by The Nature Conservancy and Nature Conservancy of Canada, will integrate the natural resource information and habitat priorities of Ontario and New York into a binational action agenda for Lake Ontario as a single ecosystem.

The end result will be a scientifically grounded, common vision of priority strategies that partner organizations can pursue. The process involves selecting important conservation targets, ranking threats to them, and then comparing the recommended strategies to the present actions of public and private partners. This process will enable us to identify gaps in conservation efforts that need to be filled through binational collaboration.

Three workshops have been held thus far, and the collaborators have made progress in many important areas.

During the first phase, a binational basin-wide dataset of species-at-risk, exemplary, threatened natural communities, and protected areas was assembled. Then, conservation targets were identified. Conservation targets are important species, natural communities, or ecological systems that serve as the focus for conservation analysis and planning. Eight ecosystem-level targets were selected for analysis and discussion:

- Open water ecosystems–the pelagic zone of the lake;
- The ecosystem of the lake's bottom in permanently cold waters;
- The nearshore waters that support submerged aquatic plants, and the fish, amphibians, and dabbling ducks that depend on these aquatic habitats;
- Coastal wetland ecosystems of the lake;
- Native migratory fish, including lake trout, Atlantic salmon, lake sturgeon, American eel, and northern pike;
- Coastal terrestrial habitats, such as beaches, dunes, and eroding bluffs;
- Islands that serve as nesting habitat for birds such as the common tern; and
- Tributaries, estuaries, and connecting channels, including major inlet and outlet rivers of the lake.



Finally, the threats that endanger the conservation targets were identified and ranked. The top ranked threats included dams and barriers on tributaries; current aquatic invasive animals; future aquatic invasive animals; and incompatible residential and commercial development.

Black Tern Standing on Den
Photo credit: © Marie Read

Other highly ranked threats included pollution from industrial, agricultural, and non-point sources; hydrologic alteration from water level regulation; and climate change.

The next steps will include a more detailed mapping analysis of the threats so that watersheds for conservation action can be prioritized. One major task will be to make the strategies as geographically specific and action-oriented as possible. Questions that need to be answered include:

- Which watersheds most need forested buffers around tributaries to reduce sediment run-off and restore natural flows?
- Where are the spawning beds of lake trout that need to be preserved?
- What steps should we take to preserve areas of the lake benthos that still harbor native macro-invertebrates?
- Which dams are blocking access to important habitat and can be removed with minimal environmental and economic impacts?
- Which invasive species can be dealt with through biological control?

A second major task will be the identification of a suite of indicators to measure the success of conservation strategies and the status of threats. The objective will be to match the key attributes of the targets (i.e., the density of *Diporeia*, a native shrimp-like animal, as an indication of the status of the benthos) with the existing and future monitoring programs of natural resource organizations in the two countries. A "gap analysis" will compare the monitoring needs with existing monitoring efforts.

By engaging a binational network of partners in developing this action agenda, this project will enhance collaboration and integration of efforts toward achieving the habitat restoration goals of the LaMP.

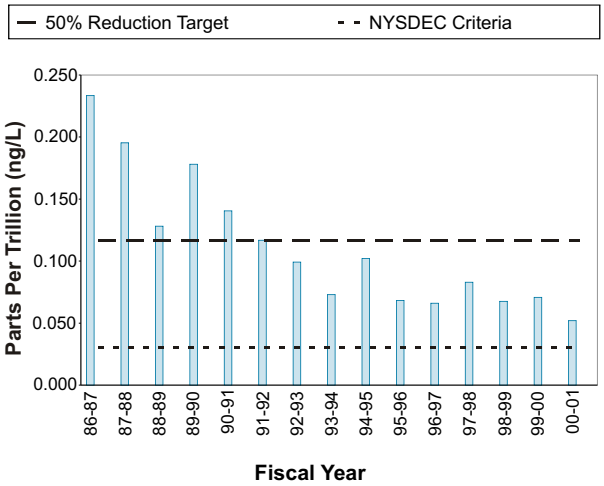
Niagara River Toxics Reduced

In one second, as much as 200,000 cubic feet (about 6,000 cubic meters) of water flows over the falls and out the Niagara River, providing Lake Ontario with more than 80 percent of the lake's annual water supply. Because of this large volume of water and the toxic chemicals originating from sources along the river and upstream Lake Erie, the Niagara River has historically been a major contributor of chemical pollutants to Lake Ontario.

This year the four agencies – Environment Canada, U.S. Environmental Protection Agency, Ontario Ministry of the Environment, and the New York Department of Environmental Conservation are celebrating the twentieth anniversary of the Niagara River Toxics Management Plan (NRTMP). Adopted in 1987, the NRTMP has coordinated government and industry efforts to significantly reduce the concentrations of toxic pollutants in the Niagara River. Today, significant decreases in concentrations of many toxic pollutants have been observed, and reduction targets for nearly all of the eighteen priority toxic chemicals have been surpassed, with some achieving 80 percent reductions (e.g., 93% for octachlorostyrene in suspended sediments from 1988-2000, 78% for hexachlorobenzene in whole water from 1986-2000; see Figure 1) . This successful improvement in water quality is further supported by evidence of significant reductions of toxics in small fish and mussels in the river and tributaries.

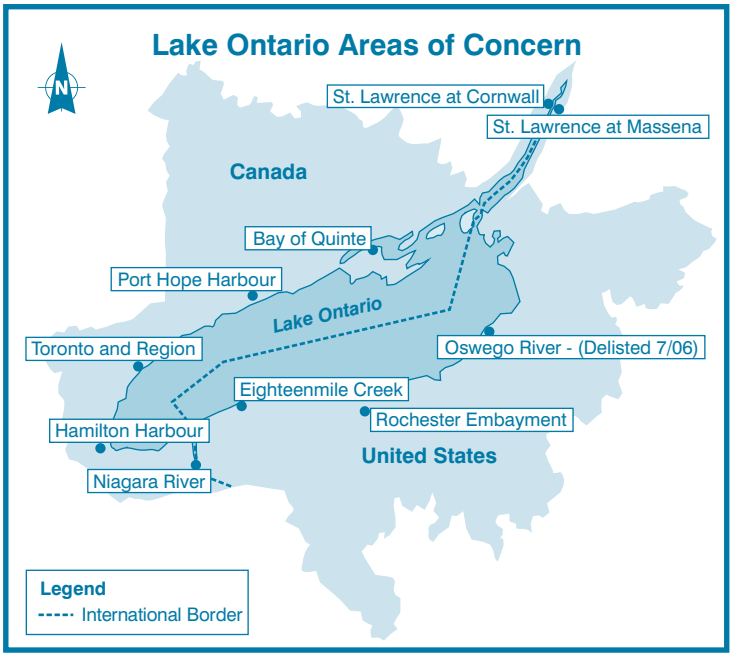
A summary report on the results of the various NRTMP monitoring and source reduction programs will be available and presented at a public meeting in October 2007, in conjunction with the Lake Ontario LaMP.

Figure 1 Decline in Mean Annual Concentration of Hexachlorobenzene in Water at Niagara-on-the-Lake Station



Great Lakes Areas of Concern (AOCs) Make Progress

The International Joint Commission identified nine AOCs around Lake Ontario based on their potential to be significant sources of critical pollutants to the lake. Two of these AOCs are binational and are located at the inlet (mouth of the Niagara River) and outlet (the St. Lawrence River) of the lake. Remedial Action Plans (RAPs) have been developed and are being implemented for each AOC. The RAPs focus on the restoration and protection of beneficial uses based on the application of fourteen use impairment indicators. The United States AOCs have taken steps to implement the needs identified in the Great Lakes Regional Collaboration Strategy. The 2007 Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) provides for enhanced Canadian Great Lakes activities.



Canada and the United States are implementing the RAPs for the binational AOCs (the Niagara and St. Lawrence Rivers) independently within a broader context of intergovernmental cooperation. Joint participation on technical and public participation activities is contributing to a shared vision of restoration and protection. AOC highlights follow:

Niagara River AOC (U.S. Side): Remedial measures address site cleanups, wastewater discharges, non-point sources, spill prevention, combined sewer overflows (CSOs), bottom sediments, and habitat. Tremendous progress has been documented (i.e., 20 out of 26 sites remediated), water treatment infrastructure upgrades and best management practices established, habitat improvement plans developed, and a river greenway plan created. A RAP workshop was held in 2006 to begin the process of designating delisting criteria.

Niagara River AOC (Canadian Side): A review of beneficial use impairments and delisting criteria was recently completed. Sediment management strategies are being developed for Lyons Creek East and West. Municipal and rural non-point source reduction activities are being coordinated with municipal infrastructure improvements to reduce CSO and stormwater inputs to the Welland and Niagara Rivers. Efforts to restore habitat continue.

St. Lawrence River at Massena (U.S. Side): Significant capital costs have been expended to implement remedial actions in the Massena area by Alcoa and General Motors (up to $1 billion including remedial sites, wastewater, and air pollution controls). The current focus is on establishing end points and delisting criteria regarding the beneficial uses. A status report was completed in 2006.

St. Lawrence River at Cornwall (Canadian Side): A sediment management strategy has been established and implemented in this AOC. The focus over the next three years is to address remaining priority actions (e.g. completion of the non-point source and habitat projects and upgrading of the City of Cornwall's sewage treatment plant). Monitoring and assessment is planned to document restoration of beneficial uses.

Eighteenmile Creek AOC (U.S.): The Niagara County Soil and Water Conservation District is managing the RAP under an EPA grant. Activities are focused on addressing PCB sediments and sources, remediating hazardous waste sites, and correcting CSOs. An AOC Status Report, Report Card, and State of the Basin Report were all developed in 2006.

Rochester Embayment AOC (U.S.): Monroe County Department of Health is managing the RAP under EPA grant funding. Delisting criteria and monitoring methods have been established to address impairment indicators. The Lake Ontario Coastal Initiative is helping to address the bathing beach algae and nutrient enrichment problems in the nearshore areas of Lake Ontario.

Hamilton Harbour AOC (CDN.): The RAP was updated in 2002. The Region of Halton's Sewage Treatment Plant is now consistently meeting most final Hamilton Harbour RAP effluent targets. Hamilton has constructed three more CSO tanks and is nearing completion of a wastewater master plan to address tertiary upgrades required to meet RAP targets. Final design is underway to address PAH contaminated sediment at Randle Reef. Habitat restoration and an expanding waterfront trail system are continuing highlights of this AOC.

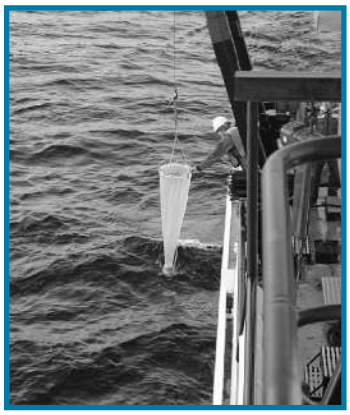
Toronto and Region AOC (CDN.): Rapid population growth and urbanization, as well as the legacy of pollution from industrial and other sources, continue to impair environmental conditions in the Toronto and Region AOC. Plans to restore conditions and improve water quality have been developed. The RAP Team, in conjunction with its partners, completed a progress report and is determining the steps necessary to put this AOC on the path to recovery.

Port Hope Harbour AOC (CDN.): Natural Resources Canada is the lead for the cleanup of historic radioactive wastes found within the local municipalities, including contaminated sediment. With Environment Canada, they will work to ensure that the requirements of the RAP process are met. It is currently anticipated that the clean-up will be completed by 2012.

Bay of Quinte AOC (CDN.): In 2006, a four-year work plan was completed that identifies natural recovery processes to lead to restoration and eventually allow delisting of the Bay as an AOC. A phosphorus loading management plan is under development that will assist the Restoration Council in determining and implementing reductions in the Bay.

Getting Ready for the 2008 Lake Ontario Cooperative Monitoring Year

The Lake Ontario Lakewide Management Plan (LaMP) and the Great Lakes Fishery Commission's Lake Ontario Committee (LOC) have begun planning for the 2008 U.S.–Canadian Lake Ontario Cooperative Monitoring Year to address research and monitoring needs critical for the effective management and restoration of the Lake Ontario Ecosystem. Two recent LaMP/LOC workshops, generously supported by the International Joint Commission's Council of Great Lakes Research Managers, helped develop the following Lake Ontario research and monitoring priorities for 2008:



Lake Ontario Sediment Sampling. Photo credit: Jim Swart

Understanding Nearshore-Offshore Nutrient Transport Mechanisms – The incidence of nearshore eutrophication problems appears to be increasing. Invasive zebra and quagga mussels may have set in motion a series of changes that now limit the transport of nutrients from the coastal zone to offshore waters. Emphasis will be given to coordinating agency, academic, and local government monitoring efforts to provide a lakewide assessment of biological changes in the nearshore zone.

Status of Offshore Lower Food Web – Given continuing concerns over the "health" of the aquatic food web, an assessment of offshore nutrients, phytoplankton, benthos and zooplankton, similar in scope to the 2003 LaMP/LOC effort, is needed to document on-going changes in the aquatic food web.

Lakewide Fishery Assessment – Routine prey and sport fish assessments will be expanded lakewide with a special emphasis on lake trout, a key LaMP indicator species. The distribution, natural reproduction, reproductive health, and genetic diversity of lake trout are of particular interest. Nearshore embayments and coastal areas where zebra and quagga mussels and now, round goby, are suspected to have altered energy pathways will also be included. These assessments will help guide the implementation of fishery management plans.

Understanding Food Web Changes Using Biomarkers – The flow of nutrients through Lake Ontario's aquatic food web needs to be reconsidered now that exotic mussels and zooplankton have become established. The analysis of stable isotopes and fatty acids in food web organisms will be used to understand the relative importance of bottom dwelling and water column prey animals, to higher-level organisms such as lake trout and colonial water birds.

Improving Coordination of Contaminant Monitoring Programs – LaMP staff will work to identify opportunities to improve on our binational cooperative contaminant monitoring to better meet the information needs of LaMP modeling and environmental indicator activities.

These monitoring and research initiatives are designed to address LaMP and LOC agency priorities for Lake Ontario. New "hi-tech" monitoring technologies, such as towed remote sensing instrumentation and satellite imagery, will be incorporated into these monitoring efforts, where possible.

Successful implementation of these efforts will depend on our ability to develop cooperative partnerships beyond the LaMP agencies, leverage resources, and actively pursue creative funding sources. More information on the LaMP/LOC cooperative monitoring workshops is available at: http://canamglass.org/low.

Come Join the Celebration

The year 2007 marks the 20th anniversary of the signing of the Declaration of Intent by representatives of Environment Canada, United States Environmental Protection Agency, Ontario Ministry of the Environment, and New York State Department of Environmental Conservation. This document committed the agencies to developing toxics management plans for the Niagara River and Lake Ontario.

On October 24, 2007, the Niagara River Toxics Management Plan (NRTMP) will host a public meeting in conjunction with the Lake Ontario LaMP. The focus of this year's meeting will be the progress that has been made over the last two decades, with a look toward what further work is needed to achieve the goals of improved environmental conditions in the Niagara River and Lake Ontario.

The evening will consist of presentations by representatives of the NRTMP and the Lake Ontario LaMP, with time for questions from the audience and a discussion of future priorities.

Come and join with us on October 24 at the Holiday Inn, Grand Island, New York, located at 100 Whitehaven Road. Presentations will begin at 7 p.m.

Next Steps

The LaMP will continue efforts to restore and protect Lake Ontario and its biological resources. The LaMP workplan outlines priority actions and tracks progress toward achieving this goal. The current LaMP five-year workplan, which became effective in January 2005, is being updated to include new activities for the LaMP.

The further reduction of critical pollutants is of primary importance to the LaMP. In addition to the Parties' ongoing pollution prevention programs, trackdown investigations in the U.S. and Canada will continue so that contaminant sources can be identified and addressed.

Coordination of binational monitoring efforts, particularly those related to the LaMP's ecosystem indicators, will continue. The Lake Ontario Lower Food Web Assessment (LOLA) project is assessing the status of the changing lower food web. The LaMP is now planning the Lake Ontario 2008 Intensive Monitoring Year which will further assess the lower food web, and also the chemical status of the lake, both nearshore and open lake. The extent of new emerging chemicals in the water and sediment will also be studied. Planning is underway to continue the data analysis from the major binational monitoring efforts, to disseminate this information, and evaluate the resource management implications that will evolve from these efforts.

The binational habitat strategy that began in 2006 will set the stage for coordinating future actions. Once the habitat strategy is finalized, targeted restoration or protection projects will be selected and funding, resources, and partners will be sought to complete these projects. The LaMP also plans to expand its links with regional and local watershed priorities around the basin.

Effective public stewardship demands a sound understanding of the complex problems facing the lake. Ongoing and planned activities include opportunities to meet with existing groups, forming partnerships locally to assist in LaMP projects, and providing public information through the LaMP Web site and mailings.

For More Information

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