



## WHAT ARE THE CURRENT PRESSURES IMPACTING LAKE ONTARIO?

The current pressures impacting Lake Ontario include non-native invasive species, contamination, lake level regulation, habitat alteration, aquatic food web changes and urbanization.

### Pressures

#### Non-native Invasive Species

Zebra and quagga mussels have irreversibly changed the physical, chemical and biological integrity of Lake Ontario. The filtering activity of the mussels has reduced the amount of food available to other organisms and caused some native species populations to decline. This decline created a ripple effect that has impacted the health of the fishery. These mussel colonies encrust many manmade features of the lake and alter the habitat of other organisms.

The round goby and the spiny and fishhook waterfleas are non-native species recently introduced to the lake. Round gobies eat zebra and quagga mussels and in turn are eaten by native and non-native fish species. Unfortunately, these mussels and the round goby are suspect in the growth and transfer of Type E- botulism detected at a few locations along the Lake Ontario shoreline.

#### Contaminants

Canada and the United States have banned, or otherwise control, contaminants such as polychlorinated biphenyls (PCBs), dichlorodiphenyltrichloroethane (DDT), mirex, dioxin/furans, mercury and dieldrin entering the Great Lakes. As a result, levels of contaminants in the Lake Ontario ecosystem have decreased significantly over the past 20 to 25 years. Despite this decline, levels of some contaminants detected in fish still exceed consumption guidelines for humans.

Contaminant levels in herring gull eggs have dramatically decreased, successful reproduction is occurring and bird populations have generally increased. Many fish and wildlife populations once on the verge of extinction have rebounded from the effects of contaminants. Key indicator species such as the bald eagle, river otter and mink, are making a



comeback in the Lake Ontario ecosystem. Aquatic communities, however, are still under stress. It appears that the most significant sources of critical pollutants to Lake Ontario now arrive from upstream sources and from the atmosphere.

#### Lake Level Regulation

The artificial management of lake levels has had some consequences. Lake level regulation has seriously affected Lake Ontario's natural resources, including fish and wildlife, shoreline habitat, dune barrier systems and numerous wetland complexes along the shore. The management of lake levels has inadvertently reduced the area, quality and functioning of Lake Ontario nearshore wetlands.

#### Habitat Alteration

The physical loss, modification and destruction of habitats are all threats to the success of fish and wildlife populations. Wetlands are particularly vulnerable to activities such as in-filling and dredging. An estimated 50 percent of Lake Ontario's wetlands have been lost throughout the basin as a result of habitat alteration.

#### Aquatic Food Web Changes

The offshore lake ecosystem (in areas greater than 15 metres deep) relies heavily on stocked salmon and trout to provide recreational fisheries and to control populations of non-native alewife and smelt.

## WHAT ARE THE CURRENT PRESSURES IMPACTING LAKE ONTARIO?

Chinook and coho salmon, rainbow and brown trout all continue to support recreational fisheries and display variable rates of wild reproduction. The current salmon and trout complex relies on alewife and smelt, and both of these preyfish species are in mixed or deteriorating states. In response, top predators, particularly Chinook salmon, are showing signs of reduced weight.

Other pressures on the Lake Ontario fishery include increasing competition for food by invasive species such as the round goby; consumption of fish by cormorants; thiamine deficiencies resulting in increased mortality of young fish; overfishing and continued reliance on stocking; and the presence of contaminants in many fish species, including walleye and trout.

### Urbanization

Urbanization has consequences including increases in impervious land area, stormwater runoff and transportation-related emissions. Land use and population growth, particularly low-density urban sprawl in the Golden Horseshoe (Toronto area), are affecting Lake Ontario and the stress is growing. By 2030, it is projected that an additional three million people will live in the Lake Ontario basin. Almost all of the growth is expected to concentrate in Ontario at the western end of the lake.

### Current Actions

To help meet Great Lakes Water Quality Agreement commitments, the governments of the United States and Canada agreed to develop and implement:

- Lakewide Management Plans (LaMPs) for open lake waters; and
- Remedial Action Plans (RAPs) for specific geographic Areas of Concern (AOCs).

The Lake Ontario LaMP works closely with the Great Lakes Fishery Commission to identify priority projects and develop objectives and indicators for the aquatic habitat ecosystem.

### Actions Needed

To protect the Lake Ontario ecosystem the following actions are needed:

- Design communities that accommodate more people without rampant urban sprawl and destruction of habitats;
- Prevent the introduction of non-native species;
- Continue to monitor and control contaminants;
- Inform lake level regulation managers of changes in fish and wildlife populations; and
- Monitor the subtle, but important, changes occurring in the Lake Ontario food web so that appropriate actions may be taken.

### To Learn More

For further information related to the state of Lake Ontario, please refer to the *State of the Great Lakes 2005* report and other Great Lakes references which can be found at [www.binational.net](http://www.binational.net). The Lake Ontario Lakewide Management Plan 2004 can be found at <http://cfpub.binational.net/ontario/intro-e.cfm>.



Lake Ontario shoreline, Oswego, New York.  
Photo Credit: U.S. Environmental Protection Agency, Great Lakes National Program Office.