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## WHAT ARE THE MAJOR PRESSURES IMPACTING THE ST. LAWRENCE RIVER?

Low and stabilized water levels, non-native invasive species, declining fish stocks, contaminants, and restricted use of beaches are among the major pressures impacting the St. Lawrence River.

### Pressures

#### Low and stabilized water levels

The construction of the seaway and dams in the St. Lawrence River considerably modified the river's hydrodynamics and resulted in the loss and alteration of natural habitats. As an example, in the Boucherville Islands, near Montreal, low-lying marshes have been transformed into higher and drier marshes, a phenomenon due in part to the dredging of the shipping channel and exacerbated by low water levels. An increase in the frequency of low water levels could influence fish abundance, diversity, and health significantly. Low water levels could also have harmful repercussions on diversity of wetlands, which are important habitats for birds, fish, amphibians, reptiles, molluscs, and many small mammals.

#### Non-native invasive species

The St. Lawrence River is the primary navigational access route for trade and commerce in the Great Lakes basin. Not surprisingly, ballast water discharge from ships is the largest single source of entry for non-native aquatic invasive species. Although not all invasive species or their ecological and economic impacts are yet known, the zebra

mussel alone is estimated to have caused billions of dollars of damage in North America since its introduction. Dense beds of zebra mussels also hinder the establishment and growth of naturally occurring vegetation, and may threaten local invertebrate, bird, and fish populations. The invasive Chinese mitten crab has been identified recently near Quebec City.

Non-native invasive plant species comprise an estimated 43 percent of wetland plant cover from Lake Saint-Louis to Contrecoeur. A European variety of the common reed is now expanding in some areas including the Boucherville Islands. Other invasive plant species in the St. Lawrence River area include purple loosestrife, flowering rush, reed canary grass, and water chestnut.

#### Declining fish stocks

Structural changes to the St. Lawrence River and contaminants such as PCBs, mercury, and DDE, contribute to the degradation of fish and wildlife habitat. The decline of yellow perch and lake sturgeon stocks in Lake Saint-Pierre is caused by habitat degradation and overfishing. Construction of

dams and overfishing similarly have resulted in the decline of fish populations in Lake Saint-Francis.

#### High levels of contaminants in fish tissue

Contaminants are introduced into the St. Lawrence River through municipal, industrial, and agricultural point sources and through atmospheric deposition. These contaminants



Hydrographic divisions of the St. Lawrence River. Source: Environment Canada.

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increasingly accumulate in organisms higher in the chain, such as top predator fish. New York state, the provinces of Ontario and Quebec, First Nations, and tribal councils have developed fish contaminant monitoring programs and issue fish consumption advice to their residents. This advice ranges from recommendations limiting consumption of specific sizes of fish, fish species, and/or fish from particular water bodies to unrestricted consumption of fish from various locations in the St. Lawrence River.

### Restricted recreational use of beaches

Although most communities along the St. Lawrence River now treat their wastewater, lack of disinfection is responsible for high coliform counts and results in restriction of recreational water use in some regions of the river.



Purple loosestrife (left). Photo: C. Savage, St. Lawrence Centre. Zebra mussel (right). Photo: B. Cusson and D. Labonté, St. Lawrence Centre.

### Current Actions

The IJC-sponsored Lake Ontario - St. Lawrence River Study will propose management options for water level regulation that consider environmental impacts. Environmental indicators have been developed to evaluate impacts related to different water level regulation plans. These indicators have also been integrated into a St. Lawrence River hydrodynamic model.

Cleanup of contaminated sediments is an ongoing process for all contaminated aquatic areas, including Dock 103 (Port of Montreal), Saint-Louis River, and Sandy Beach (Port of Gaspé). The federal and provincial governments of Canada, in partnership

with industry and NGOs, are involved in several habitat restoration, conservation, and monitoring projects, as part of the ZIP (Zone d'intervention prioritaire) program, the Canadian Wildlife Service supporting local actions, and ecosystem monitoring through the State of St. Lawrence River program.

Canada and Quebec are partners in the St. Lawrence Action Plan, which aims to eliminate chemical pollution by major manufacturing plants. A recent initiative under the plan, the Sustainable Navigation Strategy for the St. Lawrence River, contributes to the development of navigation while respecting the environmental conditions of the St. Lawrence River. Studies have also been undertaken to determine the impacts of urban wastewater on river biodiversity.

The *Canadian Framework for Invasive Species* will provide guidance in managing the urgent threat of invasive species.

### Needed Actions

Improved water quality and sediment quality are needed to maintain ecosystem health and ensure continued use of the St. Lawrence River ecosystem for recreational use. Assessment of coastal and island erosion is needed to protect the physical integrity of the river banks. The spread of invasive plant species such as common reed, water chestnut (now present in the Richelieu River Basin), and the Chinese mitten crab requires prompt attention.

### To Learn More

For further information related to the state of the St. Lawrence River, refer to the *State of the Great Lakes 2005* report which, along with other Great Lakes references, can be accessed at [www.epa.gov/glnpo/solec](http://www.epa.gov/glnpo/solec). To learn more about the St. Lawrence River monitoring program and to access the St. Lawrence Centre's Great Lakes-St. Lawrence fact sheets, visit [www.slv2000.qc.ca](http://www.slv2000.qc.ca) and [www.qc.ec.gc.ca/csl](http://www.qc.ec.gc.ca/csl).

