WHAT ARE THE MAJOR PRESSURES IMPACTING THE ST. CLAIR - DETROIT RIVER ECOSYSTEM?

Non-native invasive species, contaminants, and structural changes are threats to the St. Clair - Detroit River ecosystem.

Pressures

Non-native invasive species

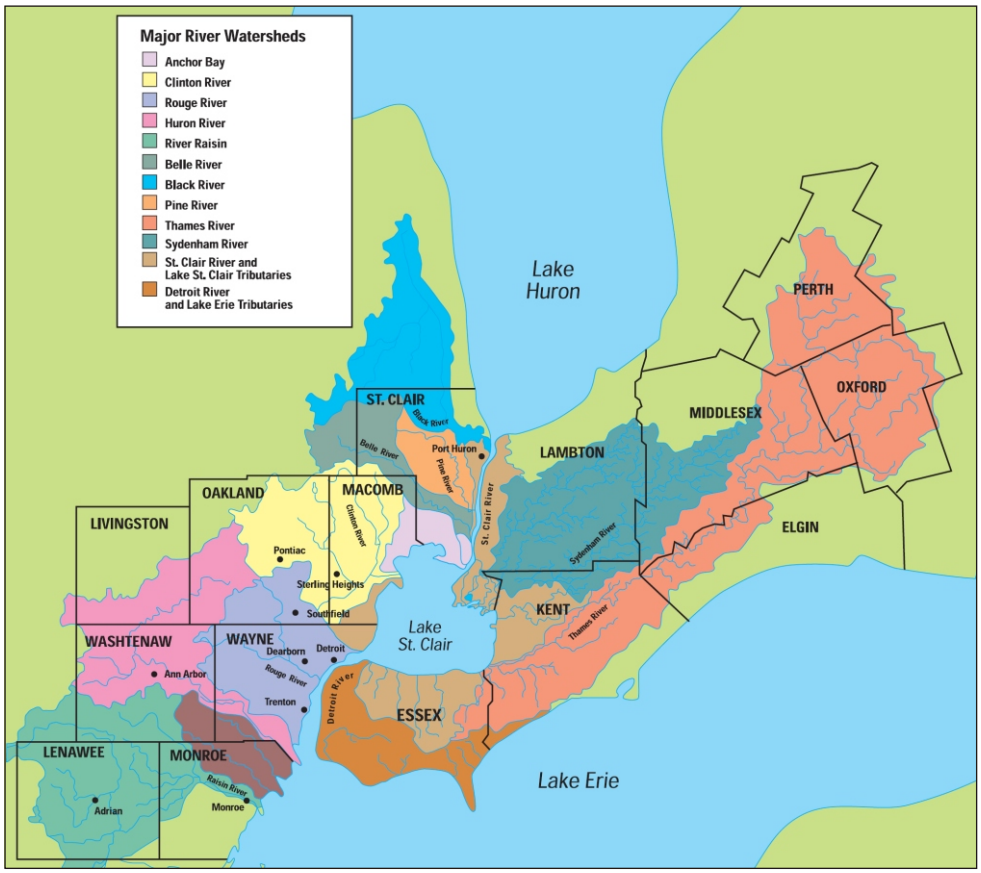
Non-native invasive species have arrived and spread throughout the St. Clair - Detroit River ecosystem. Some recent invading species, such as tubenose goby, have had very little impact on the community ecology of the system, while other invading species, including zebra mussels and purple loosestrife, have significantly disrupted the ecology by causing changes to food webs and excluding native species from their preferred habitats. For example, in 1988, the year zebra mussels were found in Lake St. Clair, there were eighteen native mussel species inhabiting the open lake. By 1994, only five of the original eighteen native mussel species remained. White perch colonized the St. Clair-Detroit River ecosystem in 1977, and caused dramatic changes to the fish community by the late 1980s, including poor walleye and yellow perch recruitment and an increase in abundance of muskellunge and smallmouth bass.

Contaminants

Industrial, urban, rural, and agricultural land use discharges drain directly into the St. Clair and Detroit Rivers and Lake St. Clair, and often contain elevated levels of sediment, nutrients, bacteria, metals, and chemicals. Historic contaminants such as mercury, arsenic, dioxins, and PCBs continue to cycle through the sediments and the food web. The presence of these contaminants affects the health and vitality of fish and wildlife populations and results in consumption restrictions and beach closures.

Structural changes

The shorelines of the St. Clair and Detroit Rivers are highly urbanized and industrialized. Structural changes include dredging and dyking to facilitate shipping and to protect against flooding; and, shoreline hardening, which involves building structures to protect coastal lands from erosion. These developments have altered the hydrology of the St. Clair-Detroit River ecosystem, changing the movement of sediments, and the location, extent, and



Major St. Clair River - Lake St. Clair - Detroit River watersheds. Source: *Explore Our Natural World: A Biodiversity Atlas of the Lake Huron to Lake Erie Corridor*.

diversity of habitats. Significant amounts of the watershed have also been altered, resulting in very little natural habitat remaining in the St. Clair and Detroit Rivers or their watersheds.

Current Actions

The Canadian and U.S. federal governments are working with the province of Ontario and the state of Michigan on two Remedial Action Plans (RAPs) and the management of Lake St. Clair. The Detroit River RAP includes control of combined sewer outflows, point and nonpoint source pollution controls, remediation of contaminated sediments, habitat restoration, and pollution prevention, in addition to a number of local and regional initiatives. The federal, provincial, and state governments of Canada and the United States are also working in partnership with the St. Clair Binational Public Advisory Committee on the St. Clair River RAP. Implemented in 1987, the focus of the St. Clair River RAP is contaminated sediment remediation on the Canadian side of the river, elimination of combined sewer outflows and sanitary sewer overflows on both sides of the river, elimination of spills to the river from "Chemical Valley" downstream of Sarnia, Ontario, and ensuring proper notification when spills do occur.

Lake St. Clair management is currently overseen through an agreement between Canadian and U.S. federal governments, the state of Michigan, and the province of Ontario. The recently released U.S .Army Corps of Engineers St. Clair River/Lake St. Clair Comprehensive Management Plan provides implementation recommendations focusing on environmental health, stressors relating to habitat and biodiversity, human health (beach closures), land use, fisheries, boating, commercial navigation, and monitoring. A Lake St. Clair Canadian Watershed draft Technical Report provides detailed information about the state of the Canadian Lake St. Clair watershed and identifies management issues.

Actions Needed

The implementation of activities to minimize chemical inputs, manage sediment and nutrient inputs, clean up contaminated sediments, reduce the effects of exotic invasive species, prevent the introduction of new exotic species, allow full human body contact with waters of the connecting channels, and monitor ecosystem changes, will improve and confirm the quality of the St. Clair - Detroit River ecosystem. The predicted effects of climate change necessitates further research on how air temperature, water levels, significant weather events, and ice cover duration and thickness may have extensive and dramatic effects for the St. Clair -Detroit River ecosystem.

To Learn More

For further information related to the state of the St. Clair - Detroit River Ecosystem, 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**. Information on the St. Clair and the Detroit River RAPs can be accessed at **www.on.ec.gc.ca/water/raps/stclair/implement_e.html** and **www.epa.gov/glnpo/aoc/detroit.html#status**.

Walpole Island prairie in the St. Clair River delta. Photo: G. M. Allen.

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