WHAT ARE THE CURRENT PRESSURES IMPACTING LAKE HURON?

Chemical contamination, non-native invasive species, habitat loss, poor coastal health, and aquatic food web changes are the greatest threats to the Lake Huron ecosystem.

Pressures

Chemical contamination

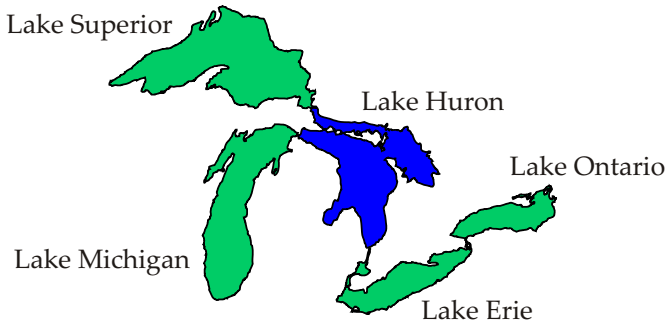
Contaminants enter Lake Huron through a variety of pathways including industrial and municipal discharges, land runoff, atmospheric deposition, and contaminated sediments. Lake Huron has relatively few local contaminant point sources but has a large surface area which makes it vulnerable to atmospheric deposition of contaminants. Contaminant levels in fish and wildlife have decreased substantially since the 1970s and populations of most fish-eating birds have recovered; however, fish consumption advisories for PCBs still exist for the open lake and for all Areas of Concern (AOCs) in Lake Huron.

Non-native invasive species

The recent invasion of zebra and quagga mussels, round goby, spiny water flea, white perch and ruffe threaten the diversity and abundance of native species and the ecological stability of Lake Huron. Abundance of *Diporeia*, a key prey item in the diet of whitefish and other sport and commercial fish species, has drastically declined in Lake Huron, possibly due to competition with non-native invasive species. The invasive sea lamprey remains prevalent in Lake Huron, but intensive control efforts in the St. Mary's River (the largest source of sea lampreys in the Great Lakes) since 1999 have reduced the impacts of sea lamprey predation on salmon and lake trout.

Habitat loss

The Lake Huron watershed, home to about 2.5 million people, has relatively low human population densities. As a result, Lake Huron retains much of its historic fish and wildlife habitat. Historically, Lake Huron was connected to a diverse array of stream and inland lake tributaries that provided spawning habitats for many fish species. Construction of dams



and hydroelectric facilities in the 1800s, however, excluded fish from many historical spawning sites. For lake sturgeon, walleye, chinook salmon and other river spawning fish, stream fragmentation reduces natural reproduction and increases dependence on fish stocking. Water level fluctuation patterns also alter nearshore habitat. Although residential land use comprises a small percentage of total land use in the Lake Huron region, much rural development has occurred along the shoreline. In the past 20 years there has been increasing development pressure for cottages and year-round residential development, which poses a threat to nearshore habitats.

Coastal health

For many years, elevated levels of *E. coli* bacteria have caused numerous postings of Lake Huron beaches as unsafe for swimming. Multi-jurisdictional efforts are

Fathom Five National Park, Canada. Photo: Environment Canada.

underway to identify significant sources and encourage land-owner best management practices to reduce bacteria levels and the risk to human health. Also, as in Lakes Erie and Ontario, outbreaks of Type E botuism bacterium have killed thousands of fish and waterbirds in Lake Huron, which wash up on area beaches. The sources of this bacterium and causes of the outbreaks are being studied.

Aquatic food web

Lake trout, burbot, and walleye were the original main fish predators in Lake Huron. Lake herring, cisco species, sculpins, lake trout and round whitefish comprised the historic prey base. Today, stocked chinook salmon is the dominant predator in the lake, primarily feeding on the dominant, non-native alewife and smelt prey fish. Since the 1960s, chinook salmon and lake trout have been stocked in the Great Lakes to create sport fisheries and to reduce the huge populations of alewife and smelt. The current ecosystem now contains more predators than prey species, and is at risk of becoming unstable. While markedly different from historical fish communities, fish management efforts have resulted in a much improved fish community than was present 30 to 40 years ago. Drastic changes in the Lake Huron fish community were noted in 2004: while Saginaw Bay had huge year classes of walleye and yellow perch, the open water fishery is suffering from the collapse of alewife and major declines of *Diporeia* in the Main Basin and Georgian Bay.

Current Actions

In 2002, the Binational Executive Committee, a forum of executive-level representatives of U.S. and Canadian natural resource management and environmental protection agencies, chaired by U.S EPA and Environment Canada formally endorsed the formation of a Lake Huron Binational Partnership in order to coordinate environmental activities in the Lake Huron basin. The U.S. EPA, Environment Canada, Michigan's Departments of Environmental Quality and Natural Resources, and Ontario's Ministries of Environment and Natural Resources form the core of the Partnership by providing leadership and coordination. However, a flexible membership is being promoted which is inclusive of other agencies and levels of government, Tribes/First Nations, non-government organizations and the public on an issue-by-issue basis.

In 1987, four AOCs were identified within the Lake Huron watershed, as well as the St. Marys River. Collingwood Harbour and Severn Sound in Canada were delisted in 1994 and 2003, respectively. Monitoring is ongoing in these areas to ensure that environmental quality is maintained. The remaining AOCs (Saginaw River/Bay, Michigan and Spanish Harbour, Ontario) are being addressed through on-going programs. At the Spanish Harbour AOC, all recommended actions were completed and in 1999, the area was the first in the Great Lakes to be recognized as an Area in Recovery.

Actions Needed

- Support for local efforts that protect areas of high-biodiversity from future degradation
- Continued strong domestic programs to restore and protect tributary and nearshore health
- Continued support for the Great Lakes Fishery Commission's binational approach to address recent changes in the open water food web
- Support for the restoration of the remaining Areas of Concern
- Demonstration projects to restore the connectivity of tributaries with the open water, such as dam removal and/or fish passageways

To Learn More

For further information related to the state of Lake Huron, 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**. The 2004 Lake Huron Binational Partnership Action Plan can be accessed at **http://cfpub.binational.net/ontario/intro-e.cfm**.

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