

Open Waters Regional Plan

This is one of twenty Regional Plans that support implementation of the Lake Superior Biodiversity Conservation Strategy (Strategy). The Strategy, prepared and overseen by the Lake Superior Partnership, contains information and 62 sub-strategies to provide guidance to restoring and protecting biodiversity (www.natureconservancy.ca/superiorbca).

Regional Plans are intended to be adaptive documents that support and respond to local conservation efforts that are contributing to lakewide biodiversity goals. To contribute an update to this Regional Plan, please contact greatlakes-grandslacs@ec.gc.ca

20. Open Waters



The crew of freighters and other vessels that travel the open waters of Lake Superior will at times enjoy calm, flat surroundings; but there is a wave height potential of over 7.6m (25 ft). Some of the most dramatic shipwrecks in the Great Lakes have occurred in the open waters, most famously the wreck of the *Edmund Fitzgerald*.

Almost 80% of Lake Superior is characterized by deep waters, greater than 80m (260ft), which contain a diversity of unique native species. At least 57 species and communities of conservation concern have been documented in this regional unit, including Kiyi and Shortjaw Cisco.¹ The top predators of the offshore waters are Lake Trout. In Lake Superior, Lake Trout can live to be over 50 years old, measure over 1.2 m (4ft) in length, and weigh over 27kg (60lbs). There are at least four forms Lake Trout in Lake Superior (lean, siscowet, humper, and redfin).

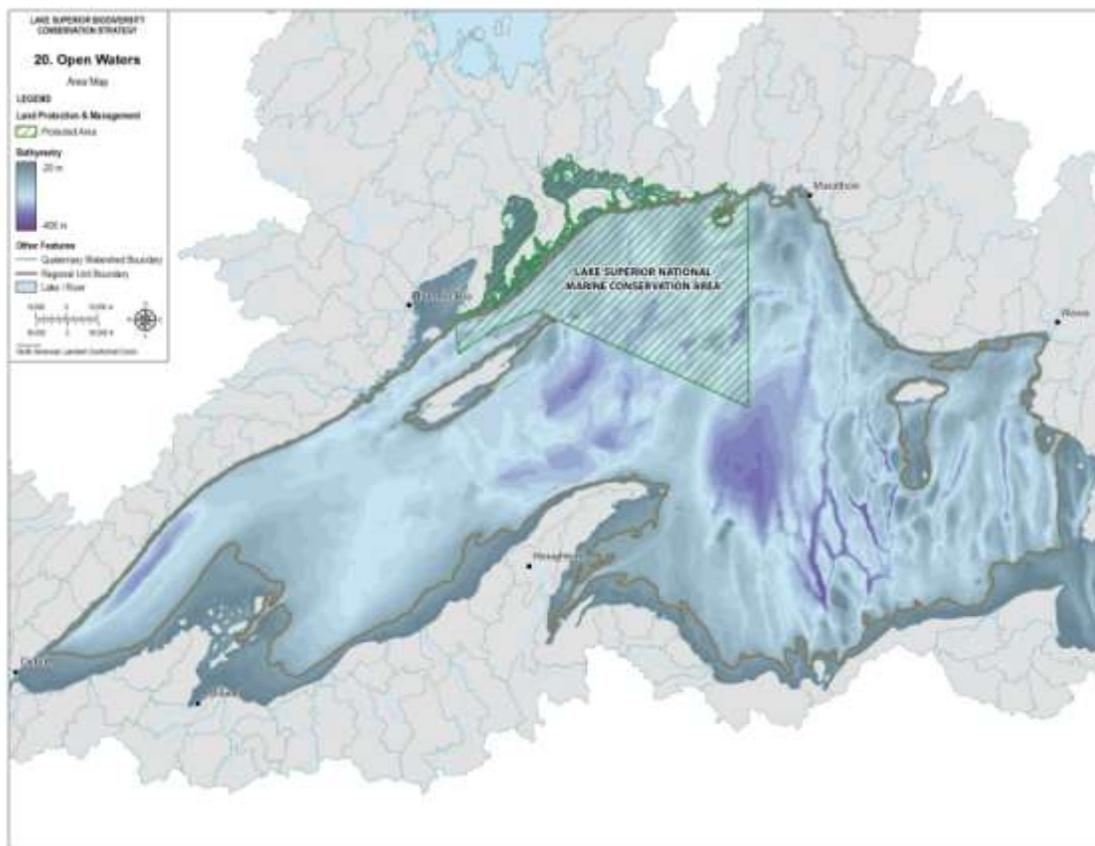
Prey fish are also diverse, including a suite of small deepwater chubs known as Kiyi, Bloater (Hoyi) and Shortjaw Cisco, the commercially valuable Cisco (formerly known as Lake Herring), and the rarely encountered Pygmy Whitefish.

The open waters are in good ecological condition. Evidence of this good condition includes: the top predator, Lake Trout, has self-reproducing populations; the preyfish community, dominated by deepwater chubs, Cisco and three bottom dwelling sculpin species (Deepwater, Spoonhead, and Slimy Sculpins) is robust; the lower food-web (e.g., Mysis and Diaporia populations) are healthy; and, toxic chemicals (e.g., PCBs and mercury) detected in the waters are at very low concentrations.

¹ Records for species and communities in the Open Waters regional unit were provided by three separate organizations, from Minnesota, Ontario and Wisconsin. The following disclaimers apply to this data. a) Data included here were provided by the Division of Ecological and Water Resources, Minnesota Department of Natural Resources (DNR), and were current as of December 3 2014. These data are not based on an exhaustive inventory of the state. The lack of data for any geographic area shall not be construed to mean that no significant features are present. b) Data included here were provided by the Ontario Ministry of Natural Resources and Forestry. Copyright Queen's Printer for Ontario (2012). c) Data included here were provided by the Bureau of Natural Heritage Conservation, Wisconsin Department of Natural Resources (DNR). Although the NHI database is the most up-to-date and comprehensive database on the occurrences of rare species and natural communities available, many areas of the state have not been inventoried. Similarly, the presence of one rare species at a location does not imply that all taxonomic groups have been surveyed for at that site. As such, the data should be interpreted with caution and an "absence of evidence is not evidence of absence" philosophy should be followed.

Overview of Conservation Opportunities

Even the ‘greatest’ of the Great Lakes is vulnerable to human stressors. For example, in the 1950s the Lake Trout in Lake Superior had nearly disappeared due to fishing pressure and predation by the invasive Sea Lamprey. Lost during that time were up to eight different forms of Lake Trout in Lake Superior. Today, Sea Lamprey control efforts and significant habitat restoration work, and improved



and ongoing natural resource management, has resulted in significant increases in population levels of Lake Trout and other species. At the same time, invasive species prevention, fisheries assessment, and pollution prevention are part of the ongoing management actions. For example, the threatened Shortjaw Cisco is now afforded protection in Canadian waters, and efforts to recover their populations are underway.

There is a strong relationship between conserving open water species and addressing the onshore stressors. The migration of many fish species to and from open waters, nearshore waters, and inshore waters is an important mechanism for energy transfer in the lake, but also leaves fish susceptible to different stressors in all of these locations. The movement of many species between Canadian and U.S. waters is one of the reasons the different jurisdictions around Lake Superior cooperate on science and management. Once fully established, the Lake Superior National Marine Conservation Area in Canada will showcase ecologically sustainable use of aquatic resources.

Conservation Actions

The Lake Superior Basin has a strong and ongoing history of action to restore and protect the lakes' extraordinary biodiversity. Actions are already occurring at all scales, from national programs to individual efforts. Some important habitats currently have a conservation designation with a corresponding management strategy, and active supervision of these areas is essential to sustaining biodiversity.

The status of habitats and species in the open waters is largely dependent on the conditions and activity originating from the other nineteen regional units around the lake. Understanding and tracking the open water conditions, such as the decline and recovery of Lake Trout populations, provides an excellent measure of the results of lakewide restoration and protection efforts. This knowledge is also used to make decisions on future conservation actions, such as tracking food web dynamics, determining the need for stocking, and actively protecting species populations.

There is some variation among Regional Plans in how future actions from existing plans were incorporated into this document, based on advice from the implementers of those plans in the region. Similarly, implementation approaches vary greatly among regional units. The Lake Superior Partnership serves an important role in facilitating cooperation among agencies to support on-the-ground action. Priority implementation actions developed through the Partnership are identified in the Lake Superior LAMP, Lake Partnership committee work plans, and agency specific action plans.

Next steps include:

- Continue and refine established long-term monitoring programs and initiatives.
 - Effective conservation relies on understanding conditions and trends of core aspects of the ecosystem. This includes long-term monitoring of physical (e.g., air and water temperature trends), biological (i.e., fish populations, food web dynamics, and diversity) and chemical integrity (e.g., water, air, fish). This information is used in various ways by many organizations, including as the basis for advanced study, identification of specific science investigation needs, and determination of what further action is required by governments and the public to protect important habitats and species.
- Continue to evolve and refine as needed the recurring five-year, multi-partnered, integrated lakewide ecological assessment to support lakewide management, which began in 2006, under the Cooperative Science and Monitoring Initiative.
 - This is an integrated assessment that includes water quality, lower food web, benthic invertebrates, pelagic fish, in manner that is spatially-consistent, comprehensive for the entire lake, and utilized by all lake managers.
- Continue prevention of new invasive species, including monitoring, enforcement of ballast water regulations, education, and enhanced rapid-response planning.
- Continue to identify, understand and support recovery of diminishing populations of deep water species, when appropriate.

Regional Plan Development

Regional Plans are informed by a technical assessment, including maps of *Volume 1: Lakewide Assessment*. This information is available at: www.natureconservancy.ca/superiorbca .

The *Next Steps* in each Regional Plan are made possible input from public and stakeholders that are connected to these areas. Oversight was provided by a Steering Committee from the Lake Superior Partnership. All input was considered and incorporated whenever possible and when relevant to a lakewide biodiversity conservation targets and threats. To contribute an update to this Regional Plan, please contact greatlakes-grandslacs@ec.gc.ca.

Existing Plans

Other existing plans relevant to conserving habitats and species in this region include but are not limited to:

- A Basin-wide Fish Habitat Strategic Plan for the Great Lakes
- Great Lakes Fishery Commission: Fish-community objectives for Lake Superior; and A Lake Trout restoration plan for Lake Superior