

The Great Lakes

Policy Report

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The Great Lakes Policy Report is a quarterly news report published by the Little Traverse Bay Bands of Odawa Indians Natural Resource Department's Environmental Services Program. The report features Great Lakes policy updates and relevant initiatives, projects, and issues.

The report is meant to be an educational document, and does not express an opinion on the subjects discussed. Stories and information cited in this report are taken from a variety of sources including news articles, non-governmental reports, interviews, and government documents.



The Great Lakes Fishery Commission: State of Lake Michigan Report

The Great Lakes fishery is complex - both from ecological and management perspectives. Here, we take a closer look at the governmental management structure of the fishery. The Great Lakes fishery includes a variety of native and introduced species that are harvested for commercial, subsistence, and recreational purposes. Some species are regularly stocked and others reproduce naturally. Common fish include lake trout, salmon, walleye, perch, and white fish.

To start, there are five Great Lakes, each with unique ecological circumstances and influences from both humans and natural processes. Then, there are the jurisdictional government overlaps in the lakes. The lakes are bordered



The Great Lakes Fishery Commission is a Binational Organization. Photo Credit GLFC

by two federal governments, – the United States and Canada – dozens of Native American nations with fishing treat-

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Invasive Sea Lamprey Harming the Great Lakes

There are approximately 180 non-native species that now inhabit the Great Lakes. Some are more invasive and harmful than others. The sea lamprey is an invasive species that has caused substantial harm to the Great Lakes ecosystem, and the fishery in particular. Sea lampreys are an aquatic vertebrate, native to the Atlantic Ocean that look like eels. They do not, however act like most eels: they feed on large fish.

Sea lampreys attach to fish with a sucking round mouth filled with sharp teeth



A Sea lamprey's mouth has sharp teeth used to attach to its host. Photo Credit T. Lawrence, GLFC

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ty rights either to the lakes themselves or the connecting waters within the basin, eight U.S. states, and two Canadian provinces. Each government has a stake, and responsibility, in the management of the fishery, albeit at differing scales and geographic locations.

In the early 1950s the Great Lakes were facing some problems never yet experienced. Specifically the decline in several fish species and the extraordinary harm invasive species posed to the fishery worried fishery managers. To address these issues and increase coordination and collaboration across the United States and Canada, the two countries ratified the Convention on Great Lakes Fisheries (October 11, 1955). The Convention established the joint Great Lakes Fishery Commission and outlined the duties of the commission.

The Great Lakes Fishery Commission was tasked with two major responsibilities. First, the commission develops coordinated Great Lakes research programs, and “recommend measures which will permit the maximum sustained productivity of” specific fish species. In other words, the commission has the responsibility to make sure key fish species have healthy and harvestable populations. Secondly, the commission was directed to “formulate and implement a program to eradicate or minimize sea lamprey populations in the Great Lakes” – a task that has proven quite difficult.

The commission is comprised of eight Commissioners (four appointed from the United States and four from Canada), who have authority on relevant fishery issues. The commission also has staff that direct and implement programs and provide decision support. As stated in the Convention on Great Lakes Fisheries and supporting legislation, the commission is funded by both the United States and Canadian federal governments. For sea lamprey control implementation, the United State contributes 69% and Canada contributes 31%. Commission documents show that the total operating budget was 26.9 million USD for FY 2008, more recent yearly budgets were not available, but the commission requested 34.6 million USD for FY 2010. Although this may seem like a substantial amount, the commission believes that these dollar amounts are nec-

essary to protect the 4 billion dollar Great Lakes fishery - other estimates place the worth of the Great Lakes fishery much higher – from the invasive sea lamprey.

In order to best manage the fishery of each unique Great Lake system, the commission, with agreement from federal, state, provincial, and tribal management agencies, established Lake Committees for each of the lakes to set and oversee priorities and objectives. Each Lake Committee has one representative from each state, province, and tribal fishery management agency with jurisdiction over the particular lake. For example, the Lake Michigan Committee (LMC) is comprised of one representative from Illinois, Indiana, Michigan, Wisconsin, and the Chippewa-Ottawa Resource Authority (of which Little Traverse Bay Bands is a member). Lake Committee representatives are fishery managers. Additionally, each lake has technical subcommittees and task groups that further explore scientific research on the lake fishery. These subgroups can have additional representatives (e.g. federal agency staff and individual tribe’s staff) and work on specific issues, for example, lake sturgeon restoration and computer modeling of the fishery. Periodically, the commission reports on the status of the Great Lakes fishery. In December 2012 the commission released *The State of Lake Michigan In 2011*, a report that discusses fishery management progress from 2005 to 2010. Some highlights of the report include:

- Invasive quagga mussels have thrived in Lake Michigan, largely replacing invasive zebra mussels. Quagga mussels are thought to have caused a 78% decline in the (Phytoplankton) base of the foodweb in the spring months.
- Natural reproduction of lake trout is still not found in Lake Michigan and harvest, consequently, remains below desired amount. The Lake Michigan Committee has approved a new rehabilitation strategy for lake trout.
- Sea lamprey attack rates on lake trout are 2-3 times greater than desired.
- Small lake sturgeon populations are consistently spawning in eight tributaries.

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- Three new non-native species and one virus (viral hemorrhagic septicemia or VHS) were identified in Lake Michigan from 2005 to 2010.

In the coming years the LMC will focus on several topics, according to the 2012 report. The Lake Michigan Technical Committee made recommendations that the LMC address: 1) improve strategic stocking policies and management actions for lake trout and salmon. 2) Promote the rehabilitations of native prey fish species (e.g., bloater and cisco). And, 3) chemically treat priority streams for two consecutive years to reduce invasive sea lampreys. Additionally the LMC's own action items include, reassessing the current fish objectives, fill research gaps, and increase coordination with outside organizations to promote better ecosystem management (including assessing climate change impacts).

Although the commission brings together fishery managers with overlapping jurisdictions, each government independently develops and sets their own programs and priorities, largely based on the needs/desires of the government's citizenship. This process allows each government to have influence on larger fishery management decisions, while pursuing its own goals at the same time.



Salmon caught with sea lamprey attached. Photo Credit M. Gaden, GLFC

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– similar to a leech. They feed on the fish's body fluids, becoming a parasite during this stage of their life cycle. Sea lampreys usually cause scarring and regularly kill the host fish. It is estimated that a single sea lamprey can kill 40 or more pounds of fish during its life. According to the Great Lakes Fishery Commission, sea lampreys prey on all species of large Great Lakes fish, including lake trout, salmon, whitefish, walleye, and sturgeon.

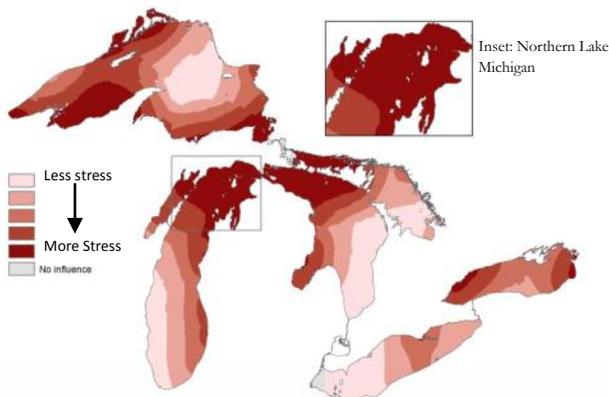
The invasive lampreys have also caused economic harm to the region. The Great Lakes Fishery Commission, tasked with the enormous challenge of minimizing sea lamprey predation on Great Lakes fish, estimate lakes Huron and Superior harvested 15 million lbs. of lake trout annually before the arrival of the lamprey. But after the invasive lamprey became established, the harvest levels were down to 300,000 lbs. in the 1960s. In Lake Michigan, sea lamprey-induced mortality of lake trout has been reducing the harvestable amount for the commercial tribal fishery in recent years.

Recent analysis released by the Great Lakes Fishery Commission states that "increased sea lamprey-induced mortality in the northern portion of [Lake Michigan] has set lake trout restoration efforts back by at least a decade." From 1981 to 2001, commercial fishing comprised 70% of lake trout mortality in northern Lake Michigan. Recently however, lake trout mortality from sea lamprey predation has increased, while commercial harvest pressure has decreased. Consequently, commercial lake trout harvest mortality has lowered to 51% in northern Lake Michigan.

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Great Lakes Geography

Distribution of sea lamprey as a stressor in the Great Lakes



This map shows the level of influence (or stress) the invasive sea lamprey has across the Great Lakes. Based on spawning tributaries, the dark red areas show the most stressed areas caused by sea lamprey. Map adapted from: GLEAM (www.greatlakesmapping.org)

GREAT LAKES POLICY WATCH

In this section you can find current legislation and proposed regulations related to the Great Lakes. When applicable public comment periods and information on how to comment will be given.

Rules and Regulations

On March 28, 2013, EPA issued the 2013 Vessel General Permit (VGP) to authorize discharges incidental to the normal discharge of operations of commercial vessels of 79 ft. in length or greater. This permit covers ballast water (a primary invasive species vector). The 2013 VGP has an effective date of December 19, 2013. EPA is also expected to issue a Small VGP for vessels under 79 ft. this year.

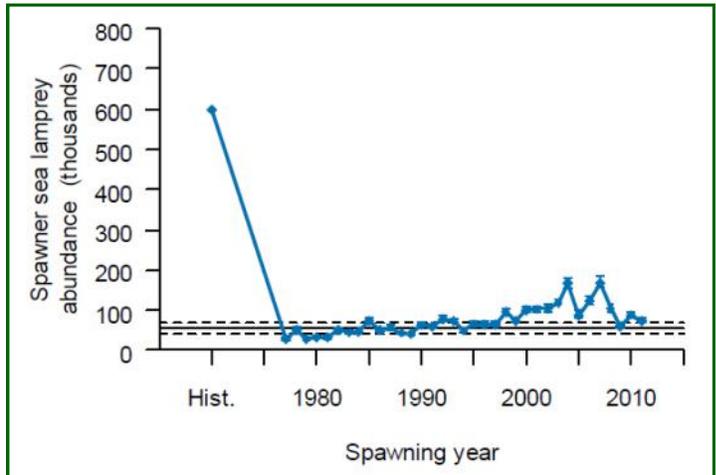
Invasive Sea Lamprey continued from page 3

Before 2000, sea lampreys killed an average of 21,500 lake trout per year, but since 2001 sea lamprey-induced kills have increased, with 170,223 lake trout killed in 2010.

Fishery managers are not sitting idly by; both government biologists and academic researchers conduct important sea lamprey research and implement control measures. There are currently three main initiatives to reduce sea lamprey populations at this time:

- **Lampricides** (harmful chemicals that kill sea lampreys): about 175 Great Lakes tributaries used by sea lampreys to spawn are periodically “treated with lampricides to eliminate or reduce the populations of larvae before recruitment to the lake as parasitic adults.”
- **Barriers**: sea lamprey barriers are designed to block the upstream migration of spawning sea lampreys, while also allowing native fish to pass. “Barriers have reduced or eliminated altogether lampricide treatment on many streams” according to the Great Lakes Fishery Commission. Additionally, many dams also function as a barrier to lampreys, but dams also restrict access for native fish species.
- **Trapping**: sea lamprey traps catch lampreys as they travel upstream to spawn and are usually used in combination with barriers.

The Great Lakes Commission estimates that sea lamprey control efforts have resulted in “a 90% reduction of sea lamprey populations in most areas” compared to historic levels. In the past decade lamprey populations were in-



Abundance estimates of sea lampreys, including historic pre-control levels (circa 1960). The dashed lines show desired levels. Photo Credit GLFC

creasing followed by a decline from 2007 to 2010. The Great Lakes Fishery Commission attributes increases in sea lamprey abundance to deterioration of barriers, reduced lampricide application (due to altered strategies, reduced treatment efficiency, and concerns regarding the effect on non-target species) and fish community changes. Decreases in sea lamprey abundance are attributed to targeted lampricide application.

According to the Great Lakes Commission, sea lamprey controls “remains instrumental in maintaining the current fish community” health. There is most likely no chance of totally eradicating sea lamprey from the Great Lakes. Once an invasive species is established, it is nearly impossible to remove, but controlling the invasive lamprey population can greatly benefit the Great Lakes ecosystem and reduce impacts to the fishery.



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