



LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN

Annual Report 2014

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What is the LaMP?

Under the Great Lakes Water Quality Agreement, the governments of Canada and the United States are obligated to protect the physical, biological and chemical integrity of the waters of the Great Lakes

The Lakewide Action and Management Plan (LAMP) provides a framework for coordinating and documenting an assessment of the Lake Michigan ecosystem basin and for developing lake-specific strategies for achieving the objectives of the Agreement. The LAMP collaboration includes federal, state, tribal, and local governments, as well as the public.

Overview

Lake Michigan is the second largest Great Lake by volume and the only one located totally within the United States. The northern portion of the basin's 45,000 square miles is covered with second-growth forest and, except for the highly industrial Fox River Valley, has not been subjected to extensive development. Conversely, the more temperate southern portion of the basin has been extensively developed -- from Milwaukee through Chicago to Northwest Indiana, resulting in environmental stressors such as loss of native habitat, urban runoff and discharges of improperly treated sewage.

The Lake Michigan basin contains the world's largest collection of fresh water sand dunes, along with many wetlands, prairies and savannas that provide essential habitat to a great diversity of plant and animal species. The Lake's aquatic food web supports fish for food, sport and culture. The fertile southern soils support extensive agricultural activities, and the coastline is home to 25 harbors and hundreds of marinas. The Lake Michigan coastlines also serve as a key North American migratory bird flyway.

Great Lakes Water Quality Agreement (GLWQA) of 2012

Under the Lakewide Management Annex, binational teams are developing, in consultation with existing lake-focused Committees, lake ecosystem objectives, a nearshore framework, outreach and engagement plans and other program improvements. More information can be found at www.binational.net. ♦



A healthy wetland in the White Lake AOC.
Photo: Michigan Department of Environmental Quality.



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Accomplishments

Fish and Wildlife

Salmon

Supported by natural reproduction, the Chinook salmon population in Lake Michigan is considered at or above targets, and therefore reductions in stocking will continue in 2014 to help maintain the desired balance between predator and prey species—the cornerstone of a multi-billion dollar sport fishery. The fish stocking is coordinated by the Lake Michigan Committee (LMC) of the Great Lakes Fishery Commission (GLFC) in response to the current large number of wild Chinook and low levels of the dominant prey fish, non-native alewives.

Phragmites

For several years, a variety of organizations and public/private partnerships have been monitoring and controlling the invasive plant *Phragmites* along the Lake Michigan shoreline, including many of the islands. While not all areas are *Phragmites*-free, most of the shoreline is under surveillance and the plant has been successfully held in check at many high-value and high-risk sites.

This will have important benefits for wildlife as well as positive implications for recreation, water access, and aesthetics.

Yellow Perch

In spring of 2014, the LMC held a multi-jurisdictional yellow perch summit in Chicago to update anglers and stakeholders on recent research on Lake Michigan's yellow perch fishery. The fishery experienced a rapid and lakewide decline in abundance during the early 1990's, and stocks have remained low despite harvest reduction measures that were implemented in response to the population decline. The 2014 summit facilitated information gathering that will be used to develop strategic guidelines for population status and fishing in Lake Michigan. Michigan Sea Grant and Michigan State University hosted a webinar of summit presentations and the breakout session wrap up, which can be viewed at http://www.glfc.org/lakecom/lmc/yellow_perch_videos.html.

Lake Trout

The rate of natural reproduction by lake trout in Lake Michigan continues to increase. On a lakewide basis, the percentage of lake trout presumed to be wild that were detected in the 2013 spring survey reflected an increase from 1.2% in 2004 to 6.5%. Evidence from other surveys suggests a higher (i.e., >15%) rate of natural reproduction among lake trout along the southern and western waters of Lake Michigan. In addition, just-finished fall assessments of lake trout abundance and spawning at Lake Michigan's mid-lake reef complex have affirmed the positive trend identified in other recent assessments at other locations in Lake Michigan. After almost 50 years of effort, there are now

significant numbers of naturally-reproduced lake trout among the fish population of Lake Michigan.

Other Fish Species

- Wisconsin Department of Natural Resources (WDNR) has documented the presence of lake whitefish in the Fox, Peshtigo, and Oconto Rivers during spawning periods for the first time in decades.
- Lake sturgeon restoration work has entered its 10th year; over 20,000 sturgeon yearlings have been released from streamside rearing trailers in Lake Michigan tributaries.
- The U.S. Fish and Wildlife Service (US FWS) has been collecting bloater chub eggs from Lake Michigan to help facilitate the restoration of bloaters in Lake Ontario.

Little Traverse Bay Bands of Odawa Open a New Fishery

In the summer of 2013, the Little Traverse Bay Bands of Odawa Indians began operating their new fish hatchery in the northern lower peninsula of Michigan. The Tribe will use the hatchery to conduct limited fish stocking in local waters, perform research, and provide education and outreach for local and tribal and non-tribal groups.

The Tribe's first research venture began in early winter 2013, when fisheries staff collected lake herring eggs from Grand Traverse Bay – the only remnant herring population in Lake Michigan. The Tribe is interested in restoring the lake herring population to its historical status as a primary prey fish in the lake. Overfishing in the early to mid-1900s, along with impacts caused by invasive species and other environmental stressors, has contributed to the near extirpation of this species.

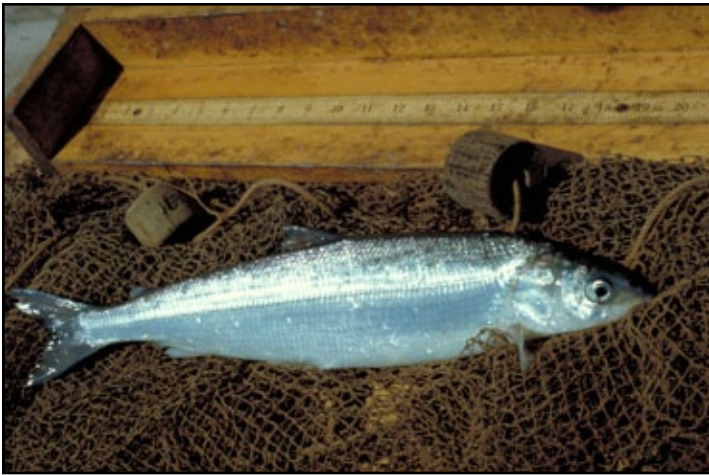
Update on Areas of Concern

U.S. Great Lakes Restoration Initiative (GLRI) funding continues to lead to significant environmental restoration in the Lake Michigan basin, where there are 10 AOCs. GLRI has targeted a number of these AOCs for the removal of listed impairments, and the federal, state, and local partners working in these AOCs are making significant progress. The U.S. Environmental Protection Agency (US EPA) and the State of Michigan successfully delisted the White Lake and Deer Lake AOCs in October 2014, and all the necessary work that will ultimately lead to the delisting of the Waukegan and Sheboygan AOCs has been completed. In addition, progress continues to be made at all of the other AOCs, including the Grand Calumet AOC, where much of the dredging work has been completed and additional riverine wetland habitat will be created.



Lake herring restoration is a priority in the Lake Michigan Biodiversity Conservation Strategy.

The lake herring population in Grand Traverse Bay appears to be expanding and the presence of lake herring is being documented in other areas. In Green Bay, three lake herring were caught during the WDNR 2013 annual fall trawl survey. Starting in the spring of 2014, larval fish surveys around Green Bay included historical lake herring spawning sites in order to look for evidence of natural reproduction. 💧



Lake Herring. Credit: US EPA Great Lakes National Program Office.

Challenges

Microplastics in the Great Lakes

Recent studies have found that concentrations of microplastics, primarily “microbeads” from cosmetics, may affect fish and wildlife in the Great Lakes. Microbeads are commonly found in hundreds of products, including facial scrubs, soaps, shampoos and toothpastes. Due to their small size and buoyancy, microbeads escape treatment by sewage plants and are discharged into rivers, lakes and oceans. Once in the water, microbeads, like other plastics, can absorb persistent toxic chemicals commonly found in waters across the state and can be mistaken for food by small fish. Some states have proposed legislation for microbead-free waters, and a few manufacturers have taken voluntarily action, such as exploring the elimination of microbeads, or changing their ingredients to natural alternatives, such as ground almonds, oatmeal and pumice. Consumers can determine if their personal-care or beauty products contain microbeads by checking the product ingredient list for “polyethylene” or “polypropylene.”

Low Oxygen Zones in Green Bay

Zones of low dissolved oxygen have been observed for years in the waters of Green Bay. Recent studies by researchers from the University of Wisconsin-Green Bay and the Green

Bay Metropolitan Sewerage District indicate that these events last longer and cover larger areas of the bay than previously thought. Researchers have theorized that heavy runoff events and nutrient loading fuel algae blooms. When the algae die and decompose, zones of low dissolved oxygen result.

Innovative approaches are being explored, and in some places, implemented, to address this problem. For example, water quality trading is a mechanism which allows point dischargers to discharge phosphorus from their own operations as long as they pay to reduce the amount of phosphorus being discharged into tributaries from non-point sources in the watershed. For example, farmers could receive funds to install conservation practices that reduce non-point runoff from their fields.

Aquatic Invasive Species (AIS)

Testing for Asian Carp

Evidence of silver carp (eDNA) was detected for the first time in Lake Michigan by the University of Notre Dame (UND). In May 2013, one positive sample was found in a set of 50 collected from Sturgeon Bay, in the Door Peninsula of Wisconsin. However, the amount of genetic material in the sample was very low and was most likely from a secondary source (i.e., bilge water, bird feces, etc.) and not from a live fish. In response to the findings, the US FWS and WDNR collected an additional 150 samples in November 2013, all of which were negative for silver carp eDNA. In total, almost 1300 samples for bighead and silver carp were collected from the Lake Michigan basin in 2013 by UND and US FWS, resulting in only the one detection from Sturgeon Bay discussed above. US FWS and its partners continued surveillance for bighead and silver carp throughout the Great Lakes Basin in 2014. Additionally, an AIS early detection and monitoring program for fishes and macroinvertebrates was implemented basin-wide in 2014 by the US FWS and its partners. The program will not only be monitoring for new or spreading invasive fish and macroinvertebrates, but also gathering data on the nearshore fish communities.

The Great Lakes Mississippi River Interbasin Study (GLIMRS) Report

The GLMIRS Report, released in early 2014, presents the results of a multi-year study regarding the range of options and technologies available to prevent AIS movement between the Great Lakes and Mississippi River basins through aquatic connections. The report identifies eight potential alternatives, including continuing current efforts to complete separation of the watersheds. It evaluates the potential of these alternatives to control the inter-basin spread of 13 aquatic nuisance fish, algae, viruses, crustaceans and plants in all life stages having high or medium risk for transfer.



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The options concentrate on the Chicago Area Waterway System (CAWS), a complex, multi-use waterway that is the primary direct, continuous inter-basin connection between the Mississippi River Basin and Lake Michigan. The CAWS is used for navigation; water supply and conveyance; flood risk management and recreation. Mitigation measures are included in many of the alternatives to address the impacts of the AIS controls on waterway uses, users and residents.

The report provides a description of various evaluation criteria, like estimated cost and timeline information, which can be used by stakeholders to compare plans. However, this report is not a decision document and does not rank, rate or make a recommendation. <http://glmris.anl.gov/glmris-report/>. ♦

Next Steps

Federal, tribal, and state agencies, along with universities and other partners, are putting the finishing touches on plans for lake-wide monitoring of Lake Michigan under the Cooperative Science and Monitoring Initiative. In 2015, Lake Michigan will undergo its next “year of intensive monitoring” to assess the state of the chemical, physical, and biological integrity of the lake. ♦

Watershed Map



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