

LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN 2017-Annual Report

In this Issue

3
ļ

What is the Lake Michigan LAMP?

Under the Great Lakes Water Quality Agreement, the governments of Canada and the United States have committed to restore and maintain the physical, biological, and chemical integrity of the waters of the Great Lakes.

The Lake Michigan Lakewide Action and Management Plan (LAMP) is an action plan for restoring and protecting the Lake Michigan ecosystem. The LAMP is coordinated by the Lake Michigan Partnership, which is led by the U.S. Environmental Protection Agency (EPA) with participation from federal, and governments, or agencies, and with non-governmental from stakeholders and the public. The next LAMP will be issued in 2019 and in the Partnership will be working to assess the state of the lake, measure progress against LAMP goals and objectives, and promote management actions to address identified problems.

This 2017 annual report highlights accomplishments and progress in achieving LAMP goals and objectives.

Overview

The Lake Michigan Basin is home to the world's fifth largest lake and contains the world's largest collection of freshwater sand dunes. It also hosts many wetlands, prairies, forests, and savannas that provide essential habitat to a diverse ecosystem of plant and animal species. The Lake Michigan coastline contains 25 harbors and hundreds of marinas, and serves as a key North American migratory bird flyway.

The Lake Michigan Partnership's 2017 Annual Report provides information and updates on aquatic and terrestrial invasive species control efforts; habitat and species restoration; fishery management; and collaborative shoreline management.

Accomplishments

Invasive Species Control

Sea Lamprey Control

The parasitic Sea Lamprey invaded Lake Michigan during the early 1930s and was an important factor contributing to the mid-century collapse of top predator fish populations, especially Lake Whitefish and Lake Trout. Native species restoration and maintenance of Lake Michigan's world-class sport and commercial fisheries would not be possible without the Great Lakes Fishery Commission (GLFC) Sea Lamprey Control Program. The GLFC and partners report continued success in their integrated pest management approach to controlling established Sea Lamprey populations. In Lake Michigan, the index estimates of adult Sea Lampreys during 2016 was 16,125, which was below the target of 24,874 for the second year in a row. In 2016, management activities included: lampricide treatments in 14 streams and two areas in Lake Michigan, larval assessments in 102 Lake Michigan tributaries and offshore of 17 tributary mouths, lamprey barrier maintenance operations, and

barrier removal or modification consultations with partner agencies at 21 sites in 10 streams. Lake Michigan is the focus of the 2017 Large Scale Treatment Strategy that will target 32 streams and three areas in Lake the Michigan with highest larval Sea Lamprey production.



Sea Lamprey and Salmon with wound. Credit: T. Lawrence, GLFC.



LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN

2017 Annual Report

Lake Trout Rehabilitation

Lake Trout, a native top predator in Lake Michigan, suffered a lakewide population collapse during the mid-1900s due to parasitic Sea Lamprey and overfishing. After many years of stocking, primarily by the U.S. Fish and Wildlife Service (USFWS), and coordinated research and management planning, Lake Trout are showing signs of natural reproduction and population recovery in portions of Lake Michigan. A study funded by the Great Lakes Restoration Initiative (GLRI) through the Great Lakes Fish and Wildlife Restoration Act found Lake Trout eggs and fry present at Julian's Reef in southwest Lake Michigan in 2016. While increasing populations of unmarked 'wild' Lake Trout adults have been found in



Lake Trout caught off of Manistee, Michigan. Credit: M. Preisser, Michigan Office of the Great Lakes.

southern Lake Michigan, this is not the case in the and central northern portions of the lake where wild proportions of the population are generally less than 25%. Continued stocking, population monitoring, and research efforts to identify successful spawning locations and the factors contributing to successful natural reproduction are essential for the future success of Lake Trout rehabilitation Lake in Michigan.

Great Blue Heron Rookery on Strawberry Island in the Lower Menominee AOC. Credit: S. Baker, Michigan Office of the Great Lakes.

wetland habitat restoration that expanded to 30 acres the area treated for invasive plant species and planted with native species. Northern Pike habitat was enhanced by providing a channel to improve access to the restored wetlands for spawning and loafing platforms for turtles, ducks, and other animals were added. Woody structures were installed to improve fish habitat; nesting structures were installed for waterfowl, wading birds, raptors, songbirds, and bats; and rocky material was removed from under the Ogden Street Bridge to improve flows, fish passage, and overall stream connectivity between South Channel and Menekaunee Harbor. Invasive plant monitoring and control will continue through 2019 to ensure that native vegetation is established and project and Lower Menominee Area of Concern (AOC) goals are met.

Habitat Restoration at Areas of Concern

Lower Menominee River AOC (Michigan/Wisconsin)

A U.S. Army Corps of Engineers GLRI-funded project to improve rookery habitat on Little Blueberry, Blueberry, Boom, and Strawberry Islands in the Lower Menominee River AOC made substantial progress in 2016. The project goal is to control invasive plants, restore native plant communities, and support colonial nesting bird populations. Strawberry Island is currently home to a large breeding colony of egrets and herons, while Little Blueberry Island, Blueberry Island, and Boom Island have potential for providing rookery habitat. Targets were met in order to remove the Restrictions on Dredging and Degradation of Benthos BUIs in 2017.

The South Channel habitat restoration project was implemented by the city of Marinette and Wisconsin Department of Natural Resources (WI DNR) with GLRI funding. The project, which will be completed in 2017, included



Installation of 'fish sticks' into the South Channel nearshore to restore woody habitat for fish, expand fishing opportunities, and provide protection to the shoreline. The fish sticks also provide perching/loafing areas for avian, amphibians and reptiles. Credit: WI DNR.



LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN 2017 Annual Report

Milwaukee Estuary AOC (Wisconsin)

The Milwaukee Metropolitan Sewerage District, in cooperation with the U.S. Army Corps of Engineers, completed a GLRIfunded habitat restoration project in the Menomonee River, in the Milwaukee Estuary AOC, in 2016. The project removed 2,900 feet of concrete-lined channel that was built in the 1960s for flood control purposes and constructed a natural riverbed to provide structure for migratory fish to rest, thereby opening access to over 37 miles and 125 acres of riverine and wetland habitat used for spawning by many different native fish species. Restoration of the Menomonee River provides connectivity between previously restored sections of the river while also maintaining its flood control function. Monitoring of the project is currently underway and initial surveys show many fish species are now present in upstream locations that were not present prior to the project, including Redhorse and Gizzard Shad.



Menomonee River in downtown Milwaukee, Wisconsin, after the concrete-lined channel was removed. Credit: U.S. Army Corps of Engineers.

Addressing Challenges

Managing Lake Michigan Fish Stocks

Salmon Stocking Reduced in Response to Low Prey Fish Abundance

Low prey fish abundance, combined with high natural reproduction levels for salmon, prompted Lake Michigan states to reduce Chinook Salmon stocking by 50% lakewide in 2013. Declines in prey fish abundance are thought to be due to predation by piscivorous (fish eating) fishes, disruption of the lower trophic level food web by invasive species (e.g., Zebra and Quagga mussels and Spiny Water Flea), and reductions in lake productivity. Four years after the 2013 stocking reduction, scientists still have not observed the anticipated increase in lakewide prey fish biomass. Results from prey fish assessments by U.S. Geological Survey scientists in 2016 indicate that prey fish populations remain at historic lows. Additionally, fishery models show that an imbalance in the amounts of prey fish (Alewife) in the lake to support predators (Chinook Salmon) still exists. Lake Michigan states, working through the GLFC Lake Michigan Committee, again reduced predator stocking in the lake in 2017. The current management action calls for a lakewide reduction in predator stocking equivalent to 900,000 Chinook Salmon by 2018. State fishery management agencies will now decide which stocked salmon and trout species (i.e., Chinook Salmon, Coho Salmon, Lake Trout, Rainbow Trout, and Brown Trout) they will reduce to reach the overall lakewide predator reduction target. Continued monitoring of predator and prey fish abundance and levels of natural recruitment are necessary to sustain the diverse Salmon and Trout fishery that Lake Michigan sport anglers have come to enjoy.

Invasive Species Detection

Monitoring for Starry Stonewort in Lake Michigan

In August 2016, Starry Stonewort, an invasive aquatic macroalgae native to parts of Europe and Asia, was found in Sturgeon Bay (Door County, WI) during a routine aquatic plant survey, marking the first documentation of this non-native species in Lake Michigan. Starry Stonewort was first recorded in the St. Lawrence River in 1978, likely introduced through international ballast water. It has recently been documented in multiple inland lakes in several Eastern and Midwest states, including several in the Lake Michigan watershed portion of the State of Michigan. The potential impacts of this species on Lake Michigan's ecosystem is unknown, but in other lakes where it has invaded it outcompetes native plants, alters fish spawning habitats, and clogs waterways. Monitoring confirms that this species is also present in some coastal bays and marinas along the eastern shore of Green Bay and western shore of Wisconsin. This discovery of Starry Stonewort in the waters surrounding the Door County Peninsula, a popular recreational and commercial boating area, raises concerns

about spread via boats to other parts of the Great Lakes, as well as the potential for transport to additional inland lakes. Additional outreach, education, and monitoring activities are underway.





Starry Stonewort. Credits: P. Skawinski.



LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN 2017 Annual Report

On the Lookout for Terrestrial Invasive Species

Approximately 41% of the land cover in the Lake Michigan basin is forested, which includes 29% upland forest and 12% wetland forest. The proliferation of terrestrial invasive species, particularly forest insect pests, may profoundly impact the lake ecosystem, as well as tourism and other industries. In 2016, citizens and tree management professionals reported new locations of Hemlock Woolly Adelgid (an invasive insect) on private lands in Muskegon and Ottawa counties, Michigan (both bordering Lake Michigan). Oak wilt, a fungus affecting



White, woolly masses produced by Hemlock Woolly Adelgid. Credit: Connecticut Agricultural Experiment Station, Bugwood.org

both red and white oaks, is now found in all four states in the Lake Michigan basin. Asian Long-horned Beetles, first detected in Chicago in 1998 and declared eradicated there in 2008,

have not been detected elsewhere in the Lake Michigan basin. Agencies and partners are actively conducting surveillance and emergency response planning to protect maples (its favorite host) and other tree species if it is discovered. Emerald Ash Borer (EAB) has been detected in most counties in the basin. In areas where Emerald Ash Borer has been present for several years, high ash mortality has affected both forest land and urban tree cover. The GLRI has supported tree inventories, management plans, black ash wetland research, and planting of approximately 50,000 trees to replace affected ash. These efforts emphasize tree species diversity and enable the basin's forests to better withstand pests and disease.

Shoreline Management

Collaborative Approach to Public Shoreline Management along Illinois' North Shore

The Illinois Sand Management Working Group formed in 2015 to help coastal communities from Chicago to the Wisconsin border work together to find sustainable solutions to Lake Michigan shoreline protection. This group is comprised of public and non-residential landowners and managers, and is facilitated by the Illinois Department of Natural Resources' Coastal Management Program (CMP). The group serves as a forum for communication, collaboration, and priority-setting. In the first 18 months of this effort, participants identified the most significant shoreline management issues and strategies for regional coordinated action. Currently, the group is focusing on initiatives ranging from permitting policies and regulations to demonstration projects that will achieve tangible progress over the next two years. In addition, the CMP and Illinois State Geological Survey (ISGS) are partnering on research and monitoring projects to fill data and knowledge gaps in sand management. In 2017, CMP and ISGS began beach topography and shoreline change monitoring as well as helicopter-based surveys to map sand location and quantity along the Illinois coastline.



One of many trees along the shoreline uprooted by erosion at Illinois Beach State Park. Credit: Illinois Department of Natural Resources' CMP.

State of Lake Michigan Conference

The 2017 State of Lake Michigan Conference (SOLM) will be held November 7-10, 2017, at the KI Convention Center in Green Bay, Wisconsin and is hosted by the International Association for Great Lakes Research with support from state and local sponsors. The event, aimed at promoting linkages between the science and policy communities, will also feature the annual meeting of the Great Lakes Beach Association and other associated workshops and field trips (http://iaglr.org/sol/solm17).

Contact Information:

Elizabeth Hinchey Malloy Lake Michigan Manager – U.S. EPA <u>hinchey.elizabeth@epa.gov</u> Phone: (312) 886-3451 <u>http://www.epa.gov/glnpo/michigan.html</u>