



LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN Annual Report 2015

In This Issue

Overview	1
Accomplishments.....	2
Addressing Challenges	4
Special Events	4
Contact Information	4

What Is the 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 with participation from federal, state, tribal and local governments or agencies, and with input from non-governmental stakeholders and the public. The next LAMP will be issued in 2019 and in the coming years, the Lake Michigan 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 2015 annual report highlights accomplishments and progress in achieving LAMP goals and objectives during the past year, and identifies LAMP-related activities including outreach, monitoring, and protection and restoration actions.

Overview

Lake Michigan is the second largest Great Lake by volume and the only Great Lake located entirely within the United States. Agriculture and forest are the most common categories of land cover in the basin, accounting for more than half the area. 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’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. 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 of GLWQA, the Lake Michigan Partnership is 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.



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.
Credit: B. Jones, U.S. EPA.



LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN

Annual Report 2015

Accomplishments

Fish and Wildlife

Lake Herring Restoration

Restoration of the native Lake Herring is a priority identified in the Lake Michigan Biodiversity Conservation Strategy. The Lake Herring population in Lake Michigan is very low, with little documented evidence of natural reproduction outside of a remnant stock from Grand Traverse Bay, Michigan. To help restore the species to its historical status as a primary prey fish in Lake Michigan, the Little Traverse Bay Bands of Odawa Indians released nearly 50,000 summer fingerling and 8,000 fall fingerling into Little Traverse Bay, Michigan in 2014. The LTBBOI is currently evaluating the success of the fingerling releases.

Lake Trout

Scientists from the Illinois Natural History Survey and Southern Illinois University Carbondale studied the chemistry of otoliths (ear bones) of Lake Trout obtained from hatcheries and gill net surveys in Lakes Michigan and Huron. The results have provided the first empirical evidence of natural reproduction and survival of Lake Trout to the adult life stage in Lake Michigan since restoration efforts began in the mid-1960s. Agencies have captured increasing proportions of unmarked adult Lake Trout in fall spawning surveys and the highest proportions have come from the southern portion of the lake. These Lake Trout were not of hatchery origin, nor migrants from Lake Huron, which provides more evidence of natural reproduction in Lake Michigan.

Lake Michigan Coastal Campaign for the Illinois Wildlife Action Plan

Illinois Department of Natural Resources (DNR) is working with conservation partners to develop a new Lake Michigan Coastal Campaign for the Illinois Wildlife Action Plan. This campaign will identify species in greatest need of conservation, select focal management species, and determine priority goals and conservation actions to protect rare species and keep common species common. The campaign is scheduled to be complete in late July 2015 and will be included in the 2015 revision of the statewide Illinois Wildlife Action Plan.

Habitat Restoration

Ulao and Kaul Creeks

Ozaukee County, Wisconsin is completing a large-scale habitat restoration project on Ulao and Kaul creeks within the Milwaukee River Watershed. The project will provide improvements to aquatic habitat available to resident and migratory native and desirable, introduced fish species in the Milwaukee River Watershed and Lake Michigan Basin. Project outcomes have included the reestablishment of meanders in over 5,760 feet of Ulao Creek, the reconnection of nearly 330 acres of wetlands and floodplains as well as the construction of two wetland/pond areas. Over 274 native

trees, 200 shrubs, 265 live stakes, and 470 herbaceous plugs have been planted, and stream conditions have been greatly improved.

Tributary Connectivity

The Boardman River Dams Ecosystem Restoration Project, located in Grand Traverse and Kalkaska counties in Northwest Lower Michigan, will eventually reconnect over 160 miles of free-flowing, cold-water stream and restore hundreds of acres of wetland and upland habitat. It is one of the most comprehensive dam removal and restoration projects in Michigan's history and one of the largest such projects in the Great Lakes Basin. Now underway in the Boardman River Watershed is development of a plan by 12 Grand Traverse/Kalkaska county regional organizations that links community goals with the environment and economy.

Door County Receives International Wetlands Designation

In Wisconsin, Door County conservation partners announced that the Door Peninsula Coastal Wetlands complex has been designated a Wetland of International Importance under the Ramsar Convention, an international treaty for protection of exemplary wetland systems around the world. The 11,443-acre site, one of only 37 sites in the United States to achieve this designation, encompasses



Dwarf Lake Iris (*Iris lacustris*, endangered species), Ridges Sanctuary, Door County, WI. Credit: Joshua Mayer.

more than 22 miles of protected Lake Michigan shoreline and protects some of the most biologically diverse habitat in the region, ranging from wet forests, sedge meadows and fens to springs, creeks and interdunal wetlands.

Lake Michigan Islands

One of Lake Michigan's most distinctive and valuable features is its 725 islands, which support a variety of uses and are seen as priorities for conservation and restoration. On St. Martin Island, The Nature Conservancy and the Little Traverse Bay Bands of Odawa Indians have protected the entire island, creating an important sanctuary for native birds and endangered plants and animals. USDA Wildlife Services and Wisconsin DNR are working to reduce overabundant Double-Crested Cormorant populations on four islands in Green Bay. The Michigan DNR is revising its Northern Lake Michigan islands management plan to better recognize diverse values, uses, and local needs. The Beaver Island community is limiting the spread of invasive



LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN

Annual Report 2015



The Beaver Island archipelago in northern Lake Michigan.
Credit: NASA.

species through annual shoreline surveillance and control activities, and through a prohibition on moving firewood via the island ferry. In 2014, the Beaver Island Birding Trail was created, establishing the island as a notable destination for birders.

Data and Monitoring

CSMI Field Year

The 2015 Cooperative Science and Monitoring Initiative (CSMI) coordinated an investigation by federal agencies and partners of a key knowledge gap—the distribution, abundance and movement of nutrients and biota (e.g., invertebrates and fish) from nearshore to offshore waters. An intensive survey of over 150 stations also evaluated the health of the Lake Michigan benthic (lake bottom) food web and its ability to support fish populations, and will include mapping of Dreissenid mussel and *Diporeia* (mud scud) populations. PCB and mercury loads for five tributaries were quantified, and open waters of Lake Michigan were sampled for atrazine. An assessment of organic contaminants in water, pelagic micro-fauna, and benthic invertebrates to understand how these concentrations relate to those measured in Lake Trout via the Great Lakes Fish Monitoring Surveillance Program routine sampling was also conducted.

Science in the Great Lakes (SiGL) Mapper

USGS has developed the Science in the Great Lakes (SiGL) Mapper, a searchable data-discovery tool that encourages coordination and collaboration among Great Lakes stakeholders. SiGL helps researchers and managers strategically plan, implement, and analyze monitoring and restoration activities by providing easy access to current and historical project details, connecting them with project leads and data repositories, and assisting in the identification of spatial and topical monitoring gaps. SiGL provides a user-friendly and efficient way to explore projects and data through robust search options and an interactive mapping interface. As of April 2015, SiGL contained 257 projects (including those collected by the Lake Michigan Monitoring Coordination Council's Monitoring Inventory), representing 65 different federal and state agencies, municipalities, tribes, universities, and nonprofit organizations throughout all five Great Lakes.

Areas of Concern

Progress continues to be made toward restoring the remaining Lake Michigan Areas of Concern (AOCs):

Lower Menominee River (Wisconsin/Michigan)

After years of hard work, contaminated sediments in the Lower Menominee River have been remediated and focus is now shifting to habitat restoration. Island rookery habitat is being improved on four islands in the river to support heron and egret habitat through the removal of invasive plant species and plantings of native vegetation. A fish passage project will increase numbers of native sturgeon in the river, and Menakaunee Harbor is being restored for recreation and habitat improvements.

Lower Green Bay and Fox River (Wisconsin)

Over 546,000 cubic yards of sediment were dredged in 2014 as part of the PCB sediment cleanup project (www.foxrivercleanup.com); it is estimated that more than 3.3 million cubic yards of sediment were dredged from 2009 to 2014 (in the entire project area, not just within the AOC). The Cat Island project was completed in 2013 and is now being used to dispose of clean dredged sediments from the navigational channel for the Port of Green Bay. This creative re-use of sediments is creating new islands in the Bay, which are becoming a haven for aquatic life, birds, and other wildlife.

White Lake (Michigan) – delisted!

The White Lake AOC was officially removed from the AOC list in October 2014. Future stewardship and protection activities will be led by the newly formed White Lake Environmental Network. “Bringing Back White Lake the Beautiful,” a documentary showcasing the lake’s history and recovery, was completed in May 2015.

Waukegan Harbor (Illinois)

Dredging of the Waukegan Harbor was completed in late 2013, and the Restriction on Dredging Beneficial Use Impairment (BUI) was removed in July 2014. With the removal of dredging restrictions and completion of upland habitat work in 2013, all management actions for the AOC have been completed, and three of the six BUIs have been removed. Fish, benthos, and plankton sampling continues in Waukegan Harbor to address the remaining BUIs and to monitor biological response of the system to the sediment cleanup.

Muskegon Lake (Michigan)

The Great Lakes Commission received \$7.9 million in funding for a restoration project in Muskegon Lake that will remove sediments that contain harmful levels of phosphorus, restore natural water flow and create wetlands in Bear Creek, a tributary to Muskegon Lake in west Michigan. The project will restore almost 36 acres of wetlands and improve water flow and fish passage to Muskegon Lake as part of a larger program to complete Muskegon Lake restoration efforts by 2017. U.S. Environmental Protection Agency (EPA) is also working with the West Michigan Shoreline



LAKE MICHIGAN LAKEWIDE ACTION AND MANAGEMENT PLAN

Annual Report 2015

Regional Development to address oil contamination and restore wetlands in the upper reaches of the AOC.

Sheboygan River (Wisconsin)

Over \$80 million was invested in major dredging of contaminated sediments and habitat restoration work in the Sheboygan River in recent years. River life has been revitalized, and the public and wildlife are enjoying a far improved environment. U.S. EPA and Wisconsin DNR will monitor environmental progress, and BUIs are anticipated to be removed in the next few years, which will eventually lead to AOC delisting.

Grand Calumet (Indiana)

In 2015, an \$82 million project will be completed, cleaning up 1.2 million cubic yards of contaminated sediments and restoring approximately 60 acres of riverine wetland

habitat. Another project to remediate an additional 82,000 cubic yards of contaminated sediment is planned. Critical habitat restoration was completed on 320 acres, and another 800 acres of restoration are planned to restore dune and swale and riverine wetland structure throughout the AOC.



Seidner Dune and Swale Nature Preserve-Grand Calumet River AOC restoration site. Credit: P. Donnelly, U.S. EPA.

Addressing Challenges

Sand Management along Illinois' Shore

The Illinois Coastal Management Program and the Alliance for the Great Lakes are working with municipalities, land managers, businesses, non-profits, and various public agencies to develop regional solutions for sand management issues along Illinois' North Shore. They will develop a plan, to be completed in Fall 2015, that maintains coastal infrastructure, preserves the stability and integrity of the shoreline, and realizes individual benefits through collective actions.

Northwest Indiana Septic System Working Group

The Indiana Coastal Nonpoint Pollution Control Program initiated a Northwest Indiana Septic System Working Group with participants from state and local health departments, Indiana Department of Environmental Management, septic-served municipalities, and other coastal area agencies and organizations. For the first time, Indiana state agencies and over 30 coastal region towns, cities, and agencies

Special Events

Lake Michigan Day 2015

On August 14, 2015, natural resource professionals and policymakers gathered at UW-Manitowoc for the second annual Lake Michigan Day. Attendees discussed the challenges of managing Lake Michigan for present and future generations and presented solutions for this unique world treasure.

2015 State of Lake Michigan Conference

The 9th biennial State of Lake Michigan Conference (www.michigan.gov/deqworkshops) was held in conjunction with the 15th Annual Beach Association Conference on October 28-30, 2015 in Acme, Michigan.

partnered to distribute SepticSmart materials and advertise information on websites, media outlets, and local cable channels during U.S. EPA's Septic System Awareness Week, September 22–26, 2014.

Changing Food Webs

Annual hydroacoustic and bottom trawl assessments by the USGS Great Lakes Science Center reveal substantial lakewide declines in most Lake Michigan prey fish species, including the dominant, non-native alewife. Federal scientists believe the cause of this decline may be due to reductions in lake productivity, disruption of the lower trophic level food web by invasive species (e.g., zebra and quagga mussels and spiny water flea) and predation by fish. Zooplankton abundance has declined and the once abundant benthic invertebrate *Diporeia* has been nearly eliminated from the lake.

This reduced abundance of prey fish, combined with high reproduction levels for salmon, prompted the Lake Michigan Committee (LMC) of the Great Lakes Fishery Commission to reduce Chinook salmon stocking by 50% lakewide in 2013. Utilizing results of a recently developed fish biomass model, the LMC decided to continue stocking Chinook salmon at reduced levels to maintain the desired balance between predator and prey species – a cornerstone of the management strategy for the multi-million dollar Lake Michigan sport fishery.

Contact Information

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