



2019 Annual Report

Sleeping Bear Dunes. Source: National Park Service.

In this issue

Overview	1
Accomplishments	1
Addressing Challenges	3
Outreach and Engagement	4
Contact Information	Δ
contact mornation	-

What is the Lake Michigan LAMP?

Under the Great Lakes Water Quality Agreement (GLWQA), 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 ecosystembased strategy for protecting and restoring Lake Michigan's water quality. The LAMP is coordinated by the Lake Michigan Partnership, which is led by the U.S. Environmental Protection Agency (EPA) with participation from federal, state, tribal and local governments or agencies, and with input from nongovernmental stakeholders and the public. The next LAMP will be issued in 2021 and in the coming years, the Lake Michigan Partnership will be working to assess the state of the lake, measure progress towards LAMP goals and objectives, and promote management actions to address identified problems.

This 2019 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 hosts many wetlands, prairies, forests, and savannas that provide essential habitat to a diverse array of plant and animal species. The Lake Michigan coastline has 25 harbors, hundreds of marinas, and serves as a key North American migratory bird flyway. The Lake Michigan Partnership's 2019 Annual Report provides information and updates on habitat and species restoration; fishery management; and shoreline management research.

This table summarizes overall Lake Michigan conditions in relation to the Great Lakes Water Quality Agreement General Objectives based on information from the State of the Great Lakes 2019 Technical Report and other sources.

GLWQA GENERAL OBJECTIVES	STATUS FOR LAKE MICHIGAN
Drinking water	Good
Swimming	Good
Fish and wildlife consumption	Fair
Chemical pollutants	Fair
Habitats and native species	Fair
Nutrients and algae	Fair
Invasive species	Poor
Groundwater	Fair

ACCOMPLISHMENTS

Connecting Forests and Rivers

The U.S. Forest Service marked the 50th Anniversary of the Wild & Scenic Rivers Act in late 2018 with a national celebration on Michigan's Pine and Manistee Rivers in the Huron-Manistee National Forest. Beyond the significant recreational, habitat, and economic values of the Lake Michigan basin's 329 miles of designated Wild and Scenic Rivers, there is much to celebrate with regard to forests, rivers, and Lake Michigan. Trees protect Lake Michigan's tributaries from warming temperatures in the summer, provide leaves and woody material for aquatic life habitat, help communities become resilient to climate change impacts, and intercept and filter runoff to reduce flashiness and pollution in streams.

A series of recent projects enhance these benefits of trees and forests along Lake Michigan tributaries. Michigan DNR and partners successfully completed a grant launching the Forests for Fish project, helping foresters and landowners manage streamside forests for healthy fisheries. With funding support from a U.S. Forest Service (US FS) Landscape Scale Restoration grant, Trout Unlimited is taking this collaborative project a step further, kicking off a Trout and Trees project that will plant trees in riparian areas impacted by invasive pests or development, improve instream habitat, and continue education on healthy riparian forests in Michigan. This builds on similar work underway on federal lands in Huron-Manistee National Forest by US FS and other partners. In 2019, the Forest Service awarded 19 Great Lakes Restoration Initiative (GLRI)-funded grants that support planting of almost 55,000 new trees within the Lake Michigan basin. Initial benefits are being seen in settings as diverse as Chicago-area communities with low canopy cover, industrial areas bordering Indiana Dunes National Park. rare forested wetland ecosystems along Wisconsin's coast, and along Michigan's blue ribbon trout streams. The benefits add up even more in the long run. Trees planted under these grants will intercept over 3 million gallons of runoff initially, growing to an estimated 30 million gallons annually as surviving trees reach maturity. Meanwhile, communities across the urban to rural spectrum will be a step closer to achieving local watershed and habitat goals.

Understanding Food Web Changes

u N O A G L E R L V\ 80kO continued to study food web structure , including Dreissenid mussel , Mysis



data necessary for understanding changes in the food web and bottlenecks to Lake Whitefish recruitment. Recognizing that Lake Michigan's water clarity has increased in recent years, NOAA has begun to measure levels of UV radiation (both UVB and UVA) penetration into southern Lake Michigan.

Zooplankton net deployed in Lake Michigan. Source: NOAA-GLERL.

The goal is to understand if UV radiation could potentially impact plankton and fish communities in surface waters by changing the depth distribution of organisms in the water column. NOAA scientists are testing hypotheses to determine if organisms are now residing at deeper depths to avoid UV radiation and how this depth shift may alter predatory-prey dynamics.

Indiana Dunes National Park Designation



Indiana Dunes National Park. Source: National Park Service.

On February 15, 2019, President Donald J. Trump signed into law the <u>Consolidated Appropriations Act of 2019</u>. Section 115 of the law officially re-designated the Indiana Dunes National Lakeshore as a National Park. The Indiana Dunes is now the nation's sixty-first national park.

Although advocates pushed for an Indiana sand dunes national park as early as the 1910s and Indiana established the Indiana Dunes State Park in 1925, it wasn't until 1966 that Congress first authorized the Indiana Dunes National Lakeshore. Only the name has changed; the park still occupies approximately 15 miles of Indiana shoreline between Gary and Michigan City, as well as several satellite properties in Lake and LaPorte counties. Collectively, these lands contain some of the most diverse habitats in the National Park System. Over 15,000 acres of sandy beaches, dunes, oak savannas, swamps, bogs, marshes, prairies, rivers, and forests support more than 1,430 species of vascular plants, 301 species of birds, 71 species of fish, 17 species of amphibians, 23 species of reptiles, and 42 species of mammals. It also includes over 60 historic structures, including the Bailly Homestead, the Chellberg Farm, and five houses from the 1933 Chicago World's Fair.

In addition to the Indiana Dunes National Park, there are 25 dedicated <u>state nature preserves</u> located within Indiana's Lake Michigan basin that are managed by the Indiana Department of Natural Resources. These provide Indiana's

u

highest level of natural resource protection for species and habitats. Federal, state, and local partners continue to work together to implement the goals of the Great Lakes Water Quality Agreement, in part by protecting and preserving unique habits, such as the Indiana Dunes.

ADDRESSING CHALLENGES

Manistique River Area of Concern (MI)

Construction was recently completed on the \$10 million Manistique Dredge Project, located in the Manistique River Area of Concern in Manistique, Michigan. The objective was to remove PCB-contaminated sediment and associated woody debris that was contributing to restrictions on fish and wildlife consumption and on dredging activities. Some 42,500 cubic yards of contaminated sediment and sawdust were removed from the lower river and harbor and a granulated activated carbon/sand mixture was placed over a 211,311 square foot area between June and November 2019. That remedial effort was the last major project to complete the management actions needed to delist the AOC.

NOAA funded the project through the Great Lakes Restoration Initiative. The project was managed by the Michigan Department of Environment, Great Lakes and Energy under a cooperative agreement with NOAA. Remedial activities were implemented by White Lake Dock and Dredge, Inc. and Arcadis conducted construction oversight. Support was also provided by the U.S. Army Corps of Engineers and EPA.



Dredging in Manistique Harbor. Source: EPA.

Hemlock Wooly Adelgid Update

Hemlock Woolly Adelgid (HWA) is a small aphid-like insect that kills hemlock trees. HWA was first reported in the eastern U.S. in Virginia in 1951. Since then it has slowly expanded its range and is a relatively new invader into the Great Lakes watershed. Hemlock trees have very dense evergreen canopies. They have been a long-lived conifer, capable of growing to large sizes and forming unique habitats for a variety of species. They are found growing on old sand dune habitats and along riparian corridors that feed into the Great Lakes.

Within the Lake Michigan basin, GLRI funded work to date has been targeted at infestations in four Michigan counties that abut Lake Michigan. Michigan has been implementing a statewide HWA strategy that includes a coalition of partners (state, federal, county, Universities, and several conservation organizations). Michigan's response focuses on detection, local eradications and containment of spread to protect the hemlock resource in Michigan. This strategy preserves ecological benefits of hemlock, while broader, long-term efforts to evaluate the potential of several natural predators to combat HWA are underway.



The hemlock woolly adelgid can be spotted by finding the white waxy substance it produces to protect itself. Source: Michigan DNR.

Lake Michigan Cooperative Science and Monitoring Initiative 2020 Priorities

Each year, one of the Great Lakes is the focus of a binational cooperative science effort called the Cooperative Science and Monitoring Initiative (CSMI). In 2020, Lake Michigan will be the focus of the CSMI field year. The priority science and information needs identified for this intensive field year include: 1) a better understanding of how lower food web changes caused by declining open water nutrients influence prey fish (e.g., alewife), lake whitefish and ultimately salmon and trout fisheries; 2) groundwater contributions to nutrient and chemical loads; 3) distributions of emerging contaminants of concern in Lake Michigan waters and sediments; 4) quantification of land cover/land use changes and their impacts on terrestrial and aquatic cycling of

nutrients, carbon, and mercury and impacts to habitats for rare species or critical life stages; and 5) identification of values and needs of diverse Lake Michigan stakeholder groups to better understand status and trends in how people use and value the lake and its resources. A summary of the 2015 CSMI field year results is available <u>online</u>.

Protecting Kenosha Dunes & Chiwaukee Prairie

The Wisconsin Department of Natural Resources, University of Wisconsin, and the U.S. Army Corps of Engineers are working collaboratively on a research project to construct submerged reef structures in the nearshore and offshore environments at Kenosha Dunes, Chiwaukee Prairie, Wisconsin. Chiwaukee Prairie State Natural Area is a 477acre property that is one of the largest prairie complexes in the state and the most intact coastal wetland in Southeastern Wisconsin. This area is recognized as a National Natural Landmark by the National Park Service, a State Natural Area by the Wisconsin Department of Natural Resources, a Conservation Opportunity Area of global significance by the Wisconsin Wildlife Action Plan, a Wetland Gem by the Wisconsin Wetlands Association, and, as of September 2015, a Wetland of International Importance by the Ramsar Convention, as part of the Chiwaukee Illinois Beach Lake Plain.

Past high-water levels in Lake Michigan caused increased erosion of dune habitats. To protect the dunes from erosion, a revetment was installed in the early 1970s. This revetment failed during a 2014 storm event. With the current high water levels the Kenosha Dunes area has been losing as much as 25 feet of shoreline per year, which leaves critical public infrastructure (including the adjacent wastewater treatment plant's intake and output infrastructure) and coastal wetlands extremely vulnerable to future extreme weather events. At the current rate of shoreline loss, the near shore wetlands located within Kenosha Dunes could be lost within the next decade if no action is taken.

The structures developed through this project will help restore the littoral system, protect it from erosion, and provide habitat for fish and other aquatic organisms. Data is currently being collected on site to inform the development of innovative design alternatives that are adaptable to many different conditions, such as high and low water levels. One of the ultimate goals of the project is to pilot alternatives to traditional shoreline stabilization (such as riprap and seawalls). The project will "engineer with nature" to increase shoreline habitat and resiliency and will identify long term sustainable solutions that can be used throughout the Great Lakes.

OUTREACH AND ENGAGEMENT

You can keep up to date on GLWQA engagement opportunities in the <u>Engagement</u> section of Binational.net. Information on many of our partner organizations' upcoming outreach and engagement opportunities can also be found at the Great Lakes Commission's "<u>Great Lakes Calendar</u>".

CONTACT INFORMATION

For more information, please contact: Elizabeth Hinchey Malloy, Lake Michigan Manager – U.S. EPA, <u>hinchey.elizabeth@epa.gov</u>, Phone: (312) 886-3451



Severely eroded native dune coastal habitat at Chiwaukee Prairie and Kenosha Dunes State Natural Area with failing public access trail at crest of dune. Source: WI DNR.