



LAKE MICHIGAN LAKEWIDE MANAGEMENT PLAN

Annual Report 2012

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What is the LaMP?

In the 1987 amendments to the Great Lakes Water Quality Agreement (GLWQA), the United States and Canada agreed "to restore and maintain the chemical, physical and biological integrity of the Great Lakes Basin Ecosystem." The Lakewide Management Plan (LaMP) is an adaptive management program that integrates and targets actions for contaminated Areas of Concern (AOCs), watershed plans that address land-based activities contributing to degraded water quality, and strategies for habitat and biodiversity protection.

The LaMP is a collaborative effort among federal, state, tribal governments, and a public involvement partnership with the Lake Michigan Forum, planning commissions and local groups.

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 less developed except for the Fox River Valley. 307 miles to the south, the more temperate southern portion is very developed from Milwaukee through Chicago to Northwest Indiana. Lake Michigan flows into Lake Huron through the Straights of Mackinac at a rate that allows for a complete change of water about every 100 years.

Lake Michigan contains the world's largest collection of fresh water sand dunes along with many wetlands, prairies, and savannas, these all provide essential habitat to a great diversity of life. The aquatic food web supports fish for food, sport and culture. The fertile southern-soils are amenable to agriculture and the coast is home to 25 harbors and hundreds of marinas. The Lake Michigan coastlines also serve as a key North American migratory bird flyway.

The LaMP vision is of "a sustainable Lake Michigan ecosystem that ensures environmental integrity and that supports and is supported by economically viable, healthy human communities." The primary goal "is to restore and protect the integrity of the Lake Michigan ecosystem through collaborative, place-based partnerships." Through a collaborative effort, LaMP projects focus on meeting the vision and goal through monitoring the changing environmental conditions and adapting management strategies by addressing the following 12 sub-goals:

Canada-U.S. Great Lakes Water Quality Agreement (GLWQA) Amendments

Negotiations to amend the 1987 GLWQA were launched in early 2010. The Governments of Canada and the United States and held the final negotiation session in early 2012 and the amended GLWQA is now in the process of being finalized and approved. It is anticipated that the amended Agreement will be signed in 2012.



Photo Credit and Contact: Sleeping Bear Dunes National Lakeshore, U.S. National Parks Service, chris_j_otto@nps.gov.



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1. Can we eat any fish?
2. Can we drink the water?
3. Swim in the water?
4. Are habitats healthy, naturally diverse, and sufficient to sustain viable biological communities?
5. Does the public have access to abundant open space, shorelines, and natural areas, and does the public have enhanced opportunities for interaction with the Lake Michigan ecosystem?
6. Are land use, recreation, and economic activities sustainable and supportive of a healthy ecosystem?
7. Are sediment, air, land, and water sources or pathways of contamination that affect the integrity of the ecosystem?
8. Are aquatic and terrestrial nuisance species prevented and controlled?
9. Are ecosystem stewardship activities common and undertaken by public and private organizations in communities around the basin?
10. Is collaborative ecosystem management the basis for decision-making in the Lake Michigan basin?
11. Do we have enough information, data, understanding, and indicators to inform the decision-making process?
12. What is the status of the 33 Lake Michigan sub-watersheds?

Answers presented at the October, 2011 State of the Lakes Ecosystem Conference in Erie, PA in summary are: Lake Michigan is in a state of change with contrasts between positive and negative. Noted are the return of eagles, mammals and aquatic species due to dam removals, restoration of wetland habitat and riverine spawning areas as well as continued decline of the contaminant PCB in fish. These improvements also aid the migratory flyway of millions of birds representing over 250 species. Twelve million residents have access to quality drinking water and beach advisory days continue to decrease even with enhanced monitoring.

The Aquatic Food Web is under great stress as a key food source, *Diporeia*, continues to disappear and the invasive quagga mussel interacts with the ecosystem by filtering the water column for food. This filtering increases clarity so sunlight can penetrate deeper into nutrient rich water which is believed to aid the wide spread growth of algae. Decomposing algae on the lake bottom may play a role in Type E botulism outbreaks which impact the food chain by causing significant numbers of deaths of fish-eating birds.

Water Levels and Winter Ice remain below average as ice cover on the Great Lakes has dropped dramatically. Researchers at the National Oceanic and Atmospheric Administration recently reviewed satellite photos from 1973 to 2012. Peak ice cover has dropped 71% as a Great Lakes average

with Lake Michigan decreasing even more. In 1979, ice covered about 94% of the lakes.

In 2012, the winter maximum cover was about 5%. These changes allow evaporation even in winter, which reduces water levels. Lower water levels expose more shoreline to storm events and erosion. A warmer lake could also fuel earlier and more frequent algae blooms. ♦

Accomplishments

NOAA recognizes Illinois as newest Coastal Program

On March 9, 2012 Illinois joined the Coastal Management Program providing for sustainable development and resource protection along 63 miles of Lake Michigan shore. The Illinois Department of Natural Resources is now eligible for up to \$2 million federal funds annually from the National Oceanic and Atmospheric Administration (NOAA).

The State of Illinois also announced their Millennium Reserve Initiative in Southeast Chicago's Lake Calumet area, part of President Obama's America's Great Outdoors Initiative. The effort will focus on protecting and restoring 2,500 open space acres in the Calumet Core and connecting 53 miles of trails and wildlife corridors.

Fish Stories

Since 2005, five stream-side rearing facilities for the rehabilitation and restoration of Lake Michigan sturgeon have increased sturgeon populations. A sixth location was added in September 2011 on the Kalamazoo River in Michigan through a Great Lakes Restoration Initiative (GLRI) funded partnership. These facilities allow young sturgeon to be raised in tanks filled with river water. The taste and odour imprints the fish who will return to spawn every other year after spending 12-15 years traveling the lakes, even as far as Lake Erie. In May 2012, a tagged sturgeon was caught Wisconsin's Wolf River and determined to be 125 years old!

Restoration Work and Jobs

Almost \$1.7 million Great Lakes Restoration Initiative funds were awarded to the National Park Service (NPS), Bureau of Indian Affairs (BIA) and the Huron Manistee National Forest through a competitive process to match restoration work and provide work for the unemployed.

The NPS will expand wetland restoration in the Sleeping Bear Dunes National Lakeshore, BIA will expand restoration field work in watersheds and the Huron-Manistee work will include habitat restoration for threatened or endangered species, including the Karner Blue butterfly, Piping Plover, Kirtland's warbler and the Massasauga rattlesnake.



Education, Outreach and Engagement

State of Lake Michigan (SOLM) and Great Lakes Beach Association Conference #7 was held September, 2011 in Michigan City, IN. Close to 400 attendees heard in depth presentations and had opportunities for networking. John Goss, the U.S. Chair for the Asian Carp Regional Coordinating Committee and Cameron Davis, Senior Advisor to the U.S. Environmental Protection Agency (US EPA) Administrator Lisa Jackson each keynoted a plenary session.

The Lake Michigan Forum stakeholders and the Watershed Academy network of regional planning commissions have updated their web site to provide for more interactive and current information. At www.lakemichiganforum.org you can find the presentations from all the State of Lake Michigan conferences since 1999.

The Lake Michigan WIKI Watershed maps and status of the 33 major tributaries are on line at <https://wiki.epa.gov/watershed/index.php/Main>. This format enables the addition of sub-watershed data. This is part of US EPA's Watershed Central effort to provide a site for sharing tools and new data from multiple agencies and watershed groups. ♦

Challenges

Battling Invasive Species, Protecting Native Species

Since 2009, the Chicago Area Waterway System has attracted national attention for invasive species concern when evidence of Asian Carp environmental DNA was detected above the electric barriers and near entry points to Lake Michigan. The multi-agency Asian Carp Control Strategy Framework captures an increasing body of knowledge, on-going research and monitoring data and the ability to collaboratively discuss and plan management options and to keep the public informed. In March 2011, US Fish and Wildlife Service began the regulatory process to implement the Asian Carp Prevention and Control Act signed by President Obama in 2010 which makes it illegal to import or transport live bighead carp across state lines. Multiple electric and physical barriers are in place to separate watersheds and the US Army Corps of Engineers' study of alternatives can be found at glmris@usace.army.mil.

Asian Carp Coordinating Committee: www.asiancarp.us.

Nutrients: near shore abundance, off shore deficit

Run off from both agricultural fields, combined feeding operations, and urban paved areas flows into the lake and is filtered by the invasive mussels. This filtering increases water clarity and sunlight penetration in nutrient rich water which is believed to aid the wide spread growth of algae. This filtering also concentrates food for the invasive species and reduces nourishment for many native species. Again, the filtering by

mussels in the near shore traps nutrients there or in near shore currents that prevents the movement of the nutrients to the deeper, off shore waters. The open waters increasingly show a lack of the building blocks for a healthy and productive food web due to cutting the supply of nutrients to the open lake waters. The GLRI is funding concentrated nutrient management efforts in watersheds like Wisconsin's Fox River Green Bay that may serve as a pilot for other watersheds. The open water problem requires more research and management attention.

Next Steps

U.S. Great Lakes Restoration Initiative Continues

In Fiscal Years 2011 & 12 President Barack Obama's GLRI allocated \$300 million for capacity grants to federal, state and tribal agencies for restoration and maintenance of the Great Lakes ecosystem as well as funding for competitive grants. Among projects funded for next steps in Lake Michigan:

- **Basin-wide Biodiversity Conservation Strategy** that identifies key habitats, protection needs and prioritized projects is due this fall. For more info, visit www.conserveonline.org/workspace/michiganblueprint.
- **Water Quality and Food Web workshops** that use 2010 Field Year data to develop recommendations for adaptive management actions by Lake Michigan agencies.
- **Green Infrastructure, Climate Conditions:** Federal, state and local efforts are down scaling data for use in "climate ready community or watershed plans." A key elements for the basin is use of green infrastructure. See: www.noaa.gov.
- **GLRI's Green Marina Education and Outreach Project** is working to develop uniform certification standards for marinas, boatyards and harbors that can be consistently applied through the basin. Lead by the OH, MI and WI Sea Grant programs in partnerships with the other Sea Grant programs, agencies, universities and the industry, webinars, hands on training and publications are being provided and new marinas are being certified. ♦



Photo Credit and Contact: asamples@umich.edu.



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Special Events



State of Lake Michigan and Great Lakes Beach Association Conference

October, 2013 at Blue Harbor, Sheboygan, WI.

Contact:

John.Mastersont@wisconsin.gov.

Making Lake Michigan Great On Board Education Boat Tour

Milwaukee, Muskegon, Chicago, Traverse Bay. For dates and more ports, contact: *vailj@gvsu.edu* or *ISAE@SCHOOLSHIP.org.*

Invasives Month in the Lake Michigan basin

State by state events in May and June, 2012.

International Beach Clean Up Day

September 15, 2012

Contact: Alliance for the Great Lakes *www.greatlakes.org.*

Area of Concern Annual Meeting

September 2012, Cleveland Ohio

Contact: *perrecone.john@epa.gov.*

Making Progress in 10 Areas of Concern

In 2011, GLRI grants to states and local groups added to the Great Lakes Legacy Act sediment clean up funds at work in the 10 Area of Concern (AOC) harbors along the shores of Lake Michigan. The following AOCs have been able to take advantage of the 2011 GLRI funds to remove PCBs and other contaminants from the lake: A one mile stretch of the West Branch of the Grand Calumet River, Indiana and the Roxana Marsh restoration; Milwaukee, Wisconsin - Lincoln Park remediation of 100,000 cubic yards of sediment; Federal, state and city agencies recently began working on Wisconsin's Sheboygan River and inner harbor project; Muskegon, Michigan's Division Street Outfall removal of about 43,000 cubic yards of sediment contaminated with mercury and poly-aromatic hydrocarbons followed by shoreline habitat restoration. The Muskegon project was a partnership of Legacy Act funds of about \$7.8 million and Michigan Department of Environmental Quality providing \$4.2 million for the non federal share.

Watershed Map

Find detailed watershed maps and information for the 33 major Lake Michigan tributaries at: <https://wiki.epa.gov/watershed/index.php/Main>.



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LaMP is at <http://www.epa.gov/glnpo/michigan.html>