



LAKE ERIE LAKEWIDE ACTION AND MANAGEMENT PLAN

Annual Report 2014

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What is the LaMP?

Under the 2012 Great Lakes Water Quality Agreement, the governments of Canada and the United States reaffirmed their agreement "to restore and maintain the integrity of the waters of the Great Lakes Basin Ecosystem."

This is accomplished in part through the development and implementation of Lakewide Action and Management Plans (LAMPs) for each lake. The Lake Erie LAMP is coordinated by a committee of water quality and natural resource managers from Canada and the United States, with participation from federal, provincial, state and local governments that have a role in implementation.

Lake Erie LAMP participants have identified ecosystem goals and objectives and assessed the state of the lake. Through the development of issue-related strategies, the LAMP identifies actions required to restore and protect the lake and evaluate the effectiveness of those actions.

For more information about the Lake Erie LAMP, visit: www.binational.net.

Overview

Lake Erie is the shallowest and most southerly of the Great Lakes, resulting in the highest production and biological diversity. It is also the most stressed and altered of the Great Lakes. Its watershed is highly agricultural; at the same time it is home to over 11 million people, including a number of large urban centres, and contains zones of very intense industrial activity. Human-induced stresses have resulted in increased nutrient concentrations, pollution and habitat loss and degradation.

Amongst all the stresses facing Lake Erie, the top priority for members of the Lake Erie binational partnership continues to be addressing the re-emergence of algal blooms by managing the amount and form of nutrients entering the lake from agricultural and urban point and non-point sources. Excess nutrient inputs to the lake impact water quality, recreational opportunities, fish and wildlife populations, and habitat quality.

This Annual Report for 2014 highlights some of the recent accomplishments, current challenges, and next steps in the ongoing binational management of the Lake Erie ecosystem.

Canada-U.S. Great Lakes Water Quality Agreement (GLWQA) of 2012

Continual improvements to lakewide management are being made. Current areas of focus are the lake ecosystem objectives, outreach and engagement plans, LAMPs, and management of nearshore waters. More information can be found at www.binational.net. ♦



Harmful algal blooms, such as this one at Kelley's Island in Ohio, have become a regular summer occurrence in parts of Lake Erie. Addressing nutrients and harmful algal blooms is a priority of the Lake Erie LAMP and its partner agencies. Photo credit: NOAA, Great Lakes Environmental Research Laboratory, https://www.flickr.com/photos/noaa_glerl/



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Accomplishments

Binational Nutrient Management Strategy

The 2012 Lake Erie Binational Nutrient Management Strategy outlines management actions to reduce excess phosphorus loading and algal blooms in Lake Erie. As work continues to review and update phosphorus targets for Lake Erie, the LAMP partnership continues to implement the Strategy.

Recent Canadian Highlights

In Ontario, government agencies and landowners are working together to undertake on-farm research and stewardship projects related to nutrient management. Examples include planning, planting and maintenance of riparian buffers and windbreaks; increasing education on soil-health best management practices (BMPs); and installation of water quality monitoring equipment to collect and analyze edge-of-field information on the impact of storms to assist in developing new management practices that are more sensitive to extreme weather events.

Water Management Plans are being developed for the Grand and Thames Rivers, the two largest Canadian watersheds on Lake Erie. The plans will reduce flood damage potential, ensure sustainable water supplies, and improve water quality to reduce the impact that the rivers are having on Lake Erie. The Grand River Plan was initiated in 2009 and is scheduled to be completed in 2014 (<http://www.grandriver.ca>). Development of the Thames River Plan was initiated in 2012.

St. Clair – Detroit River System Update

A number of initiatives are underway or have recently been completed in the St. Clair-Detroit River System that will benefit Lake Erie. These include:

- Friends of the Detroit River was awarded US\$470,000 from GLRI to control 75 acres (about 30 hectares) of aquatic invasive plants on Belle Isle, and help prevent the introduction of new invasive species.
- The cities of Detroit and St. Clair Shores have received GLRI funding of US\$1.25 Million to implement large-scale green infrastructure projects that will reduce the discharge of untreated stormwater to the Detroit and St. Clair rivers and ultimately Lake Erie.
- In Canada, a key focus has been the rehabilitation of hardened shoreline. A project initiated in 2013 was awarded CDN\$650,000 to restore 300 metres (328 yards) of Detroit River shoreline, and on the St. Clair River, CDN\$2 Million has been spent rehabilitating 1 km (0.6 miles) of shoreline.
- Binationally, Tainting of Fish and Wildlife Flavour has officially been re-designated as 'not impaired' for both sides of the Detroit River Area of Concern.

Recent U.S. Highlights

The Michigan Department of Agriculture and Rural Development received a US\$152,000 Sustain Our Great Lakes grant to provide technical assistance to River Raisin farmers. The goal is to improve water quality in the watershed through the implementation of BMPs and to reduce sediment and phosphorus loading to western Lake Erie.

In June 2013, Ohio's Environmental Protection Agency (EPA), Department of Agriculture (ODA) and Department of Natural Resources (ODNR) submitted a statewide Nutrient Reduction Strategy to U.S. EPA. It is available at www.epa.ohio.gov. The strategy provides an overview of state efforts to reduce nutrient impairments and recommends voluntary and regulatory-based initiatives to reduce nutrient losses in runoff and subsurface drainage and to remove nutrients through point source treatment technologies. As a next step, Ohio EPA created the Nutrient Technical Advisory Group to provide advice on the development of State surface water quality standards for nutrients.

As well, Ohio EPA, ODA, ODNR and the Ohio Lake Erie Commission released the final report of the Phase II Ohio Lake Erie Phosphorus Task Force. It includes recommended reduction targets for total and dissolved reactive phosphorus, as well as policy and management recommendations. The report is available at: www.epa.ohio.gov/dsw/lakeerie/index.aspx.

Binational Biodiversity Conservation Strategy

The *Lake Erie Binational Biodiversity Conservation Strategy* (BBCS) was released in 2013. A product of a two-year binational planning process led by The Nature Conservancy, it proposes strategies and actions to protect and conserve the native biodiversity of Lake Erie. The BBCS technical report is available at www.conservationgateway.org (search for "Lake Erie Biodiversity").

The GLWQA of 2012 includes a commitment to complete and begin to implement BBCSs for each of the Great Lakes. The Lake Erie LAMP is reviewing the BBCS and making recommendations regarding its adoption and implementation by the LAMP partnership. A Canadian regional implementation workshop was held in April 2014 to review the BBCS, refine the selection of priority areas and to begin developing objectives and strategies for the Canadian portion of the basin.

Priority Watersheds Update

U.S. Priority: Maumee River

The Maumee River watershed is a significant contributor of sediment and phosphorus to Lake Erie. In June 2012, the Ohio General Assembly approved US\$3 million to create the Healthy Lake Erie Fund to support projects that address agricultural nutrient issues. The Fund has enabled farmers to implement nutrient reduction practices on more than 35,000 acres

(14,164 hectares) of farmland. Work has also been done in two subwatersheds: Powell Creek and the Upper Blanchard.

The Powell Creek Nutrient Reduction Project will create approximately 15 acres (0.4 hectares) of agricultural drainage wetlands within the Powell Creek watershed. Thirty-eight controlled drainage structures will be installed to reduce nutrient loading in Defiance and Putnam Counties; and 2,375 acres (961 hectares) of cover crops will be established on agricultural fields to reduce soil erosion. Four whole-farm management plans will be conducted and four producers will be identified for the development of nutrient reduction management plans.

The Upper Blanchard Watershed Nutrient Reduction Project is a collaborative partnership among Ohio EPA, the Hancock County Soil and Water Conservation District, Hancock County Health Department and Park District, and the city of Findlay. The GLRI-funded project kicked off in 2013 and will demonstrate the effectiveness of targeting agricultural nutrient reduction practices at a highly focused and more manageable scale.

Canadian Priorities: Grand and Thames Rivers

The Grand River is the largest Canadian tributary to Lake Erie. Historically, the river ecosystem supported large populations of native migratory fish whose populations are now extirpated or significantly restricted. The Southern Grand River Ecosystem Rehabilitation Initiative, comprised of federal, provincial, conservation authority and First Nation partners, looks to restore the ecological function of the river. The initiative has engaged a broad range of stakeholders to develop a shared vision and assess options for this restoration effort. The process was expected to be complete in 2014.

Current work in the Thames River watershed is focused on better understanding phosphorus sources. This includes a water quality assessment, on-farm agricultural BMP adaptation, and initiating a new Low-Impact Development program in urban areas. Funding for many of these initiatives was provided by the Ontario Ministry of the Environment and Climate Change's *Showcasing Water Innovation* program.

Binational Public Forum

The Lake Erie Binational Public Forum is a cooperative organization of diverse stakeholders whose objective is the restoration and protection of Lake Erie.

In 2013 the Forum continued to raise awareness and promote actions to address the nutrient issue in Lake Erie. The Forum hosted outreach meetings and used a presentation and display to explain the impact of nutrients to stakeholders, and promote everyday actions to address the issue. The Lake Erie Forum's website (<http://www.lakeerieforum.org>) continued to educate people about the GLWQA and issues affecting Lake Erie. The

Forum also hosted a binational public meeting in Ontario to discuss lake-specific governance and implementation. ♦

Addressing Challenges

Nutrients and Harmful Algal Blooms

Starting in the mid-1990s, Lake Erie began experiencing large algal blooms not seen for decades. In the western basin, potentially toxic blooms of blue-green algae (*Microcystis*) have become a regular occurrence; in the eastern basin, *Cladophora* is again fouling nearshore areas and affecting the enjoyment of beaches and shoreline areas. Phosphorus (P) is the key nutrient influencing algal growth in Lake Erie. Whereas the primary sources of P in the 1960s and 1970s were municipal sewage plants, today there are multiple rural and urban point and non-point sources. Reducing the amount of P entering Lake Erie will require the commitment and collaboration of various stakeholders to change P use and management practices.

Under the GLWQA, the U.S. and Canada coordinate research and monitoring efforts under a program called the *Cooperative Science and Monitoring Initiative* (CSMI). In 2014, CSMI partner agencies will focus their staff, vessels and resources on Lake Erie to better understand sources of nutrients, nutrient cycling, and causes of algal blooms; and to improve modeling of phosphorus dynamics. The results of this and other monitoring by LAMP partners will result in the development, by 2016, of updated offshore Phosphorus Concentration Objectives for Lake Erie, and new nearshore Phosphorus Concentration Objectives and Phosphorus Loading Targets for Lake Erie.

Invasive Species Require Ongoing Vigilance

Non-native invasive species pose a significant and ongoing challenge in the Lake Erie basin. Extensive monitoring and control efforts are being directed at three key invasive species: sea lamprey, Asian carp and *Phragmites*.

The sea lamprey is an eel-like fish native to the Atlantic Ocean that was first reported in Lake Erie in 1921. The Great Lakes Fishery Commission, Fisheries and Oceans Canada (DFO), U.S. Fish and Wildlife Service (USFWS), and U.S. Army Corps of



This 104 cm (41 inch) Grass Carp was caught in the Grand River near Dunnville, Ontario in April 2013. Testing found that it was unable to reproduce. Credit: Ontario Ministry of Natural Resources and Forestry.

Engineers (USACE) implement annual sea lamprey controls that have resulted in a 90% reduction of sea lamprey populations in the Great Lakes.

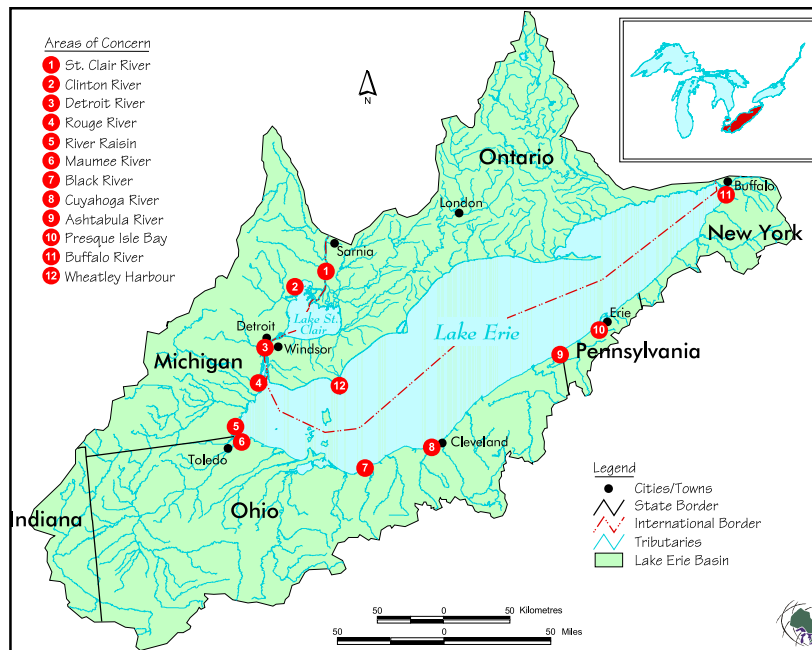
However, current estimates indicate the number of sea lamprey in Lake Erie has increased significantly, which may be due to previously unidentified production in the Detroit and St. Clair Rivers. Asian Carp are currently found in the Mississippi River, but are a threat to invade the Great Lakes. DFO, Ontario Ministry of Natural Resources and Forestry, U.S. Geological Survey, Michigan Department of Natural Resources, USFWS, and USACE have been conducting intensive monitoring to detect the presence of Asian carp in Lake Erie. This includes electrofishing, netting and water sampling.

The non-native common reed (*Phragmites australis*) is the key terrestrial invasive species threatening Lake Erie. This aggressive invasive plant out-competes native wetland plants, and is now very common along the Lake Erie coast and throughout the Huron-Erie Corridor. Binational collaboration will be key to successfully managing its impacts.

LAMP partners will continue to implement monitoring and control efforts for these and other invasive species, as well as projects to restore native habitat and species in the Lake Erie basin. ♦

Watershed Map

Lake Erie naturally functions as three distinct basins: western, central and eastern. Its shoreline includes Point Pelee, the most southerly point in Canada, as well as portions of Ontario and the states of Michigan, Ohio, Pennsylvania and New York. Two of Lake Erie's 12 Areas of Concern have been remediated: Wheatley Harbour in Ontario and Presque Isle Bay in Pennsylvania.



Contact Information

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