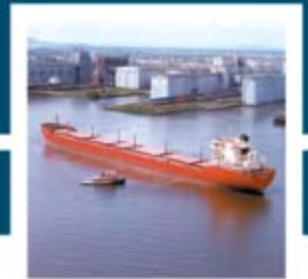


Development of a Nearshore Framework Under the Canada-Ontario Agreement



A.D. Latornell Conservation Symposium
November 18, 2011

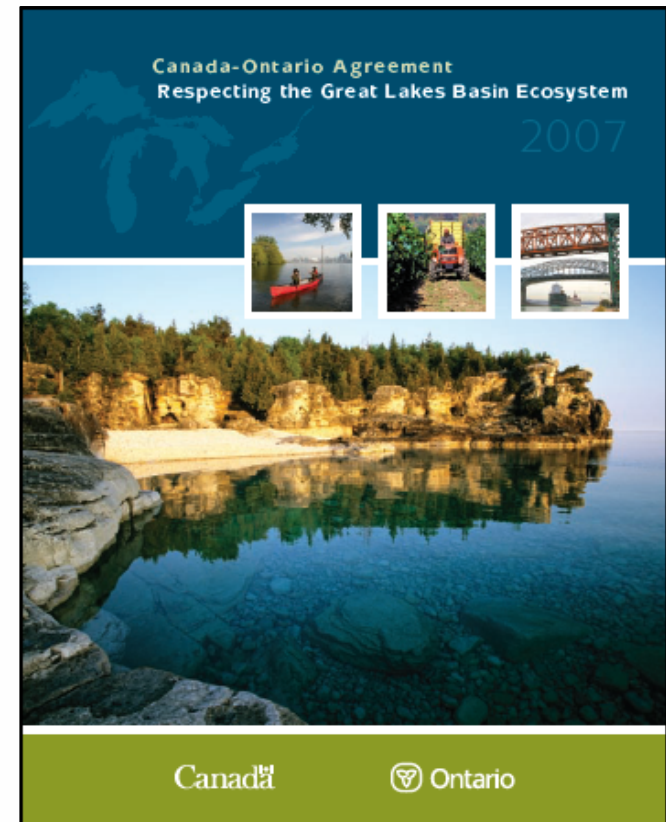
Canada

Ontario

Purpose



- Discussion of commitment in COA
- Highlight issues in the nearshore zone
- Potential focus of a nearshore framework and other considerations in developing a framework
- Some examples of nearshore focused initiatives



Nearshore Commitments



New Commitment for COA Extension Period

- Canada and Ontario will develop options and engage stakeholders and Aboriginal communities on a Canadian framework to assess and protect the aquatic ecosystem health of Great Lakes' nearshore

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

- Revisions expected to strengthen GLWQA on many issues (e.g., recognize of invasive species, climate change impacts, and focus on the “nearshore zone”)

Great Lakes agencies and neighbouring jurisdictions are focusing on phosphorus issues and the problems in the nearshore

- Great Lakes Restoration Initiative Action Plan names nearshore health and non-point source pollution as one of five focal areas (2010)
- Canadian federal budget 2011 announced an additional \$5 million over two years to improve nearshore water and ecosystem health, and better address the presence of phosphorous in the Great Lakes



Western Lake Erie (October 9, 2011)
NOAA Great Lakes MODIS Imagery



Southeast Lake Huron shoreline algae removal
Ministry of the Environment

Current Trends and Evidence of Decline



Continued habitat loss and, with it, lost resilience and decline in aquatic ecosystem health

- Two-thirds of wetlands have been lost in lower lakes – nurseries of the lakes
- Regulation of water levels and flows causing a decline in wetland health
- Increasing development demand on waterfronts and across Great Lakes watersheds

Added pressure from a growing population and changing climate

- Climate change signals present (e.g., less ice cover), adding uncertainty
- Shoreline ecosystem impacts due to the installation of protection works related to development
- Virtually all of Ontario's future population growth slated for the Great Lakes region



Shoreline alteration in Southern Georgian Bay
Google maps



Humber River stormwater plume flowing into Lake Ontario
Toronto and Region Conservation Authority

Current Trends and Evidence of Decline

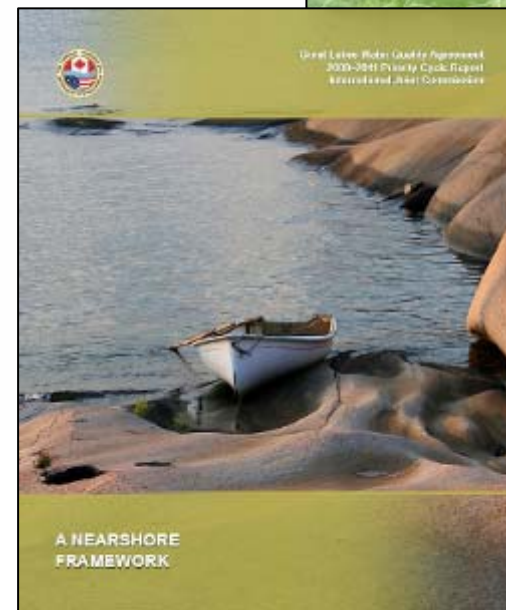
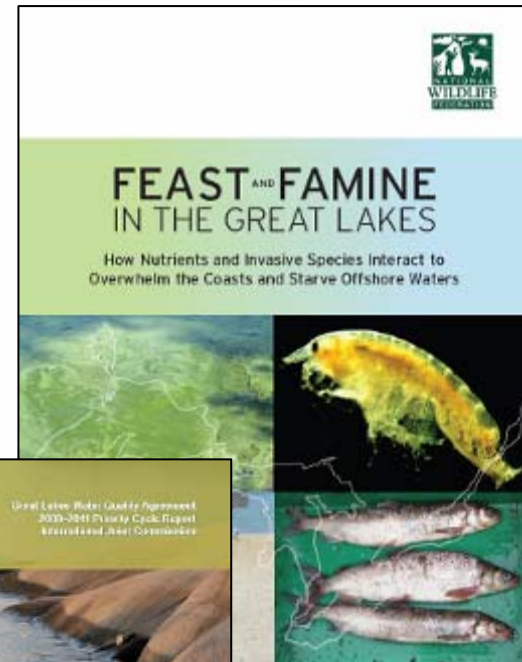


Invasive species driving significant alterations – causing “nearshore shunt”

- Food for lakes species being held in nearshore areas
- Offshore areas being deprived

Symptoms most evident in the nearshore – whole lake ecosystems are impacted

- Include algae fouled beaches, drinking water taste and odour, toxic algae, fish and wildlife pathogen outbreaks, clogging of water intakes and fishing nets
- Resultant costs to communities, industries and utilities



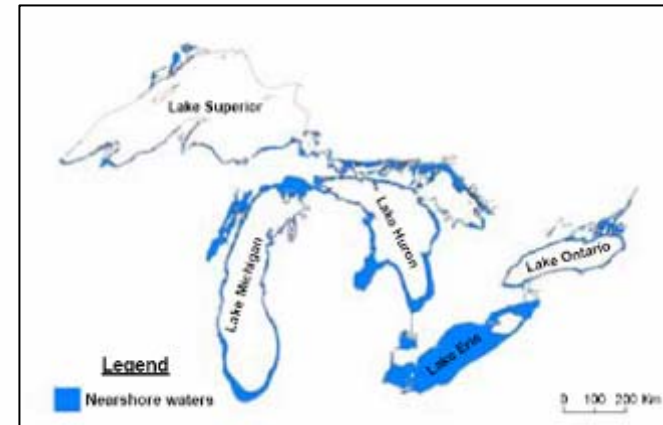
Sources: <http://www.nwf.org/News-and-Magazines/Media-Center/Reports/Archive/2011/Feast-and-Famine-in-the-Great-Lakes.aspx>;
<http://meeting.ijc.org/workgroups/nearshore>

Defining the Nearshore Zone



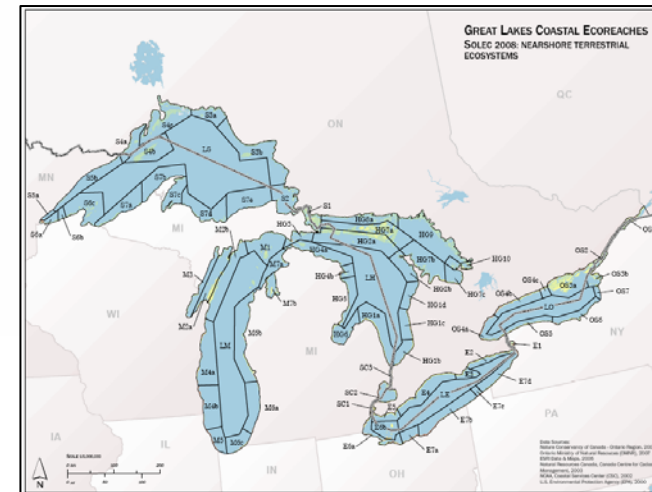
Many different definitions of the “nearshore” and “coastal” zone:

- Nearshore has been defined as beginning at the shoreline and extending offshore to the depth at which warm surface waters reach the lakebed in early fall
- Coastal zone could be defined to include the nearshore zone and embayments, drowned river mouths, coastal wetlands
- The area of nearshore planning and implementation extends into the watersheds



Nearshore waters of the Great Lakes
SOLEC 2008 Background Paper: Nearshore Areas of the Great Lakes 2009

*How do you think the nearshore should be defined?
How do watershed activities get linked with
nearshore initiatives?*



Potential Focus of a Nearshore Framework



Natural Environment

- Biodiversity protection, restoration and conservation
- Invasive species prevention and mitigation
- Land use impacts

Water Quality

- Clean up of contaminated sediment
- Eutrophication, nutrient management
- Reducing harmful pollutants (e.g., update existing targets for priority toxins)

Water Quantity

- Demand for water (water level changes, groundwater, drinking water)
- Protecting and restoring natural hydrological and physical processes
- Protection of public and property from natural hazards

Cross-cutting

- Climate change adaptation (e.g. assessing vulnerabilities, risks)
- Energy issues (wind turbines, hydropower, shale gas)
- Enhanced nearshore science and monitoring to support decision making
- Improving Great Lakes awareness and stewardship
- Maintaining and developing sustainable economic opportunities



Lake Superior shoreline
Ministry of Natural Resources

What are the issues that a nearshore program could consider?

Enhancing Governance Structures and Management Approaches



Binational/ International Arrangements

- Boundary Waters Treaty
- Fishery Agreements
- Great Lakes Water Quality Agreement
- IJC Study Board review of governance/adaptive management
- Lakewide Management Plans
- Remedial Action Plans

Federal Acts and Initiatives

- Canadian Environmental Protection Act
- Fisheries Act
- Canadian Council of Ministers of the Environment

Municipal Role

- Land-use planning decisions
- Official plans
- Own and manage wastewater systems
- Shoreline development

Provincial Acts and Agreements

- Canada-Ontario Agreement
- Conservation Authorities Act
- Emergency Management and Civil Protection Act
- Environmental Protection Act
- Lakes and Rivers Improvement Act
- Municipal Act
- Nutrient Management Act
- Ontario Water Resources Act
- Place-based (Greenbelt, Niagara Escarpment, Oak Ridges Moraine, Lake Simcoe)
- Places to Grow Act
- Planning Act (Provincial Policy Statement)
- Safe Drinking Water Act, Clean Water Act
- Water Opportunities Act

Conservation Authorities

- Flood and erosion control
- Shoreline management plans
- Source Water Protection – Clean Water Act

How should local communities be involved?

Enhancing Governance Structures and Management Approaches



Several management approaches could be considered for implementing a nearshore framework, including:

- Using existing Lakewide Management Plans and strategies (e.g., Lake Erie LaMP Nutrient Management Plan, Biodiversity Conservation Strategies)
- Using existing Conservation Authority watershed management plans (e.g., Grand River Water Management Plan)
- Using existing coastal / watershed partnerships (e.g., Lake Huron Southeast Shores, Southern Georgian Bay Coastal Initiative, Source water Protection)
- Establishing new nearshore/coastal zone partnerships

Do we need a Canadian nearshore framework or should we just work on a binational one?

Are a separate governance structure and science framework needed?

What science tools for nearshore assessment and policy tools for management would you suggest?



Presqu'île Provincial Park
Ministry of the Environment



Cleaning up contaminated sediment near Kingston
Ministry of the Environment

Taking a Priority Area Approach



“Protect the Best” – Focus on areas of excellence that need to be protected

“The Worst Comes First” – Focus on most impaired areas

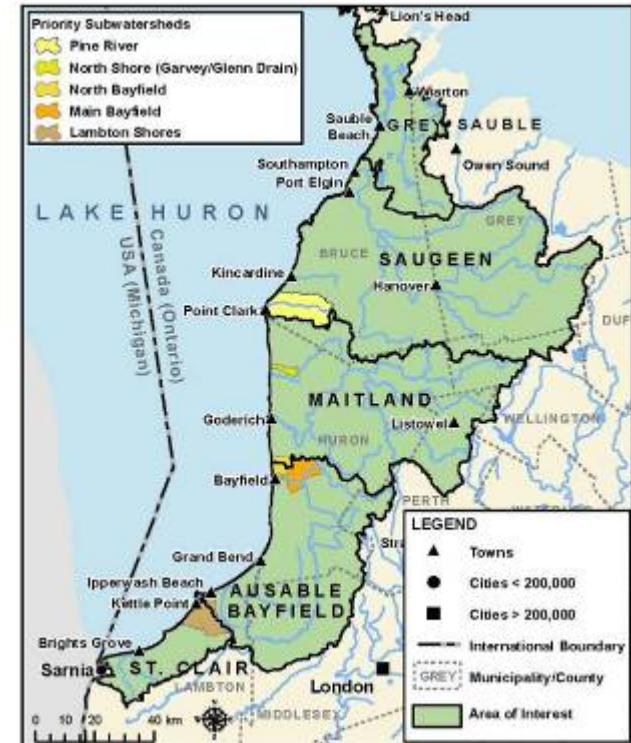


*How do nearshore initiatives get linked into broader lake considerations?
What urgent actions do you think should be taken to improve nearshore health?
Should the approach be balanced between protection and restoration or is one more urgent?*

Healthy Lake Huron



- Canada and Ontario, in partnership with local municipal governments, health units, conservation authorities and local environmental organizations, working together to improve overall water quality along the southeast shores of Lake Huron
- Area has seen an increase in water quality issues, including nuisance algae and beaches posted as being unsafe for swimming
- Focusing on and coordinating actions to lower the amount of phosphorus and reduce incidences of high levels of bacteria (such as *E. coli*) entering the water
- Focusing on five key watersheds as priorities for immediate action

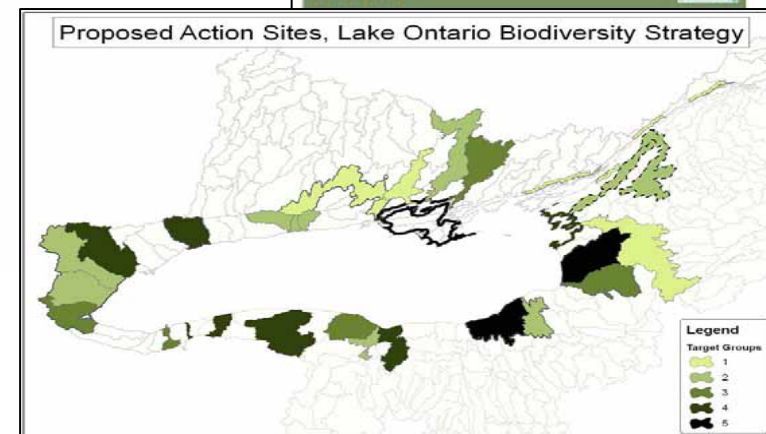
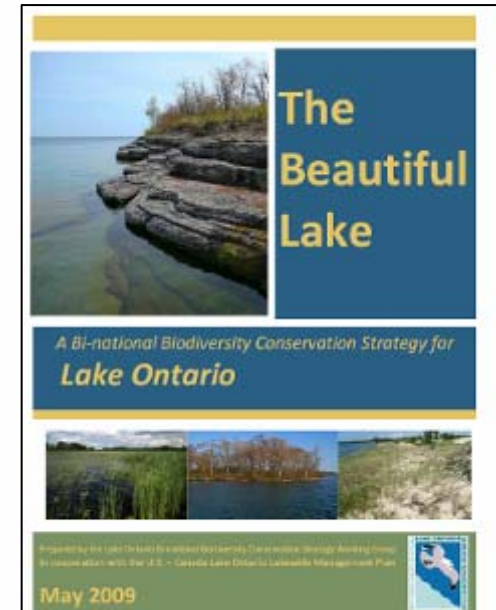


Map of the Southeast Shore Area of Interest
Ministry of the Environment

Lake Biodiversity Conservation Strategies



- Developed for Lakes Huron and Ontario; under development for Lake Erie
- Focus on the conservation of the native biodiversity
- Key biodiversity features assessed include coastal wetlands and nearshore zones
 - e.g., in Lake Ontario, wetlands, nearshore, coastal terrestrial and tributaries have high biodiversity values and are in relatively good condition
- Identify necessary actions to protect and restore biodiversity



Lake Erie Nutrient Management Strategy



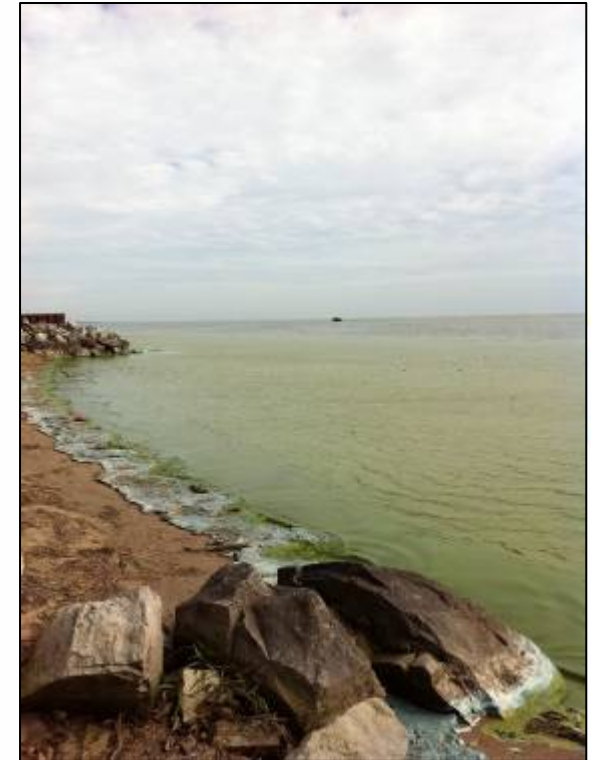
In recent years, Lake Erie has experienced the recurrence of harmful algal blooms and eutrophic problems not seen for decades

The Nutrient Management Strategy is a coordinated and strategic binational response by the partners in the Lake Erie Lakewide Management Plan (LaMP)

It summarizes the major issues and outlines nutrient management objectives and targets

Management Strategy Objectives:

- Stop further degradation
- Conserve and protect waters that meet nutrient targets
- Restore waters that don't meet nutrient targets
- Monitor and report on status of nutrients against targets and progress of domestic actions



Palmyra shoreline, Lake Erie, October 8, 2011
Essex Region Conservation Authority

What other existing nearshore/coastal initiatives should be considered?

Nearshore Framework – a recap



- How do you think the nearshore should be defined?
- How do watershed activities get linked with nearshore initiatives?
- What are the issues that a nearshore program could consider?
- How should local communities be involved?
- Do we need a Canadian nearshore framework or should we just work on a binational one?
- Are a separate governance structure and science framework needed?
- What science tools for nearshore assessment and policy tools for management would you suggest?
- How do nearshore initiatives get linked into broader lake considerations?
- What urgent actions do you think should be taken to improve nearshore health?
- Should the approach be balanced between protection and restoration or is one more urgent?
- What other existing nearshore/coastal initiatives should be considered?
- What indicators can efficiently, economically, and effectively measure nearshore health?



An aerial photograph of the Great Lakes basin, showing the five Great Lakes (Superior, Michigan, Huron, Erie, and Ontario) and the surrounding land. The water is a deep blue-green color, and the land is a mix of brown and green. Two website URLs are overlaid in white text on the image.

www.ontario.ca/healthygreatlakes

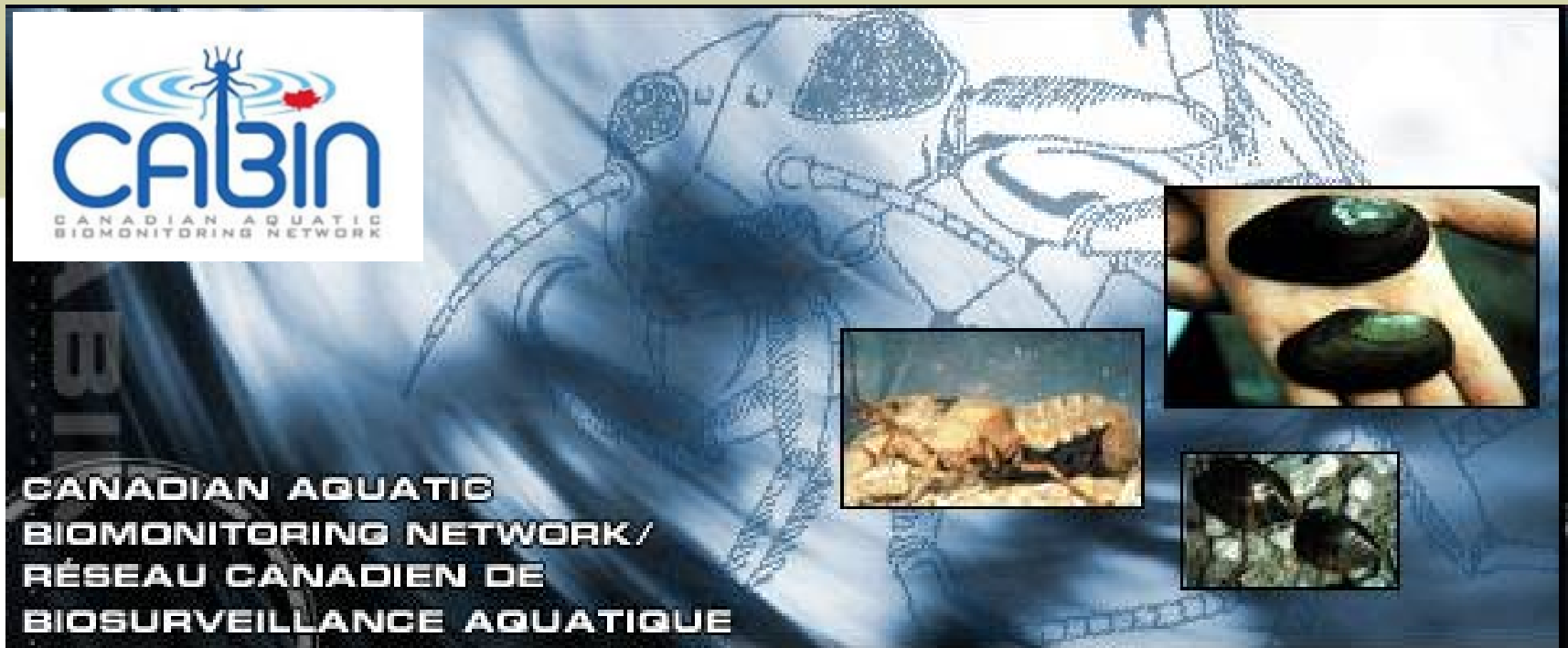
www.ec.gc.ca/grandslacs-greatlakes

Additional Information



- Canadian Aquatic Biomonitoring Network (CABIN)
- Great Lakes Environmental Indicators



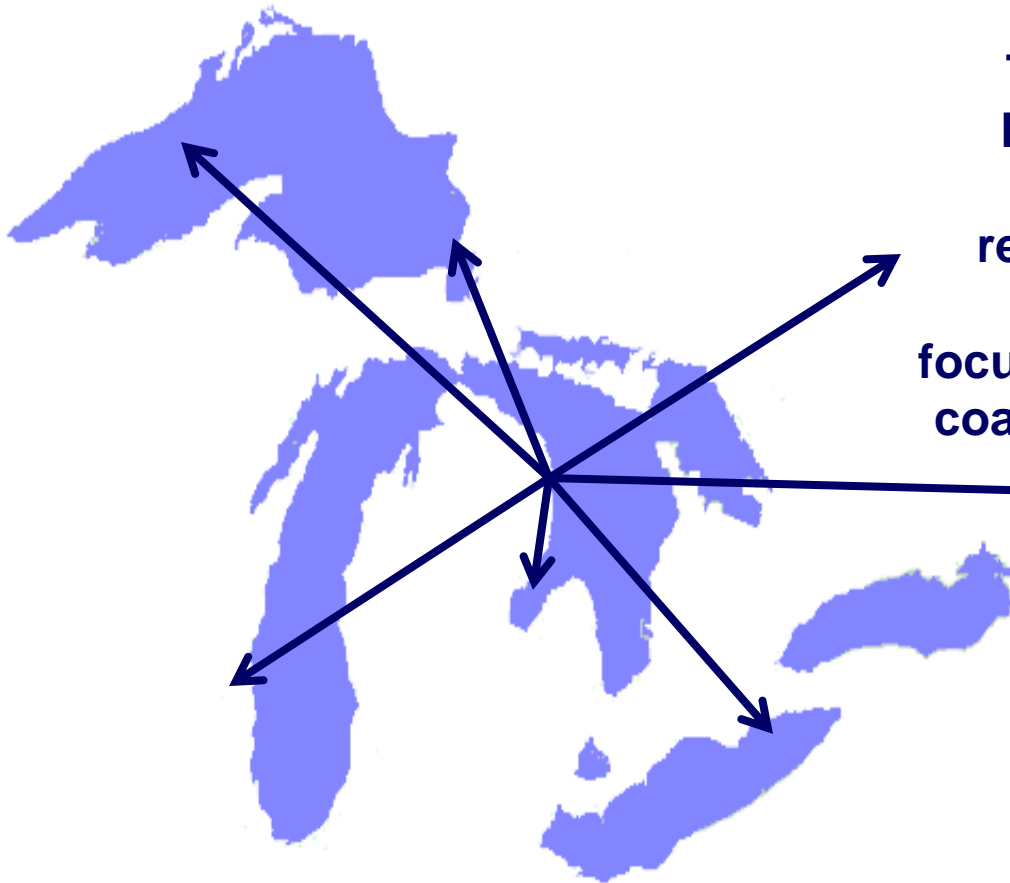


**CANADIAN AQUATIC
BIOMONITORING NETWORK /
RÉSEAU CANADIEN DE
BIOSURVEILLANCE AQUATIQUE**

“CABIN is a collaborative program developed and maintained by Environment Canada to establish a network of reference sites available to all users interested in assessing the biological health of fresh water in Canada”.

<http://cabin.cciw.ca>

Great Lakes Environmental Indicators



The Great Lakes Environmental Indicator project is a bi-national multidisciplinary cooperative research effort for developing an integrated set of indicators focusing on human stresses on the coastal margins of all Great Lakes.

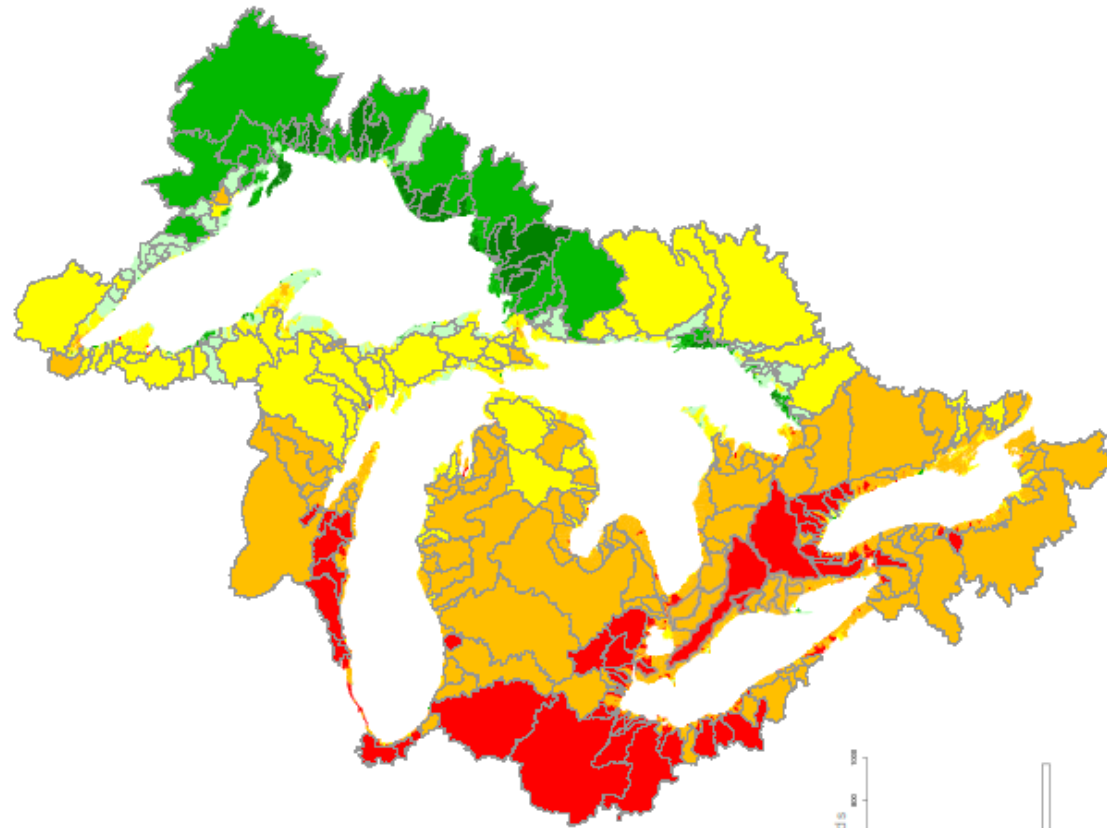


Led by the Natural Resources Research Institute at the University of Minnesota Duluth

<http://glei.nrri.umn.edu>

What indicators can efficiently, economically, and effectively measure nearshore health?

Great Lakes Environmental Indicators



100 km

