



International
Joint
Commission

United States
and
Canada

"Fresh Perspectives: IAGLR 2001 Survey of Emerging Research Priorities at the 44th Annual International Conference"

The [Council of Great Lakes Research Managers \(CGLRM\)](#) is responsible for advising the International Joint Commission about emerging research needs related to the Great Lakes ecosystem and the [Great Lakes Water Quality Agreement](#). To carry out this task, the Council seeks opportunities to work in partnership with other organizations and gather input from a broad cross-section of experts from all over the Great Lakes region. The [International Association for Great Lakes Research \(IAGLR\)](#) 44th Annual International Conference, hosted by the University of Wisconsin at Green Bay in conjunction with the University of Wisconsin Sea Grant Institute provided the Council of Great Lakes Research Managers with an outstanding opportunity to gather valuable input about emerging issues and research needs. The Council sponsored a comprehensive survey conducted by Student Travel Scholars. The students gathered input from the conference sessions and their observations were compiled and summarized under the direction of the IAGLR project leader, Dr. Chow-Fraser, past president of IAGLR. This initiative provided an effective means for the CGLRM to improve its advice to the IJC, helped to promote research and communication, and also helped to nurture future Great Lakes scientists. Council members reviewed the resulting 47 page document and extracted the emerging issues and research needs described below. To review the reference document, click [here](#).

Findings, emerging issues and research needs highlighted at the IAGLR 44th Annual International Conference

Climate Change - Solid data shows that water in the Great Lakes region is warming. Observed biological changes are clearly correlated with warming. Water levels are expected to decrease sharply and primary production is expected to decline 10-20% in the next 100 years. This would have major effects on fisheries, wetlands, and other areas. We need research to understand the mechanisms of global warming, to develop solutions, to predict the impacts of lower water levels on coastal habitats, and to predict the impacts of warming on communities and ecosystems. ([Evidence and](#)

[Modeling of Climate-Driven Global Change in the Great Lakes](#)”, Session Summary Pg 1.)

Resource Management – Research must be done to determine the effects of recovering species (e.g., cormorants) on native/ desirable species (e.g., yellow perch, smallmouth bass) and how to set management actions to control these changes. ([“Lake Michigan Yellow Perch--On the Road to Recovery?, Lake Huron Fish Community and Environmental Objectives.”](#) Session Summary Pgs 7, 12)

Food Web Dynamics - There is a continuing need to examine relationships among exotic species introductions, food web changes/dynamics, and contaminant dynamics. Specific suggestions were to:

1. improve methods for assessing *Dreissena* distribution and biomass,
2. conduct long term monitoring of the Great Lakes benthic community,
3. improve methods for understanding trophic web interactions (diet, stable isotope, and bioenergetics studies),
4. determine why *Diporeia* crashed and implications for ecosystem,
5. determine the impact of round goby on food web dynamics, and estimate changes in contaminant fate and transport in light of changing trophic dynamics.

([“Food Webs and Fisheries in the GL”](#), Session Summary Pgs 17, 18).

Plankton and Phosphorus cycling - Dreissenid mussels are clearing Great Lakes water, dissolved organic matter is decreasing, and UV radiation penetration is increasing. Bacteria appear to be more susceptible to UV damage than phytoplankton. If phytoplankton become affected, phosphorus cycling may be affected. Research is needed to investigate the consequences of these changes in the Great Lakes ecosystem. ([“Plankton in the GL”](#), Session Summary pg 23)

Changing Evolutionary Fitness - How will the evolutionary fitness of Great Lakes species change as a result of climate change, changes in nutrient and food web dynamics, over fishing, and other stressors? Preliminary indications suggest that Great Lakes species are very vulnerable given the special conditions of their existence in the lakes (founder effects/population bottlenecks, young ecosystems with stable conditions, low diversity = lack of competition). Research is required to help predict which species are most vulnerable to environmental change. ([“Fitness of Fish Populations in Large Lakes of the World”](#), Session Summary pgs 30-32)

Economic Value of Environmental Resources - Research is needed to assign realistic monetary values to environmental resources, problems and damage. Public

education must follow to demonstrate why it is cost effective to invest funds in pollution prevention and cleanup efforts. ([“Economic, Social and Education Issues in the Great Lakes”, Session Summary pg 35](#))

Emerging Chemicals of Concern - Many chemicals are emerging as potential health threats for wildlife and humans (e.g., PBDEs, polybrominated diphenyl ethers; PBBs, polybrominated diphenyls; PCNs, polychlorinated naphthalenes; C10-C13 polychlorinated alkanes; new pesticides and other agriceuticals; and pharmaceuticals, health care products, etc.). Research is needed on their fate and transport in ecosystems and their effects on biota, including humans. ([“Beyond PCBs--Emerging Organic Chemicals of Concern in the Great Lakes” Session Summary Pg 36](#))

Habitat Fragmentation - Research is needed to understand the impacts of human activities, via habitat fragmentation, on animals and plants in the Great Lakes basin and its watersheds. Appropriate management actions must then be taken to maintain or restore sufficient contiguous patches of habitat to support non-edge species. ([“Birds, Habitat and Landscapes in the GL Basin”, Session Summary Pg 41](#))