

An International Conference

# Ecology of Lake Superior: Integrated Approaches & Challenges in the 21st Century

Duluth, MN  
May 3-5, 2010

Co-chairs  
J.R. Kelly  
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Organized by



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Lake Superior Binational Program  
Great Lakes Regional Research Information Network

## Context

Lake Superior is the king of freshwater lakes, being the largest lake in the world on an areal basis, with a cold, stenothermic, ultra-oligotrophic ecosystem that is generally still perceived to be pristine. Due to its special nature and unique beauty, it would seem logical to expect wide-spread interest and attention for research on the lake. However, this is not the case based on the published literature. Compilation and syntheses of studies concerning the ecology of Lake Superior exist, but are limited compared to the other Laurentian Great Lakes (JGLR, 1978; JGLR, 2004; AEHM, 2004; Munawar & Munawar, 2008)<sup>1</sup>.

Within the last decade there have been substantive new efforts to study and monitor the lake. There have been binational comprehensive surveys (Lake-wide); studies on coastal and nearshore areas and their interactions with the adjacent landscape; application and testing of new monitoring technologies to better characterize the lake; new investigations of physical dynamics and of carbon/nutrient cycling; and studies that have discovered new invasive species. Furthermore, modeling/syntheses on select topics are in progress. All these multifarious investigations show that there have been some pronounced ecosystem changes in the last few decades as indicated by physical (temperature), biogeochemical (nitrate), and biological components (lower food web, fisheries, and exotic species). Recent efforts provide new information bases and perspectives from which to assess conditions within this understudied lake. Overall, the time is ripe to develop a more integrated picture of the ecology of the lake and to assess the challenges this majestic body of water faces in the 21<sup>st</sup> century.



## Background Questions

- How well do we know the present status and ecological dynamics of Lake Superior?
- Can we integrate understanding of the lake and its interaction with the basin and atmosphere more comprehensively?
- What does our present knowledge portend for the lake's future into the 21<sup>st</sup> century?
- Can we identify important information gaps that could be filled by research and monitoring?
- What emerging tools and approaches will best facilitate an integrated, multi-disciplinary assessment in Lake Superior and function as an international model?
- Are there useful lessons and comparisons of Lake Superior with other Great Lakes of the World?

## Objectives of the conference

- Develop understanding of Lake Superior's ecology, including its internal limnological dynamics.
- Explore the lake's interactions with the basin, air shed, and regional climatology.
- Create a state-of-the-lake perspective from a variety of information.
- Overview recent study results that can provide insights enabling integration and synthesis at several levels, such as:
  - ~ from water quality/biogeochemical cycles to effects on food webs and fisheries;
  - ~ from basin/air shed trends to their influences on physical limnology and biology;
  - ~ across spatial scales and habitats within the lake, such as linking coastal processes with offshore ecology or surface water dynamics with deep water ecology; and
  - ~ across temporal scales from seasons to decades or longer.

<sup>1</sup> J. Great Lakes Res., 1978. Special Section on Limnology of Lake Superior. 4(3-4).

J. Great Lakes Res., 2004. Lake Superior. 30(sup1).

Aquat. Ecosys. Health Mgmt., 2004. Emerging Issues in Lake Superior Research. 7(4).

Munawar, M., Munawar, I.F., 2008. *State of Lake Superior*. Aquatic Ecosystem Health and Management Society, Burlington, Canada.

- Consider current and future threats to the ecology of the lake, including climate change and exotic species.
- Publish individual and topical summary manuscripts in special issue(s) of *Aquatic Ecosystem Health & Management* and/or a synthesized book under the *Ecovision World Monograph Series*.

Researchers, students and managers are cordially invited to submit presentations for the conference, participate fully in discussions on the Ecology of Lake Superior, and are encouraged to publish papers for consideration in the above peer-reviewed international publications

## ***Venue***

The conference will be held at the Gitchee Gumee Conference Center of the US EPA in Duluth, Minnesota.

## ***Response Questionnaire***

Please complete the enclosed Questionnaire and return by **January 6<sup>th</sup>, 2010 (extended deadline)** to Jennifer Lorimer (jennifer.lorimer@dfo-mpo.gc.ca). Conference/registration information will be sent to only those who complete and return the response questionnaire.

## ***Abstracts***

Abstracts must be submitted by email to: jennifer.lorimer@dfo-mpo.gc.ca, as a Word or text file. The due date for abstract submission is **February 5<sup>th</sup>, 2010**. The author must indicate if he/she wishes to present the abstract orally or as a poster. Underline the presenting author and include affiliation, address and email of the presenting author only. Abstracts will be limited to 300 words in the following format: Text – single space Times New Roman 12 pt, Paper - letter size 21.6x28 cm (8.5x11”). An example abstract is available at [www.aehms.org](http://www.aehms.org) demonstrating abstract format. Any abstracts over the word limit will be returned to the author. Abstracts should synthesize from the objectives, methods, results, and conclusions of the paper. Receipt of the registration fee is essential for inclusion of your accepted presentation into the program. The book of abstracts will act as the proceedings of the conference.

## ***AEHMS Publication Plans***

The Publication and Production Committee of the AEHMS, chaired by Dr. M. Munawar, Chief Editor, will oversee the publication of selected manuscripts originating from the conference. The manuscripts will be considered for publication subject to peer review in the ISI rated journal: *Aquatic Ecosystem Health and Management* and/or in the *Ecovision World Monograph Series* depending on the quality and suitability of the manuscripts. Instructions to authors on the preparation of manuscripts can be found on the AEHMS website: [www.aehms.org](http://www.aehms.org). Due to the large number of manuscripts expected the AEHMS has set page limit guidelines as follows: Keynote: 8; Oral & Poster: 5 printed pages including tables and figures (Text: Times New Roman 11 pt, Margins: 2.7 cm (1”), Paper: letter size 21.6x28 cm (8.5x11”). For more information please contact Dr. M. Munawar, Chief Editor (mohi.munawar@dfo-mpo.gc.ca).



## ***Conference Organization***

### ***Conference Co-chairs:***

J. R. Kelly (U.S.A) and M. Munawar (Canada)

### ***Conference Organizing Committee:***

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