6th Biennial

State of the Lakes Ecosystem Conference

October 6th - 8th, 2004
Toronto, Ontario

CONFERENCE PROGRAM

Greetings from the SOLEC 2004 Conference Co-Chairs

Paul Horvatin and Harvey Shear

Welcome to the 6th Biennial State of the Great Lakes Ecosystem Conference (SOLEC), sponsored by the Governments of Canada and the United States. Our conferences are designed to be interactive, to maximize delegate discussion and scientific feedback, and to provide insight into emerging trends.

This year, SOLEC will present a comprehensive assessment on the state of health of the Great Lakes Basin Ecosystem based on the assessments provided from 56 indicators. The assessments are now based on "bundles" of indicators. This new approach is the result of two Peer Reviews held over the past two years and should help to further refine our reporting format and content.

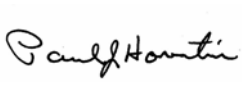
Based on recommendations from SOLEC attendees in 2002, we are presenting you with the DRAFT ***State of the Great Lakes 2005*** report, some 10 months ahead of when we have usually released it. This has meant a lot of extra work for authors and for the SOLEC team, but we hope that this draft aids you in your deliberations. After listening to all the presentations, we invite you to review this work, and enhance the findings with your insight and knowledge. We welcome your input to the draft after SOLEC, and expect to have a final ***State of the Great Lakes 2005*** report available in early 2005.

Following the work presented at SOLEC 2002 on Biological Integrity, we are providing an assessment of the indicator bundles related to Biological Integrity. The theme of SOLEC 2004 is Physical Integrity, and most of the Lake and River presentations on the second day of SOLEC will focus on the physical component of the ecosystem.

An intriguing and though-provoking presentation on the Ecological Footprint of the Great Lakes basin will kick start the conference and we are looking forward to your response to this way of presenting the Great Lakes information. You will also find indicator reports on forestry and groundwater, something that was proposed at the last SOLEC.

Your participation in SOLEC 2004 represents an important contribution to our efforts to meet the goals of the Great Lakes Water Quality Agreement. We look forward to working with you over the next two and a half days.

Sincerely,



Harvey Shear
Co-Chair
Environment Canada

Paul Horvatin
Co-Chair
U.S. Environmental Protection Agency

Definition of Physical Integrity:

Physical Integrity is the ability to maintain a balanced, integrated, and adaptive system capable of sustaining all components and interactions (structure and function) in an organized manner.

EXTRA! EXTRA!

TORONTO HARBOUR BOAT TOUR

On Tuesday, October 5th, 2004, we were pleased to offer SOLEC 2004 delegates a boat tour of Toronto Harbour including visits to restoration sites and spectacular views of Toronto. We thank the City of Toronto and the Toronto and Region Conservation Authority for their assistance in organizing this tour.

JOINT GREAT LAKES COMMISSION~SOLEC RECEPTION

As has become a SOLEC tradition, on Tuesday evening, October 5th, we held a joint reception with the Great Lakes Commission, as they concluded their annual general meeting. Thanks to GLC for providing the liquid refreshments.

DISPLAYS

Be sure to visit Mountbatten Lane and the Baker Room to see the selection of displays related to Great Lakes issues and programs. Displays can be viewed any time between 7:30 am and 5:30 pm October 6th and 7th, and from 7:30 am to 12:00 pm October 8th.

THANK YOU TO THE CITY OF TORONTO AND TORONTO AND REGION CONSERVATION AUTHORITY (TRCA)

A special thank you is extended to the staff from the City of Toronto and the TRCA who have been so very helpful in planning and delivering SOLEC 2004. Please be sure to have a look at their displays and materials available for you in our display area.

TORONTO

TORONTO AND REGION Conservation for The Living City

WE WANT TO HEAR FROM YOU!!

Please complete your evaluation form and return it to the registration desk. Your input is valuable to us – it allows the SOLEC organizers to continually improve the conference and the products.

DAY 1: WEDNESDAY OCTOBER 6, 2004

7:30 am	**CONTINENTAL BREAKFAST – Mountbatten Salon**
9 am - 12 pm	**MORNING PLENARY – Churchill Ballroom**
9:00 am	**Native Greetings** Grafton Antone, *Elder, Oneida Nation of the Thames*
9:10 am	**Welcome and Introductions** MC: John Andersen, *Great Lakes Program Director, The Nature Conservancy* Pradeep Kharé, *Regional Director General, Environment Canada – Ontario Region* Joe Pantalone, *Deputy Mayor, City of Toronto*
	Overview of SOLEC 2004 Gary Gulezian, *Director, Great Lakes National Program Office, U.S. Environmental Protection Agency*
9:30 am	**Ecological Footprint and Human Drivers** William E. Rees, *Professor and Director, School of Community and Regional Planning, University of British Columbia*
9:50 am	**Human Oriented Issues** Lori Boughton, *Chief, Office of the Great Lakes, Pennsylvania Department of Environmental Quality*
10:20 am	**BREAK**
10:50 am	**Natural Resources and Biological Integrity** Douglas Dodge, *CEO, Stream Benders*
11:20 am	**Coastal Wetlands** Joel Ingram, *Wetland Biologist, Environment Canada* Tom Burton, *Professor, Departments of Zoology and Fisheries and Wildlife, Michigan State University*
11:50 am	**Summary and Charge to Participants** – John Andersen
12 pm	**LUNCH – Mountbatten Salon**
INFORMATIONAL SESSIONS (optional) – both sessions end at 1:50 pm	
12:45 pm	**Q & A Session on the *Ecological Footprint*** with William Rees – Churchill Ballroom
1:00 pm	**Introduction to Indicators –** *a primer on indicators* – Rosetti B Room Paul Bertram, *U.S. Environmental Protection Agency*
2 - 5 pm	**AFTERNOON DISCUSSION SESSIONS – Rooms to be Announced**
	Contaminants
	Biotic Communities (including Invasive Species)
	Habitats (including Climate Change)
	Coastal Wetlands
	Groundwater
	Land Use – Land Cover
	Human Health
	Resource Utilization
5:00 pm	**Adjourn**
RECEPTION & DINNER – Churchill Ballroom	
6:00 pm	**Cash Bar Opens** – Churchill Court
7:00 pm	**Dinner** MC: Dale Phenicie, *representing the Council of Great Lakes Industries* **Success Stories Awarded by:** Roger Marsham, *Consul General, Canadian Consulate General in Buffalo* Jessica LeCroy (invited), *Consul General of the United States of America* **Keynote Speaker –** Mayor David Miller, *City of Toronto*

DAY 2: THURSDAY OCTOBER 7, 2004

7:30 am	**CONTINENTAL BREAKFAST – Mountbatten Salon**	
9 am – 12 pm	**MORNING PLENARY – Churchill Ballroom**	
9:00 am	**Welcome and Introductions plus Highlights from Day 1**	
	MC: Chris Goddard, *Executive Secretary, Great Lakes Fishery Commission*	
	Ecosystem Status Reports: Lakes and Connecting Channels Presentations	
9:10 am	**Lake Superior**	Stephen Schlobohm, *U.S. Forest Service*
9:25 am	**Lake Michigan**	Norman Grannemann, *U.S. Geological Survey*
9:40 am	**Lake Huron**	Leon Carl, *U.S. Geological Survey*
9:55 am	**St. Clair River–Lake St. Clair–Detroit River Ecosystem**	Ted Briggs, *Ontario Ministry of the Environment*
10:10 am	**BREAK**	
10:40 am	**Lake Erie**	Sandra George, *Environment Canada*
10:55 am	**Lake Erie Fishery**	Phil Ryan, *Ontario Ministry of Natural Resources*
11:10 am	**Lake Ontario**	Rimi Kalinauskas, *Environment Canada*
11:25 am	**Lake Ontario Fishery**	Bruce Morrison, *Ontario Ministry of Natural Resources*
11:40 am	**St. Lawrence River**	Serge Villeneuve, *Environment Canada*
11:55 am	**Native Ceremony**	Grafton Antone, *Oneida Nation of the Thames*
12 pm	**LUNCH – Mountbatten Salon**	
2 – 5 pm	**AFTERNOON WORKSHOPS – Rooms to be announced**	
	Lake Superior	
	Lake Michigan	
	Lake Huron	
	Lake Erie	
	Lake Ontario	
5:00 pm	**Adjourn**	

DAY 3: FRIDAY OCTOBER 8, 2004

7:30 am	**CONTINENTAL BREAKFAST – Mountbatten Salon**
9 am – 12 pm	**MORNING WORKSHOPS – Rooms to be announced**
	Concurrent Workshops
	1. The Chemical Integrity of the Great Lakes
	2. Recent Advances in Monitoring Science and Index Development
	3. Monitoring Coordination and Information Management
	4. Impact of Urbanization on Great Lakes Water Quality
	5. Review of the Great Lakes Water Quality Agreement (GLWQA)
	6. Stormwater Management – New and Emerging Approaches
	7. Great Lakes Beaches
	8. Reporting Indicators at a Watershed Level
	9. Status of Great Lakes Islands Conservation and Development of Indicators
	10. Human Health in the Great Lakes
	11. Climate Change
12 pm	**Adjourn**

Day 1 Highlights

Day 1 of SOLEC 2004 begins with a presentation by Prof. William Rees of the University of British Columbia. He is one of the originators of the Ecological Footprint analysis. This tool allows us to calculate the impact that we are having on the planet.

Then we will present assessments of the 56 indicators for which we were able to prepare reports. These indicators have been arranged into 9 "bundles" and the assessments are based on those bundles. This is a major component of the draft State of the Great Lakes 2005 report.

Following lunch, there will be an opportunity for attendees to discuss the Ecological Footprint with Prof. Rees before the afternoon discussion sessions begin. Also, at the same time, Dr. Paul Bertram will discuss indicators and the process that lead to the development of the Great Lakes suite of indicators.

Come and participate in the **Discussion Sessions** that begin at 2 pm. The **Contaminants**, **Biotic Communities** (with Invasive Species), **Habitats** (with Climate Change), **Land Use-Land Cover** and **Resource Utilization** sessions will look at the indicator assessments, the overall bundle assessments (where applicable) and management implications arising from the indicator information. The following three sessions will focus more specifically on indicators:
Groundwater – there are four indicators of groundwater quantity and quality. During this session, hydrogeological issues related to these indicators will be addressed by binational experts and will be illustrated by recent case studies and monitoring programs from throughout the basin.
Coastal Wetlands – the Great Lakes Coastal Wetlands Consortium will take the opportunity to present and discuss the progress being made on reporting on the wetlands indicators.
Human Health – in addition to the facilitated discussion topics listed above, this session will include a presentation by Dr. Donald Cole, Dept. of Public Health Sciences, Faculty of Medicine, University of Toronto, on a sport-fish eaters mercury study.

SOLEC Success Story Awards Dinner With Guest Speaker

Join us Wednesday evening October 6 for a celebration of the SOLEC 2004 Success Story Awards in the Churchill Room. A cash bar will be available at 6:00 pm. Dinner will be served at 7:00 pm followed by the Awards presentations.

Congratulations to this year's recipients:
Junction Creek Stewardship Committee – for their citizen participation work in environmental restoration activities
DTE Energy, Monroe Power Plant – for their work on Lake Sturgeon habitat and education project
Michigan Dune Alliance – for their work on protection of dune and aquatic ecosystems on the east shore of Lake Michigan
The Lake Huron Centre for Coastal Conservation – for their work on Dune Ecosystem Stewardship / Management along the Lake Huron shoreline
ISG-Burns Harbor; Ispat Inland Inc. Indiana Harbor Works; and U.S. Steel Gary Works – for their work on the Mercury Pollution Prevention Initiative

Don't miss the Success Story displays in Mountbatten Court

Our special guest speaker following the Awards presentations will be the Honourable David Miller, Mayor of Toronto

Day 2 Workshops: Focus on Individual Lakes

- **Lake Superior: Land Use Change**
  Changes in land use can precede deleterious changes in water quality, air quality, and the status of fish and wildlife populations and their habitats. This breakout session will discuss the need for the tracking and monitoring of land use change, appropriate land use indicators for the Lake Superior basin, discussion of methods, and available data. It will include a panel discussion led by a group of land use experts including representatives from the U.S. Forest Service, the Canadian Centre for Remote Sensing, The Nature Conservancy and the Natural Resources Research Institute.

- **Lake Michigan: Stresses to the Ecosystem**
  Lake Michigan differs from the coastal areas to the open water. Of the 33 watersheds that feed the lake, all but 3 are listed for some impairment. While the open water quality is good, the aquatic food web shows signs of the impairments found in the coastal areas and tributaries. This session will explore these complex interactions and origins of the stress, plans for year 2005 intensive monitoring and the results of recent Wetland Consortium work on the lake's coastal wetlands

- **Lake Huron: Intensive Monitoring in 2007**
  The Lake Huron Binational Partnership will host this breakout session on "Intensive Monitoring in 2007". The session will begin with an overview of the unique resources and places in the Lake Huron watershed. A kick-off discussion on monitoring and research priorities to pursue in 2007 will follow. This discussion will ultimately help to shape the Partnership's monitoring effort. Agency professionals, researchers, Lake Huron enthusiasts and others interested in the protection and management of Lake Huron are encouraged to participate.

- **Lake Erie: Linking Land and Lake**
  Stressors to Lake Erie's natural ecosystem include the impacts of changing land use, shoreline alteration, nutrient loading, chemical contamination and exotic invasive species. These factors have direct impacts on habitat quality and food web dynamics. This breakout session will address these and other stressors, with a particular emphasis on land use and the potentially detrimental effects of land use change.

- **Lake Ontario**
  Part 1: Re-evaluating the impairment status of Fisheries (2:00-3:00)
  In the first part of this breakout session, discussion will focus on non-native species, which have severely disrupted Lake Ontario's aquatic foodweb since the LaMP made its initial beneficial use impairment determination a decade ago. Lake Ontario fishery managers and LaMP staff will lead the discussion about this and other stressors impacting Lake Ontario's fisheries and proposed changes to the LaMP's list of beneficial use impairments.
  Part 2: Minimizing Impacts of Lake Level Controls on Nearshore Habitats (3:15 - 4:45)
  In the second part of this breakout session, discussion will focus on minimizing impacts of lake level controls on nearshore habitats, including coastal wetlands. The International Lake Ontario-St. Lawrence River Water Level Study is currently in year 4 of a major 5 year study evaluating the possibility of changing the current water level control plan in order to consider a broader range of factors including environmental and recreational factors. Members of the IJC Reference Study and LaMP staff will lead a discussion on the work underway to evaluate a variety of potential changes to the current lake level control plan and how to best monitor the ecosystem's response to any future changes.

Day 3 Workshops: Cross-Cutting Issues

1. Planning For SOLEC 2006 – The Chemical Integrity of the Great Lakes (An Interactive Panel Discussion)

The purpose of this session is to facilitate planning for SOLEC 2006, which will focus on the chemical integrity of the Great Lakes. This will consider the state of the science on chemical integrity, the relationship between chemical, biological and physical integrity, and what research is being done or is planned.

2. Recent Advances in Monitoring Science and Index Development (Four 20-min presentations, followed by a one-hour facilitated plenary discussion)

This workshop is for managers and practitioners to discuss emerging research results that will substantially forward ecosystem assessment and environmental reporting. Experts will present new sampling designs and indicators for coastal ecosystems from the Great Lakes Wetland Consortium, the Great Lakes Environmental Indicators Program, the CCME Water Quality Index, and the Canadian Biodiversity Index.

3. Monitoring Coordination and Information Management

Monitoring and reporting on the integrity of the Great Lakes ecosystem require the involvement of multiple agencies/organizations on both sides of the border. This, in turn, necessitates binational coordination of monitoring activities and integration of the resultant information. To this end, the Binational Executive Committee has launched the Great Lakes Monitoring Inventory on www.binational.net,, and has adopted a basinwide rotational cycle for cooperative monitoring to address key information needs identified by the Lakewide Management Plans and SOLEC. As well, various information management initiatives (e.g., GLOS, COA Annex 4, GLENDA) are underway in Canada and the United States to facilitate access and sharing of Great Lakes data. This workshop will discuss the status and possible means of integrating these initiatives.

4. Impact of Urbanization on Great Lakes Water Quality

Extensive urbanization in the Great Lakes basin is degrading surface and ground water quality, and requires the application of new principles, practices and technologies to address the challenges of urban land and water management. The challenges include such obstacles as inadequate and/or improperly sited infrastructure, institutional limitations, and behavioral barriers. The workshop participants will discuss SOLEC land use indicators as well as, binational policy and program implications of water quality impacts of urbanization in the basin. An overview of the IJC 2003-05 Priority on the impact of urbanization on Great Lakes water quality as well as recent IJC SAB findings, recommendations, innovative ideas and new opportunities will be provided.

5. Review of the Great Lakes Water Quality Agreement (GLWQA)

The GLWQA between Canada and the United States is reviewed by the two governments every 6 years. The next review is scheduled for this fall (2004). As part of a review of the Agreement, the monitoring components and the development and implementation of ecosystem health indicators will be examined. This workshop will discuss the adequacy of present monitoring and indicator development, and will seek advice on improvements that can be made to both aspects of the Agreement. The output of this workshop will be used as input to the broader review by the governments.

6. Stormwater Management – New and Emerging Approaches

Urban development within the Great Lakes Basin and the corresponding changes to the hydrologic cycle has resulted in intense pressures on the ecosystem. Increases in impervious area coupled with land-use practices have contributed to degraded water quality conditions in area surface waters and the

Great Lakes nearshore from increased stormwater runoff and discharges from combined sewer overflows. Binational municipal representatives will present "state of the practice" approaches for planning and mitigating the impacts of these discharges including watershed based computer simulation modelling, "Low Impact Development" and ecologically friendly approaches for stormwater management for new and in-fill developments; and new and emerging technologies for stormwater management retrofits and combined sewer overflow control and treatment The workshop participants will discuss and propose SOLEC indicators for the mitigation of non-point sources

7. Great Lakes Beaches

The Great Lakes shoreline provides some of the most beautiful beaches in the world, yet many continue to be posted as unsafe for swimming for significant periods during the bathing season. These postings represent a diminished quality of life, as well as a disincentive to tourism and are a detriment to local economies. During this session binational experts will address the multi-faceted "Swimmability" issue, discuss the new SOLEC Beach Advisory indicator, update participants on US and Canadian programs to mitigate recreational water quality impairments as noted in the Great Lakes Water Quality Agreement and provide information on rapid detection methods under development in both countries.

8. Reporting Indicators at a Watershed Level

Watershed-based resource management has been identified by the International Joint Commission and by federal and provincial levels as a means of ensuring protection of water resources for both human and ecological health. In keeping with this theme, this workshop will examine the potential for using watersheds as a basis for understanding the relationship between tributaries and their contribution to the chemical, physical and biological condition of the lakes. The initial focus will be to develop SOLEC indicators that can be measured at the outlet of the tributaries to determine the contribution of their pathways to the overall state of the Great Lakes.

9. Status of Great Lakes Islands Conservation and Development of Indicators

The 30,000 Great Lakes islands form the world's largest collection of fresh water islands and their biological diversity is globally significant. In this workshop, efforts to identify priority island areas will be presented including the island assessment and ranking system, conservation targets, and freshwater island classification system. Participants will be asked to assess draft island indicators that will be used to ascertain the state of island biodiversity. This will be an opportunity to provide feedback and input in this important conservation effort.

10. Human Health in the Great Lakes

Current research and networking efforts will be presented and discussed by representatives of the Agency for Toxic Substances and Disease Registry (ATSDR), Great Lakes Human Health Effects Research Program and Health Canada. ATSDR is characterizing exposure to persistent toxic substances and investigating the potential for adverse health outcomes from that exposure via fish consumption in vulnerable populations. Health Canada will be presenting information on the development of its public health network. The Great Lakes Human Health Network will also be present to discuss future directions of calls and actions, membership expansion, and to outline recent efforts in member organizations.

11. Climate Change

This workshop will consist of a participatory discussion on potential roles for SOLEC relating to regional climate change scenarios and identifying key physical indicators to assess regional impacts of climate change. Topics to discuss will include potential impacts of climate change on the open lake and on terrestrial-aquatic interactions. A facilitated discussion will follow.

SOLEC 2004 Background/Conference Reports

All of the following reports can be found on the CD provided to each conference registrant:

State of the Great Lakes 2005: Draft for Discussion
Forestry Paper
Ecological Footprint Paper
The Great Lakes Indicator Suite: Changes and Progress 2004

Please visit the SOLEC display (near the registration desk) to pick up copies of reports from previous SOLECs. After October 8th they will only be available electronically.

SOLEC 2004 Steering Committee

SOLEC Steering Committee members represent a wide variety of agencies and organization from around the Great Lakes:

Agency for Toxic Substances and Disease Registry
Council of Great Lakes Industries
Environment Canada
Great Lakes Commission
Great Lakes Fishery Commission
Illinois Environmental Protection Agency
International Joint Commission
Michigan Department of Environmental Quality
Minnesota Pollution Control Agency
Natural Resources Canada
NY State Department of Environmental Conservation
Northeast Midwest Institute
Ontario Ministry of Agriculture and Food
Ontario Ministry of Environment
Ontario Ministry of Natural Resources
Pennsylvania Department of Environmental Protection
Quebec Ministry of the Environment
The Nature Conservancy
Tribes/First Nations
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. Geological Survey
U.S. National Park Service
University of Windsor

There are many other individuals and representatives from environmental groups, academia and all levels of government who have participated in the work necessary to develop this conference.