

**PROGRAM**



**NEW VIEWS  
NEW TOOLS  
IAGLR**

58th Annual Conference on  
**Great Lakes Research**



**Burlington, Vermont  
MAY 25-29, 2015  
at the University of Vermont**

**International Association for Great Lakes Research**

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# PROGRAM

58th Annual Conference on Great Lakes Research

**IAGLR 2015**



**Burlington, Vermont**

May 25–29, 2015  
University of Vermont

#iaglr2015

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International Association for Great Lakes Research  
4840 South State Road  
Ann Arbor, Michigan 48108

Cover design and conference logo by Jenifer Thomas



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# EXHIBITORS

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## Welcome Conference Exhibitors!

Exhibits are open daily in the Fireplace Lounge on the 4th floor of the Davis Center.

### **Alpha Mach Inc.**

101-2205 Bombardier  
Sainte-Julie, QC J3E 2J9  
[alphamach.com](http://alphamach.com)

### **Aquatic Informatics Inc.**

2400-1111 West Georgia Street  
Vancouver, BC V6E4M3  
[aquaticinformatics.com](http://aquaticinformatics.com)

### **Cooperative Institute for Limnology and Ecosystems Research**

G110 Dana Building  
440 Church Street  
Ann Arbor, MI 48109  
[ciler.snre.umich.edu](http://ciler.snre.umich.edu)

### **CREATE Great Lakes Training Program**

University of Guelph  
Bovey Building, Gordon St.  
Guelph, ON N1G 2W1  
[creategreatlakes.org](http://creategreatlakes.org)

### **Elsevier**

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1043 NX Amsterdam  
Netherlands  
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### **Fluid Imaging Technologies**

200 Enterprise Drive  
Scarborough, ME 04074  
[fluidimaging.com](http://fluidimaging.com)

### **Great Lakes Fishery Commission**

2100 Commonwealth Blvd, Ste 100  
Ann Arbor, MI 48105  
[glfc.org](http://glfc.org)

### **Great Lakes Observing System**

229 Nickels Arcade  
Ann Arbor, MI 48104  
[glos.us](http://glos.us)

### **International Joint Commission, Great Lakes Regional Office**

100 Ouellette Avenue,  
8th Floor  
Windsor, ON N9A 6T3  
[ijc.org](http://ijc.org)

### **Lake Champlain Basin Program**

54 West Shore Road  
Grand Isle, VT 05458  
[lcbp.org](http://lcbp.org)

### **Lake Champlain Sea Grant**

81 Carrigan Drive  
Burlington, VT 05405  
[uvm.edu/seagrant](http://uvm.edu/seagrant)

### **Lotek Wireless**

115 Pony Drive  
Newmarket, ON L3Y 7B5  
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1405 S. Harrison Rd., Ste. 25  
East Lansing, MI 48823  
[msupress.msu.edu](http://msupress.msu.edu)

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#### **GREAT LAKES FISHERY COMMISSION**

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Stony Brook University  
Stony Brook, NY 11794  
*seagrant.sunysb.edu*

**RBR Ltd.**  
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Ottawa, ON K2K 2M5  
*rbr-global.com*

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310 allée des Ursulines  
Rimouski, QC G5L 3A1  
*reformar.ca*

**Turner Designs**  
845 W Maude Avenue  
Sunnyvale, CA 94085  
*turnerdesigns.com*

**University of Michigan Water Center**  
214 S. State St., Suite 200  
Ann Arbor, MI 48104  
*graham.umich.edu/water*

**U.S. Dept. of Commerce, NOAA Great Lakes Environmental Research Laboratory**  
4840 South State Road  
Ann Arbor, MI 48108  
*glrl.noaa.gov*

**U.S. Geological Survey**  
USGS Wisconsin Water Science Center  
8505 Research Way  
Middleton, WI 53563  
*usgs.gov*

**Vemco**  
20 Angus Morton Drive,  
Bedford, NS B4B 0L9  
*vemco.com*

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1540 Drew Ave  
Davis, CA 95618  
*zequanox.com*

## CONFERENCE ORGANIZERS

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Theresa Qualls, NEW Water,  
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Lemma, Tori Pinheiro, Lee Simard

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We extend our deepest appreciation to our sustaining members. Their annual contributions over the years provide a valuable source of support for IAGLR. We invite your organization to join their ranks in supporting Great Lakes research.

### **Great Lakes Fishery Commission**

Ann Arbor, MI

*Since 1979*

### **Great Lakes Protection Fund**

Evanston, IL

*Since 1992*

### **International Joint Commission, Great Lakes Regional Office**

Windsor, ON

*Since 1984*

### **U.S. Department of Commerce, NOAA, Great Lakes Environmental Research Laboratory**

Ann Arbor, MI

*Since 1994*

### **U.S. Environmental Protection Agency, Great Lakes National Program Office**

Chicago, IL

*Since 1991*

## JOIN IAGLR!

If you're interested in supporting the scientific community in its work in the exploration, discussion and resolution of Great Lakes issues, consider joining IAGLR. Individual or sustaining memberships are available. Further information may be found on our website, [iaglr.org](http://iaglr.org).

### **IAGLR members receive the following benefits:**

- Online and print subscription to the *Journal of Great Lakes Research*
- Annual Conference on Great Lakes Research registration discount
- *IAGLR Notes*, an e-mail news service
- Access to our private *IAGLR Membership Directory*
- Access to and/or volunteer for IAGLR's *Expert Directory*
- Recognition through prestigious peer-reviewed IAGLR awards
- Free *Contents Direct* email alerting service. Additional discounts available from Elsevier
- Eligibility for election to serve on the IAGLR Board of Directors
- Opportunities to work on various committees
- Networking resources
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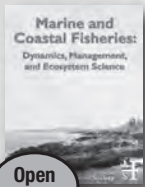
**Coastal Management**  
*The Official Journal of The Coastal Society*  
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*University of Washington*  
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**Lake and Reservoir Management**  
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*Sosiak Environmental Services*  
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**Reviews in Fisheries Science & Aquaculture**  
**Editor: Sandra E. Shumway,**  
*University of Connecticut*  
Volume 23, 2015 • 4 issues per year  
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**Marine and Coastal Fisheries**  
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## Aquatic Ecosystem Health & Management

FEATURED JOURNAL



*The Official Journal of the Aquatic Ecosystem Health and Management Society, [www.aehms.org](http://www.aehms.org)*

**Chief Editor: M. Munawar,**  
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## SPECIAL EVENTS

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### Welcome Reception

Monday, May 25

6 - 9

Sugar/Silver Maple Ballrooms

### Welcome and Plenary featuring Jake Vander Zanden

Tuesday, May 26

11:15 - 12:20

Ira Allen Chapel

### Poster Session

Tuesday, May 26

6 - 9

Mansfield Room and Olin Atrium

### IAGLR Business Lunch

Wednesday, May 27

Noon - 1:20

Sugar/Silver Maple Ballrooms

### IAGLR Hockey

Wednesday, May 27

3:30 - 5

Gutterson Fieldhouse

### IAGLR Barbecue

Wednesday, May 27

6 - 9

ECHO Center

### Plenary featuring Maude Barlow

Thursday, May 28

11:15 - 12:20

Ira Allen Chapel

### JGLR Editors' Reception

Thursday, May 28

4:40 - 6

Aiken Center Solarium

## IAGLR Banquet & Awards Ceremony

Thursday, May 28, 6 - 9

Sugar/Silver Maple Ballrooms and Frank/Mildred Livak Rooms



*The Cultural Legacy of the Great Lakes: History and Shipwrecks Under Threat*

Featuring Guest Speaker  
Arthur B. Cohn, Director Emeritus,  
Lake Champlain Maritime Museum

### IAGLR Awards

IAGLR Lifetime Achievement Award for important and continued contributions to Great Lakes research

Jack R. Vallentyne Award for outreach and education

Anderson-Everett Award for outstanding contributions to the Association

Chandler-Misener Award for outstanding article in the *Journal of Great Lake Research*

Editor's Award

Elsevier Best Reviewer Award for the *Journal of Great Lakes Research*

Elsevier Young Scientist Award

Elsevier Young Student Award

IAGLR-HydroLab Best Student Paper – 2014

IAGLR-HydroLab Best Student Poster – 2014

IAGLR Appreciation Awards

### IAGLR Scholarships

IAGLR-OMNR Student Travel Award

IAGLR Scholarship

Norman S. Baldwin Fishery Science Scholarship

David M. Dolan Scholarship

Paul W. Rodgers Scholarship

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# OVERVIEW OF CONFERENCE ACTIVITIES

---

## MONDAY, May 25

---

8:30 - 5

### IAGLR Board Meeting

Williams Room

9 - 5

### Intro to R Workshop

Chittenden Room

3:30 - 8:30

### Registration

Davis Center Entry

6 - 9

### Welcome Reception

Sugar/Silver Maple Ballrooms

## TUESDAY, May 26

---

7:30 - 5

### Registration

Davis Center Entry

8 - 11

### Concurrent Sessions

Davis Center / Aiken Center

11:15 - 12:20

### Welcome & Plenary: Jake Vander Zanden

Ira Allen Chapel

1:40 - 5:40

### Concurrent Sessions

Davis Center / Aiken Center

4:40 - 6

### Publishing Workshop

Williams Room

6 - 9

### Poster Session

Mansfield Room & Olin Atrium

7 - 8

### Lake Ontario CSMI Meeting

Boulder Room

8 - 11:30

### Afterparty

Brennan's Pub, Davis Center

## WEDNESDAY, May 27

---

7:30 - 5

### Registration

Davis Center Entry

### 8 - 12 Concurrent Sessions

Davis Center / Aiken Center

12 - 1:20

### IAGLR Business Lunch

Sugar/Silver Maple Ballrooms

1:20 - 3:20

### Concurrent Sessions

Davis Center / Aiken Center

3:30 - 5

### IAGLR Hockey

Gutterson Fieldhouse

3:40 - 5:40

### IJC Workshop

Mildred Livak Room

6 - 9

### IAGLR Barbecue

ECHO Center

8:30

### Graduate Student Mixer

Metronome

## THURSDAY, May 28

---

7:30 - 5

### Registration

Davis Center Entry

8 - 11

### Concurrent Sessions

Davis Center / Aiken Center

11:15 - 12:20

### Plenary: Maude Barlow

Ira Allen Chapel

1:30 - 4

### Microplastics Discussion

Aiken Center, Room 202

1:40 - 5:40

### Concurrent Sessions

Davis Center / Aiken Center

4:40 - 6

### Citizen Science Discussion

Aiken Center, Room 112

4:40 - 6

### Editors' Reception

Aiken Center Solarium

4:40 - 6:10

### VEMCO Chat Session

Boulder Room

5 - 6

### Social Science Discussion

Aiken Center, Room 103

6 - 9

### Banquet & Awards Ceremony: Speaker Arthur Cohn

Sugar/Silver Maple Ballrooms & Frank/Mildred Livak Rooms

## FRIDAY, May 29

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7:30 - 1

### Registration

Davis Center Entry

8 - 12:20 & 1:40 - 4

### Concurrent Sessions

Davis Center / Aiken Center

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## PLENARY, TUESDAY, MAY 26

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11:15 a.m. - 12:20 p.m.  
Ira Allen Chapel



@JakeDeLake

*New tools for studying Great Lakes food webs:  
have they led to new views?*

### Featuring Jake Vander Zanden

Professor, Center for Limnology, University of Wisconsin-Madison

---

Over the last few decades, many of the new insights into how lakes work derive from new ecological tools that draw from biogeochemistry, biochemistry, and molecular biology. What new insights into the Great Lakes have come from application of these new tools? Perhaps more importantly, how have these insights contributed to ecosystem management and the ability to solve environmental problems? Stable isotope analysis has allowed researchers to trace energy flow through lake food webs, leading to new insights. More recently, compound-specific stable isotope analysis and other food web biomarkers are providing much deeper insights into food webs. Elemental mass balance models have been used as a bioenergetics tracer, an approach that is complementary to the use of food web tracers. Measurement of environmental DNA has emerged as a tool for the early detection of invasive species, and has tremendous promise for monitoring Great Lakes biological communities more generally. The emergence of new tools has allowed exciting new insights into Great Lakes ecosystems. As the emergence of new insights accelerates, so does the need for translational science that is capable of ushering new insights into improved management.

#### About

*Jake is a professor at the Center for Limnology, University of Wisconsin – Madison. He has conducted research on topics ranging from the giant trout of Mongolia, to giant insect emergences in Iceland. In the process he has trained over 30 postdocs and graduate students at UW-Madison. His basic research has focused on developing a more holistic understanding of lake food webs that includes benthic pathways and linkages among*

*habitats and ecosystems. On the applied side, his work includes efforts to understand and predict the spread and impact of aquatic invasive species in inland waters. Along with numerous national and international awards and plenary talks, Jake is author of over 100 peer review publications. In addition to communicating with public audiences, he teaches several courses at UW-Madison, including the world's largest limnology course.*

11:15 a.m. - 12:20 p.m.  
Ira Allen Chapel

## *Blue Future: Protecting Water for People and the Planet Forever*

### **Featuring Maude Barlow**

National Chairperson of the Council of Canadians

The world is running out of freshwater. This is the greatest threat to the future of people and the planet. Large lake systems are not immune. The Aral Sea and Lake Chad — once the 4th and 6th largest freshwater lakes in the world respectively — are close to destroyed from over-extraction for food production. Half the rivers in China have disappeared. The U.S. Department of Agriculture says the Ogallala Aquifer will be gone in our lifetime. The Great Lakes are in trouble from pollution, invasive species, eutrophication, extraction and more recently, because they are being used as a carbon corridor for the most dangerous energy sources in the world. Maude Barlow will share her research and campaign to ban the shipping of extreme energy on the Great Lakes and to keep fracked wastewater off shipping lanes as well. Barlow will argue that globalization, the dominant economic model for most of the world, promotes unlimited growth, gives large corporations greater power than nation states to set economic and trade policy and dramatically limits the ability of nation-state governments to protect their water heritage and set rules to protect watersheds. She will also share the incredible story of her successful campaign to have the United Nations recognize the human right to water and sanitation and challenge us to develop and support a “Marshall Plan for Water” with its own UN convention and process.



@MaudeBarlow

*Maude is the National Chairperson of the Council of Canadians and chairs the board of Food and Water Watch. She is a board member of the International Forum on Globalization and a Councillor with the Hamburg-based World Future Council. Maude is the recipient of 12 honorary doctorates as well as many awards, including the 2005 Right Livelihood Award (known as the “Alternative Nobel”), the 2005 Lannan Foundation Cultural Freedom Fellowship Award, the Citation of Lifetime Achievement at the 2008 Canadian Environment Awards, the 2009 Earth Day*

*Canada Outstanding Environmental Achievement Award, the 2009 Planet in Focus Eco Hero Award, and the 2011 EarthCare Award, the highest international honour of the Sierra Club (US). In 2008/2009, she served as Senior Advisor on Water to the 63rd President of the United Nations General Assembly and was a leader in the campaign to have water recognized as a human right by the UN. She is also the author of dozens of reports, as well as 17 books, including her latest, Blue Future: Protecting Water For People And The Planet Forever.*

### **About**

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# WORKSHOPS & DISCUSSIONS

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All events are in the Davis Center unless otherwise noted.

## **MONDAY, MAY 25**

### **Introduction to R Workshop**

9 - 5 / Chittenden Room

This workshop will introduce beginners to the R statistical analysis software. It will cover the R environment, importing/exporting and organizing data, using and creating functions, graphing, and basic statistical analyses such as regression (linear and nonlinear) and ANOVA. The course is offered by the Quantitative Fisheries Center of Michigan State University's Department of Fisheries and Wildlife. You must register separately for the workshop.

## **TUESDAY, MAY 26**

### **Publishing Workshop**

4:40 - 6 / Williams Room

Have you ever wondered what steps are needed to get your paper published or how to shorten the time to publication? Maybe you want to learn how being a reviewer provides insights into what makes a good paper, or how to avoid the most common mistakes made when submitting a paper. If getting published is important to you, please plan to attend the Journal of Great Lakes Research Publishing Workshop, open to all conference participants.

### **Lake Ontario Cooperative Science and Monitoring Initiative**

7 - 8 / Boulder Room

This informal meeting will bring together researchers who actively participated in the 2013 field season on various aspects of Lake Ontario ecology. Since most of the Lake Ontario researchers will be attending IAGLR, it provides an excellent opportunity for colleagues from Canada and the U.S. to assess progress of 2013 projects as well as make future plans. Interested persons not part of the regular CSMI group may contact Mohi Munawar (mohi.munawar@dfo-mpo.gc.ca) if they wish to attend due to shortage of space.

## **WEDNESDAY, MAY 27**

### **IJC Workshop**

3:40 - 5:40 / Mildred Livak Room

In the Fall of 2014, the International Joint Commission mandated the Lake Champlain and Richelieu River Technical Working Group to 1) Address and close data gaps that are necessary as a basis for the earliest possible initiation of a real-time flood forecasting and inundation mapping system for Lake Champlain and the Richelieu River and, 2) Create static flood inundation maps using a combination of existing and new data and modeling showing affected areas if Lake Champlain and Richelieu River water levels hit different heights. The work is focused on components that can be delivered within a year. You're invited to review the group's work and provide guidance for the project based on your experience and knowledge of successful techniques and approaches for such a task. Of particular interest are existing hydrologic and hydraulic forecasting systems for large watersheds and large lakes that cross international boundaries. Topics to be discussed include data needs and sharing, modeling approaches, methods to provide forecasting results to stakeholders, governance and funding structures, and political impediments.

## THURSDAY, MAY 28

### **Microplastics Discussion**

1:30 - 4 / Aiken Center, Room 202

This interactive breakout session follows the session *Plastic Pollution in the Great Lakes* and offers a forum for members of Great Lakes microplastics research community to convene, work on and discuss the development of NOAA Marine Debris Program's Action Plan for the Great Lakes region. The discussions will be focused on currently identified actions already underway. This open forum is intended to provide exposure of the community plan and new participants are encouraged to partake. Presentations from 8-10:40 in the Davis Center, Jost Room, with open discussion in the Aiken Center, Room 202 after lunch.

### **Citizen Science Discussion**

4:40 - 6 / Aiken Center, Room 112

Join in on the conversation following the session *Citizen Science: New Perspectives and Applications* to share ideas on the challenges and opportunities for citizen science activities to reach their full potential in research, decision making, and policy. Whether from a natural science, social science, technology, or communications and outreach background, all perspectives are welcome. Presentations from 1:40-4:40 in the Davis Center, Frank Livak Room, with open discussion following in the Aiken Center, Room 112.

### **Editors' Reception** (Invitation only)

4:40 - 6 / Aiken Center Solarium

Each year the Journal of Great Lakes Research is supported by a group of dedicated associate editors and the ongoing efforts of the IAGLR Publication Committee. We want to take this time to thank you for your efforts and get your feedback on how the journal is doing and what we can do better. If you're one of these hard working folks, please join us for the Editors' Reception.

### **VEMCO Chat Session**

4:40 - 6:10 / Boulder Room

VEMCO, makers of acoustic telemetry equipment used throughout the Great Lakes, will host a discussion to talk with users about their ideas for new advances in the technology, and to inform users of what's coming up for new technology.

### **Social Science Discussion**

5 - 6 / Aiken Center, Room 103

This year at IAGLR several sessions present research from social science research frameworks, including the management aspects of restoration. For anyone researching from the social sciences, or anyone interested in the exciting research about complex social ecological systems, please join us for a networking session. We plan a round of introductions, and hope to identify some shared research interests that might lead to new opportunities for collaboration. Please join us!

# PLANNER

|       | Monday   | Tuesday  | Wednesday  |   |
|-------|--|--|--|---|
| 8:00  |  |  |  |   |
| 8:20  |  |  |  |   |
| 8:40  |  |  |  |   |
| 9:00  |  |  |  |   |
| 9:20  |  | Break  |  |   |
| 9:40  |  |  | Break  |   |
| 10:00 |  |  |  |   |
| 10:20 |  |  |  |   |
| 10:40 |  |  |  |   |
| 11:00 |  | <b>Plenary: Jake Vander Zanden</b><br><i>Ira Allen Chapel</i><br>(starts at 11:15) |  |   |
| 11:20 |  |  |  |   |
| 11:40 |  |  |  |   |
| 12:00 |  |  | <b>IAGLR Business Lunch</b><br><i>Sugar/Silver Maple Ballrooms</i>           |   |
| 12:20 |  | <b>Lunch</b><br>(on your own)  |  |   |
| 12:40 |  |  |  |   |
| 1:00  |  |  |  |   |
| 1:20  |  |  |  |   |
| 1:40  |  |  |  |   |
| 2:00  |  |  |  |   |
| 2:20  |  |  |  |   |
| 2:40  |  |  |  |   |
| 3:00  |  |  |  |   |
| 3:20  |  | Break  | <b>IAGLR Hockey Game</b><br><i>Gutterson Field House</i><br>(starts at 3:30) |   |
| 3:40  |  |  |  |   |
| 4:00  |  |  |  |   |
| 4:20  |  |  |  |   |
| 4:40  |  |  |  |   |
| 5:00  |  |  |  |   |
| 5:20  |  |  |  |   |
| 5:40  |  |  |  |   |
| 6:00  | <b>Welcome Reception</b><br><i>Sugar/Silver Maple Ballrooms</i><br>6-9 | <b>Poster Social</b><br><i>Mansfield Room &amp; Olin Atrium</i><br>6-9             |  |   |
| 7:00  |  |  |  | <b>BBQ</b><br><i>ECHO Center</i><br>6-9 |
| 8:00  |  |  |  |   |
| 8:30  |  |  | <b>Grad Student Mixer</b><br><i>Metronome</i><br>8:30-?                      |   |
| 9:00  |  | <b>After Party</b><br><i>Brennan's Pub</i><br>8-11:30                              |  |   |
| 10:00 |  |  |  |   |
| 11:00 |  |  |  |   |



| Thursday   |                               | Friday |
|--|-------------------------------|--------|
|  |                               | 8:00   |
|  |                               | 8:20   |
|  |                               | 8:40   |
|  |                               | 9:00   |
| Break  |                               | 9:20   |
|  | Break                         | 9:40   |
|  |                               | 10:00  |
|  |                               | 10:20  |
|  |                               | 10:40  |
| <b>Plenary: Maude Barlow</b><br><i>Ira Allen Chapel</i><br>(starts at 11:15)                 |                               | 11:00  |
|  |                               | 11:20  |
|  |                               | 11:40  |
|  |                               | 12:00  |
| <b>Lunch</b><br>(on your own)  | <b>Lunch</b><br>(on your own) | 12:20  |
|  |                               | 12:40  |
|  |                               | 1:00   |
|  |                               | 1:20   |
|  |                               | 1:40   |
|  |                               | 2:00   |
|  |                               | 2:20   |
|  |                               | 2:40   |
|  |                               | 3:00   |
| Break  |                               | 3:20   |
|  |                               | 3:40   |
|  |                               | 4:00   |
|  |                               | 4:20   |
|  |                               | 4:40   |
|  |                               | 5:00   |
|  |                               | 5:20   |
|  |                               | 5:40   |
| <b>Banquet</b><br><i>Sugar/Silver Maple Ballrooms &amp; Frank/Mildred Livak Rooms</i><br>6-9 |                               | 6:00   |
|  |                               | 7:00   |
|  |                               | 8:00   |

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# NOTES

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## TUESDAY, May 26

### Morning Sessions

|           |  |               |
|-----------|--|---------------|
| 8 - 11    | New Perspectives and Techniques for Non-Native Species Risk, Monitoring and Management | Jost          |
| 8 - 11    | Long-Term Monitoring: Achievements and Challenges                                      | Chittenden    |
| 8 - 11    | General Contributions  | Frank Livak   |
| 8 - 10:40 | Application of Trophic Markers in Aquatic Ecology                                      | Williams      |
| 8 - 11    | Physical Processes in Lakes  | Sugar Maple   |
| 8 - 11    | Advancing the Use of Tags for Monitoring Movement and Habitat Use of Aquatic Species   | Aiken 110     |
| 8 - 11    | HABs and the 2014 Toledo Drinking Water Crisis   | Mildred Livak |

### Afternoon Sessions

|             |   |               |
|-------------|---|---------------|
| 1:40 - 3:20 | Sea Lamprey Control and Alternatives to Lampricides   | Jost          |
| 1:40 - 3:20 | Long-Term Monitoring: Achievements and Challenges   | Chittenden    |
| 1:40 - 5    | Approaching Great Lakes Issues with more than the Usual Suspects: Role of Social Science (related open discussion on Thursday, see p. 11) | Frank Livak   |
| 1:40 - 3:20 | Integrating Food Web Ecology Across Gradients of Ecosystem Size   | Williams      |
| 1:40 - 5:20 | Connections between Great lakes Coastal and Nearshore Ecosystems  | Sugar Maple   |
| 1:40 - 5    | The Urban Coast: Ecological Restoration in Cities   | Aiken 110     |
| 1:40 - 5:40 | Holy Toledo! Nitrogen in the Great Lakes (Yes, Nitrogen): Blooms, Cyanotoxins, and Hypoxia  | Mildred Livak |
| 3:40 - 5:40 | New Perspectives and Techniques for Non-native Species Risk, Monitoring and Management  | Jost          |
| 3:40 - 5:40 | Advances in Technology for Lower Trophic Studies and Implications up the Foodweb  | Chittenden    |
| 3:40 - 4:40 | Contaminants in the Lower Trophic Levels of the Great Lakes   | Williams      |

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# SESSION OVERVIEW

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## WEDNESDAY, May 27

### Morning Sessions

|           |   |               |
|-----------|---|---------------|
| 8 - 9:40  | Great Lakes Education and Outreach  | Chittenden    |
| 8 - 11:20 | Ballast Water Treatment to Prevent Aquatic Invasive Species   | Frank Livak   |
| 8 - 11:40 | Multiple Stressors and Cumulative Effects: From Theory to Practice  | Williams      |
| 8 - 12    | Physical Processes in Lakes   | Brennan's     |
| 8 - 12    | Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes                                | Aiken 110     |
| 8 - 12    | Nutrient Cycling in Coastal Environments: Temporal Variability of Processes and Fluxes                          | Mildred Livak |
| 8:20 - 12 | Invasive Mussels: Informing a New Collaborative for Great Lakes Managers and Scientists                         | Jost          |
| 10 - 12   | Big Lakes, Big Opportunities: Using Complex Data to Understand Environmental Change in Great Lakes of the World | Chittenden    |

### Afternoon Sessions

|             |   |               |
|-------------|---|---------------|
| 1:20 - 3    | Invasive Mussels: Informing a New Collaborative for Great Lakes Managers and Scientists                         | Jost          |
| 1:20 - 3:20 | Big Lakes, Big Opportunities: Using Complex Data to Understand Environmental Change in Great Lakes of the World | Chittenden    |
| 1:20 - 3:20 | Environmental Chemistry, Discoveries and Biotic Effects of Chemicals of Emerging Concern                        | Frank Livak   |
| 1:20 - 3:20 | Urban Ecohydrology in the Great Lakes Watershed   | Brennan's     |
| 1:20 - 3    | Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes                                | Aiken 110     |
| 1:20 - 3:20 | Advances in Hydrological Modelling for Operational Forecasting of Lake Levels                                   | Mildred Livak |
| 1:40 - 4:20 | Anthropogenic Influences on Aquatic Food Webs   | Williams      |

## THURSDAY, May 28

### Morning Sessions

|           |  |               |
|-----------|--|---------------|
| 8 - 10:40 | Plastic Pollution within the Great Lakes Ecosystem (with open discussion after lunch, see p. 11) | Jost          |
| 8 - 9:20  | Data and Science Priorities for Managing Water Use in the Great Lakes-St. Lawrence River         | Chittenden    |
| 8 - 11    | Environmental Chemistry, Discoveries and Biotic Effects of Chemicals of Emerging Concern         | Frank Livak   |
| 8 - 11    | Where the Lake Meets the River: Ecology of Connecting Rivers in the Great Lakes                  | Williams      |
| 8 - 11    | The Great Lakes in a Global Context: Interactions among Air, Water, Ice, and Ecosystems          | Sugar Maple   |
| 8 - 10:40 | Hydrodynamics and Hydrology of the Great Lakes and Connecting Channels                           | Aiken 110     |
| 8 - 11    | Ecosystem Modeling to Support Lake Management  | Mildred Livak |
| 9:40 - 11 | Fishing Down the Food Web  | Chittenden    |

### Afternoon Sessions

|             |   |             |
|-------------|---|-------------|
| 1:40 - 5:20 | Adaptive Management in the Great Lakes-St. Lawrence River System                            | Jost        |
| 1:40 - 5    | Eyes On Our Lakes: Sharing Observations Effectively   | Chittenden  |
| 1:40 - 4:40 | Citizen Science: New Perspectives and Applications (followed by open discussion, see p. 11) | Frank Livak |
| 1:40 - 5    | Indicators of Biotic Integrity for the Great Lakes  | Williams    |
| 1:40 - 3:20 | Novel Techniques for Wetland Habitat Management and Assessment                              | Sugar Maple |
| 1:40 - 5    | What Swims Beneath: Innovative Applications for Addressing Emerging Problems                | Aiken 110   |
| 1:40 - 5:40 | Ecosystem Modeling to Support Lake Management   | Aiken 102   |
| 3:40 - 5:20 | HAB Considerations for Drinking Water Suppliers   | Brennan's   |

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# SESSION OVERVIEW

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## FRIDAY, May 29

### Morning Sessions

|            |  |               |
|------------|--|---------------|
| 8 - 9:40   | Invasive Species Pathways  | Jost          |
| 8 - 12:20  | Understanding Lake-Climate Interactions across Broad Spatial Scales: Observations, Models, and Research Networks | Chittenden    |
| 8 - 9:40   | 2014: An Intensive Field Year for Lake Erie  | Frank Livak   |
| 8 - 12:20  | Fisheries in an Ecosystem Context: Lessons Learned from Comparisons across Lakes                                 | Williams      |
| 8 - 12:20  | New Insights and Long-term Records from Lacustrine Systems   | Sugar Maple   |
| 8 - 12     | Using Cutting-edge Technologies to Advance Freshwater HAB Monitoring and Forecasting                             | Aiken 110     |
| 8 - 9      | Ecosystem Modeling to Support Lake Management  | Mildred Livak |
| 10 - 12:20 | Ecological Hazard Assessments of Legacy and Emerging Contaminants in the Great Lakes                             | Jost          |
| 10 - 12    | Institutional Capacity and Successful Decision Making Processes in Multi-Stakeholder / Jurisdictional Contexts   | Frank Livak   |
| 10 - 12:20 | Contrasting the Form and Function of the Nearshore Environment around the Great lakes                            | Mildred Livak |

### Afternoon Sessions

|             |   |               |
|-------------|---|---------------|
| 1:40 - 4    | When can we eat the fish?   | Jost          |
| 1:40 - 3    | Assessing Risks in the Great Lakes: New Tools and Current Assessments         | Chittenden    |
| 1:40 - 3:40 | General Contributions   | Frank Livak   |
| 1:40 - 3:20 | Acoustic Telemetry: Using Big Data to Answer Big Questions                    | Aiken 110     |
| 1:40 - 3:20 | Cyanobacteria and Human Health: Current Understanding and Research Directions | Mildred Livak |



# TUESDAY, MAY 26

|      | <b>Jost</b>   | <b>Chittenden</b>   | <b>Frank Livak</b>  | <b>Williams</b>   |
|------|---|---|---|---|
|      | <p><b>New Perspectives and Techniques for Non-Native Species Risk, Monitoring and Management</b><br/> <i>Co-Chairs: Stephen Hensler, Meg Modley, Eric Holmlund, and James Boase</i></p> | <p><b>Long-Term Monitoring: Achievements and Challenges</b><br/> <i>Co-Chairs: Alexander Karatayev, Lars Rudstam, Lyubov Burlakova, and James Watkins</i></p> | <p><b>General Contributions</b><br/> <i>Chair: Seth Herbst</i></p>  | <p><b>Application of Trophic Markers in Aquatic Ecology</b><br/> <i>Co-Chairs: Jacques Rinchar and Sergiusz Czesny</i></p>                  |
| 8:00 | <p><b><u>S.A. Fera</u></b><br/>           Assessing the Risk of Aquatic Invasive Species Spread Under Projected Climate Change Scenarios</p>  | <p><b><u>R.P. Barbiero</u></b><br/>           A Brief Overview of the EPA's Water Quality Survey of the Great Lakes</p>                                       | <p><b><u>K.A. Patterson</u></b><br/>           If it's There, They'll Find it: Reef Utilization by Lake Trout Populations in Southern Lake Michigan</p> | <p><b><u>A. Happel</u></b><br/>           Species specific fatty acid profiles across multiple different freshwater systems</p>             |
| 8:20 | <p><b><u>S.R. Hensler</u></b><br/>           Vector-based strategy for early detection of non-native aquatic species in Lake Erie</p>   | <p><b><u>L.J. Blume</u></b><br/>           New Direction for GLNPO's Quality and Long-Term Monitoring Programs</p>  | <p><b><u>J.A. Stein</u></b><br/>           Detection of Natural Reproduction and Successful Recruitment of Lake Trout in Southern Lake Michigan</p>     | <p><b><u>R. Pattridge</u></b><br/>           Use of Fatty Acid Signatures to Assess Food Web Trophic Interactions in Lake Ontario</p>       |
| 8:40 | <p><b><u>E. Pilgrim</u></b><br/>           Detecting larval invasive fish with high-throughput DNA sequencing<br/> <b>CANCELED</b></p>  | <p><b><u>M.E. Landon</u></b><br/>           Addressing the Impact of Ecosystem Changes in a Long-term Monitoring Program</p>                                  | <p><b><u>C.J. May</u></b><br/>           Larval Growth as a Limiter of Lake Erie Walleye Recruitment<br/> <b>CANCELED</b></p>                           | <p><b><u>T.A. Gearhart</u></b><br/>           The effectiveness of mead acid as a biomarker for essential fatty acid deficiency in fish</p> |
| 9:00 | <p><b><u>D.J. Ferguson</u></b><br/>           Early detection of aquatic invasive species using automated imaging particle analysis (FlowCAM)</p>                                       | <p><b><u>B.M. Lesht</u></b><br/>           Mind the Gaps: Using Satellite Observations to Enhance Great Lakes Water Quality Monitoring Programs</p>           | <p><b><u>K.C. Nevorski</u></b><br/>           Relationships between Smallmouth Bass Distribution and Habitat in Lake Michigan</p>                       | <p><b><u>S.J. Czesny</u></b><br/>           Biochemical data reveal that sea lamprey feed on a variety of species</p>                       |
| 9:20 | <b>BREAK</b>  |   |   |   |



| Sugar Maple  | Aiken 110   | Mildred Livak  |      |
|--|---|--|------|
| <p><b>Physical Processes in Lakes</b><br/> <i>Co-Chairs: Dmitry Beletsky, Chin Wu, and Eric Anderson</i></p>                   | <p><b>Advancing the Use of Tags for Monitoring Movement and Habitat Use of Aquatic Species</b><br/> <i>Chair: Dimitry Gorsky</i></p>                          | <p><b>HABs and the 2014 Toledo Drinking Water Crisis</b><br/> <i>Co-Chairs: Patrick Lawrence and Carol Stepien</i></p>                                       |      |
| <p><b><u>D. Beletsky</u></b><br/>                     Interannual Variability of Winter Circulation and Ice in Lake Erie</p>   | <p><b><u>Z. Biesinger</u></b><br/>                     Lake Sturgeon Spawning Habitat Use in the Lower Niagara River from Radio Telemetry</p>                 | <p><b><u>M. Child</u></b><br/>                     Lake Erie's Western Basin: What are the Factors and Influences Driving Harmful Algal Blooms?</p>          | 8:00 |
| <p><b><u>H. Hu</u></b><br/>                     Simulation of Lake Erie ice and thermodynamics</p>                             | <p><b><u>E. Bruestle</u></b><br/>                     Investigating lake sturgeon habitat use and residency in the Lower Niagara River</p>                    | <p><b><u>J.F. Bratton</u></b><br/>                     Connections between algal blooms, land use history, and glacial lake plains in the Great Lakes</p>    | 8:20 |
| <p><b><u>A.J. Bechle</u></b><br/>                     Meteorological Tsunami Occurrence and Trends: Great Lakes and Beyond</p> | <p><b><u>P.W. Willink</u></b><br/>                     Activity Patterns of Lake Sturgeon in Lakes Erie and Ontario using Pop-off Archival Satellite Tags</p> | <p><b><u>T.W. Davis</u></b><br/>                     Investigating the Ecology and Toxicity of the CyanoHAB during the 2014 Toledo Drinking Water Crisis</p> | 8:40 |
| <p><b><u>E.J. Anderson</u></b><br/>                     Detection and Reconstruction of a Meteotsunami on Lake Erie</p>        | <p><b><u>J. Boase</u></b><br/>                     Habitat use and migration patterns of lake sturgeon in the Detroit-St. Clair river system</p>              | <p><b><u>S.S. Qian</u></b><br/>                     Risk Assessment of Microcystin Contamination in Drinking Water - A Bayesian Approach</p>                 | 9:00 |
| <b>BREAK</b>   |   |  | 9:20 |

# TUESDAY, MAY 26

|       | <b>Jost</b>   | <b>Chittenden</b>   | <b>Frank Livak</b>   | <b>Williams</b>  |
|-------|---|---|--|--|
|       | <p><b>New Perspectives and Techniques for Non-Native Species Risk, Monitoring and Management</b><br/> <i>Co-Chairs: Stephen Hensler, Meg Modley, Eric Holmlund, and James Boase</i></p> | <p><b>Long-Term Monitoring: Achievements and Challenges</b><br/> <i>Co-Chairs: Alexander Karatayev, Lars Rudstam, Lyubov Burlakova, and James Watkins</i></p> | <p><b>General Contributions</b><br/> <i>Chair: Seth Herbst</i></p>   | <p><b>Application of Trophic Markers in Aquatic Ecology</b><br/> <i>Co-Chairs: Jacques Rinchard and Sergiusz Czesny</i></p>  |
| 9:40  | <p><b><u>H. Rajakaruna</u></b><br/>           Performance of species richness estimators: implications for ballast water monitoring and management</p>                                  | <p><b><u>D.D. Kane</u></b><br/>           Ten Years Gone: Continued Degradation of Plankton Communities in Lakes Erie and Ontario</p>                         | <p><b><u>D.L. Yule</u></b><br/>           Morphometric and genetic analyses of contemporary Great Lakes cisco (<i>Coregonus artedii</i>)</p>   | <p><b><u>S.F. Colborne</u></b><br/>           Establishing Tissue Discrimination Values for the Use of Sulphur Isotopes in Freshwater Systems</p>                        |
| 10:00 | <p><b><u>E.S. Jensen</u></b><br/>           Protecting the Great Lakes from Internet Sales of AIS</p>   | <p><b><u>A.Y. Karatayev</u></b><br/>           Long-Term Dynamics of <i>Dreissena</i> spp. in Lake Erie: Insights for Population Boom and Bust</p>            | <p><b><u>Z.S. Feiner</u></b><br/>           Does overwinter temperature regulate maternal condition and offspring quality in yellow perch?</p> | <p><b><u>C. Hebert</u></b><br/>           Ground-truthing Amino Acid-specific <math>\delta^{15}\text{N}</math> Analysis in Birds: Results from Lab and Field Studies</p> |
| 10:20 | <p><b><u>K. Stanislawczyk</u></b><br/>           Comparison of Multiple Techniques for Identifying Rare Species in Hamilton Harbour</p>   | <p><b><u>J.C. Ho</u></b><br/>           28-year History of Blooms in Lake Erie Shows Foreshadowing of Increasing Susceptibility to Blooms</p>                 | <p><b><u>X.F. Zhang</u></b><br/>           Benthic-Pelagic Coupling by Worms and Bivalves in Shallow Lakes: the Key Role of Benthic Algae</p>  | <p><b><u>G.B. Arhonditsis</u></b><br/>           Using <i>Daphnia</i> physiology to drive food web dynamics: Lotka Volterra revisited</p>                                |
| 10:40 | <p><b><u>A.L. Morden</u></b><br/>           Interpopulation Variation in Hypoxia Tolerance of the Invasive Asian Clam</p>   | <p><b><u>L.G. Rudstam</u></b><br/>           Combining Long-Term Data Sets to Detect Changes in Lake Ontario's Lower Trophic Levels</p>                       | <p><b><u>D.J. McCabe</u></b><br/>           Benthic communities in Missisquoi Bay of Lake Champlain</p>  |  |
| 11:15 | <b>WELCOME &amp; PLENARY, Ira Allen Chapel</b>  |   |  |  |
| 12:20 | <b>LUNCH</b>  |   |  |  |

| Sugar Maple   | Aiken 110  | Mildred Livak   |       |
|---|--|---|-------|
| <p><b>Physical Processes in Lakes</b><br/> <i>Co-Chairs: Dmitry Beletsky, Chin Wu, and Eric Anderson</i></p>                                      | <p><b>Advancing the Use of Tags for Monitoring Movement and Habitat Use of Aquatic Species</b><br/> <i>Chair: Dmitry Gorsky</i></p>              | <p><b>HABs and the 2014 Toledo Drinking Water Crisis</b><br/> <i>Co-Chairs: Patrick Lawrence and Carol Stepien</i></p>                              |       |
| <p><b><u>C.H. Wu</u></b><br/>           Meteorologically induced high-frequency water level fluctuations in northern Lake Michigan</p>            | <p><b><u>A.B. Harbicht</u></b><br/>           Does Boosting Thiamine Levels of Adult Landlocked Atlantic Salmon Enhance Upstream Migration</p>   | <p><b><u>R.W. Jackwood</u></b><br/>           Restoration Projects to Reduce Phosphorus Loadings into Lake Erie: From Concept to Implementation</p> | 9:40  |
| <p><b><u>M.J. McCormick</u></b><br/>           Impact of Natural Heave Frequency on Surface Drifter Performance</p>                               | <p><b><u>C.R. Bronte</u></b><br/>           An Overview of the Great Lakes Mass Marking Program</p>  | <p><b><u>K. Czajkowski</u></b><br/>           Mapping drain tile to assess agricultural contribution to nonpoint source pollution in Lake Erie</p>  | 10:00 |
| <p><b><u>A. Linares</u></b><br/>           Role of High Frequency Water Level Oscillation on Contaminated Sediment Transport in Lake Michigan</p> | <p><b><u>M.S. Kornis</u></b><br/>           Movements, Reproduction, and Fishery Contributions of Chinook Salmon in Lakes Michigan and Huron</p> | <p><b><u>C.A. Stepien</u></b><br/>           A University's Response to the Toledo Water Crisis and ongoing HABs</p>                                | 10:20 |
| <p><b><u>B. Hlevca</u></b><br/>           Water-level fluctuations drive exchange in shallow embayments of the Toronto Waterfront</p>             | <p><b><u>N.M. Watson</u></b><br/>           Lake Michigan Steelhead: Where were you hatched?</p>   | <p><b><u>P.L. Lawrence</u></b><br/>           2014 Toledo Drinking Water Crisis: Community, Planning, Policy Issues and Responses</p>               | 10:40 |
| <b>WELCOME &amp; PLENARY, Ira Allen Chapel</b>  |  |   | 11:15 |
| <b>LUNCH</b>  |  |   | 12:20 |

# TUESDAY, MAY 26

|      | <b>Jost</b>  | <b>Chittenden</b>   | <b>Frank Livak</b>  | <b>Williams</b>  |
|------|--|---|---|--|
|      | <p><b>Sea Lamprey Control and Alternatives to Lampricides</b><br/> <i>Co-Chairs: Martin Mimeault and Bradley A. Young</i></p>                      | <p><b>Long-Term Monitoring: Achievements and Challenges</b><br/> <i>Co-Chairs: Alexander Karatayev, Lars Rudstam, Lyubov Burlakova, and James Watkins</i></p> | <p><b>Approaching Great Lakes Issues with more than the Usual Suspects: Role of Social Science</b><br/> <i>Co-Chairs: Katherine Bunting-Howarth and Jane Harrison</i></p> | <p><b>Integrating Food Web Ecology Across Gradients of Ecosystem Size</b><br/> <i>Co-Chairs: Michael Sierszen, Thomas Hrabik, Jason Stockwell, and Ellen Marsden</i></p> |
| 1:40 | <p><b><u>B. Young</u></b><br/>           Controlling Lake Champlain Sea Lamprey in Québec Using a Seasonally-Installed, Trap-and-Sort Weir</p>     | <p><b><u>N.E. Saavedra</u></b><br/>           Vertical Distribution of Crustacean Zooplankton in Lake Ontario: Advances in Long-Term Monitoring</p>           | <p><b><u>M.L. Martin</u></b><br/>           Adaptive Approaches to Governance in the Great Lakes Context: Beyond Command and Control Regulation</p>                       | <p><b><u>M.E. Sierszen</u></b><br/>           Examining Indirect Effects of Lake Trout Recovery</p>  |
| 2:00 | <p><b><u>S.N. Ruiter</u></b><br/>           The Importance of Dams to Sea Lamprey in the Great Lakes</p>   | <p><b><u>T.B. Mihuc</u></b><br/>           Plankton Community Long-Term Patterns in Lake Champlain, U.S.A.</p>  | <p><b><u>K.B. Friedman</u></b><br/>           Integrating science, policy &amp; economic considerations in understanding and managing nearshore waters</p>                | <p><b><u>B.P. O'Malley</u></b><br/>           Exploring Causes and Consequences of Lake Champlain's <i>Mysis</i> Decline: A Food Web Perspective</p>                     |
| 2:20 | <p><b><u>L.R. Tessier</u></b><br/>           Factors affecting lampricide uptake rates in the sea lamprey (<i>Petromyzon marinus</i>)</p>          | <p><b><u>D.E. Dittman</u></b><br/>           Habitat Distribution and Modeling in the Genesee River within the Rochester Embayment AOC, NY</p>                | <p><b><u>G. Perhar</u></b><br/>           Using large-scale machine learning and public sentiment for a more informed decision making process</p>                         | <p><b><u>N.J. Strayer</u></b><br/>           To Migrate or Not: Optimal Annual Routine Modeling to Evaluate <i>Mysis Diluviana</i> Migration Decisions</p>               |
| 2:40 | <p><b><u>B.L. Hlina</u></b><br/>           The seasonal differences in the TFM tolerance and TFM detoxification capacity in larval sea lamprey</p> | <p><b><u>D.B. Bunnell</u></b><br/>           Synchronicity in Recruitment Among Lake Michigan Fish Populations</p>  | <p><b><u>A. Heeren</u></b><br/>           Applying Social Science Research in Addressing Lake Erie's Algal Blooms</p>   | <p><b><u>H.P. Riessen</u></b><br/>           Water Temperature Alters Predation Risk and the Adaptive Landscape of Zooplankton Defenses</p>                              |
| 3:00 | <p><b><u>S.R. Lantz</u></b><br/>           Alternative (Next Generation) Lampricides</p>   | <p><b><u>K. McDonald</u></b><br/>           Twenty-Four Years of Cormorant Monitoring at Tommy Thompson Park: What Have we Learned?</p>                       | <p><b><u>S.A. Orlando</u></b><br/>           Preparing Marinas for the Next Super Storm: Addressing the Social Challenges Posed by Coastal Storms</p>                     | <p><b><u>K.L. Bowen</u></b><br/>           An Ecosystem Gradient Approach to Classifying Impairment of Plankton Communities</p>  |
| 3:20 | <b>BREAK</b>   |   |   |  |

| Sugar Maple   | Aiken 110   | Mildred Livak   |      |
|---|---|---|------|
| <p><b>Connections between Great lakes Coastal and Nearshore Ecosystems</b><br/> <i>Co-Chairs: Joel Hoffman, Matthew Cooper, and Anett Trebitz</i></p> | <p><b>The Urban Coast: Ecological Restoration in Cities</b><br/> <i>Chair: Jeff Schaeffer</i></p>   | <p><b>Holy Toledo! Nitrogen in the Great Lakes (Yes, Nitrogen): Blooms, Cyanotoxins, and Hypoxia</b><br/> <i>Co-Chairs: Mark McCarthy and Silvia Newell</i></p> |      |
| <p><b><u>D.A. Albert</u></b><br/>           Thirty Five Years of Great Lakes Marsh Vegetation Sampling: Cecil Bay, Michigan</p>                       | <p><b><u>K.O. Lutsky</u></b><br/>           The Design of Urban Rivers for the Great Lakes Basin</p>  | <p><b><u>H.W. Paerl</u></b><br/>           Mitigating harmful cyanobacterial blooms: The case for dual nutrient (N &amp; P) input reductions</p>                | 1:40 |
| <p><b><u>N.T. Schock</u></b><br/>           Chemical and Physical Habitat Gradients within Great Lakes Coastal Wetlands</p>                           | <p><b><u>M.A. Alarcon</u></b><br/>           Visualizing the Dynamic Shorelines of the Great Lakes</p>  | <p>Previous Presentation Continued</p>  | 2:00 |
| <p><b><u>M.J. Cooper</u></b><br/>           Nitrogen Limitation of Algal Biofilms in Coastal Wetlands of Lakes Michigan and Huron</p>                 | <p><b><u>B.P. Neff</u></b><br/>           Panarchy 101: A tool to help scientists and urban planners understand one another</p>                           | <p><b><u>M.S. Rosamond</u></b><br/>           N Application, Catchment Geography and N Export in Small, Agricultural Catchments in the Great Lakes</p>          | 2:20 |
| <p><b><u>J.J. Pauer</u></b><br/>           What Models can Teach us about Watershed-Nearshore Relationships that Observational Studies Cannot</p>     | <p><b><u>T.R. Angradi</u></b><br/>           Mapping ecosystem services in the St. Louis River Estuary</p>  | <p><b><u>M. Fitzpatrick</u></b><br/>           Towards a Broader Understanding of the Structure and Function of Algal Blooms in the Great Lakes</p>             | 2:40 |
| <p><b><u>K.M. Chomicki</u></b><br/>           Nutrient Distributions And The Interaction Between Coastal Wetlands And The Nearshore of L. Ontario</p> | <p><b><u>B.C. Suedel</u></b><br/>           Increasing Habitat Value on Great Lakes Coastal Structures through the Engineering With Nature Initiative</p> | <p><b><u>J.D. Chaffin</u></b><br/>           Cyanobacteria Growth and Microcystin Production Response to Nitrogen Form and Loading Rate</p>                     | 3:00 |
| <b>BREAK</b>  |   |   | 3:20 |

# TUESDAY, MAY 26

|      | Jost  | Chittenden  | Frank Livak   | Williams   |
|------|---|---|---|--|
|      | <p><b>New Perspectives and Techniques for Non-Native Species Risk, Monitoring and Management</b><br/> <i>Co-Chairs: Stephen Hensler, Meg Modley, Eric Holmlund, and James Boase</i></p> | <p><b>Advances in Technology for Lower Trophic Studies and Implications up the Foodweb</b><br/> <i>Co-Chairs: Kevin Keeler, Patricia Armenio, Paris Collingsworth, Harry Nelson, Euan Reavie, and Michael Cobrs</i></p> | <p><b>Approaching Great Lakes Issues with more than the Usual Suspects: Role of Social Science</b><br/> <i>Co-Chairs: Katherine Bunting-Howarth and Jane Harrison</i></p> | <p><b>Contaminants in the Lower Trophic Levels of the Great Lakes</b><br/> <i>Co-Chairs: Jacob Ogorek and Chuck Madenjian</i></p>                    |
| 3:40 | <p><b><u>M.R. Snyder</u></b><br/>           Invasion genetics of the Eurasian round goby in North America: patterns across time and space</p>   | <p><b><u>H. Nelson</u></b><br/>           Improved methodology for automated identification of plankton using an Imaging Flow Cytometer</p>   | <p><b><u>R.C. Stedman</u></b><br/>           Human Dimensions of Great Lakes Fisheries: Managers' Information Needs</p>   | <p><b><u>K.R. Rolfhus</u></b><br/>           Mercury in the Aquatic Food Webs of Six National Parks of the Western Great Lakes Region</p>            |
| 4:00 | <p><b><u>A.J. Miano</u></b><br/>           Invasive Round Goby Diet Patterns and Egg Predation on Broadcast Spawning Fishes in Coastal Habitats</p>                                     | <p><b><u>M. Munawar</u></b><br/>           Evaluating Natural Phytoplankton Communities by In Situ Fluorescence and Utermöhl Microscopy</p>   | <p><b><u>J.H. Harrison</u></b><br/>           Assessing the Economic Cost of Water Quality Degradation at Lake Michigan Beaches</p>                                       | <p><b><u>R.L. Lepak</u></b><br/>           Utilizing Ambient Mercury Stable Isotopes in Lake Erie</p>  |
| 4:20 | <p><b><u>D. Betcher</u></b><br/>           Sea lamprey control barriers and treatments: New mapping and data visualization tools</p>  | <p><b><u>M.A. Hutton</u></b><br/>           Nearshore Primary Production in Lake Michigan: Analysis of Trends Using Remote Sensing Techniques</p>   | <p><b><u>D.R. Pearsall</u></b><br/>           Conservation for People: Integrating Human Wellbeing into Coastal Conservation for Western Lake Erie</p>                    | <p><b><u>C.P. Madenjian</u></b><br/>           Males exceed females in PCB concentrations of cisco (<i>Coregonus artedii</i>) from Lake Superior</p> |
| 4:40 | <p><b><u>K.J. Juneau</u></b><br/>           Ecological Response to Eurasian Watermilfoil Management in a Lake Superior Coastal Waterway</p>   | <p><b><u>J.M. Watkins</u></b><br/>           Tracking diel vertical migration using advanced technology and net tows in Lake Ontario</p>  | <p><b><u>O. Lyandres</u></b><br/>           Enabling change: collaboration to achieve nutrient reductions in the Lower Fox River watershed</p>                            |  |
| 5:00 | <p><b><u>N.J. Kosmenko</u></b><br/>           Correlating fish growth with metabolic rate to assess trophic impact of AIS</p>   | <p><b><u>A.H. Reid</u></b><br/>           Measuring the "Ins and Outs" of <i>Daphnia pulex</i> Foraging Energetics and Their Food Web Implications</p>  |   |  |
| 5:20 | <p><b><u>J.C. Iacarella</u></b><br/>           Calcium Limits Growth and Predatory Response of Round Gobies</p>   | <p><b><u>K.M. Keeler</u></b><br/>           Rolling Down the St. Clair-Detroit Rivers: Analyzing Spatial Movement of Copepods to Coregonines</p>  |   |  |

| Sugar Maple   | Aiken 110   | Mildred Livak   |      |
|---|---|---|------|
| <p><b>Connections between Great lakes Coastal and Nearshore Ecosystems</b><br/> <i>Co-Chairs: Joel Hoffman, Matthew Cooper, and Anett Trebitz</i></p>                 | <p><b>The Urban Coast: Ecological Restoration in Cities</b><br/> <i>Chair: Jeff Schaeffer</i></p>   | <p><b>Holy Toledo! Nitrogen in the Great Lakes (Yes, Nitrogen): Blooms, Cyanotoxins, and Hypoxia</b><br/> <i>Co-Chairs: Mark McCarthy and Silvia Nevell</i></p> |      |
| <p><b><u>J.C. Hoffman</u></b><br/>                     Energy and Nutrient Flows Connecting Coastal Wetland Food Webs to Land and Lake</p>                            | <p><b><u>S.L. Burkholder</u></b><br/>                     Confined Disposal Facilities as Accessible Urban Habitat</p>                                      | <p><b><u>T. Tuttle</u></b><br/>                     Evaluation of Increasing N and P Concentrations on Planktothrix in Sandusky Bay</p>                         | 3:40 |
| <p><b><u>L.S. Schoen</u></b><br/>                     Sources of Energy Supporting Food Webs of Two Wetland Types in Lakes Michigan and Huron</p>                     | <p><b><u>D. Bennion</u></b><br/>                     Coastal Navigational Infrastructure as a Source of Environmental Services</p>                          | <p><b><u>W.S. Gardner</u></b><br/>                     Reduced-nitrogen may Stimulate Microcystis Blooms in Lakes Taihu and Lake Erie</p>                       | 4:00 |
| <p><b><u>S.R. Stein</u></b><br/>                     Early Life Habitat Utilization of Fishes in Southern Lake Michigan Rivermouths</p>                               | <p><b><u>J.A. Jackson</u></b><br/>                     Reconnecting the Great Lakes Water Cycle through Water Conservation &amp; Green Infrastructure</p>   | <p><b><u>J.J. Hampel</u></b><br/>                     Nitrification rates and the microbial community structure in hypereutrophic Lake Taihu, China</p>         | 4:20 |
| <p><b><u>J.J.H. Ciborowski</u></b><br/>                     Developing Bioindicators of Environmental Condition &amp; Recovery Relative to Watershed-Based Stress</p> | <p><b><u>R. Toningner</u></b><br/>                     Turning an accidental wilderness into meaningful habitat and park space in Canada's largest city</p> | <p><b><u>N.D. Fredrick</u></b><br/>                     Nitrogen Cycling Dynamics in Lake Taihu Explored With Mathematical Modeling</p>                         | 4:40 |
| <p><b><u>D.G. Uzarski</u></b><br/>                     Interpreting Multiple Organism-Based IBIs and Disturbance Gradients: Basin Wide Monitoring</p>                 |   | <p><b><u>M.J. McCarthy</u></b><br/>                     The importance and challenges of accurately measuring ammonium in aquatic systems</p>                   | 5:00 |
|   |   | <p>Previous Presentation Continued</p>  | 5:20 |

CANCELED

# WEDNESDAY, MAY 27

|      | <b>Jost</b>   | <b>Chittenden</b>  | <b>Frank Livak</b>  | <b>Williams</b>  |
|------|---|--|---|--|
|      | <p><b>Invasive Mussels: Informing a New Collaborative for Great Lakes Managers and Scientists</b><br/><i>Co-Chairs: David Bunnell and Ashley Baldrige</i></p> | <p><b>Great Lakes Education and Outreach</b><br/><i>Chair: Helen Domske</i></p>  | <p><b>Ballast Water Treatment to Prevent Aquatic Invasive Species</b><br/><i>Chair: Jeff Henquinet</i></p>                                | <p><b>Multiple Stressors and Cumulative Effects: From Theory to Practice</b><br/><i>Co-Chairs: Paul Sibley, Irena Creed, Katrina Laurent, and Soren Brothers</i></p> |
| 8:00 |   | <p><b><u>F.R. Eanes</u></b><br/>Bottom-Up: Tools for integrating community knowledge and values in natural resource decision making</p>      | <p><b><u>J.W. Henquinet</u></b><br/>UV Ballast Water Treatment: The Viability Conundrum</p>   | <p><b><u>P.C. Van Metre</u></b><br/>Evaluating Relations Between Stressors and Ecological Endpoints in Streams at the Regional Scale</p>                             |
| 8:20 | <p><b><u>E.S. Jensen</u></b><br/>Overview of the Invasive Mussel Collaborative: Connecting People, Science and Management</p>                                 | <p><b><u>J.R. Williams</u></b><br/>Teacher collaboration leads to innovative shipboard programming</p>                                       | <p><b><u>O. Casas-Monroy</u></b><br/>Examining Cold Temperature Effects on the Efficacy of UV Ballast Water Treatment</p>                 | <p><b><u>J. Li</u></b><br/>Multiple drivers impact on phytoplankton composition in Lake Simcoe, ON, Canada, 1980-2012</p>  |
| 8:40 | <p><b><u>T. Hubert</u></b><br/>An Introduction to Integrated Pest Management</p>  | <p><b><u>E.K. De Vries</u></b><br/>Watershed Wise: Teacher trainings bring water quality education program to a school near you</p>          | <p><b><u>K.E. Klymus</u></b><br/>Developing Genetic Assays To Detect Aquatic Invasive Invertebrate Species From Environmental Samples</p> | <p><b><u>J.I. St Pierre</u></b><br/>Cumulative effects of human land-use on benthic community condition at Great Lakes coastal margins</p>                           |
| 9:00 | <p><b><u>J.A. Luoma</u></b><br/>Efficacy and Application of Zequanox® in USGS Field Trials</p>  | <p><b><u>A.K. Neubauer</u></b><br/>The Center for Great Lakes Literacy: Creating Synergy among Educators, Scientists, and Students</p>       | <p><b><u>J.W. Henquinet</u></b><br/>Rapid Response for Invasive Species in Ballast Water: Policy and Practicality</p>                     | <p><b><u>L.B. Johnson</u></b><br/>Uses and interpretation of human disturbance gradients for condition assessment in Great Lakes coast</p>                           |
| 9:20 | <p><b><u>D.L. Waller</u></b><br/>Evaluation of the Impacts of Zequanox® to Nontarget Organisms</p>  | <p><b><u>L.K. Kammin</u></b><br/>PPCPs in Great Lakes States &amp; Beyond: Illinois-Indiana Sea Grant's Approach to Pollution Prevention</p> | <p><b><u>P.A. Green</u></b><br/>Status of Rapid Response Tools for Ballast Vector</p>   | <p><b><u>Y.P. Yongabo</u></b><br/>Assessment of the Impact of Land Cover and Land Use on Rwandan Fisheries and Catches in Lake Kivu</p>                              |
| 9:40 | <b>BREAK</b>  |  |   |  |



| Brennan's  | Aiken 110   | Mildred Livak  |      |
|--|---|--|------|
| <p><b>Physical Processes in Lakes</b><br/> <i>Co-Chairs: Dmitry Beletsky, Chin Wu, and Eric Anderson</i></p>   | <p><b>Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes</b><br/> <i>Co-Chairs: George Lesbkeevich and Robert Shuchman</i></p>  | <p><b>Nutrient Cycling in Coastal Environments: Temporal Variability of Processes and Fluxes</b><br/> <i>Co-Chairs: Christopher Parsons and Philippe Van Cappellen</i></p> |      |
| <p><b><u>P. Xue</u></b><br/>                     Interaction of atmospheric surface forcing and hydrodynamic modeling of the lake thermal structure</p>          | <p><b><u>B. Krumwiede</u></b><br/>                     Visualizing the Impacts of Changing Water Levels in the U.S. Great Lakes: NOAA's Lake Level Viewer</p> | <p><b><u>C.A. Stow</u></b><br/>                     Long-Term and Seasonal Trend Decomposition of Maumee River Nutrient Inputs to Western Lake Erie</p>                    | 8:00 |
| <p><b><u>J.A. Austin</u></b><br/>                     Temporal and Spatial distribution of sediment resuspension in coastal Lake Superior</p>                    | <p><b><u>D.M. O'Donnell</u></b><br/>                     Underway measurements of the inherent optical properties of Lake Erie and Lake Ontario</p>           | <p><b><u>K.J. Gibbons</u></b><br/>                     The Effect of Temperature on Internal Loading of Phosphorus in the Western Basin of Lake Erie</p>                   | 8:20 |
| <p><b><u>J.G.W. Kelley</u></b><br/>                     Upgrade of NOAA/NOS' Lake Erie Operational Forecast System to FVCOM: Skill Assessment</p>                | <p><b><u>F. Peng</u></b><br/>                     Single-particle optics approach in studying IOPs of mineral particles and optical variability</p>           | <p><b><u>J.A. Marino</u></b><br/>                     Spatio-temporal Patterns in the Fungal Community Associated with Lake Erie Harmful Algal Blooms</p>                  | 8:40 |
| <p><b><u>A. vanderWesthuysen</u></b><br/>                     A High-Resolution Atmospheric, Wave and Circulation Forecast System for the Great Lakes Region</p> | <p><b><u>R. Sawtell</u></b><br/>                     Water Quality Observations in the Great Lakes Using an Optimized Satellite Bio-optical Algorithm</p>     | <p><b><u>M. Behbahani</u></b><br/>                     Application of Microelectrodes to Measure Soluble Reactive Phosphorous in Lake Erie Sediments</p>                   | 9:00 |
| <p><b><u>P.J. Roebber</u></b><br/>                     The summertime warming trends in surface water temperature of the Great Lakes</p>                         | <p><b><u>M.J. Sayers</u></b><br/>                     Bio-optical Retrieval Algorithm for the Optically Shallow Waters of the Great Lakes</p>                 | <p><b><u>W.J. Edwards</u></b><br/>                     Alteration of Near-Bed Velocity and Nutrient Dynamics by Dreissenid Mussels in the Near Shore</p>                   | 9:20 |
| <b>BREAK</b>   |   |  | 9:40 |

# WEDNESDAY, MAY 27

|       | <b>Jost</b>   | <b>Chittenden</b>  | <b>Frank Livak</b>   | <b>Williams</b>  |
|-------|---|--|--|--|
|       | <p><b>Invasive Mussels: Informing a New Collaborative for Great Lakes Managers and Scientists</b><br/><i>Co-Chairs: David Bunnell and Ashley Baldrige</i></p> | <p><b>Big Lakes, Big Opportunities: Using Complex Data to Understand Environmental Change in Great Lakes of the World</b><br/><i>Co-Chairs: Yaoyang Xu, Sigrid Smith, and Kara Woo</i></p> | <p><b>Ballast Water Treatment to Prevent Aquatic Invasive Species</b><br/><i>Chair: Jeff Henquinet</i></p>                               | <p><b>Multiple Stressors and Cumulative Effects: From Theory to Practice</b><br/><i>Co-Chairs: Paul Sibley, Irena Creed, Katrina Laurent, and Soren Brothers</i></p> |
| 10:00 | <p><b><u>M.E. Nicholson</u></b><br/>Community-level Response to Zequanox® in Aquatic Mesocosms</p>  | <p><b><u>D.K. Gray</u></b><br/>A Global Database of Lake Surface Temperatures from 1985-2009</p>   | <p><b><u>B.J. Watten</u></b><br/>Evolution of a NaOH / CO2 based Ballast Treatment Process for the Great Lakes Fleet</p>                 | <p><b><u>S.M. Brothers</u></b><br/>From the Bottom Up: Integrating the Benthos for a Fuller Understanding of the Laurentian Great Lakes</p>                          |
| 10:20 | <p><b><u>D.R. Kashian</u></b><br/>Cyanobacteria limits dreissenid sperm mobility and fertilization success</p>  | <p><b><u>K.H. Woo</u></b><br/>Data Management and Building Community in a Global Synthesis of Under-Ice Productivity</p>   | <p><b><u>A.A. Elskus</u></b><br/>A NaOH-based ballast water treatment system for freshwater ships: residual toxicity and chemistry</p>   | <p><b><u>N.F. Manning</u></b><br/>Lake Scale Planning: Unpacking Cumulative Stress and Ecosystem Services at Multiple Spatial Scales</p>                             |
| 10:40 | <p><b><u>D.P. Molloy</u></b><br/>The Future of Dreissenid Control in Open Waters</p>  | <p><b><u>N.E. Dobiesz</u></b><br/>Standardization, sharing, and ownership: key areas of concern for Great Lakes database integration</p>   | <p><b><u>P.L. Sibrell</u></b><br/>Chemical Characterization of Ballast Water and Precipitates Generated by Elevated pH Treatment</p>     | <p><b><u>J.D. Igras</u></b><br/>Managing cumulative ecosystem risk in Lake Erie from nutrient stressors in the Grand River Watershed</p>                             |
| 11:00 | <p><b><u>L.M. Collis</u></b><br/>Determining the spatial and temporal distribution of <i>Dreissena veligers</i> in Lake Ontario</p>                           | <p><b><u>P.C. Golnick</u></b><br/>A Statistical Comparison of Sampling and Analytical Methods Used by Lake Erie Research Institutions</p>  | <p><b><u>N.L. Bassett</u></b><br/>The Challenge of Ballast Water Treatment on Great Lakes Ships and Pursuit of a Home-Grown Solution</p> | <p><b><u>K.L. Laurent</u></b><br/>A systems approach to policy analysis for risk management in the Great Lakes Basin</p>   |
| 11:20 | <p><b><u>B.K. Ginn</u></b><br/>Quaggas Rising: Shifting Benthic Dominance from Zebra to Quagga Mussels in Lake Simcoe (ON, Canada)</p>                        | <p><b><u>J.A. Schofield</u></b><br/>Approaches to Manage &amp; Integrate Data-rich Sensor Technology into Long Term Monitoring Projects</p>  |  | <p><b><u>S. Jetoo</u></b><br/>Eutrophication Governance: Comparison of the Great Lakes and the Chesapeake Bay</p>  |
| 11:40 | <p><b><u>A.L. Hetherington</u></b><br/>Comparison of Zebra and Quagga Mussel Clearance Rates across Annual Lake Temperatures</p>                              | <p><b><u>D.R. Obenour</u></b><br/>Mapping the Dreissenid Mussel Invasion of Lake Michigan</p>  |  |  |
| 12:00 | <b>BUSINESS LUNCH, Sugar/Silver Maple Ballrooms</b>   |  |  |  |

| Brennan's   | Aiken 110   | Mildred Livak  |       |
|---|---|--|-------|
| <p><b>Physical Processes in Lakes</b><br/> <i>Co-Chairs: Dmitry Beletsky, Chin Wu, and Eric Anderson</i></p>  | <p><b>Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes</b><br/> <i>Co-Chairs: George Leshkevich and Robert Shuchman</i></p>     | <p><b>Nutrient Cycling in Coastal Environments: Temporal Variability of Processes and Fluxes</b><br/> <i>Co-Chairs: Christopher Parsons and Philippe Van Cappellen</i></p> |       |
| <p><b><u>T.O. Manley</u></b><br/>                     Prehistoric Landslides and the Potential for Tsunami in Lake Champlain</p>                                | <p><b><u>J. Lekki</u></b><br/>                     Airborne Hyperspectral remote sensing of Harmful Algal Blooms in western Lake Erie</p>                       | <p><b><u>C.P. Palermo</u></b><br/>                     Bacterial community analysis: Evidence for the biogenic origin of manganese-enriched sediment layers</p>            | 10:00 |
| <p><b><u>M.W. Swinton</u></b><br/>                     Stream temperature extremes attenuated by groundwater influence intrusion depth into Lake George, NY</p> | <p><b><u>J.D. Ortiz</u></b><br/>                     An estimate of the composition of the 2014 Lake Erie CyanoHAB by VNIR derivative spectroscopy</p>          | <p><b><u>C.T. Parsons</u></b><br/>                     Redox Controlled Internal Loading of Phosphorus and Silicon to Cootes Paradise Marsh</p>                            | 10:20 |
| <p><b><u>A.T. King</u></b><br/>                     3D Modeling of Hydrodynamics and Residence Time on Cayuga Lake's Southern Shelf</p>                         | <p><b><u>R.H. Becker</u></b><br/>                     Interpretation of Airborne Hyperspectral Data for HAB identification</p>                                  | <p><b><u>J.V. Klump</u></b><br/>                     The Biogeochemistry of Sediment-Water Interactions in a Seasonally Hypoxic Embayment</p>                              | 10:40 |
| <p><b><u>B. Flood</u></b><br/>                     Large internal waves structure the thermal habitat of coldwater fish in Kempenfelt Bay, Lake Simcoe</p>      | <p><b><u>T.T. Wynne</u></b><br/>                     Predicting impacts of cyanobacteria in Lake Erie based on spatiotemporal trends</p>                        | <p><b><u>A. Schroth</u></b><br/>                     Dynamic coupling of trace metal and phosphorous behavior underneath the ice of Missisquoi Bay</p>                     | 11:00 |
| <p><b><u>T. Wood</u></b><br/>                     Changes in the Mixing Regime of Central Lake in a Future Climate</p>  | <p><b><u>G.A. Leshkevich</u></b><br/>                     Preliminary Assessment of Sentinel-1 SAR Data for Great Lakes Ice Type Classification and Mapping</p> | <p><b><u>M. Dittrich</u></b><br/>                     Dynamics of phosphorus at the sediment-water interface in lakes of different trophic states</p>                      | 11:20 |
| <p><b><u>C.E. Freeman</u></b><br/>                     Recent Observations of the Physical Limnology of Lake Malawi</p>   | <p><b><u>D.K. Hall</u></b><br/>                     Ice Growth and Decay on Lake Superior and Ice Type Classification: Winter of 2013 - 2014</p>                | <p>Previous Presentation Continued</p>   | 11:40 |
| <p><b>BUSINESS LUNCH, Sugar/Silver Maple Ballrooms</b></p>  |   |  | 12:00 |

# WEDNESDAY, MAY 27

|      | Jost  | Chittenden   | Frank Livak  | Williams  |
|------|---|--|--|---|
|      | <p><b>Invasive Mussels: Informing a New Collaborative for Great Lakes Managers and Scientists</b><br/><i>Co-Chairs: David Bunnell and Ashley Baldrige</i></p> | <p><b>Big Lakes, Big Opportunities: Using Complex Data to Understand Environmental Change in Great Lakes of the World</b><br/><i>Co-Chairs: Yaoyang Xu, Sigrid Smith, and Kara Woo</i></p> | <p><b>Environmental Chemistry, Discoveries and Biotic Effects of Chemicals of Emerging Concern</b><br/><i>Co-Chairs: Elizabeth Murphy, James Pagano, Daryl McGoldrick, and Ted Smith</i></p> | <p><b>Anthropogenic Influences on Aquatic Food Webs</b><br/><i>Co-Chairs: Allison R. Hrycik, L. Zoe Almeida, and Stuart A. Ludsin</i></p> |
| 1:20 | <p><b>J.D. White</b><br/>Mass Mortality of Zebra Mussels at Sublethal Temperatures: Implications for a Complex Interaction</p>                                | <p><b>A.A. Hamed</b><br/>Measuring The Climate Change Impact on Water Quality Using a Weather Generator Pegasus Workflow</p>   | <p><b>D.J. McGoldrick</b><br/>Beth and Daryl's "Top 40" terrible, horrible, no good, very bad contaminants in Great Lakes Fish</p>   | <p><b>L.Z. Almeida</b><br/>The effects of hypoxia on yellow perch (<i>Perca flavescens</i>) foraging behavior and physiology</p>          |
| 1:40 | <p><b>A.S. McNaught</b><br/>A Mesocosm Investigation of the Direct Effects of Quagga Mussels on Lake Michigan Zooplankton</p>                                 | <p><b>A. Zia</b><br/>An Autoregressive Bayesian Network to Assess Climate &amp; Nutrient Variability Impacts on Water Quality</p>  | <p><b>M.S. Milligan</b><br/>Identification and quantitation of legacy contaminant degradation products in Great Lakes fish</p>   | <p><b>M.T. Arts</b><br/>Simple and Complex Lipid-Based Indices of Ecosystem Health</p>  |
| 2:00 | <p><b>J. Gobin</b><br/>Dreissenids may affect how size-selective mortality influences maturation in lake whitefish</p>  | <p><b>T.B. Bridgeman</b><br/>Apples to Apples: A Bayesian Approach for Comparing Water Quality Measurements</p>  | <p><b>S.R. Corsi</b><br/>Organic Contaminants in Great Lakes Tributaries: Watersheds and Chemicals of Greatest Concern</p>   | <p><b>A.R. McGrew</b><br/>Herbivorous Feeding Behaviors of an Invasive Omnivore, <i>Hemimysis anomala</i></p>                             |
| 2:20 | <p><b>E.S. Rutherford</b><br/>Run DMC! Forecasting Ecological Impacts of Dreissenid Mussel Control on Great Lakes Food Webs</p>                               | <p><b>S.D.P. Smith</b><br/>Synthesizing and Modeling Interactions among Environmental Stressors in the Laurentian Great Lakes</p>  | <p><b>J. Li</b><br/>Hg and PCB accumulation of wild bluegill from five lakes at varying latitudes</p>  | <p><b>H. Niblock</b><br/>Assessing the Eutrophication Beneficial Use Impairment in the Toronto Harbour Area of Concern</p>                |
| 2:40 | <p><b>A.K. Baldrige</b><br/>The status of Dreissenid mussels in the Great Lakes and suggested future research directions</p>                                  | <p><b>Y. Xu</b><br/>Applying spectral analysis to quantify the drivers of cyanobacterial blooms</p>  | <p><b>M. Zaqout</b><br/>Comparison of chemical kinetics in mussels and SPMDs using a consistent set of PRCs</p>  | <p><b>R.B. Briland</b><br/>Zooplankton community response to re-eutrophication and <i>Microcystis</i> blooms in Lake Erie</p>             |
| 3:00 |   | <p><b>W. Xu</b><br/>Algorithmic Detection of Deep Chlorophyll Layers in Great Lakes Water Quality Data</p>   | <p><b>N. Alexandrou</b><br/>Air Concentrations of Alternative Flame Retardants and PBDEs in the Canadian Great Lakes Basin.</p>  | <p><b>A.R. Hrycik</b><br/>Determining an ecologically-relevant definition of hypoxia</p>  |

| Brennan's  | Aiken 110  | Mildred Livak  |      |
|--|--|--|------|
| <p><b>Urban Ecohydrology in the Great Lakes Watershed</b><br/> <i>Co-Chairs: Claire Oswald, Christopher Wellen, and Oni Stephen</i></p>              | <p><b>Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes</b><br/> <i>Co-Chairs: George Lesbkeovich and Robert Shuchman</i></p> | <p><b>Advances in Hydrological Modelling for Operational Forecasting of Lake Levels</b><br/> <i>Co-Chairs: Vincent Fortin, Andrew D. Gronewold, Etienne Gaborit, Lauren Fry, Catherine Riseng, and Lacey Mason</i></p> |      |
| <p><b><u>C.J. Oswald</u></b><br/>           Meta-Analysis of Chloride Chronic and Acute Toxicity to Freshwater Invertebrates in Southern Ontario</p> | <p><b><u>W.G. Pichel</u></b><br/>           Current NOAA Operational Satellite SAR-Derived Wind Products and Plans for Utilizing Sentinel-1 Data</p>         | <p><b><u>M.A. Boucher</u></b><br/>           Assessing the hydrological uncertainty for optimal management of Lake St-Jean</p>   | 1:20 |
| <p><b><u>S.K. Oni</u></b><br/>           Chloride Storage Across a Gradient of Urban Watersheds in Southern Ontario, Canada</p>                      | <p><b><u>G. Kang</u></b><br/>           Identifying and Quantifying Coastal Upwellings in Lake Michigan using satellite SST data</p>                         | <p><b><u>L. Fry</u></b><br/>           Assessment of U.S. Army Corps of Engineers Monthly Net Basin Supply Forecasting Methods</p>   | 1:40 |
| <p><b><u>B.J. Mahler</u></b><br/>           Pavement Sealcoat, Polycyclic Aromatic Hydrocarbons (PAHs), and Water Quality of Urban Water Bodies</p>  | <p><b><u>G. Meadows</u></b><br/>           Remote sensing-based detection and monitoring of dangerous nearshore currents</p>                                 | <p><b><u>C. Chiu</u></b><br/>           Macro-Scale Correction of Precipitation Gauge Undercatch in the Midwest/Great Lakes Region</p>   | 2:00 |
| <p><b><u>L.E. McPhillips</u></b><br/>           Biogeochemical cycling in grassed roadside ditches</p>   | <p><b><u>B. Comer</u></b><br/>           Air pollution in the Great Lakes region: Implications for environmental justice</p>                                 | <p><b><u>R.A. Bolinger</u></b><br/>           Improving Climate Inputs into Operational Lake Level Forecasts</p>   | 2:20 |
| <p><b><u>D.K. Kim</u></b><br/>           Coupling public perception and watershed modelling with the water quality criteria setting process</p>      | <p><b><u>K. Mehler</u></b><br/>           Benthic habitat mapping using remote sensing and GIS in the Niagara River</p>                                      | <p><b><u>K.W. Robinson</u></b><br/>           Developing the Next Generation of Flood Forecasting in the Lake Champlain-Richelieu River</p>  | 2:40 |
| <p><b><u>Z.A. Miller</u></b><br/>           Management of Combined Sewer Overflows in Cleveland, Ohio</p>  |  | <p><b><u>E. Gaborit</u></b><br/>           Great-Lakes Runoff Inter-comparison Project for lake Ontario (GRIP-O)</p>   | 3:00 |

# THURSDAY, MAY 28

|      | <b>Jost</b>   | <b>Chittenden</b>  | <b>Frank Livak</b>   | <b>Williams</b>  |
|------|---|--|--|--|
|      | <p><b>Plastic Pollution within the Great Lakes Ecosystem</b><br/><i>Chair: Sherri "Sam" Mason</i></p>                                     | <p><b>Data and Science Priorities for Managing Water Use in the Great Lakes-St. Lawrence River</b><br/><i>Chair: Jim Nicholas</i></p>  | <p><b>Environmental Chemistry, Discoveries and Biotic Effects of Chemicals of Emerging Concern</b><br/><i>Co-Chairs: Elizabeth Murphy, James Pagano, Daryl McGoldrick, and Ted Smith</i></p> | <p><b>Where the Lake Meets the River: Ecology of Connecting Rivers in the Great Lakes</b><br/><i>Co-Chairs: Alicia Perez-Fuentetaja and Randall Snyder</i></p> |
| 8:00 | <p><b><u>M.B. Duhaime</u></b><br/>Multidisciplinary approach to assessing the impact of microplastics on Great Lakes ecosystem health</p> | <p><b><u>T.J. Calappi</u></b><br/>Great Lakes Connecting Channels and Diversions, and their impact on the Great Lakes Water Budget</p> | <p><b><u>A.D. Point</u></b><br/>Perfluoroalkyl Acid (PFAA) Concentrations and Accumulation Potential Among Great Lakes Fish</p>  | <p><b><u>A. Pérez-Fuentetaja</u></b><br/>Population dynamics and reproduction of the emerald shiner in the upper Niagara River</p>                             |
| 8:20 | <p><b><u>A.G.J. Driedger</u></b><br/>Macroplastic Debris along Shorelines of the Great Lakes</p>  | <p><b><u>R.A. Pearson</u></b><br/>Tracking Human Uses of the Great Lakes-St. Lawrence River Water Resources</p>                        | <p><b><u>B.S. Crimmins</u></b><br/>Identifying Emerging Contaminants in Lake Erie Trout using Atmospheric Pressure GC-QTOF-MS</p>  | <p><b><u>R. Snyder</u></b><br/>Growth and Mortality of Emerald Shiners (<i>Notropis atherinoides</i>) in the Niagara River, NY</p>                             |
| 8:40 | <p><b><u>A.M. Ballent</u></b><br/>Microplastic Accumulation in Beach and Lake Bottom Sediments of Lake Ontario, North America</p>         | <p><b><u>A.D. Gronewold</u></b><br/>Improving the historical record of the Great Lakes water budget</p>                                | <p><b><u>M.R. Risch</u></b><br/>Mercury Concentrations and Stable Isotopes in Litterfall for Understanding Loads to Forests</p>  | <p><b><u>A.H. Hannes</u></b><br/>Upbound Emerald Shiners - Locking Through to Lake Erie<br/><b>CANCELED</b></p>  |
| 9:00 | <p><b><u>A.K. Baldwin</u></b><br/>Microplastics in Great Lakes Tributaries</p>  | <p><b><u>D. Glance</u></b><br/>A review of progress on protections, governance, and reflections on challenges and priorities</p>       | <p><b><u>T.M. Holsen</u></b><br/>Mercury in Great Lakes Fish: Are Global Mercury Inputs Affecting the Great Lakes Ecosystem?</p>   | <p><b><u>S. Sood</u></b><br/>Turbulence and Velocity Barriers for Upstream Shiner Movement: A Field Study at Broderick Park</p>                                |
| 9:20 | <b>BREAK</b>  |  |  |  |

| Sugar Maple   | Aiken 110   | Mildred Livak  |      |
|---|---|--|------|
| <p><b>The Great Lakes in a Global Context: Interactions among Air, Water, Ice, and Ecosystems</b><br/> <i>Co-Chairs: Brent Lofgren and Jia Wang</i></p>       | <p><b>Hydrodynamics and Hydrology of the Great Lakes and Connecting Channels</b><br/> <i>Co-Chairs: Weiming Wu and Ian Knack</i></p>                            | <p><b>Ecosystem Modeling to Support Lake Management</b><br/> <i>Co-Chairs: Daniel Rucinski, Ed Verhamme, Joseph DePinto, and Don Scavia</i></p>          |      |
| <p><b><u>B.M. Lofgren</u></b><br/>                     Reaffirming Strong Systematic Bias in Projections of Climate Change Impacts on Lake Levels</p>         | <p><b><u>R.R. Arifin</u></b><br/>                     Numerical Modeling of Thermal Bar and Stratification Pattern in Lake Ontario using the EFDC Model</p>     | <p><b><u>J.V. DePinto</u></b><br/>                     An Ensemble Modeling Approach to Setting Target Loads for Lake Erie</p>                           | 8:00 |
| <p><b><u>C. Xiao</u></b><br/>                     A Dynamical Downscaling study in the Great Lakes Region Using WRF-Lake</p>                                  | <p><b><u>L.K. Cousino</u></b><br/>                     Modeling the Effects of Climate Change on Water, Sediment, and Nutrient Yields from the Maumee River</p> | <p><b><u>S.C. Chapra</u></b><br/>                     Total Phosphorus Model for the Lower Great Lakes</p>   | 8:20 |
| <p><b><u>J. Wang</u></b><br/>                     Seasonal Prediction of Great Lakes Ice cover using indices of interannual &amp; decadal teleconnections</p> | <p><b><u>I.M. Knack</u></b><br/>                     Numerical Model Studies of Ice Effects on the Great Lakes Connecting Channels</p>                          | <p><b><u>D.K. Rucinski</u></b><br/>                     Lake Erie Central Basin Hypoxia - Modeling Response to Phosphorus Load Reduction Scenarios</p>   | 8:40 |
| <p><b><u>X. Bai</u></b><br/>                     Great Lakes ice surface heat budget analysis: 1979-2012</p>  |   | <p><b><u>H. Zhang</u></b><br/>                     Spatiotemporal distributions of phosphorus loads and their impacts on Lake Erie's water qualities</p> | 9:00 |
| <b>BREAK</b>  |   |  | 9:20 |

# THURSDAY, MAY 28

|       | <b>Jost</b>  | <b>Chittenden</b>   | <b>Frank Livak</b>   | <b>Williams</b>  |
|-------|--|---|--|--|
|       | <b>Plastic Pollution within the Great Lakes Ecosystem</b><br><i>Chair: Sherri "Sam" Mason</i>                    | <b>Fishing Down the Food Web</b><br><i>Co-Chairs: Gord Paterson and Tim Johnson</i>   | <b>Environmental Chemistry, Discoveries and Biotic Effects of Chemicals of Emerging Concern</b><br><i>Co-Chairs: Elizabeth Murphy, James Pagano, Daryl McGoldrick, and Ted Smith</i> | <b>Where the Lake Meets the River: Ecology of Connecting Rivers in the Great Lakes</b><br><i>Co-Chairs: Alicia Perez-Fuentetaja and Randall Snyder</i> |
| 9:40  | <u><b>L.M. Rios Mendoza</b></u><br>Microsynthetic plastics in air, water, fish and sediments in the Great Lakes. | <u><b>R. Reilly</b></u><br>Evaluating changes in feeding behavior through movement patterns of Chinook salmon                 | <u><b>S. Biswas</b></u><br>Dynamics of an emerging antimicrobial contaminant in soil-water systems   | <u><b>I.W. Allen</b></u><br>Hydrodynamic Modeling of the Upper Niagara River to Assess Aquatic Connectivity  |
| 10:00 | <u><b>K.M. Dykhuis</b></u><br>Self-Cleaning Microplastic Filter for Wastewater Treatment Plant                   | <u><b>A.M. McLeod</b></u><br>All You Need Is Trout  | <u><b>P.J. Phillips</b></u><br>Long-term Trends in Pharmaceuticals and Other Contaminants in Wastewater Plant Effluents  | <u><b>T.M. Neeson</b></u><br>Prioritizing barrier removals to restore native fish migrations in Great Lakes tributaries                                |
| 10:20 | <u><b>S.E. Lowe</b></u><br>2014 Progress Summary of the Great Lakes Marine Debris Action Plan                    | <u><b>G. Paterson</b></u><br>Surviving the meltdown? Lake Ontario lake trout chemical tracer & biomonitoring data 1984 - 2008 | <u><b>T.M. Scott</b></u><br>Pharmaceutical manufacturing facilities as sources of pharmaceuticals to municipal WWTP effluents  | <u><b>J.R. Krieger</b></u><br>Habitat Utilization and Influences on Dispersal of Age 0-2 Lake Sturgeon in the St. Clair River, MI                      |
| 10:40 |  | <u><b>B.C. Weidel</b></u><br>Turning <i>Dreissena</i> Into Sport Fish: Round Goby's Role in the Lake Ontario Food Web         | <u><b>C.M. Vatovec</b></u><br>Pharmaceuticals in Lake Champlain: Investigating Levels, Sources, Effects and Points of Intervention   | <u><b>B.S. Schmidt</b></u><br>Assessing walleye spawning habitat in the Maumee River   |
| 11:15 | <b>PLENARY, Ira Allen Chapel</b>   |   |  |  |
| 12:20 | <b>LUNCH</b>   |   |  |  |



| Sugar Maple   | Aiken 110   | Mildred Livak  |       |
|---|---|--|-------|
| <p><b>The Great Lakes in a Global Context: Interactions among Air, Water, Ice, and Ecosystems</b><br/> <i>Co-Chairs: Brent Lofgren and Jia Wang</i></p>       | <p><b>Hydrodynamics and Hydrology of the Great Lakes and Connecting Channels</b><br/> <i>Co-Chairs: Weiming Wu and Ian Knack</i></p>      | <p><b>Ecosystem Modeling to Support Lake Management</b><br/> <i>Co-Chairs: Daniel Rucinski, Ed Verhamme, Joseph DePinto, and Don Scavia</i></p>              |       |
| <p><b><u>A. Manome</u></b><br/>                     Ice-Hydrodynamic Simulation with Data Assimilation of Satellite-Derived Ice Surface Temperature</p>       | <p><b><u>A.R. Michaud</u></b><br/>                     Modeling subsurface nutrient pathways to Missisquoi bay, Lake Champlain</p>        | <p><b><u>S.A. Bocaniov</u></b><br/>                     Managing the hypoxia in Lake Erie: Simulating the effect of nutrient reductions with a 3-D model</p> | 9:40  |
| <p><b><u>D.J. Titze</u></b><br/>                     Below-ice Observations in Lake Superior During the Cold 2013-2014 Winter</p>                             | <p><b><u>Z.J. Hanson</u></b><br/>                     Integrated Surface Water/Groundwater Modeling in the Midwest/Great Lakes Region</p> | <p><b><u>R.P. Stumpf</u></b><br/>                     Updating Heuristic Models for Predicting the Severity of Lake Erie Cyanobacterial Blooms</p>           | 10:00 |
| <p><b><u>R.W. Sterner</u></b><br/>                     Primary producers during the Big Chill</p>   | <p><b><u>W. Wu</u></b><br/>                     3-D Numerical Simulation of Flows in Large Lake</p>                                       | <p><b><u>C.E. Steger</u></b><br/>                     Intra-seasonal Cyanobacteria Bloom Dynamics in Lake Erie in Relation to Environmental Drivers</p>      | 10:20 |
| <p><b><u>E. Gibbons</u></b><br/>                     Building a Great Lakes Adaptation Data Suite (GLADS) for Informed Decision Making in the Great Lakes</p> |   | <p><b><u>E.M. Verhamme</u></b><br/>                     Western Lake Erie Ecosystem Model - Connecting Phosphorus Loads to HAB Biomass</p>                   | 10:40 |
| <b>PLENARY, Ira Allen Chapel</b>  |   |  | 11:15 |
| <b>LUNCH</b>  |   |  | 12:20 |

# THURSDAY, MAY 28

|      | Jost  | Chittenden  | Frank Livak  | Williams  |
|------|---|---|--|---|
|      | <p><b>Adaptive Management in the Great Lakes-St. Lawrence River System</b><br/> <i>Co-Chairs: Wendy Leger, Debbie Lee, Kyle McCune, Jennifer Read, and William Werick</i></p> | <p><b>Eyes On Our Lakes: Sharing Observations Effectively</b><br/> <i>Co-Chairs: Kelli Paige and Tad Slawewski</i></p>                        | <p><b>Citizen Science: New Perspectives and Applications</b><br/> <i>Co-Chairs: Stephen Hensler, Paula McIntyre, John Stone, and Lisa Tulen</i></p>  | <p><b>Indicators of Biotic Integrity for the Great Lakes</b><br/> <i>Co-Chairs: Lyubov Burlakova, Alexander Karatayev, Jill Scharold, Elizabeth Hinchey-Malloy, Julie Lietz, Treda Grayson, and Meredith Brackett</i></p> |
| 1:40 | <p><b><u>W.P. Leger</u></b><br/>           The Evolution and Implementation of an Adaptive Management Approach to Great Lakes Water Levels</p>                                | <p><b><u>J.P. Smith</u></b><br/>           State of Environmental Big Data Processing, Analysis, Management, and Distribution on the Web</p>  | <p><b><u>J.H. Hartig</u></b><br/>           Helping Develop the Next Generation of Conservationists Through Compelling Citizen Science</p>           | <p><b><u>K.E. Kovalenko</u></b><br/>           Macroinvertebrate Metrics: Confounding Effects and Consistency Across Time</p>   |
| 2:00 | <p><b><u>K.S. Stryzowska</u></b><br/>           Evaluation of Biodiversity and Water Quality Indicators in Wetlands of the Massena Area of Concern.</p>                       | <p><b><u>C.N. Brooks</u></b><br/>           Developing and Applying User-Friendly Web Portals for Sharing Great Lakes Remote Sensing Data</p> | <p><b><u>A. Joly</u></b><br/>           Acces fleuve: a web based app to promote river access</p>  | <p><b><u>T.S. Grayson</u></b><br/>           Development of a New Benthic Condition Tool for Use by the National Coastal Condition Assessment</p>   |
| 2:20 | <p><b><u>M.E. Bohling</u></b><br/>           Using Adaptive Management to Create Sustainable Great Lakes Fish Communities via Habitat Restoration</p>                         | <p><b><u>J.L. Bruce</u></b><br/>           Mapping Metadata: A New Tool for Exploring and Cataloging Great Lakes Science and Research</p>     | <p><b><u>M.J. Winslow</u></b><br/>           Establishing a Volunteer Cyanobacteria Bloom Monitoring Network</p>                                     | <p><b><u>V.J. Brady</u></b><br/>           Macroinvertebrate Sampling and Condition Indicator Development of Great Lakes High Energy Coasts</p>   |
| 2:40 | <p><b><u>L.K. Alford</u></b><br/>           Evaluation of Artificial Spawning Reef Design Using Computational Fluid Dynamics (CFD)</p>  | <p><b><u>J.M. Lucido</u></b><br/>           Tools for Management and Communication of GLRI Projects and Scientific Products</p>               | <p><b><u>M.E. Waller</u></b><br/>           Understanding the algal communities of the Lake St. Francis area with the help of citizen scientists</p> | <p><b><u>M.M. Kindree</u></b><br/>           Effect of Sampling Gear on the Index of Biotic Integrity in the Huron-Erie Corridor</p>  |
| 3:00 | <p><b><u>L.L. Wang</u></b><br/>           Climate change impacts on water quality in Great Lakes Region</p>   | <p><b><u>T.A.D. Slawewski</u></b><br/>           GLOS as an On-Ramp to the Information Superhighway</p>                                       | <p><b><u>K.C. Weathers</u></b><br/>           Embracing the role of citizen science in the Global Lake Ecological Observatory Network</p>            | <p><b><u>C.G. Groff</u></b><br/>           Potential for Re-colonization by <i>Hexagenia</i> Mayflies in Green Bay, Lake Michigan</p>   |
| 3:20 | <b>BREAK</b>  |   |  |   |

| Sugar Maple  | Aiken 110   | Aiken 102   |      |
|--|---|---|------|
| <p><b>Novel Techniques for Wetland Habitat Management and Assessment</b><br/> <i>Co-Chairs: Chantel Markle, John Paul Leblanc, Julia Rutledge, Dan Weller, and James Marcaccio</i></p> | <p><b>What Swims Beneath: Innovative Applications for Addressing Emerging Problems</b><br/> <i>Co-Chairs: Maureen Walsh, Mark Vinson, and Richard Kraus</i></p> | <p><b>Ecosystem Modeling to Support Lake Management</b><br/> <i>Co-Chairs: Daniel Rucinski, Ed Verhamme, Joseph DePinto, and Don Scavia</i></p>               |      |
| <p><b><u>J.M. Rutledge</u></b><br/>                     Land-Use Effects on Water Quality in the Nottawasaga River and the Minesing Wetlands</p>                                       | <p><b><u>E.M. George</u></b><br/>                     Confirmation of Cisco Spawning in Chaumont Bay, Lake Ontario Using an Egg Pumping Device</p>              | <p><b><u>A. Kuczynski</u></b><br/>                     Phosphorus Management and <i>Cladophora</i> in the Eastern Basin of Lake Erie</p>                      | 1:40 |
| <p><b><u>T.A. Langen</u></b><br/>                     Success of Wetland Restorations for Conserving Species: Restoration Method, Landscape, Size, or Age?</p>                         | <p><b><u>J.P. Holden</u></b><br/>                     Comparing Upward and Down-looking Hydroacoustics for Abundance Estimates of Alewife in Lake Ontario</p>   | <p><b><u>N.R. Aloysius</u></b><br/>                     Impact of Climate Change on Harmful Algal Blooms in the Western Lake Erie</p>                         | 2:00 |
| <p><b><u>J.V. Marcaccio</u></b><br/>                     Unmanned Aerial Vehicles Produce High-resolution Seasonal Maps for Wetland Habitat Identification</p>                         | <p><b><u>T.J. Holda</u></b><br/>                     Dual-Frequency Acoustics for <i>Mysis diluviana</i></p>  | <p><b><u>L.F. Leon</u></b><br/>                     On the simulation of algal blooms in Lake Erie / Modelling Phytoplankton Events</p>                       | 2:20 |
| <p><b><u>S. Endres</u></b><br/>                     Evaluating wetland hydroperiod for northwest Ohio wetlands using multi-source remote sensing imagery</p>                           | <p><b><u>R.A. Dillon</u></b><br/>                     A Video Camera to Estimate Benthic <i>Mysis</i> Densities in Lake Champlain over 24-hour Periods</p>      | <p><b><u>D.B. Baker</u></b><br/>                     Changing Location, Timing and Composition of Phosphorus Inputs to Lake Erie: Challenges for Modelers</p> | 2:40 |
| <p><b><u>M.J. Battaglia</u></b><br/>                     An Evaluation of Satellite Synthetic Aperture Radar for Vernal Pool Detection</p>   | <p><b><u>M.G. Walsh</u></b><br/>                     Effects of Trawling Depth and Area Swept on Benthic Fish Density Estimates</p>                             | <p><b><u>A. Dove</u></b><br/>                     Updated nutrient loadings to Lake Erie from Canadian tributaries</p>  | 3:00 |
| <b>BREAK</b>   |   |   | 3:20 |

# THURSDAY, MAY 28

|      | <b>Jost</b>   | <b>Chittenden</b>   | <b>Frank Livak</b>  | <b>Williams</b>   |
|------|---|---|---|---|
|      | <p><b>Adaptive Management in the Great Lakes-St. Lawrence River System</b><br/> <i>Co-Chairs: Wendy Leger, Debbie Lee, Kyle McCune, Jennifer Read, and William Werick</i></p> | <p><b>Eyes On Our Lakes: Sharing Observations Effectively</b><br/> <i>Co-Chairs: Kelli Paige and Tad Slawacki</i></p>                 | <p><b>Citizen Science: New Perspectives and Applications</b><br/> <i>Co-Chairs: Stephen Hensler, Paula McIntyre, John Stone, and Lisa Tulen</i></p> | <p><b>Indicators of Biotic Integrity for the Great Lakes</b><br/> <i>Co-Chairs: Lyubov Burlakova, Alexander Karatayev, Jill Scharold, Elizabeth Hinchey-Malloy, Julie Lietz, Treda Grayson, and Meredith Brackett</i></p> |
| 3:40 | <p><b><u>M.M. Amos</u></b><br/>           Measuring Success for Ecological Restoration Projects</p>   | <p><b><u>L.T. Johnson</u></b><br/>           The Heidelberg Tributary Loading Program: Sharing Forty Years of Data Online</p>         | <p><b><u>H.A. Ewing</u></b><br/>           Lake Observer: A Mobile App for Crowdsourcing Lake- and Water-Related Data Across the Globe</p>          | <p><b><u>J. Lietz</u></b><br/>           2010 NCCA Oligochaete Trophic Index Results to Inform Benthic Index Development for the Great Lakes</p>  |
| 4:00 | <p><b><u>T.M. Redder</u></b><br/>           What We Need is an Operational Integrated Model for Lake Ontario</p>  | <p><b><u>W.M. Bartsch</u></b><br/>           Using the Shiny Package in R to Interactively Display Great Lakes Water Quality Data</p> | <p><b><u>D.B. Eddowes</u></b><br/>           FreshWater Watch: Lessons from a Global Mass Citizen Scientist Program</p>                             | <p><b><u>L.E. Burlakova</u></b><br/>           Integrating Environmental Effects of Multiple Stressors in the Great Lakes: Dynamics of OTI</p>  |
| 4:20 | <p><b><u>C.M. Riseng</u></b><br/>           Developing Spatially Referenced Tools for Adaptive Management of Great Lakes Ecosystems</p>                                       | <p><b><u>K.R. Paige</u></b><br/>           GEO-Great Lakes: Gathering Momentum</p>  | <p><b><u>G.B. Austic</u></b><br/>           Open Source Hardware for environmental monitoring</p>   | <p><b><u>R.W. Griffiths</u></b><br/>           Effect of <i>Dreissena</i> on the Oligochaete Trophic Index (OTI).</p>   |
| 4:40 | <p><b><u>S.P. Sowa</u></b><br/>           The Great Lakes IMDS: Helping Advance Landscape-scale Collaboration and Adaptive Management</p>                                     | <p><b><u>C.L. Manninen</u></b><br/>           Great Lakes Blue Accounting: Empowering Decisions to Realize Regional Water Values</p>  | <p><b>Citizen Science Open Discussion Aiken, Rm 112</b></p>   | <p><b><u>A.S. Trebitz</u></b><br/>           Capacity for DNA-Barcode Based Taxonomy in Support of Great Lakes Biological Monitoring</p>  |
| 5:00 | <p><b><u>E.M. Wilcox</u></b><br/>           Is technology always better? Innovative watershed approach to improved water quality</p>  |   | <p><b>Open Discussion Continued</b></p>   |   |
| 5:20 |   |   | <p><b>Open Discussion Continued</b></p>   |   |

| Brennan's  | Aiken 110   | Aiken 102   |      |
|--|---|---|------|
| <p><b>HAB Considerations for Drinking Water Suppliers</b><br/> <i>Co-Chairs: Dan Peckham and Ellen Parr Doering</i></p>                        | <p><b>What Swims Beneath: Innovative Applications for Addressing Emerging Problems</b><br/> <i>Co-Chairs: Maureen Walsh, Mark Vinson, and Richard Kraus</i></p> | <p><b>Ecosystem Modeling to Support Lake Management</b><br/> <i>Co-Chairs: Daniel Rucinski, Ed Verhamme, Joseph DePinto, and Don Scavia</i></p>       |      |
| <p><b><u>M. Prevost</u></b><br/>           Toxic cyanobacteria in a drinking water treatment plant: Source to tap challenges</p>               | <p><b><u>K.R. Koch</u></b><br/>           Great Lakes Larval Fish and Egg Key: New Interactive Tool for Identifying Fish Species</p>                            | <p><b><u>R.S. Lambert</u></b><br/>           Managing Great Lakes Eutrophication on the Basis of Bioavailable Phosphorus</p>                          | 3:40 |
| <p><b><u>J.L. GRAHAM</u></b><br/>           Real-Time Estimation of Geosmin and Microcystin Occurrence, Cheney Reservoir, KS</p>               | <p><b><u>R.A. Andrews</u></b><br/>           Do Lake Erie walleye conform to an ideal free distribution?</p>  | <p><b><u>R.B. Confesor</u></b><br/>           Reducing nutrient loading: are we targeting the right sources and implementing the right solutions?</p> | 4:00 |
| <p><b><u>H. MASH</u></b><br/>           Impact of Harmful Algal Blooms on Several Lake Erie Drinking Water Treatment Facilities</p>            | <p><b><u>J.C. Makarewicz</u></b><br/>           Physical and Chemical Structure of the Nearshore of Lake Ontario</p>  | <p><b><u>M.C. Gildow</u></b><br/>           Evaluating Fertilizer Application Placement and Timing to Reduce Phosphorus Runoff to Lake Erie</p>       | 4:20 |
| <p><b><u>R.P. STUMPF</u></b><br/>           Routine Monitoring of Cyanobacterial blooms with Remote Sensing: Some Practical Considerations</p> | <p><b><u>A.E. Scofield</u></b><br/>           Mapping the deep chlorophyll layer in Lake Ontario: A comparison of profiling technologies.</p>                   | <p><b><u>E.A. Richards</u></b><br/>           Towards using spatial statistics in nutrient watershed models</p>                                       | 4:40 |
|  |   | <p><b><u>J.F. Atkinson</u></b><br/>           Hydrological Response of Spatial and Temporal Variation of Nutrients in Sodus Bay, NY</p>               | 5:00 |
|  |   | <p><b><u>P. Isles</u></b><br/>           Validation of a coupled hydrodynamic and water quality model of Missisquoi Bay, Lake Champlain using...</p>  | 5:20 |

# FRIDAY, MAY 29

|      | Jost   | Chittenden   | Frank Livak   | Williams   |
|------|--|--|---|--|
|      | <p><b>Invasive Species Pathways</b><br/><i>Chair: Meg Modley</i></p>   | <p><b>Understanding lake-climate interactions across broad spatial scales: Observations, models, and research networks</b><br/><i>Co-Chairs: John Lenters, Peter Blanken, Christopher Spence, Branko Kerkez, Norma Froelich, Pengfei Xue, Drew Gronewold, and Jay Austin</i></p> | <p><b>2014: An Intensive Field Year for Lake Erie</b><br/><i>Co-Chairs: Paris Collingsworth and Mark Rogers</i></p> | <p><b>Fisheries in an Ecosystem Context: Lessons Learned from Comparisons across Lakes</b><br/><i>Co-Chairs: Lars Rudstam and Bo Bunnell</i></p> |
| 8:00 | <p><b><u>A.J. Tucker</u></b><br/>The Erie Canal Corridor as a Pathway for Biological Invasion</p>  | <p><b><u>A.D. Gronewold</u></b><br/>Impact of Regional Climate Perturbations on Lake Michigan's Heat Content</p>   | <p><b><u>G. Matisoff</u></b><br/>Internal Loading of Phosphorus in Western Lake Erie</p>                            | <p><b><u>C. Farrell</u></b><br/>Comparing mysid abundance and growth rates across the Great Lakes.</p>   |
| 8:20 | <p><b><u>J.E. Marsden</u></b><br/>The Champlain Canal as an exotic species vector</p>  | <p><b><u>R.K. Gawde</u></b><br/>Big Heat, Big Chill: Impact of Climate Change on the Thermal Regime of Lake Superior</p>   | <p><b><u>E.H. Hillis</u></b><br/>Factors regulating primary production in Lake Erie</p>                             | <p><b><u>S.G. Glancy</u></b><br/>Comparing Zooplankton Communities of 52 Adirondack Lakes with Variable Fish Histories</p>                       |
| 8:40 | <p><b><u>E. Holmlund</u></b><br/>AIS: Regional Spread Prevention Program Design in the Adirondack Park</p>                                 | <p><b><u>M.L. Dijkstra</u></b><br/>BIG HEAT and BIG CHILL: Impact on the Timing and Magnitude of Primary Production in Lake Superior</p>   | <p><b><u>M.A. Evans</u></b><br/>Harmful Algal Bloom (HAB) initiation and phenology</p>                              | <p><b><u>J.E. McKenna, Jr.</u></b><br/>Simulation of Benthic Dreissenid Mussel Invasion of Lake Ontario with Possible Recovery of Diporeia</p>   |
| 9:00 | <p><b><u>W.C. Kerfoot</u></b><br/>"Blind-sided": How Bythotrephes Alters Microcrustacean Communities, Biomass And Secondary Production</p> | <p><b><u>P.D. Blanken</u></b><br/>An Observational Study of the Influence of Ice on Heat and Water Loss from the Upper Great Lakes</p>   | <p><b><u>P.M. Armenio</u></b><br/>The HABs and HAB-nots: Zooplankton communities within Lakes Erie and Huron</p>    | <p><b><u>G.L. Fahnenstiel</u></b><br/>Long-term trends in lake-wide phytoplankton productivity in the Upper Great Lakes: 1998-2013</p>           |
| 9:20 | <p><b><u>D. Raab</u></b><br/>Round Goby Impact on Native Fishes in a Dammed Great Lakes Tributary</p>                                      | <p><b><u>J.D. Lenters</u></b><br/>The Great Lakes Evaporation Network (GLEN): More than just evaporation</p>   | <p><b><u>P. Collingsworth</u></b><br/>What is the spatial extent of hypoxia in Lake Erie?</p>                       | <p><b><u>A.G. Grimm</u></b><br/>A New Method to Generate a High-Resolution Global Distribution Map of Lake Chlorophyll</p>                       |
| 9:40 | <b>BREAK</b>   |  |   |  |

| Sugar Maple   | Aiken 110   | Mildred Livak   |      |
|---|---|---|------|
| <p><b>New Insights and Long-term Records from Lacustrine Systems</b><br/> <i>Co-Chairs: Ryan Hladyniuk, Euan Reavie, and Fred Longstaffe</i></p>            | <p><b>Using Cutting-edge Technologies to Advance Freshwater HAB Monitoring and Forecasting</b><br/> <i>Co-Chairs: Timothy Davis, Greg Doucette, George Bullerjahn, Steve Ruberg, Tom Jobengen, and Richard Stumpf</i></p> | <p><b>Ecosystem Modeling to Support Lake Management</b><br/> <i>Co-Chairs: Daniel Rucinski, Ed Verhamme, Joseph DePinto, and Don Scavia</i></p>             |      |
| <p><b><u>N. Riddick</u></b><br/>                     A Preliminary Paleolimnological Study of Lake George, NY, Using Microfossils</p>                       | <p><b><u>K.A. Perri</u></b><br/>                     Photosynthetic Yield (<math>F_v/F_m</math>) as a Cellular Health Indicator for Cyanobacteria</p>   | <p><b><u>K.M. Pilgrim</u></b><br/>                     Evaluation of Nutrient Management Benefits With 3-D Lake Hydrodynamic and Water Quality Modeling</p> | 8:00 |
| <p><b><u>K.M. Kornecki</u></b><br/>                     Multi-proxy Reconstruction of Anthropogenic Impact in Lake George, NY</p>                           | <p><b><u>M. Stainton</u></b><br/>                     Development of a Semicontinuous Ship-board Autonomous Plankton Metabolic Monitor (APPM)</p>   | <p><b><u>D.P. Hamilton</u></b><br/>                     Ecosystem modelling of two interconnected lakes: towards understanding of restoration processes</p> | 8:20 |
| <p><b><u>M.T. Moos</u></b><br/>                     Setting Effective and Sustainable Lake Management Objectives: An Applied Paleolimnological Approach</p> | <p><b><u>A.S. Chiandet</u></b><br/>                     Comparing In Situ Fluorometric Measurements of Phytoplankton with Conventional Methods</p>  | <p><b><u>Y. Shimoda</u></b><br/>                     Phytoplankton functional type modelling: A critical assessment of the current state of knowledge</p>   | 8:40 |
| <p><b><u>E.D. Reavie</u></b><br/>                     Great Lakes Phytoplankton are being Reorganized by Climate Change</p>                                 | <p><b><u>M.G. Cohrs</u></b><br/>                     Continuous Imaging Flow Cytometer for Detection and Research of Cyanobacterial Blooms</p>  |   | 9:00 |
| <p><b><u>F.M.G. McCarthy</u></b><br/>                     Microfossil Evidence of Anthropogenic Impact on Lake Simcoe</p>                                   | <p><b><u>T.S. Moore</u></b><br/>                     Improving Detection and Understanding of HABs in Western Lake Erie Using New In-water Instruments</p>  |   | 9:20 |
| <b>BREAK</b>  |   |   | 9:40 |

# FRIDAY, MAY 29

|       | Jost  | Chittenden  | Frank Livak  | Williams  |
|-------|---|---|--|---|
|       | <p><b>Ecological Hazard Assessments of Legacy and Emerging Contaminants in the Great Lakes</b><br/> <i>Co-Chairs: Jo Banda and Vicki Blazer</i></p>               | <p><b>Understanding lake-climate interactions across broad spatial scales: Observations, models, and research networks</b><br/> <i>Co-Chairs: John Lenters, Peter Blanken, Christopher Spence, Branko Kerkez, Norma Froelich, Pengfei Xue, Drew Gronewold, and Jay Austin</i></p> | <p><b>Institutional Capacity and Successful Decision Making Processes in Multi-Stakeholder / Jurisdictional Contexts</b><br/> <i>Co-Chairs: Wendy Kellogg, Marc Gaden, Eric Howe, and Curt Gervich</i></p> | <p><b>Fisheries in an Ecosystem Context: Lessons Learned from Comparisons across Lakes</b><br/> <i>Co-Chairs: Lars Rudstam and Bo Bunnell</i></p> |
| 10:00 | <p><b><u>J.A. Banda</u></b><br/>           Contaminants of Emerging Concern and Their Effects to Fish and Wildlife in the Great Lakes Basin</p>                   | <p><b><u>K.J. Fries</u></b><br/>           Ship Data for Spatio-temporal Estimates of Hydrometeorological Conditions Across the Great Lakes</p>   | <p><b><u>R.K. Norton</u></b><br/>           Local Planning for Climate Change Adaptation on Michigan's Great Lakes</p>   | <p><b><u>N.E. Mandrak</u></b><br/>           Fish Assemblages of the Great Lakes have Changed, but not Homogenized</p>                            |
| 10:20 | <p><b><u>C.M. Hahn</u></b><br/>           Effects of Contaminants on Gene Expression Endpoints in Bass from Great Lakes Areas of Concern</p>                      | <p><b><u>D.N. Bernstein</u></b><br/>           Estimation of the Spatial Distribution of Evaporative Flux on Lake Superior</p>  | <p><b><u>C.M. Johns</u></b><br/>           Institutional Capacity and Governance Networks in the Great Lakes Region<br/> <b>CANCELED</b></p>   | <p><b><u>S.E. Campbell</u></b><br/>           Changes in Functional Diversity of Fish Species in the Great Lakes Basin, 1870-2010</p>             |
| 10:40 | <p><b><u>D. Gefell</u></b><br/>           Screening Assessment of Relative Hazard to Fish from Emerging Contaminants at Great Lakes Sites</p>                     | <p><b><u>P. Petchprayoon</u></b><br/>           Spatiotemporal Distribution of Evaporation over Lake Huron</p>  | <p><b><u>M. Gaden</u></b><br/>           Cross-border Great Lakes Fishery Management: Cooperation Through a Non-binding Agreement</p>  | <p><b><u>M.T. Zischke</u></b><br/>           Recruitment Synchrony of Lake Whitefish <i>Coregonus clupeaformis</i> in the Great Lakes Region</p>  |
| 11:00 | <p><b><u>G.R. Tetreault</u></b><br/>           Response of fish to remedial actions at select sewage treatment plants in the Grand River<br/> <b>CANCELED</b></p> | <p><b><u>B. Music</u></b><br/>           Projecting Great Lakes Water Supplies Under a Changing Climate Using Regional Climate Models</p>   | <p><b><u>W.A. Kellogg</u></b><br/>           The Patterns of Effective Watershed Collaborations: Form, Function, and Transformation</p>  | <p><b><u>O.T. Gorman</u></b><br/>           Great Lakes Prey Fish Populations: A Cross-Basin Overview of Status and Trends, 1978-2014</p>         |



| Sugar Maple  | Aiken 110   | Mildred Livak   |       |
|--|---|---|-------|
| <p><b>New Insights and Long-term Records from Lacustrine Systems</b><br/> <i>Co-Chairs: Ryan Hladyniuk, Euan Reavie, and Fred Longstaffe</i></p>     | <p><b>Using Cutting-edge Technologies to Advance Freshwater HAB Monitoring and Forecasting</b><br/> <i>Co-Chairs: Timothy Davis, Greg Doucette, George Bullerjahn, Steve Ruberg, Tom Jobengen, and Richard Stumpf</i></p> | <p><b>Contrasting the Form and Function of the Nearshore Environment around the Great lakes</b><br/> <i>Co-Chairs: Todd Howell, Véronique Hiriart-Baer, and David Depew</i></p> |       |
| <p><b><u>R. Rossmann</u></b><br/>           A Method for Estimation of Historic Contaminant Loads using Dated Sediment Cores</p>                     | <p><b><u>D.A. Palladino</u></b><br/>           Creating a More Complete Picture: Advancements in HAB Detection and Prediction in Western Lake Erie</p>  | <p><b><u>C. Holeton</u></b><br/>           Peeling the Onion: a Multi-Scale Approach to Understanding Variability in the Nearshore</p>  | 10:00 |
| <p><b><u>R. Hladyniuk</u></b><br/>           Anthropocene Changes in Organic Matter Accumulation in Lake Ontario</p>                                 | <p><b><u>E.A. Stelzer</u></b><br/>           Predicting Harmful Cyanobacterial Algal Blooms at Lake Erie and Ohio Inland Lake Waters</p>  | <p><b><u>G.J. Warren</u></b><br/>           Toward a definition of the nearshore based on surface water properties</p>  | 10:20 |
| <p><b><u>T.N. Brown</u></b><br/>           Land Use Patterns Across the Great Lakes' Basin, 1790-present, as Drivers of In-lake Change</p>           | <p><b><u>R.A. Shuchman</u></b><br/>           Extending the Satellite-based Time Series of Harmful Algal Bloom Extents in the Great Lakes</p>   | <p><b><u>A.A. Bozimowski</u></b><br/>           Aquatic Macroinvertebrate Co-occurrence Patterns in the Coastal Wetlands of the Great Lakes</p>                                 | 10:40 |
| <p><b><u>M.M. Perello</u></b><br/>           Linking the Impacts of Land Use and Changing Climate with Lake Water Quality in New Hampshire (USA)</p> | <p><b><u>M.D. Rowe</u></b><br/>           Vertical Mixing and Buoyancy in a Model for Short-term Forecasts of Cyanobacterial HABs in Lake Erie</p>  | <p><b><u>S.C. Dahmer</u></b><br/>           Long-term trends in nearshore water quality parameters along the Central Toronto waterfront</p>                                     | 11:00 |

# FRIDAY, MAY 29

|       | <b>Jost</b>  | <b>Chittenden</b>  | <b>Frank Livak</b>  | <b>Williams</b>  |
|-------|--|--|---|--|
|       | <p><b>Ecological Hazard Assessments of Legacy and Emerging Contaminants in the Great Lakes</b><br/><i>Co-Chairs: Jo Banda and Vicki Blazer</i></p> | <p><b>Understanding lake-climate interactions across broad spatial scales: Observations, models, and research networks</b><br/><i>Co-Chairs: John Lenters, Peter Blanken, Christopher Spence, Branko Kerkez, Norma Froelich, Pengfei Xue, Drew Gronewold, and Jay Austin</i></p> | <p><b>Institutional Capacity and Successful Decision Making Processes in Multi-Stakeholder / Jurisdictional Contexts</b><br/><i>Co-Chairs: Wendy Kellogg, Marc Gaden, Eric Howe, and Curt Gervich</i></p> | <p><b>Fisheries in an Ecosystem Context: Lessons Learned from Comparisons across Lakes</b><br/><i>Co-Chairs: Lars Rudstam and Bo Bunnell</i></p> |
| 11:20 | <p><b><u>A.M. Mason</u></b><br/>Hazard screening tools, how do they compare?</p>   | <p><b><u>J.D. Lenters</u></b><br/>Global Records of Lake Surface Temperature Reveal a Century of Warming</p>   | <p><b><u>A. Samanta</u></b><br/>Collaborations as Deliberative Processes for Policy Implementation: The Case of Cuyahoga Watershed</p>  | <p><b><u>D.M. Warner</u></b><br/>Pattern and Process in Pelagic Fish Communities of the Great Lakes</p>  |
| 11:40 | <p><b><u>J.L. Newsted</u></b><br/>Mink Jaw Lesions, A Sensitive Bio-indicator of Environmental Health To Dioxin-like Compounds</p>                 | <p><b><u>R.M. Pilla</u></b><br/>Lakes as Sentinels of Climate Change: Lake Responses to Precipitation and DOC</p>  | <p><b><u>K.C. Williams</u></b><br/>Environmental governance in the Great Lakes: Geographic factors of stakeholder participation in AOCs</p>   | <p><b><u>P.W. Simonin</u></b><br/>Comparing and Predicting Spatial Ecology of Lake Champlain vs Lake Ontario Rainbow Smelt and Alewife</p>       |
| 12:00 | <p><b><u>V.S. Blazer</u></b><br/>Identifying Risk Factors for Skin and Liver Tumors of Brown Bullhead and White Sucker<br/><b>CANCELED</b></p>     | <p><b><u>A.D. Weinke</u></b><br/>Time-Series Productivity and Hypoxia Dynamics Linked to Storms and Runoff in a Great Lakes Estuary</p>  |   | <p><b><u>E.S. Dunlop</u></b><br/>Spatial dynamics of the pelagic communities of Georgian Bay and Lake Simcoe</p>                                 |
| 12:20 | <b>LUNCH</b>   |  |   |  |

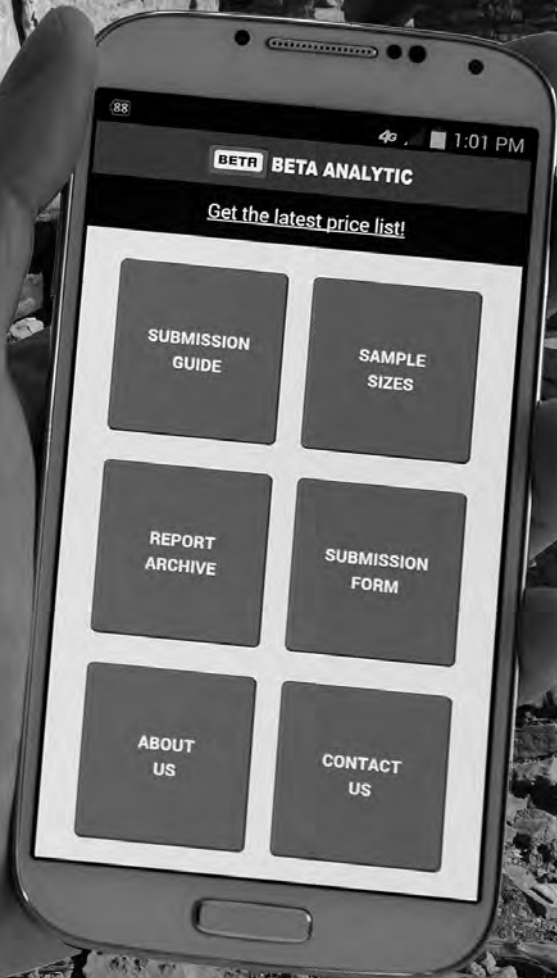
| Sugar Maple   | Aiken 110   | Mildred Livak   |       |
|---|---|---|-------|
| <p><b>New Insights and Long-term Records from Lacustrine Systems</b><br/> <i>Co-Chairs: Ryan Hladyniuk, Euan Reavie, and Fred Longstaffe</i></p>        | <p><b>Using Cutting-edge Technologies to Advance Freshwater HAB Monitoring and Forecasting</b><br/> <i>Co-Chairs: Timothy Davis, Greg Doucette, George Bullerjahn, Steve Ruberg, Tom Jobengen, and Richard Stumpf</i></p> | <p><b>Contrasting the Form and Function of the Nearshore Environment around the Great lakes</b><br/> <i>Co-Chairs: Todd Howell, Véronique Hiriart-Baer, and David Depew</i></p> |       |
| <p><b><u>S.B. Watson</u></b><br/>           Sediment Resuspension and Accumulation Rates in Lake Winnipeg</p>   | <p><b><u>L.A. Fiorentino</u></b><br/>           Understanding the Circulation During the 2014 Lake Erie HABs Using Lagrangian Coherent Structures</p>   | <p><b><u>G.S. Bowen</u></b><br/>           Variability In Phosphorus At Western Durham, Lake Ontario: Patterns And Potential Sources</p>  | 11:20 |
| <p><b><u>C.F.M. Lewis</u></b><br/>           Sediment Sequences in Manitoulin Island's South Bay: a Record of Lake Huron's Ups and Downs</p>            | <p><b><u>F.L. Hellweger</u></b><br/>           Time to Add More Biology to Ecosystem Models? Agent-based Modeling of Anabaena-nitrogen Interaction</p>  | <p><b><u>D.C. Depew</u></b><br/>           Investigating Lake Erie near shore P dynamics using 18O-PO4 isotopes</p>   | 11:40 |
| <p><b><u>F.J. Longstaffe</u></b><br/>           Oxygen Isotope Variations in Pleistocene and Holocene Clay Mineral Assemblages from the Great Lakes</p> |   | <p><b><u>E.T. Howell</u></b><br/>           Nearshore Gradients over Three Contrasting Regions of the Great Lakes</p>   | 12:00 |
| <b>LUNCH</b>  |   |   | 12:20 |

# FRIDAY, MAY 29

|      | Jost   | Chittenden   | Frank Livak   |
|------|--|--|---|
|      | <p><b>When can we eat the fish?</b><br/> <i>Co-Chairs: Judith Perlinger, Thomas Holsen, Hugh Gorman, and Noel Urban</i></p>                        | <p><b>Assessing Risks in the Great Lakes: New Tools and Current Assessments</b><br/> <i>Chair: Jerome Marty</i></p>                                | <p><b>General Contributions</b><br/> <i>Chair: Victoria Pinheiro</i></p>  |
| 1:40 | <p><b><u>J.F. Martin</u></b><br/>           Fate and Concentration of Microcystin in Lake Erie Game Fish</p>                                       | <p><b><u>D.B. Dean</u></b><br/>           Applying Geospatial Technology to Oil Spill Response Planning in the Western Basin of Lake Erie</p>      | <p><b><u>A.J. Bramburger</u></b><br/>           The Nature of Phytoplankton in the Epilimnion and Summer Deep Chlorophyll Layers in the Great Lakes</p> |
| 2:00 | <p><b><u>M.R. Twiss</u></b><br/>           Thallium bioaccumulation by lake trout related to changes in lake water chemistry</p>                   | <p><b><u>N. Whittier Mulanaphy</u></b><br/>           Oil Spill Trajectory Forecasting Tool: Integrate and Disseminate Data to Decision Makers</p> | <p><b><u>G.O. Malcolm</u></b><br/>           An Objective Method to Quantify the Location Criterion used to Classify Species at Risk in Canada</p>      |
| 2:20 | <p><b><u>E.W. Murphy</u></b><br/>           Lake Michigan Lake Trout PCB Model Forecast Post Audit</p>   | <p><b><u>G.E. Host</u></b><br/>           An interactive map of environmental stress for watersheds of the Great Lakes basin</p>                   | <p><b><u>P.L. Lenaker</u></b><br/>           Hydrologic, Land Use and Seasonal Patterns of Waterborne Pathogens in Great Lakes Tributaries</p>          |
| 2:40 | <p><b><u>N.R. Urban</u></b><br/>           When Can We Eat the Fish? An Approach towards an Answer</p>   | <p><b><u>J. Marty</u></b><br/>           Assessing the risk of marine spills in Canadian Great Lakes waters: oil and HNS</p>                       | <p><b><u>A. Gudimov</u></b><br/>           Integrating watershed modelling with socioeconomic values in the Great Lakes area</p>                        |
| 3:00 | <p><b><u>V.S. Gagnon</u></b><br/>           Collaborative Research Tools in Keweenaw Bay: Workshops, Focus Groups, and Talking Circle Views</p>    |  | <p><b><u>D.D. Engel</u></b><br/>           Resource Management in the Great Lakes Region: Understanding Ecosystem Services Integration</p>              |
| 3:20 | <p><b><u>H.S. Gorman</u></b><br/>           Fish Consumption Advisories, Societal Choices, and Systems of Governance</p>                           |  | <p><b><u>S. Simoliunas</u></b><br/>           Chlorination of Drinking Water in the Detroit System</p>  |
| 3:40 | <p><b><u>E.C. Sokol</u></b><br/>           Trends and Predictions of Polychlorinated Biphenyl Contamination in Michigan's Upper Peninsula Fish</p> |  |   |

| Aiken 110   | Mildred Livak   |      |
|---|---|------|
| <p><b>Acoustic Telemetry: Using Big Data to Answer Big Questions</b><br/> <i>Co-Chairs: Jon Midwood, Liset Cruz Font, and Andrew Rous</i></p>       | <p><b>Cyanobacteria and Human Health: Current Understanding and Research Directions</b><br/> <i>Co-Chairs: Angela Shambaugh and Lori Cragin</i></p> |      |
| <p><b><u>T.B. Johnson</u></b><br/>           Evaluating Effects of Surgically Implanted Acoustic Transmitters in bloater, <i>Coregonus hoyi</i></p> | <p><b><u>G.L. Boyer</u></b><br/>           The Occurrence of Microcystins and their Metabolites in Fish: Implications for Human Health</p>          | 1:40 |
| <p><b><u>A.T. Fisk</u></b><br/>           Characteristics and Application of an Acoustic Telemetry Tag Designed to Detect Predation Events</p>      | <p><b><u>E.W. Stommel</u></b><br/>           Risk Factors for ALS: A Comprehensive Evaluation of Toxins and Toxicants from Field to Patients</p>    | 2:00 |
| <p><b><u>V.M. Pinheiro</u></b><br/>           Lake Trout Spawning Site Utilization in Lake Champlain</p>  | <p><b><u>N.M. Torbick</u></b><br/>           Mapping amyotrophic lateral sclerosis lake risk factors across northern New England</p>                | 2:20 |
| <p><b><u>L. Cruz-Font</u></b><br/>           Upwelling Events in Toronto Harbour: Do Fish Really Care?</p>  | <p><b><u>J.A. Dellinger</u></b><br/>           Analysis of Cyanotoxins and Human Health Impacts in the Great Lakes</p>                              | 2:40 |
| <p><b><u>A.M. Rous</u></b><br/>           Telemetry-Based Multispecies Space Use and Movement in Restored Habitat in the Toronto Harbour</p>        | <p><b><u>V.A. Roberts</u></b><br/>           Building Health Surveillance Capacity for Harmful Algal Blooms in the United States</p>                | 3:00 |
|   |   | 3:20 |
|   |   | 3:40 |

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**MANSFIELD ROOM**

Aquatic Nuisance Species (ANS)

Contaminants (CO)

Data Management and Modeling (DM)

Innovative Approaches to Science, Education, and Outreach (EO)

Food Webs and Ecosystems (FE)

Earth Sciences: Climate, Hydrology, and Paleolimnology (ES)

**OLIN ATRIUM**

Nearshore Zones (NS)

Novel and Advancing Technologies (TE)

Nutrients (NU)

Tools for Great Lakes Management (TM)

General Contributions (GC)

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## POSTERS BY THEME

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### Aquatic Nuisance Species (ANS)

- ANS-1 AVLIJAS, S.  
Evaluating the Impacts and Spread of Tench, a Globally Invasive Cyprinid
- ANS-2 CASTANEDA, R.A.  
Novel detection techniques for rare freshwater fishes
- ANS-3 FARRELL, J.L.  
Ecology of Asian Clams on the Northern Edge of Their Geographical Range
- ANS-4 HENQUINET, J.W.  
Hydroxide Stabilization as a New Tool for Ballast Disinfection: Efficacy of Treatment on Zooplankton
- ANS-5 LAMAY, M.A.  
Zooplankton Diel Vertical Migration in a Lake Invaded by *Bythotrephes Longimanus*
- ANS-6 MUHAMETSAFINA, A.  
Effects of Temperature on Sensitivity of Larval Sea Lampreys to 3-Trifluoromethyl-4-Nitrophenol, TFM
- ANS-7 OKUM, S.  
Investigating PCR Bias in Genetic Analyses of Larval Fish Communities
- ANS-8 PATERSON, W.L. An international approach to improve early detection of alien species in the Great Lakes
- ANS-9 PENNUTO, C.M.  
Round Goby Swimming Behavior and Fin Morphology May Facilitate Upstream Range Expansion
- ANS-10 PETERSON, G.S.  
Morphological Features to Distinguish the Larval Stage of Invasive Ruffe from Native Fish Species
- ANS-11 SUN, X.  
Use of LC50 and LT50 testing to compare the acute thermal tolerance in two goby species

ANS-12 WOELMER, W.M.  
Do *Bythotrephes* and *Cercopagis* wear their sunglasses at night?

ANS-13 WOOD, N.J.  
The invasive mute swan's impact on plant, fish, and invertebrate communities of coastal wetlands

### Contaminants (CO)

- CO-1 ABEBE, F.  
Persistent Organic Pollutants on Microplastic Debris from Great Lakes.
- CO-2 ALAKAYAK, W.M.  
Lake Characteristics that Affect Biomagnification of Mercury in Michigan's Upper Peninsula
- CO-3 BACKUS, J.B.  
Organophosphorus Flame Retardants in Fish: UPLC-QToF Method Development and Application
- CO-4 CABLE, R.  
Great Lakes' Microplastics: Developing novel methods of microplastic extraction and quantification
- CO-5 DI PIERDOMENICO, L.L.  
Contaminant dynamics in the lower pelagic food webs amongst Lake Huron's basins
- CO-6 GARNER, A.J.  
Concentrations, Trends, and Elimination Rates of PCDD/F and DL-PCB in Lake Ontario Salmonid Eggs
- CO-7 OGOREK, J.M.  
Mercury and Methylmercury Content of Seston across the Great Lakes
- CO-8 HARE, M.J.  
Plastic Microdebris in the Lower Great Lakes
- CO-9 JOHNSON, K.  
Are we Breathing Plastics?



CO-10 JOUNG, D.J.  
Variations of Sedimentary Phosphorus and Trace Metal Inputs in a Eutrophic bay of Lake Champlain

CO-11 SANO, L. Presence and Characteristics of Microplastic Material in Great Lakes Fishes

CO-12 STEVACK, K.M. PCB Bioaccumulation and Toxicity of Lyons Creek Sediments in Comparison to Historical Trends

CO-13 ZHAO, Z.H.  
The fate of polycyclic aromatic hydrocarbons (PAHs) and organochlorine pesticides (OCPs) in sediment

### Data Management and Modeling (DM)

DM-1 BROWN, T.N.  
Data management for large projects collecting diverse environmental field data.

DM-2 GRONEWOLD, A.D.  
A historical monthly hydrometeorological database for the Great Lakes

DM-3 HINCHEY, E.  
Connecting the Lakes - Completing their Assessment: Huron-Erie Corridor NCCA Pilot Study

DM-4 HIRIART-BAER, V. P.  
Why Now? Understanding the Reasons Hamilton Harbour is Letting Go of Sediment Phosphorus.

DM-5 HUANG, C.  
Estimation of the Surface Heat and Water Budgets of the Great Lakes Using a Regional Climate Model

DM-6 JONES, H.  
Quantifying uncertainty in St. Marys River flow estimates

DM-7 PEARSON, R.A.  
Monitoring and Mapping of Avian Resources over the Great Lakes to Support Management

DM-8 POMARI, J.  
An Inter-Decade Limnological Study on Jurumirim Reservoir - a Subtropical Spatially Complex System

DM-9 RUSSO, A.D.  
High Resolution St Lawrence River Water Quality Monitoring Using Sensors in a Hydropower Dam

DM-10 SUGLA, M. A.  
Zooplankton Respiration Model to Evaluate Lake Metabolism Estimates from High-Frequency Data

DM-11 TILLOTSON, N.A.  
Zebra Mussels in Lake Champlain Prior to Quagga Mussel Invasion

DM-12 XIA, Z.Q.  
Spatial Characteristics of Nutrient and Phytoplankton and their Causes of the Three Gorges Reservoir

### Innovative Approaches to Science, Education, and Outreach (EO)

EO-1 BATTAGLIA, M.J.  
MichiganView Brings Remote Sensing and Invasive Species Monitoring to the Classroom

EO-2 BRACKETT, M.L.  
Engaging K-12 students in benthic ecology through self-designed, in situ critter collector

EO-3 THARP, R.  
Land Use Planning and Water Quality Educator

EO-4 WHITE, B.  
Lake Champlain REU: Evaluating and Improving Our Summer Undergraduate Research Program

### Food Webs and Ecosystems (FE)

FE-1 CLAPSADL, M.D.  
Energy Content and Diet of the Emerald Shiner From Lakes Erie, Ontario and the Niagara River

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## POSTERS BY THEME

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- FE-2 COCHRAN, J.  
Ecology of the Young-of-the-Year Emerald Shiner (*Notropis atherinoides*) in the Niagara River
- FE-3 EUCLIDE, P.T.  
Is Mysis in decline across the Laurentian Great Lakes?
- FE-4 HUCKINS, C.J.  
Fish and Invertebrate Response to Stamp Sand Deposits and Stabilization in a Lake Superior Tributary
- FE-5 LANG, J.  
Morphometric Differentiation in Lake and River Populations of the Emerald Shiner
- FE-6 LIU, X.  
Nutrients and chlorophyll a responses to water level fluctuations in Poyang Lake, China
- FE-7 MALINICH, T.D.  
Isotope and Diets for Perch and Goby Suggest Site-Specific Diet Specialization in Saginaw Bay
- FE-8 MARCARELLI, A.M.  
Stream ecosystem process responses to stamp sand stabilization in tributaries of Lake Superior
- FE-9 MURPHY, E.W.  
Shifts in Age of Great Lakes Lake Trout; an inter-laboratory comparison
- FE-10 OSBORNE, C.  
Reproductive Effort of the Emerald Shiner (*Notropis atherinoides*) in the Upper Niagara River, NY
- FE-11 PEZZUOLI, A.R.  
Examination of the Zooplankton Community of Lake George NY With Regards to Trophic Status
- FE-12 SHERMAN, J.J.  
A Habitat Suitability Model for Lake Sturgeon (*Acipenser fulvescens*) in the Maumee River
- FE-13 TYLER, J.A.  
Physical Model Resolution and Predictive Power for Fish Populations: The Value of Detailed Data

## Earth Sciences: Climate, Hydrology, and Paleolimnology (ES)

- ES-1 BALAS, E.K.  
Tree Ring Records Reveal a Shift in Precipitation Regime in the Lake George Basin
- ES-2 FRANKS, B.S.  
Water Elevation Changes in the Fox River, Green Bay, Wisconsin
- ES-3 GARNER, C.  
Non-pollen Palynomorphs as Indicators of Anthropogenic Impact on Small and Large Lakes
- ES-4 HAMSHAW, S.D.  
Sediment Loading and Sources in the Mad River: Implications for sediment-bound nutrient management
- ES-5 HWANG, K.  
Hydrogeomorphic classification of the natural and restored wetlands in St. Lawrence Valley
- ES-6 KIRETA, A.R.  
Climate Change and Great Lakes Water Quality: Response to Past and Present Warming
- ES-7 LINI, A.  
New Insights on the Champlain Sea-Lake Champlain Transition from Shallow Bay Sediments
- ES-8 LEGEZA, M.  
Evaluation of Changes in Channel Geometry Following Environmental Dredging in the Buffalo River
- ES-9 LEON, L.F.  
Hydrologic Modelling and Evaluation of BMP Scenarios for the Grand River Watershed in Ontario
- ES-10 O'CONNOR, E.M.  
Using in-situ turbidity measurements to calculate loads from streams of the Lake Simcoe watershed.
- ES-11 XU, J.  
Upgrade of NOAA/NOS' Lake Erie Operational Forecast System (LEOFS)

### Nearshore Zones (NS)

- NS-1 BATTAGLIA, M.J.  
Development of a bi-national Great Lakes coastal wetland map for resource management
- NS-2 CARBERRY, B.C.  
Evaluating Wetland Restoration Success and Its Impact on Landowners in the St. Lawrence River Valley
- NS-3 DIOP, H.E.  
Can Earthworms Increase Nutrient Losses from Tile Drained Fields in the Pike River Watershed?
- NS-4 FOYLE, A.M.  
Groundwater and Surface Water Linkages on a Holocene Spit Complex, Presque Isle, Pennsylvania
- NS-5 JOHNSON, R.A.  
Altered Lake Erie Shorelines: Impacts of Vegetation and Armor Type on the Near-shore Fish Community
- NS-6 KOSIARA, J.M.  
Patterns in trace element concentrations of nearshore and wetland waters in northern Lake Huron
- NS-7 NODINE, E.R.  
Phytoplankton community responses to Hurricane Irene differ across Lake Champlain
- NS-8 SCHAROLD, J.  
Linkages Between Benthic Macroinvertebrate Assemblages and Landscape Stressors in the US Great Lakes

### Novel and Advancing Technologies (TE)

- TE-1 CLINE, M.T.  
Analysis of coincident HICO and airborne hyperspectral images over Lake Erie Western Basin HABs
- TE-2 CORBIERE, M.M.  
Mapping urban sprawl in the northeast USA for the past four decades to support lake management

- TE-3 GRIMM, A.G.  
Assessment of Lake Trout spawning habitat in the Great Lakes using satellite remote sensing
- TE-4 RITZENTHALER, A.A.  
Development of an Immunoassay for Near Real-time Detection of Particulate Microcystins in Lake Erie
- TE-5 TORBICK, N.M.  
Mapping Lake Champlain spatiotemporal water quality to support human health
- TE-6 YU, A.W.  
Assessing Spatial and Temporal Distribution of Harmful Algal Blooms in Western Lake Erie

### Nutrients (NU)

- NU-1 CUI, Y.  
Internal Phosphorus Loading in the Bay of Quinte 2014: Field and Laboratory Studies
- NU-2 COLLART, L.P.  
Phylogenetic and Nitrogen Growth Analyses of Lake Erie Microcystis Strains
- NU-3 COMER, B. Great Lakes Tributary Modeling Program - Program Examples
- NU-4 DOAN, P.T.K.  
Application of reactive-transport modelling to estimation of internal P loading in the Bay of Quinte
- NU-5 HILL, N.D.  
Seasonal Effects of Cyanobacteria on Fatty Acid Composition of Perch in Lake Champlain
- NU-6 MURBY, A.L.  
Microcystins and Picocyanobacteria in Lake Water Aerosols
- NU-7 PARSONS, C.T.  
Soil Biogeochemical Dynamics Under Freezing and Thawing Cycles

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## POSTERS BY THEME

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NU-8 VERHAMME, E.M.  
A real-time HABs monitoring system to support the Toledo Water Treatment Plant

### Tools for Great Lakes Management (TM)

TM-1 CAI, Y.J.  
Community Structure and Additive Diversity Partitioning of Zoobenthos in China's Five Largest Lakes

TM-2 DANIEL, S.E.  
Effect of Dreissena on Profundal Oligochaeta Community

TM-3 STADIG, E.R.  
Monitoring Long Term Trends in the St Joseph River Watershed

### General Contributions (GC)

GC-1 AMINI, K.  
Towards the Development of a Hand-held Tool for the Detection of Pathogen Contamination of Surface W

GC-2 BROOKS, C.N.  
Using Multi-temporal Imagery to Improve Mapping of Forested Roads in Michigan's Upper Peninsula

GC-3 GRIMM, A.G.  
Satellite-based assessment of nutrient status and benthic algae distribution in eastern Georgian Bay

GC-4 HAHN, C.M.  
First Hepadnavirus Isolated from Fishes: Evidence of Hepatitis B Virus Infection in White Sucker

GC-5 LAFONTAINE, J.  
Contaminant patterns in Huron-Erie Corridor sediments using the Getis-Ordgeospatial statistic

GC-6 LEDUC-LAPIERRE, M.  
Beneficial Use of Dredged Material in the Great Lakes

GC-7 MILLER, K.A.  
Zooplankton Community and White Perch Diet in Southern Lake Champlain.

GC-8 MONTGOMERY, F.A.  
Predicting the Distribution and Habitat of Fish Species at Risk in a Lake St. Clair Tributary

GC-9 MUZANA, A.  
Seasonal and spatial stock assessment of Limnothrissa miodon in Lake Kivu

GC-10 ROOK, N.A.  
Recolonization Trends in Fish Communities Following the Restoration of a Great Lakes Coastal Wetland

GC-11 SPIESE, C.E.  
Human Waste Markers and Nutrient inputs From Waste-treatment Systems in an Agricultural Watershed

GC-12 TANG, R.W.K.  
Dissolve Oxygen Tolerance Guilds of Lake Ontario Fish Species for Fish Habitat Modelling In Hamilton

GC-13 TISUE, G.T.  
Perfect Pitch: Simple Map Tools for Estimating Stream Gradients

GC-14 ZIOLA, B.A.  
Effects of Mute Swans Overwintering in Northwestern Lake Erie and the Detroit River

### Poster Awards

In addition to the IAGLR-Hydrolab Best Student Poster Award, we're recognizing great posters with several new awards:

- Graphic Design Award
- Information Impact Award
- Coffee Shop Award
- People's Choice Award

## Oral Presentations

All presentation slots are 20 minutes in duration and are strictly enforced. Your presentation should be at most 15 minutes, leaving the remaining time for questions and the transition to the next speaker.

An LCD projector and dedicated computer will be in each of the rooms where the sessions will be held. All presentations must be loaded on the computer in the session room where you are to give your presentation prior to the start of your session. These computers run PowerPoint on a Windows environment only and are password-protected. Only the assigned student volunteer can load the presentations. Presenters may not use their own laptops.

Please label your presentation file as follows:

DayofMonth\_Room Name\_HH:MM\_Lastname (e.g.  
27\_Jost\_11:50\_Marsden)

You can verify the day, room number and time of your presentation by visiting the program page on the conference website at [iaglr.org/conference/abstracts/listsession.php](http://iaglr.org/conference/abstracts/listsession.php).

### Uploading Your Talk

Please bring your presentation on a USB flash drive to the session room of your presentation at least half a day before your session starts. Presentations can be uploaded between 7:50 a.m. and 5 min prior to the first talk of the session or during morning and afternoon breaks from Tuesday to Friday.

### Internet Access

The entire UVM campus is served with Wi-Fi, including the residence halls. When you pick up your registration materials at the registration desk, you will receive a unique login account to connect to the Wi-Fi network *UVM Guest*.

## Poster Presentations

The poster session will take place on the evening of Tuesday, May 26 in the Davis Center from 6:00 pm to 9:00 pm.

Presenters can begin mounting their poster in their assigned space after lunch on Tuesday. Mounting must be completed before 5:30 pm Tuesday evening and we encourage presenters to leave their posters up as long as possible. Posters need to be removed by Thursday noon.

### Mounting Your Poster

Each poster board will have an area of 120 cm x 90 cm. All poster material must be confined to the space provided. Posters will be hung with tacks which the conference will provide. Student volunteers will be present in the poster area to assist between 1:30 pm and 5:30 pm on Tuesday. Presenters are expected to tend their poster during the evening poster session to answer questions. This is especially important for student presenters who are candidates for the Best Poster IAGLR-HydroLab Award.

To motivate better poster presentations, we have added the following awards to this year's IAGLR conference:

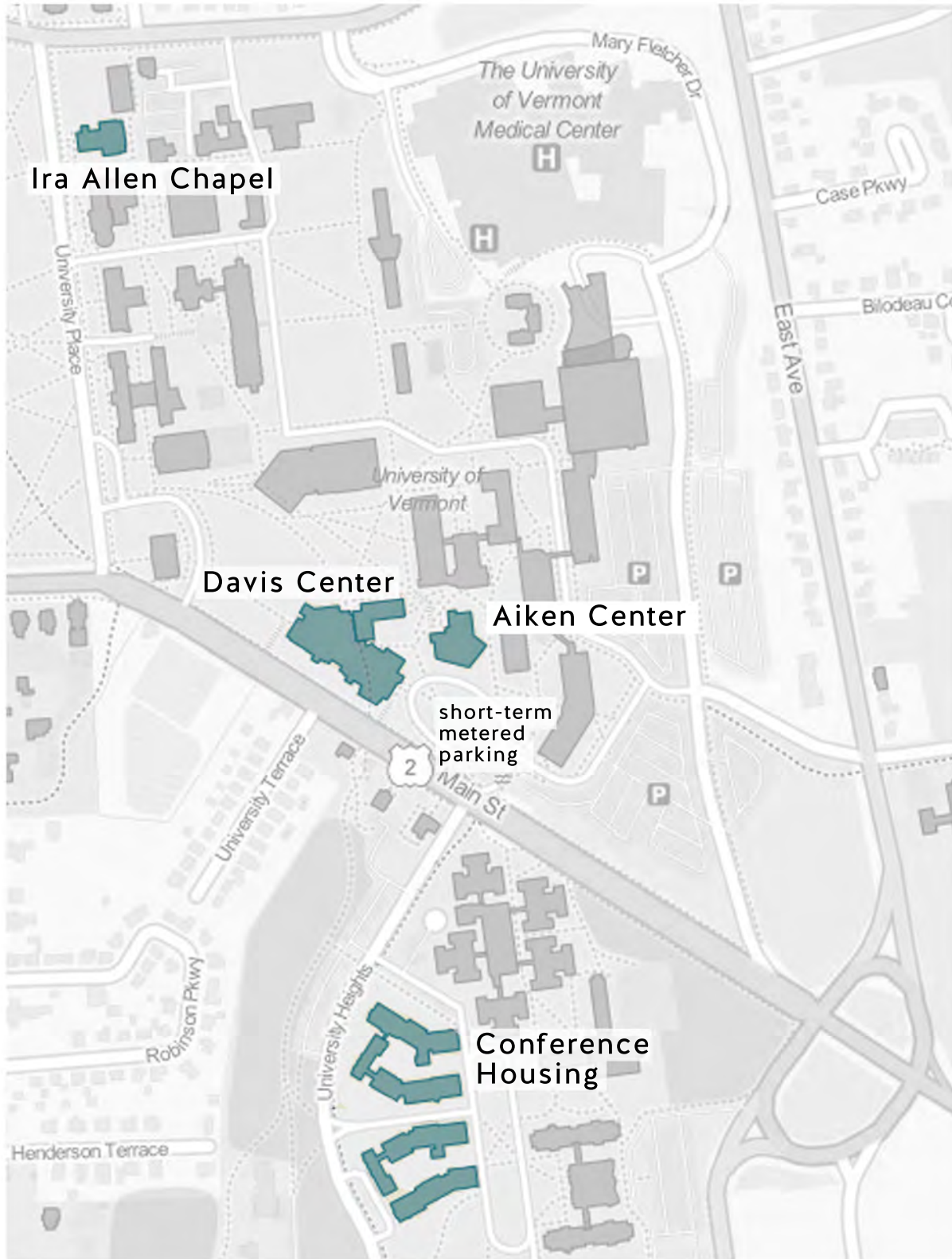
- Graphic Design Award – for posters that demonstrate sensible and artistic designs for conveying information pleasing to the eye
- Information Impact award – best use of minimal and informative text to convey a clear message. These awards will be given in several subject areas.
- Coffee Shop Award – for posters that demonstrate effective science translation to both scientific and public audiences. Posters receiving this award will be showcased in Henderson's Café in the Davis Center on Wednesday.
- The People's Choice Award – poster session attendees will be able to vote for their favorite poster and awards will be given to the top placing posters.

**Presentations and posters are the property of the presenter. Audio recordings, copying, videotaping, or photographing a presentation or poster without the express permission of the presenter is strictly prohibited.**

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# CAMPUS MAP

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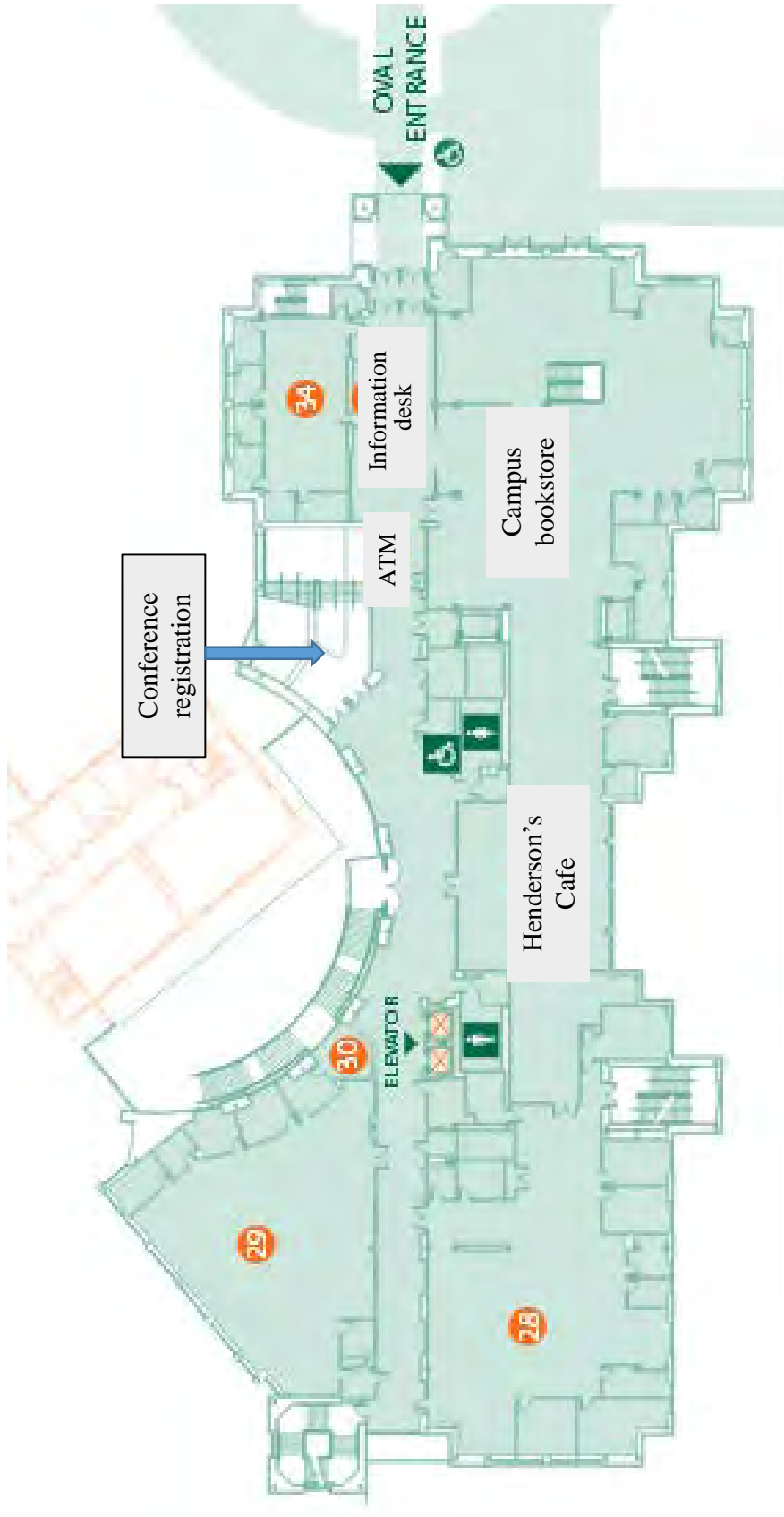
# DAVIS CENTER / FOURTH FLOOR

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# DAVIS CENTER / THIRD FLOOR

Inira Floor (entry level)

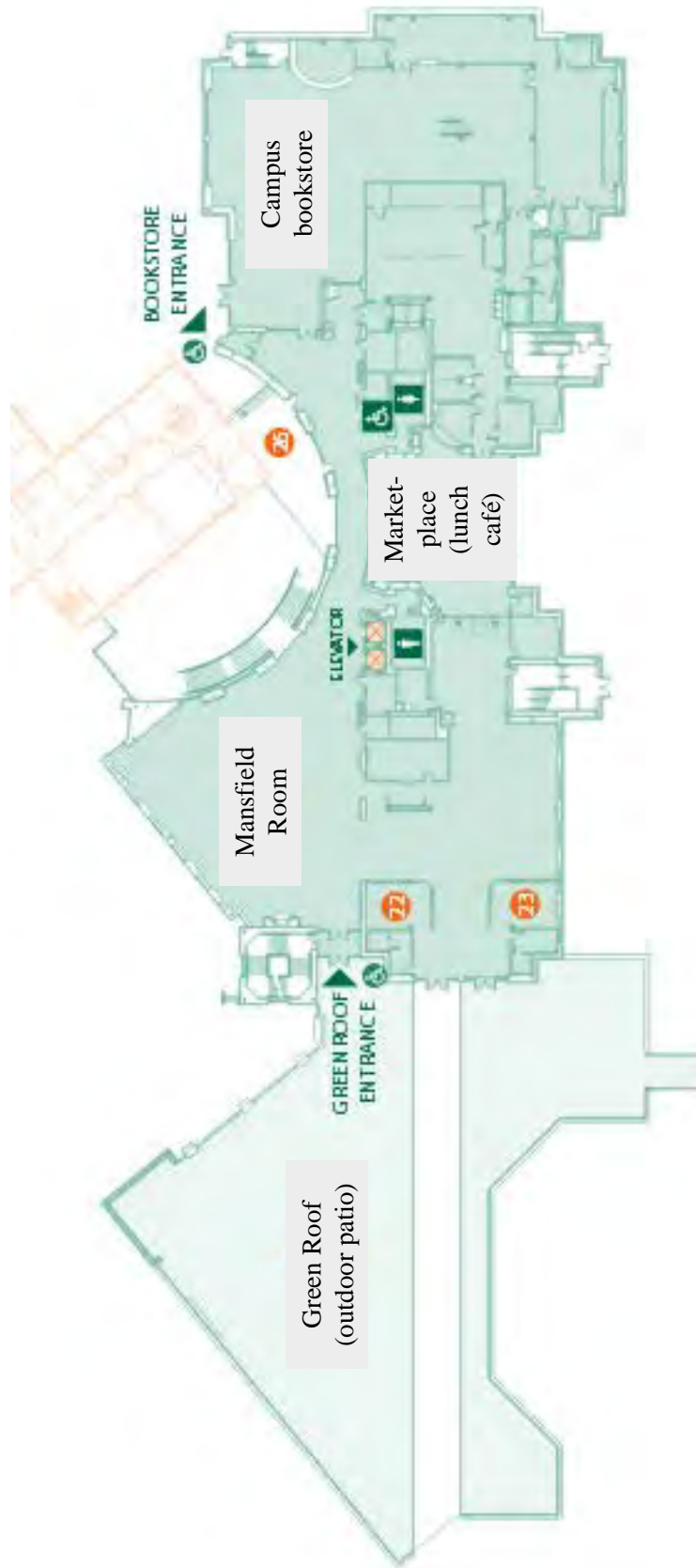




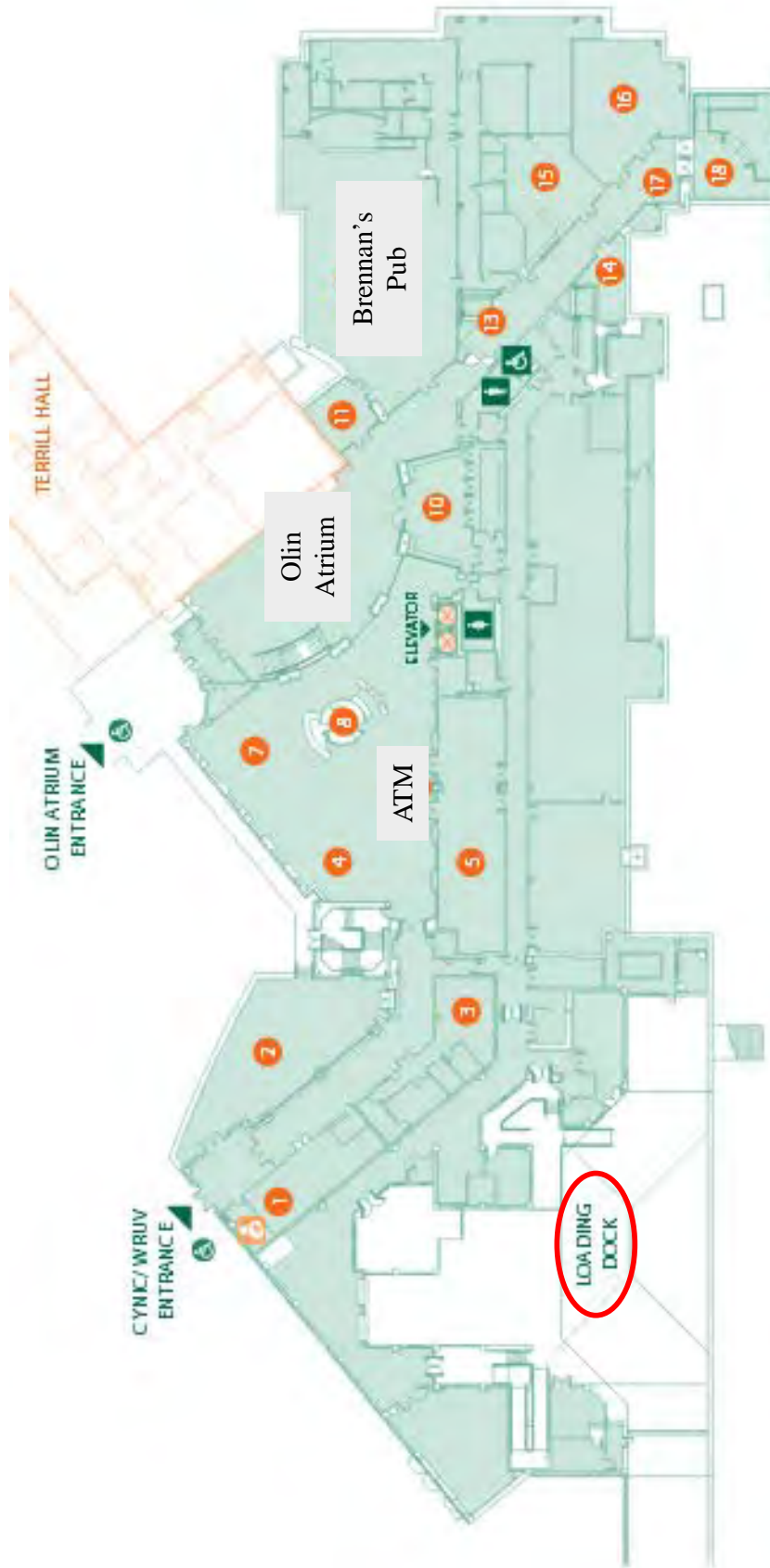
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# DAVIS CENTER / SECOND FLOOR

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# DAVIS CENTER / FIRST FLOOR



Burlington has an abundance of arts, shopping, and entertainment within a short walk of the conference venue. Vermont is also rich in outdoor recreational opportunities, such as hiking, kayaking, fishing, and biking. Additional recreational opportunities are available across Lake Champlain, in New York in the Adirondack Mountains. Two ferries cross Lake Champlain to New York in May; the Grand Isle ferry is 30 minutes north from Burlington, and the Charlotte ferry is 25 minutes south.

### Church Street Marketplace

You'll find many choices for a quick lunch or elegant dinner at the Church Street Marketplace, within a 15 minute walk of the main conference venue. A free shuttle runs every 15 minutes from Waterman Hall on campus. The Marketplace comprises five blocks of an outdoor pedestrian mall with more than 100 shops, restaurants, and art galleries. Outdoor stores abound, including Eddie Bauer, LLBean, Patagonia, and Burlington's own Outdoor Gear Exchange.



### Burlington Bike Path

A few blocks from the Marketplace is the Burlington Bike Path, featuring stunning views of the waterfront and the Adirondacks, with several parks, beaches and natural areas along the way. You can bike, walk, run, or rollerblade 2 miles south to Oakledge Park, or 10.5 miles north to the Colchester causeway. Local Motion, Burlington's non-profit active transportation and recreation organization, offers a variety of bike rentals and helpful information about local trails at their trailside center at the waterfront.



### Shelburne Farms

Located just 7 miles outside of Burlington, Shelburne Farms is a non-profit whose goal is to educate for a sustainable future. This working farm, including a dairy, market garden and woodlands, produces foods traditional to this unique area. In addition, Shelburne farms features 10 miles of walking trails, one of Vermont's premier farm-to-table restaurants, beautiful ornamental gardens and breathtaking cliff-side views of Lake Champlain.

### Other Area Attractions

- ECHO Lake Aquarium and Science Center
- Shelburne Museum
- Mount Philo State Park
- Vermont Teddy Bear Factory
- Ben and Jerry's Factory Tour
- Lake Champlain Maritime Museum

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# NOTES

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# One great little duet...



## ...and another.



Introducing the *RBRduet* - our new, smaller, two-channel logger.

*RBRduet* is up to 60% lighter than the previous models, simple to use, and ideal for long deployments. A built-in USB interface provides very fast data download.

Includes temperature and pressure sensors, with tide and wave options.

# RBR

[rbr-global.com](http://rbr-global.com)

International Association for Great Lakes Research

**59th ANNUAL CONFERENCE  
ON GREAT LAKES RESEARCH**

University of Guelph  
June 6-10

