52nd Annual Conference on Great Lakes Research
International Association for Great Lakes Research

Program Book

BRIDGING
Ecosystems and
Environmental Health across
our GREAT LAKES

Monday May 18 - Friday May 22 2009
University of Toledo - Toledo OHIO
The Front Cover Logo

The front cover logo symbolizes our IAGLR09 conference theme, "Bridging Ecosystems and Environmental Health Across Our Great Lakes". Our conference focus is to bridge an understanding of the linkages among Great Lakes ecosystems, and environmental and human health. In summer 2006, the University of Toledo merged with the former Medical University of Ohio and our newly combined research and education collaborations helped to inspire the theme as we together laid the groundwork for the conference.

The conference is led by the University of Toledo’s Lake Erie Center, an interdisciplinary research and education center dedicated to solving environmental problems at the land-water interface and bay-lake exchanges in the Great Lakes - the world’s largest freshwater ecosystem. The Lake Erie Center is an integral environmental resource of the College of Arts and Sciences at The University of Toledo and is located in the northwestern corner of Ohio’s Maumee Bay State Park. Research at the Lake Erie Center explores the linkages among land use, aquatic resources, water quality, and human health - using the Maumee River and Bay and its key influence on the western Lake Erie Basin as a model.

You are welcome to visit the LEC on the Friday afternoon field trip or drop by anytime!

The local conference committee is a collaboration of faculty, graduate students, and staff from the University of Toledo’s Departments of Biochemistry and Cancer Biology, Civil Engineering, Economics, Environmental Sciences, Geography and Planning, Public Health and Homeland Security, the Law School, and the Lake Erie Center. Local committee members from other institutions include Bowling Green State University, NOAA’s Great Lakes Environmental Research Laboratory, Heidelberg University, the Ohio Division of Wildlife, and the US Geological Survey.

The logo features a stylized version of the new Veteran’s Glass City Skyway Bridge across the Maumee River in Toledo on I-280. The Veterans Glass City Skyway is the single largest project ever attempted by Ohio DOT, and was dedicated in June 2007. It is not only a critical Interstate highway route in Toledo, but it is also a signature landmark bridge. At 400 feet tall, it is the second tallest structure in Toledo.

The bridge design is a single pylon tower centered in the river, with two bridge spans held up by a single set of cables, with each span of the same length on each side of the tower. The cable arrangement is unique in that the cables do not attach to the main tower. Rather, the cables loop through the towers, and attach only at the bridge deck. Several smaller cable stayed bridges are now using this technique, but this is the pioneering structure to attempt such a design. To show off the bridge’s signature status, it is constructed with glass panels that run the full height of the center tower. These panels contain thousands of LED lights. The light panels are used to give nighttime light shows.

The MODIS satellite images are courtesy of NOAA Glerl and are found at http://coastwatch.glerl.noaa.gov/modis/. This year’s Great Lakes field efforts are centered on the International Field Year on Lake Erie (IFYLE).

The cover design was the joint effort of Rajorshi Ghosh of Studio Trigon and University of Toledo Lake Erie Center Ph.D. candidate Osvaldo J. Sepulveda-Villet (aka “Jhonatan”).
PROGRAM

International Association for Great Lakes Research

52nd Annual Conference

Bridging Ecosystems and Environmental Health
Across Our Great Lakes

May 18-22, 2009

The University of Toledo
Toledo, Ohio

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Welcome Conference Exhibitors!

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www.bbe-moldaenke.com

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www.fondriest.com

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Toledo, OH 43612
www.frigidunits.com

Great Lakes Fishery Commission*^**
2100 Commonwealth Blvd., Suite 100
Ann Arbor, MI 48105
www.glfc.org

Hach Environmental**
5600 Lindbergh Dr.
Loveland, CO 80538
www.hachenvironmental.com

International Joint Commission*^*
Great Lakes Regional Office
100 Quellette Ave.
Windsor, ON N9A 6T3
www.ijc.org

Lake Art
by Dennis Hinklin
6324 Sturbridge
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Michigan State University Press
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NOAA in the Great Lakes
4840 South State Road
Ann Arbor MI 48108
www.glerl.noaa.gov/res/centers/humanhealth

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

U.S. Geological Survey
Michigan Water Science Center
6520 Mercantile Way, Suite 5
Lansing, MI 48911
www.usgs.gov

Exhibits will be open daily.
Please make the exhibitors feel welcome by visiting their displays!

A special thank you is extended to the Exhibitors as indicated:

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1. Norman S. Baldwin Fishery Science Scholarship
2. IAGLR-Hydrolab Best Student Paper and Poster Presentation Award Co-Sponsor
LimnoTech congratulates IAGLR on its long history of protecting and sustaining the Great Lakes through the promotion and communication of large-lakes science and research. We proudly support efforts to understand stressors and solutions for better decision-making on Great Lakes issues. A few of our projects are illustrated below.

**Fox River and Green Bay, Wisconsin:** PCB fate and transport model evaluation

**All Great Lakes**
- Developing methods to analyze, protect, and restore flow regimes in the Great Lakes Basin
- Model framework for assessing the impacts of water withdrawals in the Great Lakes-St. Lawrence Basin
- Great Lakes Basin multi-media model for screening emerging chemicals

**Saginaw Bay:** Linked hydrodynamic-ecosystem model to evaluate multiple stressor impacts

**Lake St. Clair:** Mercury screening model

**Lake Ontario/St. Lawrence River:** Integrated Ecological Response Model (IERM) for evaluating ecological impacts of water level and flow regulation

**Lake Ontario:** Application of a PBT exposure model in support of a LaMP load reduction strategy

**Buffalo and Niagara Rivers:** Bacteria transport and fate model to evaluate alternative CSO control plans for Buffalo, NY

**Ottawa River:** Sediment and hydrological studies

**Lake Erie:** Forecasting causes, consequences, and potential solutions for hypoxia

Visit us at: [www.limno.com](http://www.limno.com)
Conference Overview & Special Events

Monday, May 18

9 a.m. - 4 p.m. IAGLR Board Meeting, Student Union, Room 3016 (St. Lawrence River), 3rd floor

10 a.m. - 9 p.m. **PowerPoint Presentation Drop-off**, Student Union, Room 2562 (A/V Prep), 2nd floor

3 - 5:30 p.m. **NOAA Great Lakes Public Forum: Setting the Course for the Next 25 Years**, Student Union 2520, Ingman Room (RSVP to Jennifer.Day@NOAA.gov or 734-741-2266)

6 - 9 p.m. **Conference Registration**, Student Union, outside Room 2561, 2nd floor

**Welcome Reception**, Student Union, 2582-4 Atrium Lounge Area, 2nd floor

9 p.m. **Planetarium Show**, "The Star Gazer", Ritter Planetarium, 3-min. walk from Student Union

9 - 11 p.m. **Graduate Student Only Reception**, Student Union Rocket Grille, 1st floor

10 - 11 p.m. **Observatory at Planetarium** open for stargazing (with astronomy staff, weather permitting)

Tuesday, May 19

7:30 a.m. - 9 a.m. **JGLR Editor Meeting** (invitation only), Student Union, Room 3016 (St. Lawrence River), 3rd floor

8 a.m. - 5 p.m. **Conference Registration**, Student Union, outside Room 2561, 2nd floor

**Poster Setup & Exhibitors Setup**, Student Union: Posters in 3rd floor ballroom;
Exhibitors in 2nd floor lounge (Posters must be up by 2 p.m. Tuesday and are encouraged to stay up until 5 p.m on Thursday)

8 a.m. - 6 p.m. **PowerPoint Presentation Drop-off**, Student Union, Room 2562 (A/V Prep), 2nd floor

8 - 9 a.m. Buses from Hotels and Dorms to Student Union (see page 19 for bus details)
Coffee and Continental Breakfast, Student Union South Lounge

9 - 10:30 a.m. **Welcome and Plenary**, Doermann Theatre, University Hall
**Dr. Howard Frumkin**, Director, National Center for Environmental Health, Agency for Toxic Substances and Disease Registry

10:30 - 10:50 a.m. Coffee Break, Student Union, three locations

10:50 a.m. - 12:10 p.m. **Scientific Sessions**, Student Union
Conference Overview & Special Events

Tuesday, May 19, continued

12:10 – 1:10 p.m.   Lunch – on your own (Student Union vendors, Phoenicia, cafeteria, pre-paid at International House – see page 27 for suggestions)  
Graduate Student box lunch, Ingman Room, SU 2520 (lunches limited to first 50 people)  
JGLR Editor luncheon tribute to R. Stephen Schneider (invitation only), Student Union, Room 3016 (St. Lawrence River), 3rd floor  
COSEE Teachers lunch (invitation only) Student Union, Room 2579

1:10 - 3:10 p.m.   Scientific Sessions, Student Union

3:10 - 3:30 p.m.   Coffee Break, Student Union, three locations

3:30 - 5:50 p.m.   Scientific Sessions, Student Union

5 - 6:00 p.m.   Buses to Hotels and Dorms

6 - 8 p.m.   Poster Session & Exhibitor's Reception (Includes High School Student and Teacher Poster Session)  
Student Union Auditorium/Ballroom, 3rd floor

8 p.m.   Buses depart to IAGLR '09 Hockey Game

8:30 - 10 p.m.   IAGLR '09 Hockey Game, Tam O'Shanter, Sylvania, Ohio

10:30 - 11 p.m.   Buses depart from IAGLR '09 Hockey Game

Wednesday, May 20

7:45 a.m.   UT Ottawa River Rain Garden Tour. Meet in front of International House main entrance.

8 a.m. – 5 p.m.   Conference Registration, Student Union, outside Room 2561, 2nd floor

8 a.m. - 6 p.m.   PowerPoint Presentation Drop-off, Student Union, Room 2562 (A/V Prep), 2nd floor

8 - 9 a.m.   Buses from Hotels and Dorms to Student Union

8 - 8:30 a.m.   Coffee and Continental Breakfast, Student Union, 2nd floor, South Lounge

8:30 a.m. - 10:10 a.m.   Scientific Sessions, Student Union

10:10 - 10:30 a.m.   Coffee Break, Student Union, three locations

10:30 a.m. - 12 p.m.   Scientific Sessions, Student Union
Conference Overview & Special Events

**Wednesday, May 20, continued**

12:10 - 1:30 p.m.  **IAGLR Business Lunch**, Student Union Auditorium/Ballroom, 3rd floor

1:30 - 3:30 p.m.  **Scientific Sessions**, Student Union

3:30 - 3:50 p.m.  Coffee Break, Student Union, three locations

3:50 - 5:30 p.m.  **Scientific Sessions**, Student Union

5 - 6:00 p.m.  Buses to Hotels and Dorms

6:30 p.m.  Buses depart for Banquet from Meetings, Hotels and Dorms

7 - 9:30 p.m.  **IAGLR Banquet**, Pinnacle in Maumee, Ohio, near the Maumee River

9:30 p.m.  Buses depart to Dorms, Hotels, Campus Lots

**Thursday, May 21**

7 - 8:15 a.m.  **Birdwatch/Nature Walk to Wildwood MetroPark**. Meet at Ottawa West Dorms.

8 a.m. – 5 p.m.  **Conference Registration**, Student Union, outside Room 2561, 2nd floor

8 a.m. - 6 p.m.  **PowerPoint Presentation Drop-off**, Student Union, Room 2562 (A/V Prep), 2nd floor

8 - 9 a.m.  Buses from Hotels and Dorms to Student Union

8 - 8:30 a.m.  Coffee and Continental Breakfast, Student Union, 2nd floor South Lounge

8:30 a.m. - 10:50 a.m.  **Scientific Sessions**, Student Union

10:30 - 11 a.m.  Coffee Break, Student Union, three locations

11 a.m. – Noon  **Plenary**, Doerrmann Theatre, University Hall

“Climate, Oceans, Infectious Diseases, and Human Health: The Cholera Paradigm”

**Dr. Rita Colwell**, Chair of Canon US Life Sciences, Inc. and Distinguished University Professor, University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health
Conference Overview & Special Events

Thursday, May 21, continued

Noon – 1 p.m.  Lunch – on your own (Student Union vendors, Phoenicia, cafeteria, pre-paid at International House – see page 27 for suggestions)
Graduate Student boxed lunch, Ingman Room, SU 2520 (lunches limited to first 50 people)
Invitation-only lunch for Dr. Colwell, Libby Hall (hosted by UT Lake Erie Center & AWIS)

1 - 3 p.m.  Scientific Sessions, Student Union

3 - 3:20 p.m.  Coffee Break, Student Union, three locations

3:20 - 5:20 p.m.  Scientific Sessions, Student Union

5 - 6:00 p.m.  Buses to Hotels and Dorms

5:30 - 6:30 p.m.  Buses depart for Zoo barbecue picnic from Student Union, Hotels, and Dorms

6:30 - 10 p.m.  IAGLR BBQ, Nairobi Events Pavilion, Toledo Zoo (Park in Anthony Wayne Trail lot)

9:30 - 10:30 p.m.  Buses depart to Dorms, Hotels, Campus Lots

Friday, May 22

8 - 10 a.m.  Conference Registration, Student Union, outside Room 2561, 2nd floor
PowerPoint Presentation Drop-off, Student Union, Room 2562 (A/V Prep), 2nd floor

8 - 9 a.m.  Buses from Hotels and Dorms to Student Union

8 - 8:30 a.m.  Coffee and Continental Breakfast, Student Union, 2nd floor South Lounge

8:30 a.m. - 10:30 a.m.  Scientific Sessions, Student Union

10:30 - 10:50 a.m.  Coffee Break, Student Union, three locations

10:50 a.m. – 2:30 p.m.  Scientific Sessions, Student Union

12 p.m. - 2:00 p.m.  Bus to Hotels and Dorms

1:30 - 4 p.m.  Field Trips (see page 28)
1. Oak Opening State Nature Preserve at Kitty Todd. Leader: Todd Crail
2. Lake Erie Center and Lake Guardian Tour or Maumee Bay State Park Nature Museum.
   Leader: Nathan Manning

Both field trips should meet at Ottawa West Dorm’s front parking lot for rides via university vans or to car pool.
HOWARD FRUMKIN, M.D., Dr.P.H., Plenary Speaker

Tuesday, May 19th, 9:00-10:30 a.m., Doerrmann Theatre

“Health and Environment: The Great Lakes Region”

Howard Frumkin is the Director of the National Center for Environmental Health and Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) at the U.S. Centers for Disease Control and Prevention. NCEH/ATSDR works to maintain and improve the health of the American people by promoting a healthy environment and by preventing premature death and avoidable illness and disability caused by toxic substances and other environmental hazards.

Dr. Frumkin is an internist, environmental and occupational medicine specialist, and epidemiologist. Before joining the CDC in September 2005, he was Professor and Chair of the Department of Environmental and Occupational Health at Emory University’s Rollins School of Public Health and Professor of Medicine at Emory Medical School. He founded and directed Emory’s Environmental and Occupational Medicine Consultation Clinic and the Southeast Pediatric Environmental Health Specialty Unit.

Dr. Frumkin previously served on the Board of Directors of Physicians for Social Responsibility (PSR), where he co-chaired the Environment Committee; as president of the Association of Occupational and Environmental Clinics (AOEC); as chair of the Science Board of the American Public Health Association (APHA), and on the National Toxicology Program Board of Scientific Counselors. As a member of EPA’s Children’s Health Protection Advisory Committee, he chaired the Smart Growth and Climate Change work groups. He currently serves on the Institute of Medicine Roundtable on Environmental Health Sciences, Research, and Medicine. In Georgia, he was a member of the state’s Hazardous Waste Management Authority, the Department of Agriculture Pesticide Advisory Committee, and the Pollution Prevention Assistance Division Partnership Program Advisory Committee, and is a graduate of the Institute for Georgia Environmental Leadership. In Georgia’s Clean Air Campaign, he served on the Board and chaired the Health/Technical Committee. He was named Environmental Professional of the Year by the Georgia Environmental Council in 2004. His research interests include public health aspects of urban sprawl and the built environment; air pollution; metal and PCB toxicity; climate change; health benefits of contact with nature; and environmental and occupational health policy, especially regarding minority communities and developing nations. He is the author or co-author of over 160 scientific journal articles and chapters, and his books include Urban Sprawl and Public Health (Island Press, 2004, co-authored with Larry Frank and Dick Jackson; named a Top Ten Book of 2005 by Planetizen, the Planning and Development Network), Emerging Illness and Society (Johns Hopkins Press, 2004, co-edited with Randall Packard, Peter Brown, and Ruth Berkelman), Environmental Health: From Global to Local (Jossey-Bass, 2005; winner of the Association of American Publishers 2005 Award for Excellence in Professional and Scholarly Publishing in Allied/Health Sciences), Safe and Healthy School Environments (Oxford University Press, 2006, co-edited with Leslie Rubin and Robert Geller), and Green Healthcare Institutions: Health, Environment, Economics (National Academies Press, 2007, co-edited with Christine Coussens).

Dr. Frumkin received his A.B. from Brown University, his M.D. from the University of Pennsylvania, his M.P.H. and Dr.P.H. from Harvard, his Internal Medicine training at the Hospital of the University of Pennsylvania and Cambridge Hospital, and his Occupational Medicine training at Harvard. He is Board-certified in both Internal Medicine and Occupational Medicine, and is a Fellow of the American College of Physicians, the American College of Occupational and Environmental Medicine, and Collegium Ramazzini.
RITA COLWELL, Ph.D., Plenary Speaker

Thursday, May 21st, 11:00 a.m. to Noon, Doerrmann Theatre

“Climate, Oceans, Infectious Diseases, and Human Health: The Cholera Paradigm”

Dr. Rita Colwell is a Distinguished University Professor both at the University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health; Senior Advisor and Chairman Emeritus, Canon US Life Sciences, Inc., and President and CEO of CosmoID, Inc. Her interests are focused on global infectious diseases, water, and health, and she is currently developing an international network to address emerging infectious diseases and water issues, including safe drinking water for both the developed and developing world.

Dr. Colwell served as the 11th Director of the National Science Foundation, 1998-2004. In her capacity as NSF Director, she served as Co-chair of the Committee on Science of the National Science and Technology Council. One of her major interests includes K-12 science and mathematics education, graduate science and engineering education and the increased participation of women and minorities in science and engineering.

Dr. Colwell has held many advisory positions in the U.S. Government, nonprofit science policy organizations, and private foundations; as well as in the international scientific research community. She is a nationally-respected scientist and educator, and has authored or co-authored 17 books and more than 700 scientific publications. She produced the award-winning film, Invisible Seas, and has served on editorial boards of numerous scientific journals.

Before going to NSF, Dr. Colwell was the President of the University of Maryland Biotechnology Institute and Professor of Microbiology and Biotechnology at the University Maryland. She also was a member of the National Science Board from 1984 to 1990. Dr. Colwell has previously served as Chairman of the Board of Governors of the American Academy of Microbiology and also as President of the American Association for the Advancement of Science, the Washington Academy of Sciences, the American Society for Microbiology, the Sigma Xi National Science Honorary Society, and the International Union of Microbiological Societies. Dr. Colwell is a member of the National Academy of Sciences, the Royal Swedish Academy of Sciences, Stockholm, the Royal Society of Canada, the American Academy of Arts and Sciences, and the American Philosophical Society. She is President of the American Institute of Biological Sciences (AIBS).

Dr. Colwell also has been awarded 49 honorary degrees from institutions of higher education, including her Alma Mater, Purdue University and is the recipient of the Order of the Rising Sun, Gold and Silver Star, bestowed by the Emperor of Japan, and the 2006 National Medal of Science awarded by the President of the United States. Dr. Colwell is an honorary member of the microbial societies of the UK, Australia, France, Israel, Bangladesh, and the U.S. and has held several honorary professorships, including the University of Queensland, Australia. A geological site in Antarctica, Colwell Massif, has been named in recognition of her work in the polar regions. Born in Beverly, Massachusetts, Dr. Colwell holds a B.S. in Bacteriology and an M.S. in Genetics, from Purdue University, and a Ph.D. in Oceanography from the University of Washington.
Graduate Student Luncheons

Luncheons will be held in the Ingman Room of the Student Union (SU 2520) from 12:10 to 1:10 on Tuesday and Thursday. **Box lunches will be provided free of charge for the first 50 graduate students who arrive.**

**Tuesday May 19th – “How to Succeed and Network in Graduate School”**
Dr. Patricia Komuniecki, Vice Provost for Graduate Affairs and Dean of the College of Graduate Studies, The University of Toledo

**Thursday May 21st – “How to Write your CV and Get a Job or Postdoc”**
Mary Jo Borden, Assistant Director of Career Services, The University of Toledo

The graduate students thank Dr. Patricia (“Patsy”) Komuniecki for her presentation at the graduate student luncheon on Tuesday May 19th. Dr. Komuniecki earned her B.A. in biology cum laude from Newton College (Boston College), an M.A. in biological sciences from Mount Holyoke College, and a Ph.D. degree in zoology from the University of Massachusetts. She conducted NIH- and WHO-funded postdoctoral research in parasite biochemistry at The University of Notre Dame and in pharmacology at the former Medical College of Ohio. She currently is a Professor of Biology at The University of Toledo and is part of an NIH-funded molecular parasitology research group with her husband, Dr. Richard Komuniecki. She has been an active mentor of M.S. and Ph.D. students over the years. She belongs to many professional parasitology organizations and academic honor societies, and is a longtime mentor for women in science. Dr. Komuniecki is the founding president of the northwest Ohio chapter of the Association for Women in Science (AWIS, 2005), and was elected as the first female Chapter President of Sigma Xi (1989-90) and the first female Chair of the Graduate Council (1998-99). She is the recipient of an Outstanding Faculty Woman Award (1990) and Outstanding Advisor Award (2006). She has held previous administrative appointments as the Chair of the Department of Biological Sciences (1998-2009) and as Associate Dean for the College of Arts and Sciences (1990-96). She was appointed as Vice Provost for Graduate Affairs and Dean of the College of Graduate Studies in January 2009.

We also thank Mary Jo Borden from Career Services, who is a graduate of The University of Toledo with a master’s degree in counseling and a bachelor’s degree in individualized programs. After working in international education, Ms. Borden began her focus on career services while employed at Pennsylvania State University as a Career Development and Placement Services counselor. She currently is an assistant director of Career Services and specializes in career counseling, federal employment, and advising graduate students on CV development and academic careers. She coordinates the annual job fair for students in the College of Pharmacy. She is the administrative and technical manager of the university’s job/resume service “Rocket Jobs”. Ms. Borden is a member of the National Association of Colleges and Employers and National Career Development Association. She is an active community volunteer and has served in a number of leadership roles with non-profit organizations.
Oral presentation guidelines

- Each speaker has 20 minutes (15 minutes for the presentation and 5 minutes for Q & A). Time limits will be enforced.
- A PC laptop, LCD projector and laser pointer will be provided in each room.
- Presentations not uploaded prior to the conference must be placed on a USB flash drive or CD and taken to the A/V prep room, Student Union Room 2562, for loading the day before the presentation (see guidelines for loading your presentation at the conference site, below). All talks must be pre-loaded in the A/V prep room, SU 2562 – no talks will be loaded in session rooms and individual laptops will not be hooked up.
- Computer-based presentations should use PowerPoint (PDF is also acceptable). We will be using PC laptops running Microsoft Office 2003. Mac users should take special care before the conference to ensure their presentation is compatible.
- Please do not use unusual fonts and limit use of animated images. Please do not use videos unless absolutely necessary for your presentation. Videos you must play in your PowerPoint presentation should be embedded and have separate back up copies (if you fail to embed the video, it will not play during your presentation; also note that embedding is not fail-safe and the video file should be stored on your presentation USB drive or CD).

Guidelines for loading your presentation at the conference site

- Student Union Room 2562 is the A/V prep room. It is located near the registration desk.
- All presentations must be loaded onto the conference server in the A/V prep room, SU 2562. Talks will not be loaded in the presentation rooms.
  
  A/V personnel will be in the prep room to load presentations during the following hours:
  
  - Monday, May 18th: 10 a.m. – 9 p.m.
  - Tuesday, May 19th: 8 a.m. – 6 p.m.
  - Wednesday, May 20th: 8 a.m. – 6 p.m.
  - Thursday, May 21st: 8 a.m. – 6 p.m.
  - Friday, May 22nd: 8 a.m. – 12 p.m.

- Monday, May 18, is an ideal time to load your talk, as there are no sessions that day. A/V personnel will be in the prep room from 10 a.m. – 9 p.m. to load your presentation.

- Please make every effort to load your presentation THE DAY BEFORE your session or earlier. The program will not be delayed because a talk is loaded last-minute or does not display properly on the conference computers.

- Before arriving to the A/V prep room, check the program for information about your session, including the date, time and room number. Name your presentation file using the following guidelines:
  
  - PresentationDayAndTime-RoomNumber-PrimaryAuthorLastName-FirstName.ppt
  - EXAMPLE: T830-2582-Smith-J.ppt
  - Use a single letter for the day with R for Thursday – T, W, R or F

- Your talk must be placed on a USB drive or CD before arriving to the A/V prep room. No other storage devices will be supported and individual laptops will not be hooked up for loading.

- You will be provided up to 3 minutes to view your presentation in the A/V prep room to ensure everything looks okay. This time is not for doing a practice talk.

- A/V personnel will be on hand in each session room to pull up the appropriate presentations on networked computers before sessions begin.
Poster presentation guidelines

- The formal poster session will be Tuesday, May 19, from 6 p.m. – 8 p.m., in the Student Union Auditorium (3rd Floor). All posters must be in place by 2 p.m. that afternoon.
- Poster boards and pushpins will be available in the Student Union Auditorium (3rd Floor) beginning Tuesday morning.
- Though poster boards are 4 feet high by 8 feet wide (~1.2 meters high by ~2.4 meters wide), we recommend that posters be no higher than 3 feet and no wider than 4 feet (~1 meter high by ~1.2 meters wide).
- Additional advice on designing science posters can be found at: http://www.conbio.org/studentaffairs/posters/
- All posters must be removed by 5 p.m. on Thursday, May 21.

IAGLR Officers and Board Members

<table>
<thead>
<tr>
<th>Officers:</th>
<th>Board Members:</th>
<th>Student Board Members:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ronald A. Hites, President</td>
<td>Susan Doka</td>
<td>Kristen DeVanna</td>
</tr>
<tr>
<td>Linda Campbell, Vice President</td>
<td>Robert Heath</td>
<td>Mark Dzurko</td>
</tr>
<tr>
<td>Lynda D. Corkum, Past President</td>
<td>Charles Madenjian</td>
<td></td>
</tr>
<tr>
<td>Stephen J. Lozano, Treasurer</td>
<td>Joseph Makarewicz</td>
<td></td>
</tr>
<tr>
<td>Stephanie Guildford, Secretary</td>
<td>Chris Metcalfe</td>
<td></td>
</tr>
</tbody>
</table>

Presentations and Posters are the property of the presenter. Audio recording, copying, videotaping or photographing of a presentation without the express permission of the presenter is prohibited.
Our deepest appreciation is extended to our annual

**IAGLR Sustaining Members**

**Great Lakes Fishery Commission***
2100 Commonwealth Boulevard, Suite 100
Ann Arbor, Michigan 48105-1563

**Great Lakes Protection Fund**
1560 Sherman Avenue, Suite 880
Evanston, Illinois 60201-4808

**International Joint Commission**
Great Lakes Regional Office
100 Ouellette Avenue
Windsor, Ontario N9A 6T3

**U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration**
Great Lakes Environmental Research Laboratory
4840 South State Road
Ann Arbor, Michigan 48108

**U.S. Environmental Protection Agency**
Great Lakes National Program Office
77 West Jackson Street
Chicago, Illinois 60604

* proud sponsor of the Norman S. Baldwin Fishery Science Scholarship

The International Association for Great Lakes Research is a member run organization. If you are interested in supporting the scientific community in its work in the exploration, discussion and resolution of Great Lakes issues, please consider joining IAGLR! Individual or Sustaining memberships are available.

Further information may be found on our website [www.iaglr.org](http://www.iaglr.org) or pick up our brochure in the registration area.

**IAGLR member benefits include:**

- Quarterly *Journal of Great Lakes Research* subscription
- *Journal of Great Lakes Research* Special Issues
- Access to *J. Great Lakes Research* archives from 1975-present
- Annual Conference on Great Lakes Research registration discount
- *IAGLR Notes*, a biweekly 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
- Eligible for election to serve on the IAGLR Board of Directors
- Opportunities to work on various committees
- Networking resources are available to all members
- Utilize the Job Board to advertise job openings or seek employment
- Stay abreast or post news of interest on our web site
- Students, Retirees, and Young Professionals enjoy reduced fees with full benefits!
Organizing Committee

52nd Annual Conference

Bridging Ecosystems and Environmental Health
Across Our Great Lakes

Conference Chair
Carol Stepień
Lake Erie Center and Department of Environmental Sciences, University of Toledo

Site Co-Chairs
Patrick Lawrence, Department of Geography & Planning, University of Toledo
Daryl Moorhead, Department of Environmental Sciences, University of Toledo

Program Chair
Christine Mayer
Department of Environmental Sciences and Lake Erie Center, University of Toledo

Subcommittee Chairs
Ken Krieger & George Bullerjahn, Program and Abstract Books
Amanda Haponski and Kristen DeVanna, Graduate Students
Daryl Moorhead, Plenary and Welcome; Press
Kevin Czajkowski and Daryl Moorhead, AV and Computer
Tom Bridgeman and Daryl Dwyer, Sponsors and Exhibitors
Cyndee Gruden, Opening Reception, Planetarium
Jon Bosanbroke, Poster Show & Exhibitors Reception
Mike McKay and Kevin Czajkowski, Hockey Game
Carol Stepień and Patrick Lawrence, Banquet and Barbecue

Kevin Egan, Finance
Hans Gottgens, Housing
Barb Miner and Frank Merritt, Design
Patrick Lawrence, Student Union Logistics
Von Sigler, Transportation
Tim Fisher, Signs
Daryl Dwyer, Business Lunch
Todd Crail and Nathan Manning, Field Trips
Wendy Foster, Registration

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Deanna Bobak
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Melinda Campbell

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Meredith Gray
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Rachel Lohners
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Doug Nims
Lindsey Pierce
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Rock Scarbro

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Michael Twiss
Jeff Tyson
Colleen Gorey
Patricia Uzman

The Organizing Committee extends its gratitude to the following individuals for their contributions to the 52nd Annual Conference:

Paula McIntyre (Loracs Design LLC); Robert Heath, IAGLR Conference Committee Chair;
Wendy Foster, IAGLR Business Manager
“Green” Initiatives at the 52nd Annual Conference at the University of Toledo

The University of Toledo and International Association for Great Lakes Research have “greened” our 2009 annual conference on Great Lakes Research by:

- Stainless steel travel mugs ($10.00 preorder or $13.00 at the registration desk) are available to reduce paper waste. Instead of using and throwing away cups, please purchase a travel mug and help decrease waste produced by our conference while contributing to support the IAGLR student scholarships.

- Online abstract book

- Recycle your IAGLR lanyards and name badge holders at the end of our conference to reduce waste and decrease costs for the 2010 conference in Toronto, ON. Please remember to recycle your lanyard and name badge at the registration desk before you leave!

- We eliminated most brochures and extra material in your tote bag. For extra information about the Toledo area, maps, or things to do please see the program book or stop by the registration desk to pick up maps and fliers.

- Our conference tri-fold brochure and program are printed on recycled paper.

- IAGLR pens have an 80% post-consumer recycled paper barrel and wooden clip.

- Tote bags, pens, and travel mugs were purchased from and screen-printed by a local Toledo company.

- The wine served at the IAGLR banquet is local Lake Erie wine, and the walleye is local, from Lake Erie.

- No need to drive at our campus. Please take the bus to all events! Save gas and reduce our carbon load! Stay at our new dorms and walk our beautiful campus! Or bring your bike (& lock) or roller blades and enjoy our University/Parks Trail bike path and the Wildwood MetroPark!

University of Toledo Rain Gardens

During the fall of 2008, the University of Toledo installed two rain gardens on the main campus. Both gardens were developed through efforts of the President’s Commission on the River in collaboration with UT’s Facilities and Construction team. They are designed to demonstrate a green alternative to treat stormwater runoff, help prevent storm sewers from being overwhelmed, provide habitat, serve as a natural laboratory for UT classes, and beautify campus. A third rain garden was developed at the UT Lake Erie Center in 2008 – 2009 with the help of the Ottawa Hills 7th grade Lego Robotics team.

The garden adjacent to Lot 10 on the main campus, the Carolyn Edwards Memorial Garden, absorbs water that drains from nearly 3,000 m² of contributing area including tennis courts and concrete walkways. This rain garden was built in the shape of a kidney to symbolize its cleaning function in the landscape. The other rain garden, the May Sue Cave Honors Rain Garden, collects runoff from the roof of the adjacent International House residence halls. Both gardens have been planted with a mix of native hydrophytic vegetation and will be maintained with the help of student groups and volunteers.

The UT Lake Erie Center rain garden is planted with natives. It collects all water from the French drains (roof run-off) and front parking lots, before it flows into the LEC pond.
Key Journals for the Latest Research in Aquatic Science

Aquatic Ecosystem Health & Management

Editor-in-Chief: M. Munawar
Great Lakes Laboratory for Fisheries & Aquatic Sciences, Fisheries & Oceans Canada
Volume 12, 2009 • 4 issues per year
www.tandf.co.uk/journals/UAEM

Now Covered in Science Citation Index!

Lake and Reservoir Management
Editor-in-Chief: Ken Wagner, AECOM
Volume 25, 2009 • 4 issues per year
www.tandf.co.uk/journals/ULRM

Impact Factor: 1.941*

Reviews in Fisheries Science
Editor-in-Chief: Robert R. Stickney
Texas A & M University
Volume 17, 2009 • 4 issues per year
www.tandf.co.uk/journals/BRFS

Impact Factor: 1.462*

Coastal Management
Editor-in-Chief: Patrick Christie
University of Washington
Volume 37, 2009 • 6 issues per year
www.tandf.co.uk/journals/UCMG

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Parking Lot Information:
- For Lot 10, use the North Entrance, off of Bancroft St. or the East Entrance off of Douglas Rd.
- For Lot 13, use the West Entrance, off of Secor Rd.
- For Lots 1N & 1S, use the North Entrance off of Bancroft St.
- For dorm room parking, use the South Entrance off of Dorr St.
### Parking

Conference participants may park for free in any legal parking space on the main campus. Unauthorized parking in handicapped spots, parking in metered spaces with expired meters, and other illegal parking will result in a ticket. Several of the more convenient parking lots are labeled on the campus map (page 17).

### Bus Schedules

Special IAGLR buses will transport conference participants as shown below. At the Ottawa Dorms, buses will stop at the marked bus stop in front of Ottawa West. Buses will stop at the marked stop located on the west end of the Student Union. Buses will make three circuits: (1) Hilton to Student Union, (2) Dorms to Student Union, and (3) Ramada/Comfort Inn to Student Union. The first buses should be waiting at the start of a time window and subsequent buses should arrive at approximately 20-minute intervals. If you have a transportation emergency involving the university bus system, you may contact the bus garage at 419-530-1026 between 8:00 a.m. and 5:00 p.m., and 419-277-2396 or 419-277-2385 after hours.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Pick-up/drop-off</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, May 18</td>
<td>5:00 pm - 6:00 pm</td>
<td>Hotels and Ottawa Dorm to UT Student Union</td>
<td>Welcome Reception and Planetarium Show</td>
</tr>
<tr>
<td></td>
<td>9:00 pm - 10:00 pm</td>
<td>UT Student Union to Hotels and Ottawa Dorm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11:00 pm - 12:00 am</td>
<td>UT Student Union to Hotels and Ottawa Dorm</td>
<td></td>
</tr>
<tr>
<td>Tuesday, May 19</td>
<td>8:00 am - 9:00 am</td>
<td>Hotels and Ottawa Dorm to UT Student Union</td>
<td>IAGLR Conference</td>
</tr>
<tr>
<td></td>
<td>5:00 pm - 6:00 pm</td>
<td>UT Student Union to Hotels and Ottawa Dorm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8:00 pm</td>
<td>UT Student Union, Hotels and Ottawa Dorm to Tam O’Shanter</td>
<td>Hockey Game</td>
</tr>
<tr>
<td></td>
<td>10:30 pm - 11:00 pm</td>
<td>Tam O’Shanter to Hotels and Ottawa Dorm</td>
<td></td>
</tr>
<tr>
<td>Wednesday, May 20</td>
<td>8:00 am - 9:00 am</td>
<td>Hotels and Ottawa Dorm to UT Student Union</td>
<td>IAGLR Conference</td>
</tr>
<tr>
<td></td>
<td>5:00 pm - 6:00 pm</td>
<td>UT Student Union to Hotels and Ottawa Dorm</td>
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<tr>
<td></td>
<td>6:30 pm</td>
<td>UT Student Union, Hotels and Ottawa Dorm to Pinnacle Banquet Hall</td>
<td>IAGLR Awards Banquet</td>
</tr>
<tr>
<td></td>
<td>9:30 pm - 10:30 pm</td>
<td>Pinnacle Banquet Hall to Hotels and Ottawa Dorm</td>
<td></td>
</tr>
<tr>
<td>Thursday, May 21</td>
<td>8:00 am - 9:00 am</td>
<td>Hotels and Ottawa Dorm to UT Student Union</td>
<td>IAGLR Conference</td>
</tr>
<tr>
<td></td>
<td>5:00 pm - 6:00 pm</td>
<td>UT Student Union to Hotels and Ottawa Dorm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5:30 pm - 6:30 pm</td>
<td>UT Student Union, Hotels and Ottawa Dorm to Toledo Zoo</td>
<td>IAGLR BBQ Dinner</td>
</tr>
<tr>
<td></td>
<td>9:30 pm - 10:30 pm</td>
<td>Toledo Zoo to Hotels and Ottawa Dorm</td>
<td></td>
</tr>
<tr>
<td>Friday, May 22</td>
<td>8:00 am - 9:00 am</td>
<td>Hotels and Ottawa Dorm to UT Student Union</td>
<td>IAGLR Conference</td>
</tr>
<tr>
<td></td>
<td>12:00 pm - 2:00 pm</td>
<td>UT Student Union to Hotels and Ottawa Dorm</td>
<td></td>
</tr>
</tbody>
</table>
Recreation Center
IAGLR conference participants may use the Recreation Center any time May 18-22 for $8/visit for adults and $5/visit for youth under age 18. All youth must be accompanied by a parent while at "The Rec". IAGLR participants must show their conference ID at the front desk each visit. The Rec’s hours of operation during the conference are Monday-Thursday 9 am - 9 pm and Friday 9 am - 8 pm. Telephone: (419) 530-3705.

Internet Services
Wireless internet access will be available throughout the Student Union. Each suite in the residence halls has free internet access, but conference participants need to bring their own cable. Computer terminals are available in Carlson Library for e-mail and internet browsing. For library information, call (419) 530-2298.

Ritter Planetarium: Special showings for IAGLR09 of "The Star Gazer"
8:30 and 9:30 PM, Monday, May 18, 2009

Ritter Planetarium and Brooks Observatory at the University of Toledo provide educational and entertaining activities related to astronomy, the sky, and our place in the universe. The planetarium is a 40-foot domed auditorium seating 92, with a central projector capable of reproducing the sky as seen from anywhere on Earth at any time. Outside the planetarium is a lobby with displays, many of them interactive. Brooks Observatory, located in McMaster Hall, contains refracting and reflecting telescopes for viewing the heavens. “The Star Gazer” planetarium show will be offered to IAGLR participants on Monday, May 18th at 8:30 and 9:30 p.m. and the observatory will be open after the program, weather permitting. The planetarium and observatory are located on the northeast side of campus, a 3-minute walk from the Student Union, across Centennial Mall.
The Great Lakes Fishery Commission needs more sea lamprey research proposals!

The GLFC is seeking high quality research focused on:

- Behavioral ecology
- Genetics
- Integrated pest management strategies for sea lamprey control
- Metamorphosis; Reproductive physiology
- Parasite-predator: host-prey relationships
- Lampricide toxicity
- Movement patterns in response to physical environment
- Sterility mechanisms
- Novel capture technology

Visit us online to find out more about the program.
www.glfc.org/research.php
**Attractions**

1) **Lake Erie Center**
   
   Located at 6200 Bayshore Rd, Oregon OH 43618; (419) 530-8360
   The University of Toledo's Lake Erie Center is an interdisciplinary research and education center dedicated to solving environmental problems at the land-water interface and bay-lake exchanges in the Great Lakes - the world's largest freshwater ecosystem. [http://www.lakeerie.utoledo.edu](http://www.lakeerie.utoledo.edu)

2) **The Mudhens**
   
   Located at 406 Washington St. Toledo, OH 43604; (419) 725-HENS
   Professional baseball has been played in Toledo since 1883. Come to the heart of Toledo and enjoy The Mudhens, Toledo's Triple A baseball team. [http://www.mudhens.com](http://www.mudhens.com)

3) **The Docks**
   
   “The Docks” is located east of downtown Toledo in International Park along the Maumee River. The Docks has been Toledo’s place to dine seen since 1996, and offers an eclectic array of cuisine from 6 different restaurants.

4) **TOLEDO MUSEUM OF ART**
   
   Located at 2445 Monroe Street at Scottwood Avenue, Toledo, Ohio 43697; (800) 644-6862. Since our founding in 1901, the Toledo Museum of Art has earned a global reputation for the quality of the collection, the innovative education programs, and the architecturally significant campus. Within this celebrated environment, we invite you to personally discover the power of art: to delight, to inspire, to engage, and even to transform viewers of all ages and backgrounds. Opened in 2006, the postmodern Glass Pavilion is the new home of the Toledo Museum of Art’s world-renowned glass collection, featuring more than 5,000 works of art from ancient to contemporary times. Designed by Tokyo-based SANAA, Ltd., the Glass Pavilion received Travel + Leisure’s 2007 Design Award for “Best Museum.” [http://www.toledomuseum.org](http://www.toledomuseum.org)

5) **The University of Toledo**
   
   The University of Toledo is one of 13 state universities in Ohio. We were established in 1872 and became a member of the state university system in 1967. The University of Toledo and the Medical University of Ohio merged July 2006 to form the third-largest public university operating budget in the state. Go Rockets! [http://www.utoledo.edu](http://www.utoledo.edu)

6) **The Toledo Zoo**
   
   Located at 2700 Broadway St, Toledo, OH 43609; (419) 385-5721
   With over 5,300 animals representing over 760 species, The Toledo Zoo is one of the world’s most complete zoos—it’s also the region’s top family destination! Let The Toledo Zoo take you from the Arctic tundra to the wilds of Africa, from the tropical rainforest to the Sonoran Desert and all points between—all in one great day. [http://www.toledozoo.com](http://www.toledozoo.com)

**See map on the following page for attraction locations**
University Parks Bike Trail and Local Map With Shopping and Restaurants

The six-mile trail stretches from the University of Toledo campus to Sylvania Township. It offers a lush greenway through woodland, passing meadows and wetlands. The level, paved path is suitable for joggers, cyclists and in-line skaters, and can easily accommodate wheelchairs. The trail has several neighborhood access points (including by Rocket Hall, near the railroad traks on the UT campus), a trail connecting to the Wildwood Preserve Metropark trail system, and designated roadway connections to Ottawa Park, Olander Park and Westfield Shoppingtown at Franklin Park. The University/Parks Trail is owned by Lucas County and maintained by Metroparks, the University of Toledo and the City of Toledo. Metroparks rangers and, in some sections, local jurisdictions patrol the trail. (Text and map courtesy of MetroParks Toledo, online at: http://www.metroparkstoledo.com/.)

Also on this map:
- **Westgate Farmer’s Market**, Wednesday, 4 – 7 p.m.
- **Supermarkets**: Fresh Market and Schorling’s
- **Eating Establishments**: Ferdo’s, El Vaquero, Scrambler Marie’s, Organic Bliss Deli & Bakery, Tam O’Shanter
- **Westfield Franklin Park Mall** (Sylvania, Talmadge and Monroe), stores include: Macy’s Dillard’s, JCPenney’s, Ann Taylor, Gap, Old Navy, Hollister, Forever 21, H&W, Borders and many others. There are also movie theaters and several restaurants (see [http://westfield.com/franklinpark](http://westfield.com/franklinpark) for more information)
- **Copy/Print shop**: FedEx Kinko’s
Directions From The University to The Pinnacle (Banquet Wednesday Evening)

1) Depart The University of Toledo, 2801 West Bancroft Street
2) Head west on W Bancroft St toward Secor Road (.4 Miles)
3) Turn right at Secor Rd (1.7 Miles)
4) Turn left to merge onto I-475 W (11 Miles)
5) Take exit 6 for Salisbury Rd toward I-80/ I-90/ Turnpike (.3 Miles)
6) Turn left at W Dussel Dr/Salisbury Rd (signs for I-80/Ohio Turnpike/Dussel Dr/I-90/Maumee)
7) Continue to follow W Dussel Dr (.4 Miles)
8) Turn left at Arrowhead Dr (.2 Miles)
9) Turn left at Indian Wood Circle (.2 Miles)

-- The Pinnacle will be on the left

1772 Indian Wood Circle
Maumee, OH 43537
(419) 891-7325
Directions From The University to The Lake Erie Research Center (Friday Field Trip)

1) Depart The Univeristy of Toledo, 2801 West Bancroft Street
2) Head east on W Bancroft St (for 2.2 Miles)
3) Turn left at N Detroit Ave/US-24 (.2 Miles)
4) Merge onto I-75 North via the ramp (4.2 Miles)
5) Take exit 208 for I-280 South
6) Keep left at the fork to continue toward I-280 S and merge onto I-280 South (2.3 Miles)
7) Take exit 9 for State Hwy 65/Front St (1 Mile)
8) Turn right onto Front St (signs for Front St)
9) Turn right at Consaul St (1.6 Miles)
10) Turn left at Otter Creek Rd (2.5 Miles)
11) Continue on Bayshore Rd (2.6 Miles)

Open to the public
9 a.m. – 5 p.m.
—
IAGLR09 tour
Friday afternoon

-- The Lake Erie Center will be on the right
6200 Bayshore Rd
Oregon, OH 43618
(419) 530-8360
www.lakeerie.utoledo.edu
Directions from the University to The Toledo Zoo (BBQ Thursday Evening)

1) Depart University of Toledo, use **Dorr Street** exit, turn right onto Dorr Street.
2) Head west on **Dorr Street** towards N. Byrne Rd (for 0.5 Mile)
3) Turn **left** onto **N. Byrne Road** (for 2.8 Miles)
4) Turn **left** onto **Glendale Ave** (for 1.6 Miles)
5) Bear **left** onto **Anthony Wayne Trail** (for 1.1 miles)
6) Turn **left** onto **Hippo Way entrance** (500 feet)
7) at Toledo Zoo, go to Nairobi Pavillion for IAGLR BBQ
<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone Number</th>
<th>Breakfast/</th>
<th>Lunch</th>
<th>Dinner</th>
<th>Bar</th>
<th>Distance from Campus* (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caffeinis Coffee</td>
<td>1471 Secor Rd.</td>
<td>(419) 536-9724</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>1.1</td>
</tr>
<tr>
<td>Barry Bagels</td>
<td>3301 W. Central Ave.</td>
<td>(419) 537-9377</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>Biggby Coffee</td>
<td>3301 W Central Ave.</td>
<td>(419) 537-9377</td>
<td>x</td>
<td></td>
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<td></td>
<td>1.5</td>
</tr>
<tr>
<td>The Original Pancake House</td>
<td>3310 W. Central Ave.</td>
<td>(419) 578-0342</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>1.6</td>
</tr>
<tr>
<td>Starbucks Coffee</td>
<td>3305 W. Central Ave.</td>
<td>(419) 535-2943</td>
<td>x</td>
<td></td>
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<td></td>
<td>1.5</td>
</tr>
<tr>
<td>Café Mariés</td>
<td>3344 Secor Rd.</td>
<td>(419) 531-9678</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>1.8</td>
</tr>
<tr>
<td>Dorr Street Café</td>
<td>5243 Dorr St.</td>
<td>(419) 531-4446</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3.5</td>
</tr>
<tr>
<td>Dunkin' Donuts</td>
<td>2709 W Central Ave.</td>
<td>(419) 480-0504</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>1.3</td>
</tr>
<tr>
<td>Schmuckers Restaurant</td>
<td>2103 N. Reynolds Rd.</td>
<td>(419) 535-9116</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3.0</td>
</tr>
<tr>
<td>Student Union Food Court</td>
<td>On campus, Student Union, 1st fl.</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>(not open for dinner)</td>
<td>Subway, Pizza Hut, Starbucks</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phoenicia (Mediterranean)</td>
<td>Student Union 3rd fl.</td>
<td>(419) 530-2151</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Jimmy Johns</td>
<td>3235 Dorr St.</td>
<td>(419) 720-6333</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>1.1</td>
</tr>
<tr>
<td>Papa John’s Pizza</td>
<td>3329 Dorr St.</td>
<td>(419) 539-7777</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>1.1</td>
</tr>
<tr>
<td>Toledo Meat Market</td>
<td>3410 Dorr St.</td>
<td>(419) 539-4262</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>1.2</td>
</tr>
<tr>
<td>(Deli sandwiches, sides)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus Oasis (Pizza,</td>
<td>3303 Dorr Street</td>
<td>(419) 329-0000</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>1.1</td>
</tr>
<tr>
<td>Sandwiches, Ice cream)</td>
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</tr>
<tr>
<td>El Vaquero</td>
<td>3302 Secor Road</td>
<td>(419) 536-0471</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>1.6</td>
</tr>
<tr>
<td>Organic Bliss (Deli)</td>
<td>3312 Secor Road</td>
<td>(419) 724-4888</td>
<td>x</td>
<td>x</td>
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<td></td>
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</tr>
<tr>
<td>Franklin Park Mall</td>
<td>5001 Monroe Street</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3.4</td>
</tr>
<tr>
<td>(Claddagh Irish Pub, Elephant Bar, Bravo! Italian, and more)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Sori Sushi</td>
<td>5236 Monroe St.</td>
<td>(419) 720-7674</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>Aladdin’s (Lebanese/American)</td>
<td>4038 Talmadge Rd.</td>
<td>(419) 472-8004</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>4.4</td>
</tr>
<tr>
<td>Real Seafood</td>
<td>22 Main Street</td>
<td>(888) 456-DINE</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>5.1</td>
</tr>
<tr>
<td>Kotobuki Japanese</td>
<td>5577 Monroe St.</td>
<td>(419) 882-8711</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>1.8</td>
</tr>
<tr>
<td>Tony Packo’s</td>
<td>1902 Front Street</td>
<td>(419) 691-6054</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>10.1</td>
</tr>
<tr>
<td>J. Alexander’s</td>
<td>4315 Talmadge Rd.</td>
<td>(419) 473-8620</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3.8</td>
</tr>
<tr>
<td>Georgio's Café Int'l</td>
<td>426 N. Superior St.</td>
<td>(419) 242-2424</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>4.8</td>
</tr>
<tr>
<td>Mancy’s Italian Grill</td>
<td>5453 Monroe Street</td>
<td>(419) 882-9229</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>4.6</td>
</tr>
<tr>
<td>Shorty’s American</td>
<td>5111 Monroe Street</td>
<td>(419) 841-9505</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3.6</td>
</tr>
<tr>
<td>Roadhouse</td>
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<tr>
<td>Ferdo’s (Mediterranean)</td>
<td>3065 W.Bancroft St.</td>
<td>(419) 535-9494</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>0.2</td>
</tr>
<tr>
<td>Mulvaney’s Bunker Irish Pub</td>
<td>4945 Dorr St.</td>
<td>(419) 534-9830</td>
<td>x</td>
<td>x</td>
<td></td>
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<td>3.0</td>
</tr>
<tr>
<td>Nick &amp; Jimmy’s Bar &amp; Grille</td>
<td>4956 Monroe St.</td>
<td>(419) 472-0756</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>3.3</td>
</tr>
</tbody>
</table>

There are many more options located along Monroe Street west of Secor Road including Applebee’s, Red Robin, Bob Evans, Olive Garden, Red Lobster, and many fine restaurants located at The Docks, located off Main Street in downtown Toledo (see page 21).

* Driving distance from Main Campus address: 2801 W. Bancroft Street, Toledo, Ohio 43606
Friday Field Trip Information

Friday Field Trips will meet in front of the Ottawa West Dorms at 1:30 (see campus map, page 17) and will have snacks packed for you (granola bars, dried fruit, water). Your choices are as follows:

Field Trip 1: Oak Openings

Explore the Oak Openings, designated by the Nature Conservancy as "One of the 200 Last Great Places on Earth." This globally distinct ecosystem is as rare and significant as the rainforest. We will explore a heterogeneous patchwork of dunes and interdunal wetlands that host over 1,000 species of plants and 200 species of birds. We will also observe a host of reptiles, mammals, and insects, among which we will likely see the Federally Endangered karner blue butterfly, Lycaeides melissa samuelis, during the peak bloom of the wild lupine, Lupinus perennis.

We will walk approximately 1.5 miles (2.4 km) through various habitats at the Nature Conservancy's Kitty Todd Preserve showcasing barrens and oak savanna ecotones and a half mile (0.8 km) walk on a boardwalk through the wetlands of the Irwin Prairie Ohio State Nature Preserve showcasing Great Lakes twig-rush wet prairie.

Please bring shoes that can get slightly wet or comfortable wellington boots, binoculars, hand lenses, field guides, sunscreen & bug spray. We will try to stay out of water as much as we can, but there may be muddy areas.

Field Trip 2: University of Toledo Lake Erie Center and R/V Lake Guardian (weather permitting) and/or Maumee Bay State Park Trautman Nature Center

The Research Vessel (R/V) Lake Guardian is the EPA flag-ship research vessel on the Great Lakes and “is the only self-contained, non-polluting research ship on the Great Lakes” (www.epa.gov/glhpo/monitoring/guardian/ship.html).

The ship is 180 feet (55 m) in length, has a range of 6,000 nautical miles, and has three dedicated scientific laboratories as well as three containerized laboratories.

The Lake Guardian is an integral part of the EPA’s long-term monitoring of the health of the Great Lakes, as well as being available as a vessel of opportunity to scientists conducting their own research.
The University of Toledo’s Lake Erie Center is an interdisciplinary research and education center located on the shore of Maumee Bay in Oregon, Ohio. The Lake Erie Center assembles within a single facility programs and expertise in aquatic conservation, bioremediation and restoration, coastal zone processes, environmental chemistry and hydrology, ecology and ecosystem management, fishery genetics, geography and land use planning, limnology, remote sensing, and environmental and health monitoring (www.lakeerie.utoledo.edu).

The Trautman Nature Center, located on the grounds of Maumee Bay State Park, is a state-of-the-art education center staffed by a year-round naturalist. The center has interactive displays, a programming auditorium, research laboratories and viewing areas. It is also adjacent to the boardwalk trail, which winds through the woods and wetlands that border the bay.

Please be aware that there are time and weather constraints on the availability of the R/V Lake Guardian that may prevent her docking in Toledo. We will visit the LEC and R/V Lake Guardian, if it is available. If the Lake Guardian is not available, we will visit the LEC and Trautman Nature Center at Maumee Bay State Park.

Undergraduate and Graduate Programs at the University of Toledo Lake Erie Center

The Lake Erie Center is dedicated to environmental research and education, centering on the Lake Erie Watershed. The LEC integrates research and education programs in:

- Aquatic and Terrestrial Ecology
- Aquatic Resources and Fisheries
- Environmental Restoration Ecology
- Geography and Land Use Planning
- Hydrologic and Landscape Modeling
- Plant Science and Bio-remediation
- Public Policy and Risk Management
- Remote Sensing and Monitoring
- Soil and Water Chemistry
- Water Pollution, Air Pollution, and Human Health

The LEC houses the Benthic Ecology Lab, the Environmental Remediation and Restoration Laboratory, the GIS & Remote Sensing Lab, the Great Lakes Genetics Laboratory, the Invasive Species Modeling Lab, and the Water Quality Laboratory. The LEC hosts an NSF GK-12 Program, which partners advanced graduate students in STEM disciplines at the University of Toledo with high school teachers and their students to build an Environmental Science Learning Community at the land-lake ecosystem interface; and an NSF URM program, which supports minority undergraduate scientists. Faculty and students come to work and learn at the Lake Erie Center from a variety of UT departments, including the Departments of Environmental Science, Civil Engineering, Geography & Planning, Economics, and Education. UT Undergraduate and Graduate applicants interested in the Great Lakes, please consider the Lake Erie Center for your research and education pursuits! Visit www.lakeerie.utoledo.edu for information about the LEC and www.utoledo.edu to learn about University of Toledo departments and the admission process.
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Thank you to the following Sponsors for their generous financial support!

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Overview of Sessions

Tuesday, May 19

10:50 a.m. - 12:10 p.m.  Aquatic Invasive Species in the Great Lakes Region  
Room 2582, Lake Superior

10:50 a.m. - 12:10 p.m.  Upper Great Lakes Food Webs, Conditions, and Assessments.  
Room 2584, Lake Huron

10:50 a.m. - 12:10 p.m.  Carbon Cycling in the Laurentian Great Lakes  
Room 2592, Lake Michigan

10:50 a.m. - 12:10 p.m.  Sources, Exposures, Remediation and Toxicity of PCB Congeners and their  
Breakdown Products  
Room 2591, Lake Erie

10:50 a.m. - 12:10 p.m.  Physical Limnology and Physical-Chemical-Biological Coupling in Lakes  
Room 2520, Ingman Room

10:50 a.m. - 12:10 p.m.  Local and Regional Collaborative Environmental Policy, Planning and  
Management Initiatives to Protect The Great Lakes  
Room 3018, Lake Ontario

10:50 a.m. - 12:10 p.m.  Ecological Trends in Great Lakes Wetlands  
Room 3020, Lake St. Clair

1:10 p.m. - 5:50 p.m.  Aquatic Invasive Species in the Great Lakes Region  
Room 2582, Lake Superior

1:10 p.m. - 5:50 p.m.  Upper Great Lakes Food Webs, Conditions, and Assessments.  
Room 2584, Lake Huron

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Room 2592, Lake Michigan

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Room 3018, Lake Ontario

1:10 p.m. - 3:10 p.m.  Ecological Trends in Great Lakes Wetlands  
Room 3020, Lake St. Clair

3:30 p.m. - 5:50 p.m.  Toxic Chemicals in Great Lakes Air  
Room 2591, Lake Erie

3:30 p.m. - 5:30 p.m.  Great Lakes Science for Everyone  
Room 3020, Lake St. Clair

6:00 p.m. – 8:00 p.m.  Poster Show: Student Union Auditorium/Ballroom 3rd floor
Wednesday, May 20

8:30 a.m. - 12:10 p.m.  **Aquatic Invasive Species in the Great Lakes Region**  
*Room 2582, Lake Superior*

8:30 a.m. - 10:10 a.m.  **Upper Great Lakes Food Webs, Conditions, and Assessments.**  
*Room 2584, Lake Huron*

8:30 a.m. - 12:10 p.m.  **Physical and Chemical Drivers of Great Lakes Fish Ecology**  
*Room 2592, Lake Michigan*

8:30 a.m. - 12:10 p.m.  **Toxic Chemicals in Great Lakes Air**  
*Room 2591, Lake Erie*

8:30 a.m. - 12:10 p.m.  **Physical Limnology and Physical-Chemical-Biological Coupling in Lakes**  
*Room 2520, Ingman Room*

8:30 a.m. - 10:10 a.m.  **Satellite Monitoring of Great Lakes for Cyanobacteria Blooms**  
*Room 3018, Lake Ontario*

8:30 a.m. - 12:10 p.m.  **Watershed Restoration in the Maumee Basin**  
*Room 3020, Lake St. Clair*

8:30 a.m. - 12:10 p.m.  **Quaternary Geology and Sand Dune History of the Great Lakes**  
*Room 3016, St. Lawrence River*

10:30 a.m. - 12:10 p.m.  **Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes**  
*Room 2584, Lake Huron*

10:30 a.m. - 12:10 p.m.  **The Muskegon River Mega Model: Integrating Changes in Land Use, Climate, Hydrology and Fish Populations**  
*Room 3018, Lake Ontario*

1:30 p.m. - 5:50 p.m.  **Challenges to the Ecological Integrity of the Lake Ontario Ecosystem: Shoreline, Nearshore, and Offshore Dynamics**  
*Room 2582, Lake Superior*

1:30 p.m. - 5:10 p.m.  **Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes**  
*Room 2584, Lake Huron*

1:30 p.m. - 3:30 p.m.  **Physical and Chemical Drivers of Great Lakes Fish Ecology**  
*Room 2592, Lake Michigan*

1:30 p.m. - 5:30 p.m.  **Nearshore and Offshore Changes in Great Lakes Food Webs: Mechanisms and forecasting**  
*Room 2591, Lake Erie*

1:30 p.m. - 5:10 p.m.  **Physical Limnology and Physical-Chemical-Biological Coupling in Lakes**  
*Room 2520, Ingman Room*

1:30 p.m. - 4:30 p.m.  **The Muskegon River Mega Model: Integrating Changes in Land Use, Climate, Hydrology and Fish Populations**  
*Room 3018, Lake Ontario*

1:30 p.m. - 5:30 p.m.  **Environmental Education, Training, and Certification in the Great Lakes Region**  
*Room 3020, Lake St. Clair*

1:30 p.m. - 5:10 p.m.  **VHS in the Great Lakes: Impacts and Outlooks**  
*Room 3016, St. Lawrence River*
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 8:30 a.m. - 10:50 a.m. | **Challenges to the Ecological Integrity of the Lake Ontario Ecosystem: Shoreline, Nearshore, and Offshore Dynamics**  
Room 2582, Lake Superior | | **Building Toward a Science Strategy for the Great Lakes Basin under the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement**  
Room 2584, Lake Huron | | **Saginaw Bay: The Continuing Impact of Multiple Ecosystem Stressors**  
Room 2592, Lake Michigan | | **Healthy Large Lakes: Fisheries Management, Policies, and Perceptions**  
Room 2591, Lake Erie | | **Climate Variability and Its Impacts on Environment and Ecosystems in the Great Lakes Region**  
Room 2520, Ingman Room | | **Benthic populations in the Great Lakes: Temporal Trends and Ecology**  
Room 3018, Lake Ontario | | **COSEE School for Scientists**  
Room 3020, Lake St. Clair | | **History, Ecology, and Management of Fisheries in Great Lakes Connecting Channels**  
Room 3016, St. Lawrence River |  
1:00 p.m. - 2:20 p.m.  
| **Challenges to the Ecological Integrity of the Lake Ontario Ecosystem: Shoreline, Nearshore, and Offshore Dynamics**  
Room 2582, Lake Superior | | **Building Toward a Science Strategy for the Great Lakes Basin under the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement**  
Room 2584, Lake Huron | | **Nuisance Algae in the Great Lakes**  
Room 2592, Lake Michigan | | **Healthy Large Lakes: Fisheries Management, Policies, and Perceptions**  
Room 2591, Lake Erie | | **Climate Variability and Its Impacts on Environment and Ecosystems in the Great Lakes Region**  
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Room 3016, St. Lawrence River | | **Climate Variability and Its Impacts on Environment and Ecosystems in the Great Lakes Region**  
Room 2520, Ingman Room | | **Benthic populations in the Great Lakes: Temporal Trends and Ecology**  
Room 3018, Lake Ontario | | **History, Ecology, and Management of Fisheries in Great Lakes Connecting Channels**  
Room 3016, St. Lawrence River |
Thursday, May 21, Continued

1:20 p.m. - 5:00 p.m.  Field Stations and Institutes in the Laurentian Great Lakes and the St. Lawrence River  
                       Room 3020, Lake St. Clair

3:20 p.m. - 4:40 p.m.  General Topics  
                       Room 2582, Lake Superior

3:20 p.m. - 5:20 p.m.  Examining the Benefits and Risks of Consuming Great Lakes Fish.  
                       Room 2584, Lake Huron

3:20 p.m. - 5:00 p.m.  Great Lakes - St. Lawrence River Basin Water Resources Compact  
                       Room 2591, Lake Erie

3:20 p.m. - 5:20 p.m.  COSEE School for Scientists  
                       Room 3018, Lake Ontario

Friday, May 22

8:30 a.m. - 11:50 a.m.  Emerging Contaminants in the Environment  
                       Room 2582, Lake Superior

8:30 a.m. - 11:50 a.m.  Bioeconomics of Invasive Species in the Great Lakes Region  
                       Room 2584, Lake Huron

8:30 a.m. - 11:10 a.m.  Nuisance Algae in the Great Lakes  
                       Room 2592, Lake Michigan

8:30 a.m. - 11:30 a.m.  Fish Consumption Advisories in the Great Lakes: Bridging Contaminants and Human Health  
                       Room 2591, Lake Erie

8:30 a.m. - 12:50 p.m.  Fisheries and Fish Ecology  
                       Room 2520, Ingman Room

8:30 a.m. - 2:30 p.m.  Education and Outreach  
                       Room 3018, Lake Ontario

8:30 a.m. - 12:10 p.m.  Causes of Injury to Ecosystems and Environmental Health Across the Great Lakes  
                       Room 3020, Lake St. Clair
Sessions by Day
## Tuesday, May 19

### Welcome and Plenary: Doermann Theatre, University Hall

**Dr. Howard Frumkin**, Director, National Center for Environmental Health, Agency for Toxic Substances and Disease Registry

<table>
<thead>
<tr>
<th>9:00-10:30 a.m.</th>
<th>2520, Ingman Room</th>
<th>2582, Lake Superior</th>
<th>2584, Lake Huron</th>
<th>2591, Lake Erie</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Limnology and Physical-Chemical-Biological Coupling in Lakes</strong>&lt;br&gt;Co-Chairs: Dmitry Beletsky, Chin Wu, and George Arhonditsis</td>
<td><strong>Aquatic Invasive Species in the Great Lakes Region</strong>&lt;br&gt;Co-Chairs: Alexander Karatayev, Lyubov Burlakova, and Christopher Pennuto</td>
<td><strong>Upper Great Lakes Food Webs, Conditions, and Assessments.</strong>&lt;br&gt;Co-Chairs: Peder Yurista, Jeff Schaeffer, and Jim Johnson</td>
<td><strong>Sources, Exposures, Remediation and Toxicity of PCB Congeners and their Breakdown Products</strong>&lt;br&gt;Co-Chairs: Keri Hornbuckle and Jerry Schnoor</td>
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<tbody>
<tr>
<td></td>
<td>The Hydrodynamic Modeling of Grand Haven River using Finite Volume Coastal Ocean Model (FVCOM)</td>
<td>Non-indigenous species and contaminant transfer</td>
<td>Trophic connections in the nearshore and offshore food webs of Lake Superior: a diet analysis approach</td>
<td>PCBs in commercial paint pigments</td>
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<td></td>
<td>Hydrodynamic Simulations of Stratified Flow in Lake Michigan Using SUNTANS</td>
<td>Spread of exotic plants in the landscape: the role of time, biological traits, and history of invasiveness</td>
<td>Recent Trends in Benthic Macroinvertebrate Populations in Lake Huron</td>
<td>Continuing Sources of PCBs: The Significance of Building Sealants</td>
</tr>
<tr>
<td>11:50 a.m.</td>
<td>D. Beletsky et al.</td>
<td>S.E. Mastilsky et al.</td>
<td>P.M. Yurista et al.</td>
<td>A. Martinez et al.</td>
</tr>
<tr>
<td></td>
<td>Climatological circulation in Lake Michigan</td>
<td>freshwater invertebrate invaders as vectors of the spread of parasites</td>
<td>Spatial patterns in water quality and plankton for the US waters of nearshore Lake Huron, 2007</td>
<td>Fate of PCB Congeners in an Industrial Harbor of Lake Michigan</td>
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<tr>
<td>12:10 p.m.</td>
<td>LUNCH</td>
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## Tuesday, May 19

### Welcome and Plenary, Doermann Theatre, University Hall

**Dr. Howard Frumkin**, Director, National Center for Environmental Health, Agency for Toxic Substances and Disease Registry

9:00-10:30 a.m.

### 2592, Lake Michigan 3016, St. Lawrence River 3018, Lake Ontario 3020, Lake St. Clair

<table>
<thead>
<tr>
<th>Carbon Cycling in the Laurentian Great Lakes</th>
<th>Local and Regional Collaborative Environmental Policy, Planning and Management Initiatives to Protect The Great Lakes</th>
<th>Ecological Trends in Great Lakes Wetlands</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-Chairs: Galen McKinley and James Cotner</td>
<td>Chair: Wendy Kellogg</td>
<td>Chair: Martin Stapanian</td>
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<th>Time</th>
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</thead>
<tbody>
<tr>
<td>B.N. Seegers and R.W. Sterner</td>
<td>Lake Superior Deep Chlorophyll Maximum Related to Zooplankton Grazing</td>
<td>B.D. Herman <strong>CANCELLED</strong> Restoring Great Lakes Habitat: Lessons Learned from the Great Lakes Habitat Initiative</td>
<td>11:10 a.m.</td>
</tr>
<tr>
<td>J.B. Cotner and B.A. Biddanda</td>
<td>Respiration in the headwaters of the Laurentian Great Lakes (Superior and Michigan): Insights into the Carbon Cycle</td>
<td>M.M. Seymour et al. Landscape-level Conservation of Great Lakes Island Biodiversity</td>
<td>11:30 a.m.</td>
</tr>
<tr>
<td>M. Micacchion</td>
<td>Evaluating the Amphibian Communities of Urban Wetlands Using Level 1, 2 and 3 Wetland Assessment Tools</td>
<td>J.M. Gilbert et al. Restoring Rondeau Bay's Ecological Integrity: changing the status quo</td>
<td>11:30 a.m.</td>
</tr>
<tr>
<td>J.M. Gilbert et al. Investigating control options for the Invasive Alien Species Phragmites australis subssp. australis (common reed) in sensitive Lake Erie coastal habitats</td>
<td><strong>LUNCH</strong></td>
<td>12:10 p.m.</td>
<td></td>
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## Tuesday, May 19

<table>
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<tr>
<th>Time</th>
<th>2520, Ingman Room</th>
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<th>2584, Lake Huron</th>
<th>2591, Lake Erie</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:10 p.m.</td>
<td>N. Nekouee et al.</td>
<td>J.F. Alexander</td>
<td>J. Gerlofsma and K.L. Bowen</td>
<td>D.J. Jude et al.</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>N. Hawley et al.</td>
<td>W.J. Bolen and J.C. Schardt</td>
<td>P.P. Barbiéro et al.</td>
<td>R.F. Marek et al.</td>
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<td>Under-ice Physical Conditions in Lake Erie During the Winter of 2004-2005</td>
<td>Invasive Species Rapid Response</td>
<td>Recent Changes in the Lower Food Web of Lake Huron</td>
<td>A Comparison of Blood PCB Concentrations in Industrial and Rural Communities: East Chicago, IL and Columbus Junction, IA</td>
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<td>1:50 p.m.</td>
<td>R.R. Yerubandi et al.</td>
<td>K.M. Glassner-Shwayder et al.</td>
<td>P.P. Barbiéro et al.</td>
<td>J. Korwel</td>
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<td>Hydrodynamic Modelling of Lake Ontario: An Intercomparison of three hydrodynamic models</td>
<td>Advancing Aquatic Invasive Species Management of Organisms in Trade in the Great Lakes Region</td>
<td>Recent shifts in the zooplankton community of Lake Michigan</td>
<td>Disposition and toxicity of PCB atropisomers - from animal model to human</td>
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<td>2:10 p.m.</td>
<td>M. Mohamed et al.</td>
<td>R.A. Eberhardt</td>
<td>K.L. Bowen et al.</td>
<td>Y. Zhu et al.</td>
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<td>Interaction of physical processes and river discharge on nearshore regions of Lake Huron</td>
<td>The Lake Superior Aquatic Invasive Species Complete Prevention Plan</td>
<td>Population Dynamics, Growth and Condition of Mysis relicta in Lake Huron</td>
<td>Polychlorinated Biphenyl (PCB)-Induced Oxidative Stress Mediates Cytotoxicity in Human Prostate Epithelial Cells</td>
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<td>2:30 p.m.</td>
<td>E.J. Anderson et al.</td>
<td>S.A. Adlerstein et al.</td>
<td>J.L. Mida et al.</td>
<td>R.E. Meggo and J.L. Schnoor</td>
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<td>2:50 p.m.</td>
<td>A. Martynov et al.</td>
<td>N. Dong and C.M. Pennuto</td>
<td>E.J. Isaac et al.</td>
<td>P.A. Correa et al.</td>
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<td>Coupling of the Canadian Regional Climate Model (CRCM) with 1D lake models: application to the Great Lakes</td>
<td>Effects of Experience and Age on Predator Avoidance Behavior of Crayfish in Lake Erie</td>
<td>Selection of Mysis relicta as Prey by the Lake Superior Fish Community</td>
<td>Impact of single PCB Congeners on a Soil Bacterial Community and the Expression of Biphenvyl Dioxygenase Genes</td>
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Tuesday, May 19

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<th>2592, Lake Michigan</th>
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</table>
| **Carbon Cycling in the Laurentian Great Lakes**  
(continued)  
Co-Chairs: Galen McKinley and James Cotner | **Local and Regional Collaborative Environmental Policy, Planning and Management Initiatives to Protect The Great Lakes**  
(continued)  
Chair: Wendy Kellogg | **Ecological Trends in Great Lakes Wetlands**  
(continued)  
Chair: Martin Stapanian |

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| W.J. Edwards *et al.*  
Assessment of metabolism in a coupled nearshore-offshore ecosystem in Lake Erie | M. Maitre *et al.*  
The Consumptive Use Conundrum: Calculating Future Consumptive Use Related to Intra-basin Transfer in York Region | P.F. Lee  
Re-introduction of Southern wild rice, *Zizania aquatica* L., into Cootes Paradise, Lake Ontario | 1:10 p.m. |
| N. Atilla *et al.*  
Observed dynamics of surface pCO2 in Lake Superior | L. Zhang and C. Weisener  
The past, current and future of water quality in Yangtze River | M.A. Stapanian *et al.*  
Soil Chemistry of Natural and Constructed Wetlands: A Multivariate Approach for Determining Biotic Integrity | 1:30 p.m. |
| N.R. Urban *et al.*  
Field Measurements of CO2 in and above the Great Lakes: the Case for Net Emission of CO2 | P.G.R. Smith *et al.*  
Urbanization and Wetland Soil Phosphorus Retention in the Cuyahoga River Watershed | 1:50 p.m. |
| G.A. McKinley *et al.*  
The magnitude and mechanisms of the CO2 flux from Lake Superior | R.K. Norton *et al.*  
Lake Level Dynamics and the Ordinary High Water Mark on Lake Michigan Shores: Implications for Shoreline Management Policy and Law | J.P. Watton and G.P. Grabas  
Developing a Method to Monitor Vegetation Community Dynamics in Great Lakes Coastal Wetlands | 2:10 p.m. |
| P.K. Zigah *et al.*  
Sources and Cycling of Carbon in Lake Superior: Insights from Δ14C | G.S. Whitelaw and P.F. Eagles  
Regional environmental land use planning activities benefitting Great Lakes Protection: Case studies of the Niagara Escarpment and Oak Ridges Moraine, Ontario Canada | S.J. Choc *et al.*  
Water Quality Trends and Models for the Design of Wetlands Used to Treat Drainage Water Entering Lake Erie | 2:30 p.m. |
| H.A. Bootsma *et al.*  
Influence of a Large Rain Event on Lake-Atmosphere Carbon Dioxide Exchange in Lake Michigan | Discussion | G.P. Grabas  
Monitoring Coastal Wetlands in a Great Lakes Area of Concern: Application of a Regional Framework | 2:50 p.m. |

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<tr>
<td>3:30 p.m.</td>
<td>Q. Liao et al. In Situ Measurements of Sediment Resuspension Using a Underwater Miniature Particle Image Velocimeter (UWMPIV)</td>
<td>M.J. Yuille et al. Hemimysis anomala in Lake Ontario – distribution and food web effects</td>
<td>S.G. Gewurtz et al. Trends and Current Status of Contaminants in Fish from the St. Clair River/Lake Corridor</td>
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<td>4:50 p.m.</td>
<td>K.L. Hunkins et al. A Simple Model of Wind-Driven Lake Circulation Interprets Lagrangian Drifter Observations</td>
<td>S.M. Rupprecht and C.M. Pennuto Assessing the swimming performance of the round goby (Neogobius melanostomus Pallas 1814) and its implications for upstream migration in tributary streams and rivers</td>
<td>R.M. Claramunt Evidence of a Remnant Cisco Stock in Grand Traverse Bay, Lake Michigan</td>
<td>G.W. Stupple et al. Monitoring atmospheric mercury and surface accumulation along an urban/rural gradient in Ontario, Canada</td>
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### Carbon Cycling in the Laurentian Great Lakes (continued)
*Co-Chairs: Galen McKinley and James Cotner*

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<tr>
<td>2592, Lake Michigan</td>
<td>3:00 p.m.</td>
<td>J.M. Mwangi et al. Eddy Covariance Measurements of CO₂ Fluxes Above Lake Superior</td>
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<td>3016, St. Lawrence River</td>
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<td>A.J. McCammon Reach by Reach: Ontario's First Community-led Watershed Regeneration Plan</td>
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<td>3018, Lake Ontario</td>
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<td>T.G. Fisher Glacial Evolution of the Great Lakes Region</td>
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### Local and Regional Collaborative Environmental Policy, Planning and Management Initiatives to Protect The Great Lakes (continued)
*Chair: Wendy Kellogg*

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<td>2592, Lake Michigan</td>
<td>3:30 p.m.</td>
<td>J.H. Fillingham et al. Modeling waves and their influence on air-water gas exchange in Lake Michigan</td>
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<td>3016, St. Lawrence River</td>
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<td>V.I. Pebbles and B.A. Pearson Great Lakes State and Provincial Smart Growth Trends</td>
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<td>3018, Lake Ontario</td>
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<td>B.M. Lofgren Building a Bridge in the Face of Uncertainty: Connecting Climate Change Science with Public Needs</td>
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### Great Lakes Science for Everyone
*Chair: Rochelle Sturtevant*

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<td>2592, Lake Michigan</td>
<td>3:30 p.m.</td>
<td>H.J. Carrick et al. Is There a Link Between Seasonal Phytoplankton Dynamics and Hypoxia in Lake Erie?</td>
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<td>3016, St. Lawrence River</td>
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<td>C.M. Riddle The Lake Erie Balanced Growth Program – Overview</td>
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<td>3018, Lake Ontario</td>
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<td>J.G. Read Spawning Habitat for our Key Native Fish</td>
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### S.K. Oni et al.
Effect of land use changes on dissolved organic carbon fluxes in Lake Simcoe watershed

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<td>3016, St. Lawrence River</td>
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<td>K. Date The Lake Erie Balanced Growth Program – Best Local Land Use Practices</td>
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<td>3018, Lake Ontario</td>
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<td>D.R. Kashian et al. A New Approach for Addressing Fish Consumption Advisories in the Great Lakes</td>
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### Discussion

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<tr>
<td>2592, Lake Michigan</td>
<td>4:50 p.m.</td>
<td>W.A. Kellogg A Collaborative Governance Network for Land Use Decision Making in Lake Erie’s Tributary Rivers: Ohio’s Balanced Growth Program</td>
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<td>3016, St. Lawrence River</td>
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<td>R.A. Sturtevant Invasive Species Information Resources</td>
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**Tuesday, May 19**

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| 5:10 p.m. | W. Liu and K.G. Lamb  
Poincare Waves and Kelvin Waves in a Circular Lake | C.J. Houghton and J. Janssen  
Change in habitat selection by juvenile yellow perch in response to the round goby invasion | O.T. Gorman  
The demersal fish community of offshore waters of Lake Superior: stability in the midst of change in nearshore communities? | L.E. Galarneau et al.  
Atmospheric Mercury Transport Across Southern Lake Michigan: Influence from the Chicago/Gary Urban Area |
| 5:30 p.m. | Y.F. Hsieh et al.  
Boundary mixing in the thermocline of a stratified lake | P.E. Hartzog et al.  
Activity monitoring of round goby (*Apolonia melanostomus*) in Lake Erie | J. Poulopoulos and L.M. Campbell  
Can archived museum ichthyology collections be used to determine shifts in historical food web structure over time? Evidence from Lakes Nipigon and Simcoe, Ontario | E. Galarneau et al.  
Air Quality Modelling of PAHs in the Great Lakes Basin |

**6 - 8 p.m.**  
**Poster Show, Student Union Auditorium/Ballroom, 3rd floor**
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<td>Great Lakes Science</td>
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<td>E.S. Jensen et al.</td>
<td>S.T. Joseph</td>
<td>G. Krantzberg and J. Manno</td>
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<td>5:10 p.m.</td>
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<tr>
<td>Tracking Federal Legislative Activities to Advance Priorities for Great Lakes Restoration and Protection</td>
<td>Great Lakes and Human Health: Communicating Water Quality</td>
<td>Renovation and Innovation; It's Time for the Great Lakes Regime to Respond.</td>
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**Poster Show, Student Union Auditorium/Ballroom, 3rd floor**

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<td>8:30 a.m.</td>
<td>C.H. Wu and J.D. Anderson&lt;br&gt;&lt;br&gt;Role of High Frequency Water Level Fluctuations on Bed Shear Stress in the Sheboygan River</td>
<td>A.Y. Karatayev &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Invasion paradox: why do less invasive &lt;i&gt;Dreissena rostriformis bugensis&lt;/i&gt; outcompete &lt;i&gt;D. polymorpha&lt;/i&gt;?</td>
<td>G.J. Warren and A. Dove&lt;br&gt;&lt;br&gt;Long and Short-Term Nutrient Trends in Lake Huron</td>
<td>M.D. Rowe &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Application of an Internal Boundary Layer Transport Exchange Model to Micrometeorological Measurements of Hexachlorobenzene Gas Transfer in Lake Superior</td>
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<td>8:50 a.m.</td>
<td>J.D. Lenters &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Recent Enhancement of Surface Water Temperature Trends and Evaporation in a Northern Wisconsin Lake: Response to a Sunnier Climate?</td>
<td>K.L. Schug and C.M. Mayer&lt;br&gt;&lt;br&gt;Mussel Power and Oligotrophication: Integrating Experiments and Field Observations to Isolate Mechanisms Changing Lake Ecosystem Properties</td>
<td>S.C. Chapra and D.M. Dolan&lt;br&gt;&lt;br&gt;Updating Great Lakes Total Phosphorus Mass Balances</td>
<td>T.F. Bidleman &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Exchange of metolachlor between Great Lakes air and water</td>
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<td>9:10 a.m.</td>
<td>P. Pernica and M.G. Wells&lt;br&gt;&lt;br&gt;Wind driven mixing of the surface waters of Lake Opeongo, Ontario</td>
<td>J.E. Brown &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Population Genetic History of the Dreissenid Mussel: Invasion and Expansion Across North America</td>
<td>C.P. McDonald &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Kinetic modeling of the nitrogen cycle in Lake Superior</td>
<td>A. Salamova and R.A. Hites&lt;br&gt;&lt;br&gt;Persistent Organic Pollutants in Tree Bark</td>
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<td>9:30 a.m.</td>
<td>A. Wuest and M. Schmid&lt;br&gt;&lt;br&gt;Birth, rapid development and sudden death of a distinct double-diffusive staircase in Lake Nyos</td>
<td>S.M. Peyer &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Plasticity in Shell Shape and Byssal Thread Synthesis Rate: Do they Contribute to the Displacement of Zebra by Quagga Mussels?</td>
<td>R.E. Hicks &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Abundance and Diversity of Planktonic Ammonia-Oxidizing Archaea in Lake Superior</td>
<td>Y. Su &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Air Concentrations of Polybrominated Diphenyl Ethers (PBDEs) in 2002-2004 at a Rural Site in the Great Lakes Region: Comparison to Measurements in the Arctic</td>
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<td>9:50 a.m.</td>
<td>T.H. Huttula &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;*** CANCELLED ***&lt;br&gt;&lt;br&gt;Coupling a 3D Hydrodynamic Lake Mdel to a Catchment Model: Case Lake Säkylän Pyhäjärvi</td>
<td>J.C. Hermanson &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Using the Inverse Problem Methodology in Biology</td>
<td>A.M. Hanson &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Viruses in Lake Michigan and a Eutrophic Pond: A Seasonal Study of the Biological Factors Controlling Viral Abundance Across Three Freshwater Locations</td>
<td>H.D. Choi &lt;i&gt;et al.&lt;/i&gt;&lt;br&gt;&lt;br&gt;Polychlorinated Biphenyls (PCB) Air Concentrations in the Lake Ontario Region: Trends and Potential Sources</td>
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### Wednesday, May 20

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<tr>
<td><strong>Physical and Chemical Drivers of Great Lakes Fish Ecology</strong>&lt;br&gt;Co-Chairs: Stuart Ludsin, Christine Mayer, and Tomas Hook</td>
<td><strong>Quaternary Geology and Sand Dune History of the Great Lakes</strong>&lt;br&gt;Co-Chairs: Timothy Fisher and John Johnston</td>
<td><strong>Satellite Monitoring of Great Lakes for Cyanobacteria Blooms</strong>&lt;br&gt;Chair: Robert Vincent</td>
<td><strong>Watershed Restoration in the Maumee Basin</strong>&lt;br&gt;Chair: Patrick Lawrence</td>
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<td>B.J. Rook <em>et al.</em>&lt;br&gt;Cisco Recruitment Dynamics in Lake Superior, 1978-2005</td>
<td>A.J. Breckenridge <em>et al.</em>&lt;br&gt;A 9,500 cal BP Rapid Lake Level Rise During the Lake Minong Phase of Lake Superior as Evidenced by Sediments from Fenton Lake, Ontario</td>
<td>R.H. Becker <em>et al.</em>&lt;br&gt;Using MODIS to Map Cyanobacteria in Lake Erie</td>
<td>C.A. Blair&lt;br&gt;Highland Park Dam Decommissioning and Riparian Project for Swan Creek</td>
<td>9:10 a.m.</td>
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<td>J.L. Jonas <em>et al.</em>&lt;br&gt;Simulating survival of lake trout eggs under various climate and predation scenarios</td>
<td>W.L. Loope <em>et al.</em>&lt;br&gt;Mid-Holocene Dune Stabilization in Interior Eastern Upper Michigan: a response to biogeomorphic or physical agents?</td>
<td>G.K. McCullough <em>et al.</em>&lt;br&gt;Discrimination of cyanobacteria in a highly eutrophic great lake, Lake Winnipeg, Manitoba, Canada</td>
<td>J. Kusnier&lt;br&gt;Wetland and Riparian Inventory and Restoration Plans for Swan Creek and Ottawa River</td>
<td>9:30 a.m.</td>
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| **Time** | **10:10 a.m.** |
### Wednesday, May 20

#### Physical Limnology and Physical-Chemical-Biological Coupling in Lakes (continued)
*Co-Chairs: Dmitry Beletsky, Chin Wu, and George Arhonditsis*

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| 10:30 a.m. | S.A. Bocaniov *et al.*  
Plankton Metabolic Balance and Physical Forcing in Lakes: Insights from Stable Oxygen Isotopes | S.N. Higgins and M.J. Vander Zanden  
The Cascading Ecological Effects of Dreissenid Mussel Invasions on Lake and River Ecosystems | D.M. O'Donnell *et al.*  
Spatiotemporal Analyses of Integrated Atmospheric Deposition (IADN) Network Data |
| 10:50 a.m. | X.M. Zhang *et al.*  
A Mercury Transport and Fate Model for Mass Budget Assessment of Mercury Cycling in Lake Michigan | R. Naddafi *et al.*  
Why is an invasive species more successful in some areas than others? A comparison of zebra mussel density in North American and European lakes | M.G. Perkins *et al.*  
Characterization and Cross-Sectional Analysis of Absorbing Components in Five Great Lakes | T.G. Nettesheim *et al.*  
Revisiting the Mauve Bible: Is the atmosphere still significant? |
| 11:10 a.m. | M.D. Kelly *et al.*  
Historical Comparisons Concerning the Acidification of Ontario Lakes and Impacts on the Bioavailability of Mercury | L.E. Burlakova *et al.*  
*Limnoperna fortunei*: The new potential invader to the Great Lakes | R.A. Shuchman *et al.*  
Making the Deposition of Airborne Toxic Substances a Threat of the Past: An Interactive Panel Discussion |
| 11:30 a.m. | G. Perhar *et al.*  
The Role of Highly Unsaturated Fatty Acids in Aquatic Food Webs | J.M. Watkins *et al.*  
Evaluating the effect of quagga mussel (*Dreissena bugensis*) exposure on the native benthic amphipod *Diporeia spp* | D.L. Witter *et al.*  
Evaluating Strategies for Retrieving Lake Erie Chlorophyll a Concentrations from SeaWiFS Observations | Previous Presentation Continued |
| 11:50 a.m. | K.E. Simpson *et al.*  
Temporal Scaling of Dissolved Oxygen Concentration in Fresh Water Environments | A. Zaiko *et al.*  
200 Years with Zebra Mussel: Lessons Learned in the SE Baltic Sea | A.K. Ali *et al.*  
Multivariate Assessment of Remotely Derived Water Quality Parameters in the Western Basin of Lake Erie | Previous Presentation Continued |
| 12:10 p.m. | **IAGLR Business lunch, Student Union Auditorium/Ballroom, 3rd floor** | | | |
### Physical and Chemical Drivers of Great Lakes Fish Ecology (continued)
Co-Chairs: Stuart Ludsin, Christine Mayer, and Tomas Hook

**2592, Lake Michigan**

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<tr>
<th>Presented by / Title</th>
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<tbody>
<tr>
<td>J.R. Marentette et al.</td>
<td>10:30 a.m.</td>
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<tr>
<td>Altered behaviour and physiology of round gobies (<em>Neogobius melanostomus</em>) living in contaminated areas</td>
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**3016, St. Lawrence River**

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<tr>
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<tbody>
<tr>
<td>D. van Dijk</td>
<td>10:50 a.m.</td>
</tr>
<tr>
<td>Lake Michigan Foredune Evolution and Short-Term Variations in Lake Level, Weather and Vegetation</td>
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**3018, Lake Ontario**

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<thead>
<tr>
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<tbody>
<tr>
<td>M.J. Wiley et al.</td>
<td>10:30 a.m.</td>
</tr>
<tr>
<td>A Multi-modeling approach to Great Lakes watershed planning: the Muskegon mega-model</td>
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**3020, Lake St. Clair**

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<tbody>
<tr>
<td>K. Swartz</td>
<td>10:30 a.m.</td>
</tr>
<tr>
<td>Green Stormwater Management in the Great Lakes: Toledo case study for building successful community stormwater projects</td>
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</table>

### Quaternary Geology and Sand Dune History of the Great Lakes (continued)
Co-Chairs: Timothy Fisher and John Johnston

**2592, Lake Michigan**

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<tr>
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<tbody>
<tr>
<td>Y. Wang and J. Janssen</td>
<td>10:50 a.m.</td>
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<tr>
<td>Larval deepwater sculpin density and growth in relation to spring thermal bar dynamics</td>
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**3016, St. Lawrence River**

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<tbody>
<tr>
<td>A.F. Arbogast et al.</td>
<td>10:50 a.m.</td>
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<tr>
<td>Lake Michigan Coastal Dunes Are Complex: Two Models For Their Formation in the Northeastern Part of the Basin.</td>
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**3018, Lake Ontario**

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<tbody>
<tr>
<td>D.K. Ray and B.C. Pijanowski</td>
<td>10:50 a.m.</td>
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<tr>
<td>Simulating Historical Landcover Maps for the Muskegon River Watershed</td>
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**3020, Lake St. Clair**

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<tbody>
<tr>
<td>K. Chapman</td>
<td>11:10 a.m.</td>
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<tr>
<td>Conservation Incentives in the Maumee Watershed</td>
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### The Muskegon River Mega Model: Integrating Changes in Land Use, Climate, Hydrology and Fish Populations
Co-Chairs: Mike Wiley and Jeffrey Tyler

**2592, Lake Michigan**

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<tbody>
<tr>
<td>J.J. Roberts et al.</td>
<td>11:30 a.m.</td>
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<tr>
<td>Sub-daily behavioral consequences of hypoxia for yellow perch in Lake Erie’s central basin.</td>
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**3016, St. Lawrence River**

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<tbody>
<tr>
<td>J.W. Johnston et al.</td>
<td>11:30 a.m.</td>
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<tr>
<td>Late Holocene lake-level paleo-hydrograph for Lake Superior constructed from hundreds of ancient shorelines</td>
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**3018, Lake Ontario**

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<tr>
<td>B. Pijanowski et al.</td>
<td>11:30 a.m.</td>
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<tr>
<td>Land Use Legacy</td>
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**3020, Lake St. Clair**

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<tbody>
<tr>
<td>J.M. O’Meara et al.</td>
<td>11:30 a.m.</td>
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<tr>
<td>*** CANCELLED *** Resource Restoration with in an Urban Watershed: Carpenter Lake Restoration And Nature Preserve Development</td>
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### Watershed Restoration in the Maumee Basin (continued)
Chair: Patrick Lawrence

**3018, Lake Ontario**

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<tbody>
<tr>
<td>M.M. Guzzo et al.</td>
<td>11:50 a.m.</td>
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<tr>
<td>Seasonal and Spatial Variation in Stable Isotope and Fatty Acid Values in Seston from the Western Basin of Lake Erie</td>
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<tr>
<td>T.A. Thompson et al.</td>
<td>11:50 a.m.</td>
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<tr>
<td>Strandplain evidence for late Holocene lake level and isostatic rebound in the Lake Huron basin</td>
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- **M.J. Wiley et al.**
  - Nutrient and sediment load responses to land management and climate change in the Muskegon River watershed: a modeling assessment
- **F. Stamati et al.**
  - Soil organic matter loss pathways in agricultural lands
- **B. Pijanowski**
  - Land Use Legacy

### IAGLR Business lunch, Student Union Auditorium/Ballroom, 3rd floor

12:10 p.m.
### Wednesday, May 20

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<tbody>
<tr>
<td>1:30 p.m.</td>
<td><strong>J.J. Pauer et al.</strong> SMALL SHOULD BE THE NEW BIG: High-resolution models with small segments have big advantages when modeling eutrophication in the Great Lakes</td>
<td><strong>J.C. Makarewicz et al.</strong> Nearshore Nutrient Chemistry of Lake Ontario</td>
<td><strong>J.D. Lekki and G. Leshkevich</strong> Airborne Monitoring of Microcystis Blooms in Lake Erie</td>
<td><strong>D.T. Kraus and G.A. White</strong> Status and Assessment of Terrestrial Coastal Ecosystems in the Great Lakes</td>
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<td>2:50 p.m.</td>
<td><strong>E.L. Jones et al.</strong> Three-dimensional modelling of walleye nursery habitat in West Basin Lake Erie.</td>
<td><strong>H. Niblock et al.</strong> Exploring Long Term Changes in the Planktonic Food Web of the Upper Bay of Quinte in Response to the Impacts of Phosphorus Abatement and Exotic Species</td>
<td><strong>C.R. Hatt</strong> Application and Evaluation of Two Satellite-Derived Bathymetry Algorithms for Clear Shallow Inland Lakes</td>
<td><strong>B.K. Ginn et al.</strong> Relationship of aquatic plant distribution to phosphorus, substrate type, and other limnological variables in Lake Simcoe (Ontario, Canada)</td>
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<tr>
<td>Time</td>
<td>Event</td>
<td>Presenter(s)</td>
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<tr>
<td>1:30 p.m.</td>
<td>Fish Community Structure in Lake Erie: Rehabilitation or a Return to Degradation?</td>
<td>J.D. Conroy et al.</td>
<td>Fish Community Structure in Lake Erie: Rehabilitation or a Return to Degradation?</td>
<td>Lake Michigan</td>
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<tr>
<td>1:50 p.m.</td>
<td>Emergence and Spread of Viral Hemorrhagic Septicemia Virus in the Laurentian Great Lakes</td>
<td>M. Faisal et al.</td>
<td>Emergence and Spread of Viral Hemorrhagic Septicemia Virus in the Laurentian Great Lakes</td>
<td>St. Lawrence River</td>
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<tr>
<td>2:10 p.m.</td>
<td>Predicting future changes in Muskegon River watershed game fish distributions under future land cover alteration and climate change scenarios</td>
<td>P.J. Steen et al.</td>
<td>Predicting future changes in Muskegon River watershed game fish distributions under future land cover alteration and climate change scenarios</td>
<td>Lake Ontario</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Regional Consortia in Higher Education: Collaborative Ecosystem-Based Teaching and Learning in the Hudson River Watershed</td>
<td>M.D. Land et al.</td>
<td>Regional Consortia in Higher Education: Collaborative Ecosystem-Based Teaching and Learning in the Hudson River Watershed</td>
<td>Lake St. Clair</td>
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<tr>
<td>2:50 p.m.</td>
<td>Developing an Environmental Sciences Curriculum: A Case Study at the University of Toledo</td>
<td>E.J. Tramer et al.</td>
<td>Developing an Environmental Sciences Curriculum: A Case Study at the University of Toledo</td>
<td>Lake St. Clair</td>
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<td>J.D. Conroy et al.</td>
<td>G.H. Grocock et al.</td>
<td>R.J. Stevenson et al.</td>
<td>D.L. Kobus</td>
<td>1:30 p.m.</td>
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<tr>
<td>L.B. Carreon-Martinez et al.</td>
<td>R. Goetz et al.</td>
<td>C.M. Riseng et al.</td>
<td>M.D. Land</td>
<td>2:10 p.m.</td>
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<tr>
<td>N.L. Legler et al.</td>
<td>L.R. Pierce et al.</td>
<td>E. Rutherford</td>
<td>E.J. Tramer</td>
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<td>E.J. Tramer</td>
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### Wednesday, May 20

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<thead>
<tr>
<th>2520, Ingman Room</th>
<th>2582, Lake Superior</th>
<th>2584, Lake Huron</th>
<th>2591, Lake Erie</th>
</tr>
</thead>
</table>
| **Physical Limnology and Physical-Chemical-Biological Coupling in Lakes (continued)**  
Co-Chairs: Dmitry Beletsky, Chin Wu, and George Arhonditsis | **Challenges to the Ecological Integrity of the Lake Ontario Ecosystem: Shoreline, Nearshore, and Offshore Dynamics (continued)**  
Co-Chairs: Mohiuddin Munawar, Frederick Luckey, and Edward Mills | **Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes (continued)**  
Co-Chairs: George Leshkevich and Robert Shuchman | **Nearshore and Offshore Changes in Great Lakes Food Webs: Mechanisms and forecasting (continued)**  
Co-Chairs: Henry Vanderploeg and Joseph DePinto |

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| 3:10 p.m. | C. DeMarchi *et al.*  
Estimating Lake-Wide Runoff Uncertainty in the Great Lakes Using a Monte Carlo Technique | M. Fitzpatrick *et al.*  
Evaluating the Planktonic Food Web of a Highly Stressed Area of Concern: Hamilton Harbour, Lake Ontario. | K.P. Kowalski  
Examination of Longnose Gar Movement in a Lake Erie Coastal Wetland Using a High-Resolution Acoustic Camera (DIDSON) | L.M. Tomlinson and M.T. Auer  
Nutrient Management and the Great Lakes Cladophora Model |
| 3:30 p.m. | **BREAK** | | | |
### Wednesday, May 20

<table>
<thead>
<tr>
<th>2592, Lake Michigan</th>
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<tr>
<td><strong>Physical and Chemical Drivers of Great Lakes Fish Ecology (continued)</strong>&lt;br&gt;Co-Chairs: Stuart Ludsin, Christine Mayer, and Tomas Hook</td>
<td><strong>VHS in the Great Lakes: Impacts and Outlooks (continued)</strong>&lt;br&gt;Co-Chairs: Fred Snyder, Rick Goetz, and Carol Stepien</td>
<td><strong>The Muskegon River Mega Model: Integrating Changes in Land Use, Climate, Hydrology and Fish Populations (continued)</strong>&lt;br&gt;Co-Chairs: Mike Wiley and Jeffrey Tyler</td>
<td><strong>Environmental Education, Training, and Certification in the Great Lakes Region (continued)</strong>&lt;br&gt;Co-Chairs: Daryl Moorhead and Joseph Ackerman</td>
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<tbody>
<tr>
<td><strong>K.L. Pangle et al.</strong>&lt;br&gt;Effects of chemo-physical variation associated with high discharge events on yellow perch larval habitat quality in western Lake Erie</td>
<td><strong>J.C. Willey and E.L. Crawford</strong>&lt;br&gt;Quality-Controlled RT-PCR Data That Support Development of New Diagnostics</td>
<td><strong>J.A. Tyler et al.</strong>&lt;br&gt;Effects of Urban Development in the Muskegon River Watershed on growth, survival and potential recruitment of a Lake Michigan steelhead population: results of a multi-modeling approach.</td>
<td><strong>K.J. Egan</strong>&lt;br&gt;Environmental Economics</td>
<td><strong>3:10 p.m.</strong></td>
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**BREAK**

**3:30 p.m.**
### Wednesday, May 20

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<tr>
<td>5:10 p.m.</td>
<td>Y. Zhu and A. Vodacek Investigation of the relationship between the thermal bar and Cladophora growth in Lake Ontario using field and satellite data</td>
<td>W.W. Fetzer et al. Evaluating young-of-the-year yellow perch (Perca flavescens) response to habitat changes following zebra mussel (Dreissena polymorpha) introduction in Oneida Lake, NY</td>
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<td>5:30 p.m.</td>
<td>T. Ozersky et al. Phosphorus Excretion by Dreissenid Mussels Can Meet Cladophora P Demand Along a Portion of Lake Ontario Shoreline</td>
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| **VHS in the Great Lakes:** Impacts and Outlooks (continued)  
Co-Chairs: Fred Snyder, Rick Goetz, and Carol Stepien | **The Muskegon River Mega Model:** Integrating Changes in Land Use, Climate, Hydrology and Fish Populations (continued)  
Co-Chairs: Mike Wiley and Jeffrey Tyler | **Environmental Education, Training, and Certification in the Great Lakes Region:** (continued)  
Co-Chairs: Daryl Moorhead and Joseph Ackerman | |

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</table>
| T.A. Gabriel *et al.*  
Viral Hemorrhagic Septicemia (VHS) in Ohio: a report on inland monitoring | D.M. Krueger *et al.*  
Using fishery management activities to forecast species interactions and Chinook (*Oncorhynchus tshawytscha*) recruitment in a large Lake Michigan tributary | C.V. Blatz  
Questions of Ethics In Environmental Science and Environmental Studies Education | 3:50 p.m. |
| G.K. Wallat  
Impacts of VHS on the Ohio aquaculture industry | S.R. Hensler and D.J. Jude  
Recruitment bottlenecks for walleye in the Muskegon River Estuary, Lake Michigan | R. Patterson  
The Intersection of Africana Studies in Environmental Studies: | 4:10 p.m. |
| F.L. Snyder  
Potential Impacts of VHS Regulations on Great Lakes Fisheries | Discussion | D.M. Ashton  
Film, Video, and Environmental Science | 4:30 p.m. |
| F.L. Snyder *et al.*  
VHS discussion | J.D. Ackerman and J. Li  
A Review of Graduate Programs in the “Environmental Sector” in Canada | | 4:50 p.m. |
| | | D.L. Moorhead and S. Milz  
Ecological and Human Health: An Integrated Curriculum at the University of Toledo | 5:10 p.m. |
<p>| | | | 5:30 p.m. |</p>
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<tr>
<td>8:50 a.m.</td>
<td>J.R. Angel and K.E. Kunkel The response of Great Lakes water levels to future climate scenarios with an emphasis on Lake Michigan</td>
<td>C.M. Pennuto \textit{et al.} Cladophora, Gobies, And Mussels, Oh My: a LONNS Update On Their Distribution And Abundance In Nearshore Lake Ontario.</td>
<td>H.W. Reeves \textit{et al.} A map to change the world: enabling environmentally based water management across the Great Lakes region</td>
<td>D. Jamu Resiliency as an essential aspect for ecosystem health</td>
</tr>
<tr>
<td>9:10 a.m.</td>
<td>F.H. Quinn Relative Roles of Climate vs Erosion in the Recent Decrease in Fall Between Lakes Huron and Erie</td>
<td>S.B. Watson and G.L. Boyer Cyanobacterial blooms in Lake Ontario coastal areas: toxins, taxa and taste-odour</td>
<td>E. MacDonald and J.F. Tonto The Ottawa-Gatineau Watershed Atlas</td>
<td>T.J. Lawrence Understanding fisher's behavior under co-management institution: defining challenges of fisheries management on Lake Victoria, East Africa</td>
</tr>
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<td>8:30 a.m.</td>
<td>C.A. Stow</td>
<td>K.M. Stewart</td>
<td>D.W. Schloesser et al.</td>
<td>R.W. Fortner et al.</td>
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<td></td>
<td>The Saginaw Bay Multiple Stressors Project</td>
<td>And a canal runs through it</td>
<td>Hexagenia spp. in western Lake Erie-- an update of abundance of this sentinel taxon</td>
<td>What is Pedagogy and Why Should Scientists Care? (Pedagogy 101)</td>
</tr>
<tr>
<td>8:50 a.m.</td>
<td>C. DeMarchi et al.</td>
<td>J.F. Gottgens et al.</td>
<td>K.M. DeVanna et al.</td>
<td>S. Stewart et al.</td>
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<td></td>
<td>Developing a Distributed Watershed Hydrology, Sediments Load, and Nutrients Load Model for Saginaw Bay</td>
<td>Effects of a Low-Head Dam Removal on the Fish Community in a Great Lakes Tributary</td>
<td>Biotic and abiotic habitat interactions determine predation risk for burrowing mayflies</td>
<td>No Scientist Left Behind: Standards 101 (What every scientist needs to know about education standards)</td>
</tr>
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<td></td>
<td>Evaluating Sediment and Nutrient Loading for the Saginaw River Using an Intensive Sampling Program</td>
<td>Development of Lake Sturgeon Spawning Beds on the St. Lawrence River near Waddington, NY</td>
<td>Oxidative stress indicators in the mayfly Hexagenia limbata: Responses to cold shock, heat shock, desiccation and parasitic infection</td>
<td>Lake Erie Literacy Principles: How PIs Can Incorporate Literacy Principles and Outreach Components to Enhance Research Proposals</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>E.M. Verhamme et al.</td>
<td>B.A. Manny et al.</td>
<td>S.X. Yi et al.</td>
<td>Previous Presentation Continued</td>
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**Thursday, May 21**

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<tr>
<th>Time</th>
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<tr>
<td>10:10 a.m.</td>
<td>R.A. Smith and D. Kristovich The Influence of the Great Lakes on Passing Cyclones During the Stable Season</td>
<td>A. Dove and G.J. Warren Long-Term Trends in Major Ions and Nutrients in Lake Ontario</td>
<td>A. Jones Anishinabek Traditional Knowledge and the Implementation of the Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement</td>
<td>J. Janssen and V. Sideleva Are the Laurentian Great Lakes Too Young to be Healthy?</td>
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<tr>
<td>10:50 a.m.</td>
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<tr>
<td>11:00 a.m.-noon</td>
<td>Plenary, Doerrmann Theatre, University Hall “Climate, Oceans, Infectious Diseases, and Human Health: The Cholera Paradigm” Dr. Rita Colwell, Chair of Canon US Life Sciences, Inc. and Distinguished University Professor, University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health</td>
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<tr>
<th>Time</th>
<th>Plenary, Doerrmann Theatre, University Hall</th>
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| 11:00 a.m.-noon | “Climate, Oceans, Infectious Diseases, and Human Health: The Cholera Paradigm”  
**Dr. Rita Colwell**, Chair of Canon US Life Sciences, Inc. and Distinguished University Professor, University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health |
### Thursday, May 21

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<tr>
<td>1:00 p.m.</td>
<td>X.L. Huang and Y. Deng</td>
<td>K.T. Holeck <em>et al.</em></td>
<td>M.J. Villeneuve</td>
<td>R.B. Mercader and T.A. Dobson</td>
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<td></td>
<td>The Effect of Different Great Lakes Treatments in Simulating Winter Temperature of the Midwest: a Large-scale Modeling Perspective</td>
<td>Zooplankton as Indicators of Ecosystem Change in Lake Ontario</td>
<td>The Canadian Water Availability Indicators Initiative: Great Lakes Pilot</td>
<td>Reducing AIS through understanding the human dimensions of live baitfish collection and use</td>
</tr>
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<td></td>
<td>Spatiotemporal regime of climate and streamflow in the U.S. Great Lakes Basin</td>
<td>Physiologic health of lake whitefish in Lake Ontario - interstock differences</td>
<td>*** CANCELLED *** System Dynamics Modeling of Water Resources</td>
<td>GAP Analysis in the Great Lakes: The Ins and Outs of Aquatic Protected Areas</td>
</tr>
<tr>
<td>1:40 p.m.</td>
<td>X. Bai and J. Wang</td>
<td>R.J. Snyder <em>et al.</em></td>
<td>A.S. Mayer <em>et al.</em></td>
<td>G. Krantzberg</td>
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<td></td>
<td>The Impacts of ENSO and AO on the Interannual Variability of the Great Lakes Ice Cover</td>
<td>Forecasting Impacts of Changing Food Webs in Lake Ontario: Effects of Dietary Fatty Acids on Growth of Alewives</td>
<td>Update on Modeling and analyzing the use, efficiency, value, and governance of water in the Great Lakes region through an integrated approach</td>
<td>Indicator Endpoints Inform Active Intervention</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>J. Wang <em>et al.</em></td>
<td>E.L. Mills <em>et al.</em></td>
<td>P.J. Martin <em>et al.</em></td>
<td>C. Masson</td>
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<td></td>
<td>Seasonal, interannual, and spatial variability of the Great Lakes ice cover</td>
<td>Reality in a Fish Bowl and the Lake Ontario Ecosystem</td>
<td>Development of a Methodology for Calculating Consumptive Water Use within the Province of Ontario</td>
<td>The Great Lakes Gordian Knot II: Governance and accountability for aquatic ecosystem health, integrity and risk management</td>
</tr>
<tr>
<td>2:20 p.m.</td>
<td>H. Hu <em>et al.</em></td>
<td>Discussion</td>
<td>T.J. Boston <em>et al.</em></td>
<td>M. Gaden <em>et al.</em></td>
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<td></td>
<td>Modeling Lake ice and circulation in Lake Erie</td>
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<td>Water Balance Quantification in the Trent River Watershed: Validation of Ungauged Tributaries and Impact of Storage Variables</td>
<td>The Great Lakes Regional Collaboration: A New Paradigm for Restoring Ecosystem Health?</td>
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<td><strong>2592, Lake Michigan</strong></td>
<td><strong>3016, St. Lawrence River</strong></td>
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<td><strong>3020, Lake St. Clair</strong></td>
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<td>1:00 p.m.</td>
<td><strong>Nuisance Algae in the Great Lakes</strong></td>
<td><strong>History, Ecology, and Management of Fisheries in Great Lakes Connecting Channels</strong> (continued)</td>
<td><strong>Benthic populations in the Great Lakes: Temporal Trends and Ecology</strong> (continued)</td>
<td><strong>Field Stations and Institutes in the Laurentian Great Lakes and the St. Lawrence River</strong></td>
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<td><strong>Co-Chairs: Juli Dyble Bressie and Tom Bridgeman</strong></td>
<td><strong>Co-Chairs: Edward Roseman, Bruce Manny, and Jennifer Read</strong></td>
<td><strong>Co-Chairs: Don Schloesser and Lee Grapentine</strong></td>
<td><strong>Co-Chairs: Michael Twiss, Tom Langen, and Carol Stepien</strong></td>
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<td>1:20 p.m.</td>
<td><strong>D.D. Kane et al.</strong></td>
<td><strong>R.C. Haas and G. Towns</strong></td>
<td><strong>A. Bantelman et al.</strong></td>
<td><strong>R.D. Ricketts and S.M. Colman</strong></td>
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<td></td>
<td><strong>Western Lake Erie Nuisance Algae: Correlations Between Nutrient Load and Total Phytoplankton and Cyanobacterial Biomass</strong></td>
<td><strong>Characterization of the nearshore fish community in the Huron-Erie Corridor</strong></td>
<td><strong>Role of environment on burrow irrigation and oxygen in Chironomus spp.</strong></td>
<td><strong>The Large Lakes Observatory, University of Minnesota Duluth: An Institute Focused on Oceanographic Research on Large Lakes Around the World</strong></td>
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<tr>
<td>1:40 p.m.</td>
<td><strong>J.D. Chaffin et al.</strong></td>
<td><strong>B.A. Daley et al.</strong></td>
<td><strong>S.J. Lozano and J.V. Scharold</strong></td>
<td><strong>The Great Lakes WATER Institute of the University of Wisconsin-Milwaukee</strong></td>
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<td></td>
<td><strong>The Effects of Light and Mixing on Photosynthesis Physiology of Microcystis in Western Lake Erie</strong></td>
<td><strong>Substrate Preference and Status of the Endangered Northern Madtom (Noturus stignosus) in the Upper Detroit River</strong></td>
<td><strong>The Status of Benthos in Lake Ontario</strong></td>
<td><strong>Lake Michigan Biological Station: studying Illinois' waters since 1985</strong></td>
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<tr>
<td>2:00 p.m.</td>
<td><strong>J. Guo et al.</strong></td>
<td><strong>M. Granados et al.</strong></td>
<td><strong>R.K. Sherman et al.</strong></td>
<td><strong>Central Michigan University Biological Station on Beaver Island, Northern Lake Michigan</strong></td>
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<td><strong>Sediment Nutrients and Bioavailability in Lake Winnipeg</strong></td>
<td><strong>Measuring changes in the fish assemblages of the Huron-Erie Corridor Areas of Concern</strong></td>
<td>**Benthic Invertebrate Community Composition in Severn Sound, (Georgian Bay) Lake Huron – 2007/08</td>
<td><strong>Delivery &amp; Information System: A Management Tool for an Area of Concern</strong></td>
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<td>2:20 p.m.</td>
<td><strong>G.P. Horst and O. Sarnelle</strong></td>
<td><strong>N.D. Green et al.</strong></td>
<td><strong>B.K. Ginn et al.</strong></td>
<td><strong>Central Michigan University Biological Station on Beaver Island, Northern Lake Michigan</strong></td>
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<td><strong>Phosphorus Uptake Physiology of Microcystis and Competing Taxa Along a Nutrient Gradient in Western Lake Erie</strong></td>
<td><strong>Detroit River Delisting &amp; Information System: A Management Tool for an Area of Concern</strong></td>
<td><strong>Assessment of environmental changes in Lake Simcoe (Ontario, Canada) using benthic invertebrates as proxy indicators: relationship of community structure and limnological conditions</strong></td>
<td><strong>Lake Michigan Biological Station: studying Illinois' waters since 1985</strong></td>
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<td>2:40 p.m.</td>
<td>K.A. Donnelly</td>
<td>Discussion</td>
<td>D.J. Van Vliet et al.</td>
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3:00 p.m. **BREAK**
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<th>Location</th>
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<tbody>
<tr>
<td>Nuisance Algae in the</td>
<td>History, Ecology, and Management of Fisheries in Great Lakes</td>
<td>Juli Dyble, Bressie and Tom Bridgeman</td>
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<tr>
<td>Great Lakes (continued)</td>
<td>Connecting Channels (continued)</td>
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<td>Benthic populations in the Great Lakes: Temporal Trends and Ecology</td>
<td>Edward Roseman, Bruce Manny, and Jennifer Read</td>
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<td>(continued)</td>
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<td>Field Stations and Institutes in the Laurentian Great Lakes and the</td>
<td>Michael Twiss, Langen Tom, and Carol Stepien</td>
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<td>St. Lawrence River (continued)</td>
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<td>A.E. Poste <em>et al.</em></td>
<td>J.G. Read <em>et al.</em></td>
<td>L.C. Grapentine</td>
<td>G.B. Steinhart <em>et al.</em></td>
<td>2:40 p.m.</td>
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<td>Seasonal variability</td>
<td>Managing Collaborations for Native Fishery Enhancement: Case Studies</td>
<td>Adjusting bioassessments of sediments for changing benthic communities</td>
<td>Lake Superior State University’s Aquatic Research Laboratory:</td>
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<td>of microcystin concentrations in Murchison Bay and Napoleon Gulf (Lake Victoria, East Africa)</td>
<td>in the Binational Detroit River</td>
<td>in reference sites in the Great Lakes</td>
<td>A Small-school Perspective on the Role of Hands-on Experience for Undergraduates</td>
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<tr>
<td>3:20 p.m.</td>
<td>J.V. Klump and J.T. Waples</td>
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<td></td>
<td>Climate Variability and Alterations in the Hydrodynamics, Particle Transport, Resuspension, Carbon Cycling, and Hypoxia in Green Bay</td>
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<td>M.E. Turyk</td>
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<td>Sport Fish and Commercial Fish Consumption in Residents of the Great Lakes Basin</td>
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<td>K.K. Kilbert</td>
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<td>The Great Lakes - St. Lawrence River Basin Water Resources Compact</td>
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<td>Chair: Kenneth Kilbert</td>
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<td>3:40 p.m.</td>
<td>M.J. Wiley et al.</td>
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<td></td>
<td>A Multi-modeling approach to evaluating impacts of climate change on river ecosystems</td>
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<td></td>
<td>L.H. McCarthy et al. Protecting Canada’s Drinking Water: Developing Real-Time, Early-Warning Biomonitoring Technology</td>
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<td>B. Holub</td>
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<td>Omega-3 Fatty Acid Contents of Great Lakes Fish.</td>
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<td>S.R. Gosman</td>
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<td>Compact Implementation: Progress Report and Next Steps</td>
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<td>4:00 p.m.</td>
<td>J. Wang and X. Bai</td>
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<td></td>
<td>Is the Dipole Anomaly a major driver to record lows in Arctic summer sea ice extent?</td>
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<td>S.C. Chapra et al. Long-Term Trends in the Major-Ion Chemistry of the Lower Great Lakes</td>
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<td>S.C. Bushkin and D.O. Carpenter</td>
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<td>Health effects of Omega 3 Fatty Acids</td>
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<td>D.P. Wendt</td>
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<td>A Trade Lawyer’s Comment on the Great Lakes Compact, the Bottled Water Loophole, and Trade Agreements</td>
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<tr>
<td>4:20 p.m.</td>
<td>Discussion</td>
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<td>M.S. Evans et al. PAH Sediment Studies in Lake Athabasca and the Athabasca River Ecosystem: Natural Sources and the Impacts of Oil Sands Development</td>
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<td>S.L. Schantz</td>
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<td>Human Health Impact of Contaminants in Great Lakes Fish</td>
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<td>M. Valiante</td>
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<td>The Impact of the Great Lakes Compact on the Development of Canadian Water Law</td>
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**Nuisance Algae in the Great Lakes** (continued)  
Co-Chairs: Juli Dyble Bressie and Tom Bridgeman

**COSEE School for Scientists**  
Co-Chairs: Rochelle Sturtevant and Rosanne Fortner

**Field Stations and Institutes in the Laurentian Great Lakes and the St. Lawrence River** (continued)  
Co-Chairs: Michael Twiss, Langen Tom, and Carol Stepien

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| P. De Tezanos Pinto and E. Litchman  
Interactive Effects of N:P Ratios and Light on Nitrogen-fixing Cyanobacteria | D.A. Hart and P.A. Kania  
GEE: A partnership for Google Earth in Education | C.A. Stepien  
Research and Education Programs at the University of Toledo’s Lake Erie Center | 3:20 p.m. |
| M.A. Evans et al.  
Climate driven variability in Microcystis abundance, dominance, and toxin production | Previous Presentation Continued | E.C. Braig and J.M. Reutter  
F. T. Stone Laboratory, The Ohio State University | 3:40 p.m. |
| E. Litchman et al.  
Trait-based Approaches to Harmful Algal Blooms | R.L. Cuhel and C. Aguilar  
Onboard and Online: Interactive field sampling from research vessel to classroom via Internet2. | J.L. Schnars  
The Regional Science Consortium: Environmental Research and Education | 4:00 p.m. |
| R.L. Lowe et al.  
Benthic algal community structure on soft sediments in western Lake Erie. | C. Aguilar et al.  
From Hands In To Hands On: Transfer Of Shipboard Research Experience To The Classroom. | L.G. Rudstam et al.  
Cornell Biological Field Station | 4:20 p.m. |
Thursday, May 21

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<td>5:00 p.m.</td>
<td>D. Mergler An update on methylmercury toxicity and dietary factors that influence its absorption, metabolism and toxicity</td>
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**Nuisance Algae in the Great Lakes** (continued)
Co-Chairs: Juli Dyble Bressie and Tom Bridgeman

**COSEE School for Scientists** (continued)
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**Field Stations and Institutes in the Laurentian Great Lakes and the St. Lawrence River** (continued)
Co-Chairs: Michael Twiss, Langen Tom, and Carol Stepiein

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<td>R.R. Rediske and J.D. Rediske The role of Cladophora and Spirogyra mats in the sequestration of E. coli and Microcystin in Saginaw Bay and Grand Traverse Bay.</td>
<td>A.M. Marshall <em>et al.</em> Making GLERL Data Accessible to Teachers for Classroom Use</td>
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<td>5:00 p.m.</td>
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<tr>
<td>A.R. Lashaway and H.J. Carrick Spatial and Temporal Variation of Diatom Physiological Condition in Lake Erie Benthos: Implications for Seasonal Hypoxia</td>
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<td>5:20 p.m.</td>
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<td>8:30 a.m.</td>
<td>A. Perez-Fuentetaja <em>et al.</em></td>
<td>C. Wu <em>et al.</em></td>
<td>J.M. Bossenbroek <em>et al.</em></td>
<td>D.R. Kashian <em>et al.</em></td>
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<td>Shiners and Smelt are the Main Forage Base for Steelhead Trout (<em>Oncorhynchus mykiss</em>) Populations in Lake Erie</td>
<td>Pharmaceutical and Personal Care Products in an Agricultural Landscape, Western Lake Erie Basin</td>
<td>An introduction to the bioeconomics of invasive species with examples from the emerald ash borer invasion</td>
<td>Addressing Fish Consumption Advisory Issues via an Integrated Assessment Approach: A case study of the Detroit River</td>
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<tr>
<td>8:50 a.m.</td>
<td>D. Rosauer <em>et al.</em></td>
<td>J.S. Tertuliani <em>et al.</em></td>
<td>D.A.R. Drake <em>et al.</em></td>
<td>S.P. Bhavsar <em>et al.</em></td>
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<td>A phenotypic comparison of lake trout (<em>Salvelinus namaycush</em>) morphotypes</td>
<td>Occurrence of Organic Wastewater Compounds in Tributaries to the Cuyahoga River, Northeast Ohio</td>
<td>Quantifying the Likelihood of Introducing Aquatic Invasive Species through the Baitfish Industry in Ontario</td>
<td>Connecting Fish Consumption-Advisories and Sedimentary PCBs in the Canadian Great Lakes</td>
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<tr>
<td>9:10 a.m.</td>
<td>E.S. Dunlop <em>et al.</em></td>
<td>D. Muir <em>et al.</em></td>
<td>J.R. Muirhead</td>
<td>L. Jezdic and K.G. Drouillard</td>
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<td></td>
<td>*** CANCELLED *** Temporal Trends in the Numbers and Characteristics of Lake Huron Fish Schools</td>
<td>Atmospheric deposition and bioaccumulation of current use pesticides and selected brominated compounds in Ontario remote lakes in Ontario and the Great Lakes</td>
<td>Forecasting dispersal and establishment of the invasive crustacean, <em>Cercopagis pengoi</em> among inland New York lakes</td>
<td>Application of the Hazard Assessment Model with spatially explicit water and sediment data to predict fish consumption advisories in the Detroit River</td>
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<td>Assessing Our Abilities to Distinguish Among Lake Trout Hatchery Strains and Their Potential Hybrid Offspring on Lake Michigan's Mid-Lake Reef Complex</td>
<td>Use of GIS to Analyze the Potential Health Impacts of the Application of Sewage Sludge to Agricultural Fields in Northwest Ohio</td>
<td>The good, the bad, and the algae: perceiving ecosystem services and disservices generated by zebra and quagga mussels</td>
<td>Cardiovascular Mortality among Frequent Consumers of Great Lakes Sport Fish</td>
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<th>Education and Outreach Co-Chairs: Rochelle Sturtevant and Helen Domske</th>
<th>Causes of Injury to Ecosystems and Environmental Health Across the Great Lakes Co-Chairs: Tom Muir, Michael Gilbertson, and James Sherry</th>
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<td>2592, Lake Michigan</td>
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<td>3016, St. Lawrence River</td>
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### Nuisance Algae in the Great Lakes (continued)

*Co-Chairs: Juli Dible Bressie and Tom Bridgeman*

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<tbody>
<tr>
<td>G.L. Boyer et al. New Approaches for Assessing the Risk from Microcystin-Contaminated Fish</td>
<td>E.K. Hinchey et al.&lt;br&gt;Climbing the Evaluation Pyramid: Techniques used by Illinois-Indiana Sea Grant to evaluate Outreach Programs.</td>
<td>9:10 a.m.</td>
</tr>
<tr>
<td>H. Nelson et al. New method to detect and identify nuisance cyanobacteria and invasive bivalves using a continuous imaging particle analyzer (FlowCAM)</td>
<td>R.N. Lohner and C.A. Step Bien&lt;br&gt;Developing an Environmental Science Learning Community at the Land- Lake Ecosystem Interface</td>
<td>9:30 a.m.</td>
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<tr>
<td>J.L. Parrott et al. Effects of Municipal Wastewater Effluents and Pharmaceuticals in Fish</td>
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## Friday, May 22

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<th>Time</th>
<th>2520, Ingman Room</th>
<th>2582, Lake Superior</th>
<th>2584, Lake Huron</th>
<th>2591, Lake Erie</th>
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<tr>
<td>9:50 a.m.</td>
<td><strong>Fisheries and Fish Ecology</strong>&lt;br/&gt;Co-Chairs: Patrick Kocovsky and Jeff Tyson</td>
<td><strong>Emerging Contaminants in the Environment</strong>&lt;br/&gt;Co-Chairs: Alison Spongberg and Lynda McCarthy</td>
<td><strong>Bioeconomics of Invasive Species in the Great Lakes Region</strong>&lt;br/&gt;Co-Chairs: Jonathan Bossenbroek and David Finnoff</td>
<td><strong>Fish Consumption Advisories in the Great Lakes: Bridging Contaminants and Human Health</strong>&lt;br/&gt;Co-Chairs: Donna Kashian and Ann Krause</td>
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<tr>
<td>10:10 a.m.</td>
<td>S.A.C. Marklevitz <em>et al.</em>&lt;br/&gt;The use of otolith microchemistry as a fisheries management tool: the differentiation of Chinook salmon, natal origins in Lake Huron</td>
<td>J.L. Newsted <em>et al.</em>&lt;br/&gt;Toxicity of perfluorooctane sulfonate (PFOS) to avian wildlife: ambient Safe Water Value derivation and uncertainty analysis</td>
<td>T. Warziniack <em>et al.</em>&lt;br/&gt;Distributions of the Impacts of Ship-borne Invasions on the Great Lakes Regional Economy</td>
<td>M. Shaskus <em>et al.</em>&lt;br/&gt;Ohio’s Sport Fish Consumption Advisory</td>
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<td>10:30 a.m.</td>
<td><strong>BREAK</strong></td>
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<th>Education and Outreach Co-Chairs: Rochelle Sturtevant and Helen Domske</th>
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<td>2592, Lake Michigan</td>
<td><strong>Nuisance Algae in the Great Lakes</strong> (continued)</td>
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<tr>
<td>T.T. Wynne et al.</td>
<td><strong>Using satellite imagery to determine the role of wind and other environmental conditions on cyanobacterial bloom movement and dispersal in western Lake Erie</strong></td>
<td>S. Adlerstein et al. Mapping the Huron River</td>
<td>D.C. Honeyfield et al. Thiamine Deficiency In The Great Lakes And Elsewhere: A Symptom Of Unhealthy Ecosystem</td>
</tr>
<tr>
<td>R.P. Stumpf et al.</td>
<td><strong>A Forecast System for Cyanobacterial Blooms in Western Lake Erie</strong></td>
<td>Previous Presentation Continued</td>
<td>N. Basu Muscarinic Cholinergic Receptors as a Novel Biomarker for Methylmercury - Evidence from Animals, Implications for Humans</td>
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**Friday, May 22**

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<tr>
<td>11:50 a.m.</td>
<td>P.M. Kocovsky Morphological Differences of Yellow Perch Across and Within Management Units in Lake Erie</td>
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<td>12:10 p.m.</td>
<td>J.A. Banda and C.A. Stepien Fourteen years of genetic structure in Lake Erie walleye</td>
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<td>12:30 p.m.</td>
<td>J.J. Deroba and J.R. Bence Evaluating harvest control rules when life history varies: the case of lake whitefish in the Great Lakes</td>
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### Friday, May 22

**Nuisance Algae in the Great Lakes** (continued)  
**Co-Chairs:** Juli Dyble Bressie and Tom Bridgeman

**Education and Outreach** (continued)  
**Co-Chairs:** Rochelle Sturtevant and Helen Domske

**Causes of Injury to Ecosystems and Environmental Health Across the Great Lakes** (continued)  
**Co-Chairs:** Tom Muir, Michael Gilbertson, and James Sherry

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</table>
| J. Dyble Bressie et al.  
Assessing environmental controls on Microcystis populations in the Great Lakes using molecular tools | M. Zint  
“MEERA” - A Web-Based Resource to Support Evaluations of Great Lakes Education Programs | R.B. Hill  
Contaminants in the Niagara River: Two Decades of Upstream/Downstream Monitoring | 10:50 a.m. |
| Discussion | L.W. Florence and M.T. Zint  
Sediment Metal Concentrations within the UNESCO Designated Rideau Canal | 11:10 a.m. |
| B. Liukkonen et al.  
Impacts of a Conservation Field Day for Youth | P. Gogineni et al.  
The Necessity of Carbon Filtration for Water and Wastewater Treatment | 11:30 a.m. |
| T.E. Hallesy  
Community Stewardship through Environmental Education—A Model Project | C. Gorey et al.  
Cellulose Acetate Ultrafiltration Membranes Modified with Temperature-Sensitive Polymers for Fouling Resistance | 11:50 a.m. |
| **BREAK** | | | 12:10 p.m. |
## Friday, May 22

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<td><strong>Education and Outreach (continued)</strong>&lt;br&gt;Co-Chairs: Rochelle Sturtevant and Helen Domske</td>
<td>T.E. Hallesy and R.G. Goettel&lt;br&gt;Lake Michigan Exploration Workshop—Synthesizing Research for Classroom Application</td>
<td>12:50 p.m.</td>
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<td>H.M. Domske&lt;br&gt;COSEE – GL: Shipboard Science on the USEPA R/V Peter Wise Lake Guardian</td>
<td>1:10 p.m.</td>
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<tr>
<td>J.H. Vail and M.E. Weinert&lt;br&gt;Examining Lake Monitoring Data from a Vessel-based Education Program – Can the data be useful?</td>
<td>1:30 p.m.</td>
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<tr>
<td>R.W. Fortner&lt;br&gt;Reaching Hundreds with Online Great Lakes Workshops</td>
<td>1:50 p.m.</td>
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<td>N. Koehler et al.&lt;br&gt;Teaching with the Great Lakes Observing System (GLOS)</td>
<td>2:10 p.m.</td>
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Poster Session

Tuesday, May 19, 6 - 8 p.m.
Student Union Auditorium/Ballroom, 3rd floor

Toxic Chemicals in Great Lakes Air

DAGGUPATY, S.M., BANIC, C.M., and BLANCHARD, P.
Numerical Simulation of Atmospheric Loadings of Mercury from a Coal Fired Power Plant to Lake Erie

MA, J. and VENKATESH, S.
Multiple Pathways Modeling of Hexachlorobenzene to the Great Lakes from North American Sources

WHO Coplanar PCB, PCDD/F, and TEQ analyses in Great Lakes Fish

OFFENBERG, J.H., LEWANDOWSKI, M., KLEINDIENST, T.E., EDNEY, E.O., JAOUI, M., SHEESLEY, R.J., and SCHAUER, J.J.
Contributions of primary and secondary organic carbon to ambient PM in midwestern US cities

Emerging Contaminants in the Environment

GRABUSKI, J.M., CAGAMPAN, S.J., STRUGER, J., and SMITH, E.C.P.
Automated Solid Phase Extraction of Carbamate Pesticides in Fortified Water and Natural Water Samples Using LC-ESI/MS/MS

LAWSON, G., DOVE, A., BACKUS, S., and MUIR, D.
Whole Water Total-Mercury Concentrations in the Great Lakes

MILEYEVA-BIEBESHEIMER, O. and GRUDEN, C.
Impact of metal nanoparticles found in personal care products on cell viability

PERSOON, C.L. and KLECKA, G.M.
“Evaluation of Current Chemicals of Emerging Concern in the Great Lakes”

STRUGER, J., RICHARDSON, V., and WATSON, S.
Occurrence of Glyphosate and AMPA in Open Waters and Tributaries of Lake Erie

Causes of Injury to Ecosystems and Environmental Health Across the Great Lakes

KAPO, K. and BURTON, G.A.
Delineation of Stressor-Response Associations Using Regional Spatial Analysis of Archival Ohio Watershed Data
Ecological Trends in Great Lakes Wetlands

Plant-Mediated Reductions of Arsenic Levels in Flow-Through Wetland Microcosms

ROFKAR, J., DUNCAN, A., BARNSWELL, K., ARMENIO, P., FRANTZ, J., and HECKATHORN, S.
Effects of nitrogen on boron toxicity in *Azolla caroliniana*

Nearshore and Offshore Changes in Great Lakes Food Webs: Mechanisms and Forecasting

ENGEVOLD, P.M., SANDGREN, C.D., and BERGES, J.A.
Changes in Phytoplankton Particulate C:N:P Composition in Response to Nutrient Enrichment and Manipulations of Natural Herbivore Abundance in Lake Michigan During Summer 2008

ENGEVOLD, P.M., SANDREN, C.D., and BERGES, J.A.
Changes in Phytoplankton Photosynthetic Parameters $P_{\text{max}}$ and Alpha in Response to Nutrient Enrichment and Manipulations of Natural Herbivore Abundance in Lake Michigan During Summer 2008.

EVANS, L.E.
Botulism Network

FAHNENSTIEL, G., POTHOVEN, S., VANDERPLOEG, H., KLARER, D., NALEPA, T., and SCAVIA, D.
Long-term trends in phytoplankton abundance, composition and primary production in the offshore region of southeastern Lake Michigan

Upper Great Lakes Food Webs, Conditions, and Assessments

CAVALETTO, J.F. and POTHOVEN, S.A.
Seasonal Patterns of Zooplankton from a Southern Lake Huron Transect in 2007

KISH, J.L., OSTER, R.J., WERNE, J.P., and HICKS, R.E.
Archaeal Diversity in the Pelagic Zone of Lake Superior

Saginaw Bay: The Continuing Impact of Multiple Ecosystem Stressors

VERHOUGSTRAETE, M.P. and ROSE, J.B.
Recreational water quality assessment of Saginaw Bay beaches using fecal indicator bacteria and source tracking methods on samples from shallow and deep waters, sediment, and muck

Satellite Monitoring of Great Lakes for Cyanobacteria Blooms

MARUTHI SRIDHAR, B.B. and VINCENT, R.K.
Spectral reflectance measurements of a Microcystis bloom

SANDERSON, L.M. and VINCENT, R.K.
Mapping the Phycocyanin Concentrations of the Great Lakes Using LANDSAT ETM+ Data
Nuisance Algae in the Great Lakes

PASCOE, T., WATSON, S., STRUGER, J., YERUBANDI, R., GUO, J., and GAGNON, L.
Getting Our Feet Wet: Preliminary Data on Algal Blooms and Nutrients in Lake of the Woods, Year 1

THOMAS, M.K., and LITCHMAN, E.
Growth responses of invasive and native cyanobacteria to temperature

Challenges to the Ecological Integrity of the Lake Ontario Ecosystem: Shoreline, Nearshore, and Offshore Dynamics

MALKIN, S.Y., HOWELL, E.T., and SMITH, R.E.H. **CANCELLED**
Seasonal and Vertical Description of Particulate Matter Inferred from Optical Measurements Along a Nearshore Transect in Lake Ontario

Application of Continuous Monitoring in the Lake Ontario Nearshore

Benthic populations in the Great Lakes: Temporal Trends and Ecology

CUSTER, K.W., BURTON, G.A., TAULBEE, K., FETTERS, K., HUMMEL, S., and SCHLEKAT, C.
Aquatic Insect Responses to Nickel Spiked Sediments: In Situ and Laboratory Exposures

Distribution of Unionid Mussels in the Ottawa River of Lucas County Ohio

Physical Limnology and Physical-Chemical-Biological Coupling in Lakes

PADDOCK, R., BASKARAN, M., BIDDANDA, B., NOLD, S., RUBERG, S., and KLUMP, V.
Sediment accumulation rates in the Middle Island Sinkhole, Thunder Bay National Marine Sanctuary, Lake Huron

PETERSON, H.M., NIEBER, J.L., KANIVETSKY, R., SHMAGIN, B., and WELLS, J.
Atlases of Water Resources for Minnesota as a Tool for Sustainable Community Planning

SMIGELSKI, J.R., TEBBENS, S.F., and BARTON, C.C.
Analysis of Water Level Dynamics in the Great Lakes of North America

Climate Variability and Its Impacts on Environment and Ecosystems in the Great Lakes Region

HU, H., and WANG, J.
Modeling Sea Ice and Ocean Circulations in the Bering Sea

KOSLOW, M.R., and MURRAY, M.W.
Thinking about Great Lakes Land and Water: The Need to Integrate Land Stakeholders and Water Managers in Planning for a Changing Climate
NEVILLE, L.A., MCCARTHY, F.M.G., and TINKLER, K.J. 
Evidence of an Early Holocene Drought in the Lower Great Lakes?

WHITE, B.A., MATSUMOTO, K., and AUSTIN, J.A. **CANCELLED** 
Implications of Ice Cover Decrease for Lake Superior Biogeochemistry: A Numerical Modeling Study

**Carbon Cycling in the Laurentian Great Lakes**

Primary production in ice-covered Lake Erie

Optical and Photophysical Parameters of Lake Superior Dissolved Organic Matter

**Physical and Chemical Drivers of Great Lakes Fish Ecology**

BODAMER, B.L., BRIDGEMAN, T.B., RUCH, R.J., and HOOK, T. 
Measuring Hypoxia-induced physiological stress in Yellow Perch (*Perca flavescens*)

HEAD, J.A., DEBOFSKY, A., and BASU, N. 
Interactive Effects of Methyl Mercury and Hypoxia in Great Lakes Fish

**Fisheries and Fish Ecology**

GOMEZDELCAMPO, E. and SANDERSON, L.M. 
Changes in Fish Diversity Due to Hydrologic Variability in the Sandusky River, Ohio: A Genetic Algorithm Application

PORTA, M.J., EDWARDS, W.H., and BUR, M.T. 
A Comparison of Three Methods for Estimating Ages of Lake Erie White Perch

**COSEE School for Scientists**

CULLER, B.M., HUNTLEY, M., ELMER, H., RIDDLE, C., JENTES BANICKI, J., LICHTKOPPLER, F., VAN ZOEST, P., and MANZO, L. 
From the Ocean to the Lake: Introducing the Lake Erie Literacy Principles

**Education and Outreach**

Disposal of Unwanted Medicines: A Resource for Action in Your Community

**Remote Sensing, Visualization, and Spatial Data Applications for the Great Lakes**

HANSEN, T., CONSI, T.R., BOOTSMA, H., and KLUMP, J.V. 
The Great Lakes Urban Coastal Observing System – Design and Performance
HOOD, J.L.A., ANDERSON, M., and TAYLOR, W.D.
Spatial survey of submersed macrophytes and macroalgae in the Grand River watershed

STIERMAN, D.J., and KRANTZ, D.E.
Geophysical Methods for Quaternary Research and Environmental Investigations in the Great Lakes Basin

TORBICK, N.M. and KRAUSE, A.E.
Improving freshwater ecosystem services in social-ecological systems through the integration of remote sensing and geospatial data

High School Students and Educators Great Lakes Watershed Science Poster Session

BLOSSER, J., and CRAIL, T.
Student-based ecological monitoring of two riffle classes in Swan Creek, an urban stream in NW Ohio

BOGUE, M., and MILEYVA-BIEBESHEIMER, O.
Student Water Quality Testing Engages Students in all Levels of Bloom’s Taxonomy

BOLLIN, T., HAPONSKI, A.E., and STEPIEN, C.A.
Collaborative Science Research Experience for High School Students with a focus on Water Quality Testing on the Ottawa River Watershed

BOURLAND, D., CAMPBELL, M., and STIERMAN, D.J.
Using Ground Penetrating Radar to Locate Unmarked Graves in Toledo, Ohio, USA

COLE, P., and BODAMER, B.L.
Introducing High School students to Environmental Monitoring: A look at water quality in the Ottawa River

GOREY, C., KOLINSKI, C., SEGER, T., and ECKMAN, D.
Analysis of Agricultural Run-off in Wolf Creek

JAIN, N., DEVANNA, K.M., MAYER, C.M., and SCHLOESSER, D.W.
Mapping the spatial relationship of burrowing mayflies and dreissenid mussels in western Lake Erie

KARSIOTIS, S.I., BROWN, J.E., LOHNER, R., and STEPIEN, C.A.
Salinity tolerance of the exotic round goby: Experimental implications for seawater ballast exchange

KIGER, S., HERR, H., BOHRER, J., BRIGHAM, S., COBLENTZ, S., KICK, T., LIVENGOOD, A., LOWE, A., NUSSBAUM, M., and VODIKA, T.
Kingsway Christian School’s Drinking Water Project

KOLINSKI, C., and GOREY, C.
Teaching Science to Make Good Citizens

LAVELLE, K.M., and MATISOFF, G.
Sediment Oxygen Demand in Lake Erie

LOHNER, R.N., STEPIEN, C.A., MOORHEAD, D.L., BRIDGEMAN, T.B., FISHER, T.G., and GRUDEN, C.L.
Graduate Teaching Fellows in STEM High School Education: An Environmental Science Learning Community at the Land-Lake Ecosystem Interface
MINER, G.H. and BULLERJAHN, G.S.
Utilization of Organic Phosphorus by Cyanobacteria

PENAMON, W.A. and MENTZER, G.C.
The Role of Mentoring in Promoting Positive Attitudes of Minority Students Towards STEM Careers

SINGLER, K. and DEVANNA, K.M.
Engaging high school students in field research: Comparing two years of water quality data for the Ottawa River

SMITHERS-PEART, T.A., SMITH, T., WATSON, S.B., YERUBANDI, R., EDGE, T., KHAN, I., and BOOTY, B.
Lake Ontario Science Research

WILSON, W. and SEPULVEDA VILLET, O.J.
Sixteen Years of Water Quality Monitoring: Shantee Creek at Roy C. Start High School

General Topics

GRABARKIEWICZ, J.D. and CRAIL, T.D.
Three Years of Unionid Surveys in Swan Creek, Lower Maumee River Watershed, Lucas County, Ohio

HUDDER, A., O’SHEA, K.E., DOMBKOWSKI, A., and WALSH, P.J.
Hepatic Toxicogenomic Evaluation of Microcystin-LR Exposure in Mice

NORRIS, K.D., BERQUIST, M., SZWEC, J., RIDAL, J., CAMPBELL, L.M., and HODSON, P.V.
Mercury in Lake St. Francis Walleye: The role of sources of mercury source, bioavailability, and food chain transfer

RODENBURG, Z.L., ERDMAN, N.R., SMITH, J.L.H., EASTLING, P.M., and HORNBUCKLE, K.C.
Persistent Organic Pollutants found in the 2008 Flood Residues of Cedar Rapids, Iowa

SELDEN, J.D., GOTTGENS, J.F., CRAIL, T.D., MATHIAS, P.T., and HEPPNER, E.A.
The effect of channel heterogeneity on fish communities in agricultural streams in Sandusky and Seneca Counties of Ohio
May 17-21, 2010
at the
University of Toronto
Toronto, Ontario

Today’s challenges and tomorrow’s solutions are rooted in our history with the Great Lakes.

Join us as we highlight science and policy research on challenges and solutions in the areas of:

Ecology  Invasive Species
Limnology  Climate Impacts
Contaminants  Watershed Interactions
Fisheries  Water Quality & Quantity
Habitat  and More!

The 53rd International Association for Great Lakes Research conference will explore how far research science in the Great Lakes and large lakes around the world has come over the decades, highlighting the science and policy research that has helped to improve and protect some aspects of the Great Lakes. Today’s challenges and tomorrow’s solutions are rooted in this history as many of yesterday’s problems continue or have resurfaced today. Science and policy research presented in the areas of ecology, limnology, habitat, fisheries, invasive species, contaminants, climate impacts, watershed interactions, water quality and quantity will become part of the solutions for the future!
“Can I make the Great Lakes a better place?”
Yes. You absolutely can.

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