



Cornell Biological Field Station staff attend International Association of Great Lakes Research Conference

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Eight staff from the Cornell Biological Field Station recently attended the 61st Annual Conference on Great Lakes Research hosted by the International Association for Great Lakes Research (IAGLR). Our team included Field Station Director Lars Rudstam; Senior Research Associate Jim Watkins; Great Lakes Laboratory Research Technicians Gabriella Doud, Chris Marshall, and Beth Whitmore; Extension Educator Dave White from New York Sea Grant; and graduate students Toby Holda and Annie Scofield. The conference was held from June 18th – June 22nd at the University of Toronto Scarborough in Ontario, Canada. The conference theme was *Great Science for Tomorrow's Solutions*.



At the conference, our team presented various research projects centered on the Laurentian Great Lakes including Lake Erie, Lake Huron, Lake Michigan, Lake Ontario, and Lake Superior. Cornell Biological Field Station members also attended talks of other researchers from the region and had the opportunity to learn about further work being done on the lakes. Additionally, this conference was unique in that researchers from the Great

Lakes of Africa were invited to present. By attending the IAGLR conference, Cornell Biological Field Station members were able to discuss their research and that of others, bouncing ideas and questions off regional researchers.

Research Technician Gabriella Doud presented “Invertebrate Predator Effects on Daphnia and Other Zooplankton Species” at the IAGLR conference. Doud used Lake Ontario summer samples from 1997-2016 to assess the biotic and abiotic factors impacting cladoceran and copepod population dynamics. Doud determined that Lake Ontario’s species composition changes with the biological shift in top predatory cladocerans. Doud found that when *Bythotrephes* is the top invasive predatory cladoceran, *Daphnia galeata mendotae* and *Leptodora kindtii* are present. Furthermore, when *Cercopagis* is the top invasive predatory cladoceran, *Daphnia retrocurva*, *Holopedium gibberum*, *Polyphemus pediculus*, and *Leptodora kindtii* are present. The conclusions are that cladoceran populations are likely correlated with *Cercopagis* and *Bythotrephes* shifts, while copepods are not affected. Additionally, *Bythotrephes* is related to alewife populations while *Cercopagis* showed an inverse relationship with chlorophyll.

Research Technician Beth Whitmore presented “How Improving DNA Barcoding Libraries Can Improve Zooplankton Monitoring in the Great Lakes” at the IAGLR conference. Whitmore discussed how DNA barcoding libraries are built, how the libraries are useful, and potential future research that can be done with DNA libraries. DNA barcoding libraries are built with individual zooplankton specimens that taxonomists have identified and sent for genetic processing. The DNA sequence is uploaded to a global database to assist identifying uncommon or new species, like recently discovered non-native cryptic species *Thermocyclops crassus*, *Brachionus leydigii*, and *Bosmina eubosmina maritima*. Whitmore further examined the opportunities that the library could provide, like early detection of invasive species,

improving the taxonomic expertise of the community, and the potential to help inform watershed managers.

Research Technician Chris Marshall presented “Parasitic Copepods of the Laurentian Great Lakes: Genetic Barcoding of Ergasilidae.” Marshall further discussed the potentials of genetic barcoding, focusing on a specific family of parasitic copepod. *Ergasilidae*. *Ergasilidae* is unique in that only adult females are parasitic and are not permanently attached to their host, still retaining the ability to swim. The family’s species specialize to meet particular environments. *Ergasilidae* members also attach to hosts in different locations, from the gills to fins. Marshall emphasized the potential of further DNA barcoding to resolve disputed taxonomic classifications and increase the effectiveness of non-native and invasive species identification. Parasitic copepods are often underrepresented in taxonomy. Cornell Biological Field Station is quickly becoming a zooplankton taxonomic center, especially in aiding with Laurentian Great Lakes DNA barcoding.

Department of Natural Resources graduate student, Annie Scofield, was presented with The 2018 Chandler-Misener Award with James Watkins, Brian Weidel, Frederick Luckey, and Lars Rudstam for the paper “The deep chlorophyll layer in Lake Ontario: extent, mechanisms of formations, and abiotic predictors.” IAGLR states that the annual award honors the author(s) of a recently published peer-reviewed paper judged to be “most notable” based on originality, contribution, and presentation.

Cornell Biological Field Station attends the Conference on Great Lakes Research hosted by the International Association for Great Lakes Research (IAGLR) annually, and enjoys building upon work from previous years in addition to presenting new findings. The conference is very helpful for sharing ideas and insights. Our attendees appreciate the opportunity to connect with great people conducting exciting research. The conference site alternates between U.S. and Canadian cities, and next year’s conference is at SUNY Brockport.



Jim Watkins discussing CSMI 2018. Image courtesy of Robin Rozon (www.twitter.com/rockinrobin03)