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The Siscowette

Great women doing great science in the Great Lakes

FEATURED RESEARCH

Trebitz et al. 2010. Status of non-indigenous benthic invertebrates in the Duluth-Superior Harbor and the role of sampling methods in their detection. J. Great Lakes Res. 36:747-756.

Invasive species can cause considerable ecological and economic damage, so it is important to have a monitoring system in place to detect new arrivals early enough to mount an effective response. But how could early detection monitoring be accomplished most efficiently, given time and budgetary constraints?

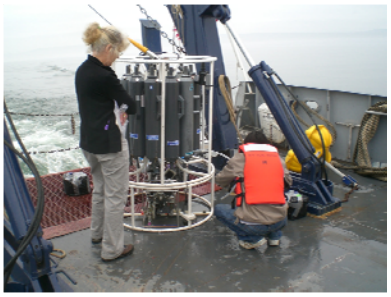
Anett Trebitz and her colleagues sought to answer that question. They conducted intensive sampling in a known exotic species 'hotspot', followed by numeric 'what-if' analyses to determine methodological efficiencies. One major finding: combining multiple search strategies is better than traditional single-gear monitoring. Through their efforts, they discovered several new invertebrate exotics in the Duluth-Superior Harbor.

Anett is a research ecologist with the US EPA Mid-Continent Ecology Division in Duluth. She received her MS from the University of Tennessee and her PhD from the University of Wisconsin-Madison.

Annett cares about how people affect aquatic ecosystems, and currently is part of a team studying linkages between watershed development and the health of Great Lakes coastal wetlands.

Anett Trebitz

FEATURED PROFESSIONAL



Stephanie Guildford aboard the RV Blue Heron with PhD student Rozhan Zakaria

In the world's largest deepest lakes, phytoplankton photosynthesis is an important source of new carbon that fuels whole lake productivity. Research by Stephanie Guildford, an Associate Professor at the University of Minnesota-Duluth, focuses on determining rates and controlling factors on primary production (PP) and, importantly, fates of PP.

Great Lakes, especially those with low nutrient concentrations and low phytoplankton biomass, pose extreme logistical challenges. Stephanie and her colleagues use advanced fluorometric instruments to characterize phytoplankton composition and photosynthetic capacity at highly-resolved spatial and temporal scales.

Using data collected from Lake Superior during five cruises in 2010, Stephanie's lab and colleagues at UMD are studying the deep chlorophyll layer (DCL). In particular, is the DCL light limited, nutrient limited, controlled by grazers, or the sinking of phytoplankton? What links exist between the DCL and the vertical migrating zooplankton *Limnocalanus* and *Mysis*? Do these zooplankton feed in the DCL and, if so, how much of their productivity is derived from the DCL? Do the phytoplankton in the DCL use the nutrients excreted by the migrating zooplankton? If so, the connection between the DCL and migrating zooplankton may be an important control point of primary production.

FEATURED STUDENT OR POSTDOC

Jessica Van Der Werff is a Master's student in Water Resources Science at the University of Minnesota–Duluth. Her keen interest in water resources and their management began during her undergrad years at the University of Wisconsin-Stout. During this time, she obtained skills and experience in an aquatic ecology laboratory and as a water quality intern in southeastern Minnesota.

Jessica's Master's research focuses on nutrient and light stress in phytoplankton in Lake Superior. The first challenge is to collect phytoplankton and water samples at this vast scale, which means multiple cruises for Jessica throughout the summer months. This is followed by sophisticated analytical techniques (e.g., bioassays and fluorometry) to measure key indicators of stress and nutrient composition of water.

Jessica's research occurs within the framework of a larger project on nutrient cycling dynamics, translocation of nutrients by biota, and overall productivity of Lake Superior. By describing the spatial and temporal patterns in indicators of nutrient stress in this system, Jessica will contribute important information about nutrient cycling in Lake Superior.

As Jessica plans her second summer of research cruises, she is looking forward to presenting preliminary data at the 2011 IAGLR conference in Duluth.

Jessica Van Der Werff

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