

## ORAL PRESENTATION

### THE ONGOING SAGA OF SIZE CHANGE IN THE GREAT LAKES PLANKTONIC DIATOM COMMUNITY

Andrew J. Bramburger<sup>1</sup>, Euan D. Reavie<sup>1</sup>, Gerald V. Sgro<sup>2</sup>, Lisa R. Estep<sup>1</sup>, Victoria L. Shaw-Chraïbi<sup>3</sup>, and Robert W. Pillsbury<sup>4</sup>

1. Natural Resources Research Institute, University of Minnesota Duluth, Duluth MN, 55812, USA.
2. John Carroll University, University Heights, OH, 44118 USA
3. Tarleton State University, Stephenville TX, 76401, USA
4. University of Wisconsin Oshkosh, Oshkosh, WI, 54901 USA

The planktonic diatoms of the Laurentian Great Lakes have exhibited a marked decrease in mean cell size over the past ~115 years. Both taxon-specific, demographic cell size changes and community level shifts towards dominance by smaller-celled taxa contributed to this overall pattern. The taxonomic composition of the Lakes has changed over this same period, and colonization and extinction events have doubtless contributed to this trend as well, but the relative influences of these phenomena are more difficult to quantify. Here, we examined the timing of diatom species' first and last appearances in the sedimentary record in the Great Lakes as a function of cell size. In all 5 lakes, the pattern of establishment or extirpation of differently-sized taxa through time can be represented as a negatively-sloped cubic curve. The largest taxa had their first appearances in Great Lakes sediments early after the first European colonization of the region. Across the basin, no "large" taxa were established after ~1940, and disappearances of these larger taxa from the sedimentary record have accelerated over the last quarter century. Appearances and disappearances of smaller-celled taxa, on the other hand, have occurred at relatively consistent rates throughout the period in question. Differences in the timing of establishments and extirpations of large vs. small taxa have contributed to overall cell size decreases in the lakes over the last century, and subtle changes in establishment and extirpation rates are reflective of the changing stressor regimes in the lakes through time.