ORAL PRESENTATION

DIATOM INDICATORS OF DISTURBANCE IN U.S. GREAT RIVERS

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The Environmental Monitoring and Assessment Program for Great River Ecosystems (EMAP-GRE) aims to evaluate conditions of the Ohio, Missouri, and upper Mississippi Rivers using a variety of physical, chemical and biological indicators. Algae are included in this suite of indicators, and this study evaluates the ability of phytoplankton and periphyton diatoms to track stress in the rivers. One hundred eighty four periphyton and 174 phytoplankton samples from the river headwaters to the confluence at St. Louis were analyzed. Both phytoplankton and periphyton were shown to be reliable disturbance indicators, although each group of diatom indicators captures different stressor aspects. Periphyton was a strong indicator for both agricultural and developmental disturbance, the latter representing stressors such as percent development and proximity to urban areas. Phytoplankton was the strongest indicator of agricultural disturbance but did not well reflect developmental stressors. Diatom indicators were also evaluated at various spatial scales with preliminary results indicating disturbance is most reliably evaluated using a geographically broader model. These new diatom-based tools will be presented highlighting differences between periphyton and phytoplankton and comparing results to concurrently developed soft algae indicators for the rivers.