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# AQUATIC SCIENCES: GLOBAL CHANGES FROM THE CENTER TO THE EDGE

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## Abstract Book 2010 Summer Meeting

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WATERSHED IMPLICATIONS OF EARTHWORM INVASION AT THE  
HEADWATERS OF THE MISSISSIPPI

The spread of terrestrial earthworms into previously earthworm-free ecosystems is causing a cascade of ecological changes. Invading earthworms alter forest litter decomposition and nutrient cycling; however, the implications of these changes for watersheds are little understood. This study investigates the possible impacts of invasive earthworms on dissolved organic matter (DOM) and nutrient characteristics in six lakes at the headwaters of the Mississippi River. We hypothesize that earthworms mobilize terrestrial nutrients to increase Nitrogen (N) and Phosphorus (P) availability in lakes, thereby stimulating lake microbial respiration. Lake water was collected four times during the summer of 2009 and analyzed for dissolved organic carbon (DOC) and dissolved organic phosphorus (DOP). Microbial respiration was measured by incubating filtered water and measuring changes in dissolved oxygen by membrane inlet mass spectrometry (MIMS) under four different nutrient treatments (control, +N, +P, and +N,P). DOC and DOP concentrations were variable between lakes, but did not co-vary with earthworm presence. The most invaded lake displayed reduced nutrient limitation and increased microbial respiration when compared with the most pristine lake, which was consistent with our hypothesis.