

Poster presentation preferred

Student presenter

Assessing the ability of microbes in freshwater systems to degrade aromatic lignin monomers for respiration and growth. S. E. A'Hearn, A. J. Burns, P. J. Hernes, Department of Land Air and Water Resources, UC Davis, Davis, CA.

Dissolved lignin is an important carbon source for food and energy in many freshwater ecosystems, yet there exists a blind spot in the scientific understanding of its degradation and use in these ecosystems. Lignin is difficult to study because the molecules are complex, heterogeneous, and highly recalcitrant. These characteristics also prevent many organisms from utilizing it as a food source, but it still enters the biologically-available carbon pool via some pathways. Microbial degradation could be one of these pathways, but the existence of this mechanism and its importance for ecosystem carbon cycling have not been extensively studied. This study seeks to fill that knowledge gap by assessing the capacity of microbial inocula to degrade aromatic lignin monomers. We used UV-Vis spectrometry to examine degradation, TOC analysis to understand changes in total carbon, and microbial mass to assess microbial production. The goal of this experiment is to characterize the role that freshwater microorganisms play in degrading and utilizing aromatic lignin monomers. This research will be important for understanding how freshwater food webs connect microbial communities to lignin-derived carbon sources, the role lignin plays in the transfer of carbon and energy in freshwater ecosystems as a whole, and how this relates to the broader biogeochemical carbon cycle.