

EMMA McCLELLAND & JAMES WOOD. Department of Natural Sciences and Mathematics. West Liberty University, Comparison of microbial respiration and carbon loss in the upper Ohio River and selected tributaries in the Northern Panhandle of West Virginia

Stream microorganisms can drive ecosystem processes, such as carbon cycling; however, changes in water chemistry can slow down or speed up the rate that carbon moves through the ecosystem. When microorganisms respire, inorganic carbon is released back into the system. In this study, we investigated the influence of water chemistry on microbial respiration and the breakdown of organic matter using two types of standardized substrates: labile cellulose sponge and recalcitrant red oak wood veneer. The rate of breakdown of these substrates correlated positively with increasing microbial respiration rates. Water chemistry data was used to assess for correlation with the microbial respiration rates. Specific conductance (SPC) was found to be a significant predictor model of microbial respiration rates; as SPC increased, microbial respiration rates increased. These correlations could provide us with new ways to predict the effects of stressors on multiple aspects of aquatic ecosystems, such as carbon cycling.