

EMILY HUFF and JAMES WOOD, Department of Natural Sciences and Mathematics, West Liberty University, West Liberty, WV, 26074. Assessment of water chemistry's influence on carbon cycling and microbial respiration using standardized substrates in Upper Ohio River watersheds

Water chemistry influences the rate that carbon is processed in streams, but few studies have investigated the role of carbon quality on carbon processing rates. We investigated how carbon quality influences respiration rate and breakdown rate using standardized substrates composed of labile cellulose sponge and a recalcitrant red oak wood veneer. We found that respiration rates of labile substrates were 10 times higher than recalcitrant substrates, and breakdown rates were 6 times faster than recalcitrant substrates. We looked at streamwater nitrogen and phosphorous to see its correlation on both substrates. We found that nitrogen positively affected cellulose breakdown rates it was also found to positively affect both wood respiration and breakdown rates. Phosphorus positively affected both cellulose respiration and breakdown rates. Assessing water chemistry's influence on microbial activity by quantifying respiration and microbial driven carbon cycling rates can provide insight into aquatic ecosystems function relevant to the management of freshwater resources. Developing a better understanding of water chemistry's effects on microbial communities will provide needed insight into the management of both the structure and function of freshwater ecosystems.