Aida Jimenez Esquilin, Zachary Harris and Caleb Duncan, Natural Science and Mathematics department, University of Charleston, Charleston, WV, 25304. Microbial substrate utilization in soils of two WV watersheds with different vegetation structures.

A West Virginia watershed planted with *Picea abies* (Norway spruce) in 1973 shows evidence that the coniferous stand has altered streamflow, N dynamics, and the soil organic layer in the watershed after 45 years. Microbial populations related to the N cycle have been studied extensively, but the metabolic versatility of microbial communities in the soil under the coniferous stand is still not well understood. We hypothesized that changes in vegetation structure would parallel changes in carbon utilization patterns of the microbial communities. Soil samples were collected under the Norway spruce stand and compared to a control watershed with a species composition of a typical WV hardwood forest. We collected composite soil samples along a 10 m transect and between the two sides of the weir at both watersheds and used community level physiological profiling to examine the microbial community utilization of carbon sources. Principal component analysis of the substrate data shows evidence that the microbial communities in the soils under the coniferous stand are functionally distinct. Communities in soils under Norway spruce showed 31% more degradation of cellobiose and 35% more degradation of amino acids than the communities under the Hardwoods soil ($p < 0.001$). We also measured Nitrification by most probable number of *Nitrosomonas* and the results show that nitrification was significantly lower under the spruce stand ($p = 0.039$). These results point at a possible change in the nutrient cycling in the soils under Norway spruce that may have implications for the biogeochemistry of the soil.