Alder Alters Soil Microbial Function: A Keystone Species? (S03-hart172106-Poster)

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Abstract:

We assessed the relative effects of red alder versus conifers on the functional diversity of the soil microbial community using patterns of sole carbon source utilization and enzyme activities in each of three adjacent forest stands: pure conifer, mixed alder-conifer, and pure alder. The activities of nine enzymes involved in lignocellulose degradation and hydrolysis of organic phosphate and sulfate esters were all significantly greater in pure alder soils compared to either pure conifer or mixed conifer-alder soils. Bacterial and fungal carbon substrate utilization patterns in soil from pure conifer stands differed significantly from both pure alder soils and mixed conifer-alder soils, while there was no difference in substrate utilization patterns between pure alder and mixed alderconifer stands. Previous research at this site has shown that the size and activity of the soil microbial biomass is higher in the mixed and pure alder stands compared to the pure conifer stand. Our results suggest that, in addition to an overall increase in microbial biomass and activity, the inclusion of alder may significantly alter the functional diversity of the microbial community.

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