Characterizing Communities of Ammonia-Oxidizing Bacteria in Forest Soils of the Cascade Mountains, Oregon. (S03-bottomley103402-Poster)

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Abstract:

Although N cycling processes are well studied in N-limited coniferous forest ecosystems of the Pacific NorthWest, the composition/ characteristics of their ammonia oxidizing bacterial communities are unknown. Microbial community DNA was extracted from soil samples taken along transects running across adjacent meadow and forest sites. A 491bp segment of the gene encoding for ammonia monooxygenase (amoA) was amplified by polymerase chain reaction (PCR), and subjected to terminal restriction fragment length polymorphism (T-RFLP) analysis. One fragment from Cfu1 (66bp) and one from Alu1 (392bp) were prominent in all samples; other fragments were found in fewer soil samples and made small contributions to the PCR products. Four different amoA sequences were identified among ammonia oxidizer isolates recovered into pure culture. One isolate possessed the dominant T-RFLP fingerprint observed in all soil samples, and shared 99% similarity with Nitrosospira sp. Ka4 (cluster 4). 3 isolates showed close similarity (94 to 97%) to Nitrosospira sp. Nsp1 (cluster 3). The T-RFLP fingerprints of the cluster 3 isolates coincided with T-RFLPs associated almost exclusively with

meadow samples.

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