

SOIL MICROORGANISMS, BIODIVERSITY, AND MINELAND RECLAMATION¹

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Abstract. Microorganisms in soil, primarily archaea, bacteria, fungi and protists, constitute the majority of biodiversity in most terrestrial communities. As with other organisms, microbial diversity in any given community is thought to be a function of interactions among organisms and environmental heterogeneity. Because of their ubiquitous distribution and biochemical activity in soil, microbes have important direct and indirect influences on diversity of other organisms, especially plants. Plant diversity is affected by plant-microbe interactions such as mycorrhizae, rhizosphere interactions, symbiotic nitrogen fixation, competition, and disease. Microbial activity can influence plant diversity through alteration of soil environmental conditions and increasing environmental patchiness. In turn, microbial diversity appears to be strongly influenced by plants in similar ways. Mineland reclamation practices that increase environmental heterogeneity and patchiness, minimize topsoil degradation, advance microbial activity, and promote species interactions may result in development of more diverse communities on disturbed sites.

Additional Key Words: mycorrhizae, rhizosphere interactions, symbiotic nitrogen fixation, plant diversity

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