

A Culture-independent Approach to Understanding the Role of Soil Fungal Communities in *Bromus tectorum* Stand Failure

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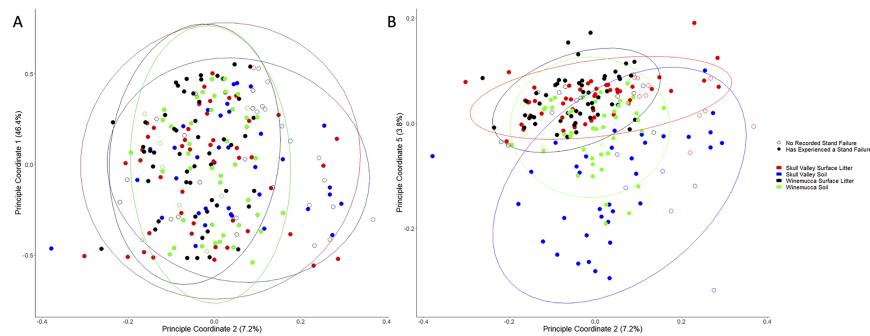
November 14, 2020

Abstract

Bromus tectorum (cheatgrass) is an invasive annual grass that has colonized large portions of the Intermountain Western United States. Cheatgrass stand failures have been observed throughout the invaded region, the cause of which may be related to the presence of several species of pathogenic fungi in the soil or surface litter. In this metagenomic study, we compared the fungal communities between sites that have and have not experienced stand failure. Samples were taken from the soil and surface litter near Winnemucca, Nevada and in Skull Valley, Utah. Our results show distinct fungal communities associated with stand failure based on both geography and sample type. In both the Winnemucca and Skull Valley surface litter, there was an elevated abundance of the endophyte *Ramimonilia apicalis* in samples that had experienced a stand failure. Winnemucca surface litter stand failure samples had increased abundance of a potential pathogen in the genus *Comoclathris*. Skull Valley surface litter stand failure samples had increased abundance of the known cheatgrass pathogen *Clariireedia capillus-albis* while the soils had increased abundance of potential pathogens in the genera *Olpidium* and *Monosporascus*.

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log abundance

