

## Sagebrush recovery post-wildfire: environmental factors

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Sagebrush steppe ecosystems historically have a wildfire return interval of multiple decades (30-100+ years) in the Great Basin region of the western United States. Invasive grasses, including cheatgrass (*Bromus tectorum*), threaten to increase the frequency of wildfire in these shrublands through strong positive feedback between fire events and invasive grass expansion. Because sagebrush (*Artemisia* spp.) shrubs often require multiple decades to recover from wildfire events, the feedback between invasive grass expansion and wildfire frequency may reduce the recovery and persistence of sagebrush in the Great Basin. We postulate that environmental conditions in the first year following wildfire events may be an important component of sagebrush recovery, but this time frame and its associated environmental conditions are poorly understood. Our objectives are to understand the plot scale factors associated with post-wildfire sagebrush recovery. We will quantify the environments of 10 experimentally burned and 10 control unburned sagebrush shrubland plots with differing vegetation compositions and will track the changes to their environments and vegetation composition in the first year following an experimental burning treatment. Our analysis will include a suite of biotic and abiotic plot characteristics, including canopy cover, ground cover, sagebrush height, plant available soil nutrients, soil organic matter, seed bank density and composition, and soil erosion. By including these diverse measurements, we will be able to identify plot-scale biotic and abiotic components associated with sagebrush's initial recovery from wildfire. Understanding the plot-scale characteristics of sagebrush recovery in post-wildfire environments is critical for restorative efforts to prevent invasive species from increasing the fire return interval.