



Climate Change, Spring Snow, and the Future of Bluebunch Wheatgrass Populations

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In mid-elevation rangelands of the Intermountain West, climate change will shift the dominant form of winter precipitation from snow to rain. This shift in precipitation type could impact forage species by changing the timing and/or magnitude of resource availability, or through non-resource effects on key demographic transitions. To explore the possible effects of a shift from snow to rain, we used long-term observational data to build an integral projection model for bluebunch wheatgrass, a key forage species in sagebrush steppe. Our model showed that the survival of small genets was the most important driver of overall population growth. 70% of the interannual variation in survival was explained by total snowfall in February and March, but was only weakly related to total winter and spring precipitation. We propose that frost damage to meristems in years of low spring snow may be the best explanation for this pattern. Further work on spring snow and bluebunch growth may allow ranchers to anticipate year-to-year variability and future trends in forage production.

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