SEVERITY OF SHORT-INTERVAL REBURN MEDIATES COMPOSITIONAL SHIFTS IN FIRE-ADAPTED MONTANE SHRUBLANDS

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Montane chaparral is a shrub community dependent on fire for its persistence in areas where it intergrades with the dry mixed-conifer forests of northern California. In these fire-prone regions, irregular patterns of mixed-severity fire on the landscape historically created forest gaps and clearings where shrublands could persist. Decades of fire exclusion facilitated the invasion of conifer forests into these gaps, reducing the extent of shrub-dominated ecosystems. Evidence exists that large, stand-replacing wildfires of recent years may be reversing this trend in some areas. Previous studies have documented vegetative type-conversion to chaparral occurring where high-severity fire has eliminated forest cover. These state shifts are especially persistent in short-interval reburn areas, where conifer regeneration is often limited, and fire-adaptive strategies of chaparral species allow for post-fire shrub dominance. As an ecosystem, chaparral is well known to be tolerant of high-severity fire, though species typical to this ecosystem possess divergent post-fire regenerative strategies. These regeneration mechanisms are often broadly grouped into species that rely on soil seed banks for post-fire germination, and species that store carbohydrates in underground structures to facilitate post-fire sprouting. While burn severity- and interval-dependent vegetative shits are well studied, little attention has been given to the effects of these disturbance characteristics on the species composition of subsequent plant communities, given the divergent adaptive strategies represented therein. In order to assess the effects of differential severities on these groups, we examined shrub abundance and species composition across a spectrum of burn severity combinations in a 9,000 ha reburn area with a 12-year interval between wildfires in the Lassen National Forest, CA. Post-reburn floristic composition was dependent on burn severity in both initial and subsequent fires. Our results indicate that post-reburn reponse is not only interval-dependent, but varies with combined burn severity following reburns. The findings have implications for future fire behavior and landscape heterogeneity and resilience in the context of a warmer and drier climate in California.