



Research Brief for Resource Managers

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Prescription Burning Reduces Alien Grasses in Native Grassland Restoration

Keeley, J.E., Klinger, R.C., Brennan, T.J., Lawson, D.M., La Grange, J., Berg, K.N. 2023. A decade-long study of repeated prescription burning in California native grassland restoration. *Ecological Restoration* 2023: e13939.

In a new study, USGS scientists and partners have found that prescription burning can alter the balance between native and non-native grasses in California grasslands.

In Southern California, native bunchgrass communities dominated by *Stipa pulchra* are widely distributed in the state but often share dominance with non-native annual grasses. Restoration of these grasslands is focused on altering the balance of native to non-native grasses to favor the native perennial grasses. This study investigated the impact of burning on vegetation recovery.

Field studies headed up by USGS scientists Jon Keeley and Rob Klinger with partner Dawn Lawson found that in the first postfire year burning showed a 70% reduction in cover of non-native annual grasses, with *Bromus diandrus* exhibiting the greatest reduction, and there was minimal impact on the native *Stipa pulchra*, which recovered largely from resprouting. In the following three years *S. pulchra* recovered to levels comparable to controls whereas the non-native annual grasses remained well below control levels until the fifth year.

Management Implications

- Rx burning can alter the balance between native and non-native grasses in California grasslands
- Burning had minimal impact on long term recovery of native grasses but had substantial reductions in non-native grasses that persisted for up to four years.
- This response was repeatable with fires spaced 5 years apart.

An important scientific principle is evidence of repeatability. After 4 years a second Rx burn was conducted with similar results.

In conclusion, this study shows the potential for prescribed burning to alter the non-native composition of remnant stands of California native bunchgrass dominated by *Stipa pulchra*. The small changes in absolute cover of *S. pulchra* following burning indicated that increases in its relative cover were due to shifts in cover of non-native grasses and forbs. In this study the dominant non-native grass was the tall-statured aggressive *Bromus diandrus*, and prescribed burning produced substantial decreases in cover of that species. Particularly convincing is that this pattern was repeatable as seen in a similar reduction after the second prescribed burn.