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Research Brief for Resource Managers

Release:	Contact:	Phone:	Email:
February 2012	Jon E. Keeley	(559) 565-3170	*jon_keeley@usgs.gov*
	Marti Witter	(805) 370-2333	*Marti_Witter@nps.gov*
	Liz van Mantgem		*evanmantgem@usgs.gov*

Central and Southern California Team, USGS Sequoia and Kings Canyon Field Station, Three Rivers, CA 93271

Converting Chaparral to Grassland in 1944

Sampson, A. W. 1944. Plant succession on burned chaparral lands in northern California. University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California. Bulletin 685.

Sampson's 1944, 139-page bulletin is the first comprehensive summary of the basic ecological effects of fire on chaparral. It was written in the context of land use and the use of fire as a tool for chaparral management. A major emphasis of the review is the techniques for converting chaparral to grassland (pp.108 to 131). , **Frequent burning** was considered the most economically desirable of the conversion methods, over **hand methods** and **mechanical methods**. Hand methods included girdling, cutting and lopping, while mechanical methods included bulldozing, a caterpillar-cable method, and biological controls in the form of goat and deer grazing. Sampson warns that none of these methods are worthwhile if the slope is too steep or the soil is too thin.

To burn chaparral effectively and increase the amount of grassland forage, Sampson described two different strategies. One is **broadcast burning** on a two-year interval, which he says works best on non-resprouting (obligate seeding) chaparral. After broadcast burning, the remaining dead twigs and stems should be crushed by dragging a log over them and then reburning. It was expected that this strategy would give way to a good forage layer within about four years. The other strategy was **rotation burning** on an 8 to 10 year schedule.

Management Implications

- Frequent fire is the cheapest way to convert chaparral to grassland, either by bi-annual broadcast burning or by using an 8 to 10 year fire rotation method. It is most effective on non-resprouting species.
- Hand methods (cutting, chopping, lopping), mechanical methods (bulldozer, caterpillar-cable) and biological control can convert chaparral to grassland, but they are very expensive and labor intensive, and thus only make sense on the best of forage lands.
- Rural lands with poor soils and steep slopes should not be cleared by any means.

All of these type conversion strategies need to be weighed against their negative effects on natural resources. Taxpaying ranchers and stockmen were generally interested in making a better living off of their land by converting it to grassland, while agency land managers had to consider the broader effects of converting chaparral on soil quality, air quality and watershed conservation. Stemming from different goals and the lack of information on how these treatments affected chaparral ecosystems, controversy between private citizens and public land managers was evident then and still persists today.