



Research Brief for Resource Managers

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Three-year Mashing Operations for Better Deer Forage

Gibbens, R.P. and A. M. Schultz. 1963. Brush manipulation on a deer winter range. California Fish and Game 49: 95-118.

In the interest of increasing browse for deer populations on California chaparral lands, a **brush manipulation program** was conducted by the California Department of Fish & Game (CDFG) from 1955 to 1960. Specifically, they wanted to understand the response of different browse species to different manipulation techniques, with “mashing” being the one manipulation in common for all non-control plots. While total browse increased with all treatments (ranged from 13 – 106 lbs. per untreated acre to 80 - 2,765 lbs. per treated acre), the different browse species responded quite differently, and some desirable species were observed to suffer, especially from repeated burning (i.e. seeders and perennial grasses). The authors concluded that managers should tailor their treatments to their plant species life histories.

Fall burning seemed to be more effective than spring burning for seeding species like wedgeleaf ceanothus, chaparral whitethorn, yerba santa and Mariposa manzanita. For sprouting species like western mountain mahogany, flannel bush, redberry, honeysuckle, cherry, and interior live oak, mashing was adequate because burning didn't increase the number of sprouts. Grass yields increased three fold (600 lbs./acre to 1,500 lbs./acre) on burned plots, but yields dropped dramatically with the fourth burn season when the desirable perennial grasses died.

Management Implications

- Mashing and burning treatments had varying effects on the different browse species. Seeders initially thrived with burning, while sprouters only required mashing.
- Desirable perennial grasses died in the fourth year of burning. Likewise, seeders eventually failed to thrive after repeated burning. Flannel bush was a resprouter that responded favorably to burning.
- The authors concluded that brush manipulation should be planned on a species by species basis.

Between 2,000 and 5,000 feet in Madera County, 37-year-old chaparral stands were monitored using the line intercept and then the line point method on a total of 10,490 feet of permanent transect lines, sampled in the spring and the fall. Browse production, sprout utilization, and grass production were all measured with tagging, clipping, and weighing techniques. Cover, sprout density, seedling density, seedling mortality from both grass and shrub competition, and browse use by both deer and cattle were all measured. The different plot treatments included four brush manipulations after a 1954-55 winter mashing: (1) burned in early spring; (2) burned in late spring; (3) burned in fall; and (4) left unburned. Another unmanaged area was sampled in 1955, then mashed in the winter of 1955-56 and partially burned for a pre-treatment record.