

Appendix E: Defensible Space Maintenance & Gambel Oak

In general, residents in the Santa Fe Trails Ranch have made significant efforts to reduce fuels around their structures. They have and are continuing to thin trees, removing the lower limbs (ladder fuels) and attempting to clear the Gambel oak. The heavy woody material has been cut and stacked for firewood and the lighter material has been chipped and spread on the ground. While their efforts in reducing fuels provided by pinyon, juniper and ponderosa pine have produced a more defensible space around their homes, clearings in the Gambel oak are more troublesome. Residents we talked to complained about the aggressive sprouting that occurs after clearing the oak and the continual clearing process that is necessary to hold the oak brush in check.

Gambel oak is a native plant that is naturally associated with pinyon-juniper and ponderosa pine forests in southern Colorado. It is a deciduous shrub that is quite adaptable and easily finds a niche in the under story of these forest types as well as in relatively pure stands. It thrives on steep slopes as well as more moderate sites and on a variety of coarse and medium textured soils. Gambel oak grows in clumps that are interconnected by an extensive root system that is characterized by both shallow rhizomes and deep-feeding roots. These rhizomes send up numerous sprouts when the mature stems are removed or when injury occurs.

Eradication of Gambel oak is rare by any method and without complete kill prolific sprouting may occur from roots, rhizomes and basal stems. Treated areas usually assume a “thicket” like appearance several years after the initial work (1). Numerous chemicals and combinations of chemicals have been used with limited success to control Gambel oak. Mechanical treatment, such as cutting stems and burning, are common methods of removing oak brush but it usually results in aggressive sprouting. Biological control of sprouts with repeated browsing by goats has proven to be an effective means of near elimination of oak sprouts, however browsing by goats is not considered to be practical in all situations. Goats prefer Gambel oak leaves for forage and after several years of repeatedly defoliating the oak during the period before the oak leaves reach full growth most of the sprouts are killed (1).

On the Santa Fe Trail Ranch where Gambel oak has been cut and sprouting is occurring, the most likely treatment is one that repeatedly defoliates the oak during mid summer. The positive effect of this repeated defoliation has been demonstrated using herbicides (1), prescribed burning (2), and browsing by goats (1). Defoliation may be accomplished by:

- mowing or chopping sprouts during mid summer
- using goats to browse the leaves and young shoots during mid

- summer
- using an approved herbicide following instructions on the label kill or defoliate the sprouts during mid summer which coincides with the time when leaf growth is reaching maximum. Some herbicides are restricted and require an Applicator's License to use. It is suggested that the Las Animas County Weed Specialist be contacted for local advice and guidance prior to using a herbicide (719-846-4468).

New Mexico State University Cooperative Extension Service Circular 597 contains a lists of herbicides for controlling Gambel oak and other undesirable brush species (3). Table 1 contains an excerpt from Circular 597.

Table 1. Herbicides for controlling Gambel oak (5)

| Trade name and product rate/acre | Herbicide common name and active ingredients | Spray volume per acre or individual plant | Time of application | Remarks |
|--|--|--|---|---|
| Spike 20P ¼ oz per 22 sq ft when treating clump or thicket. p | Tebuthiuron | Individual plant treatment. Anytime of year | Optimum is prior to rainy season | Distribute uniformly under canopy. Do not apply to frozen or snow covered ground |
| OR Spike 20P 3 ¾ to 7 ½ lbs. pellets | OR Tebuthiuron ¾ to 1 ½ lb. | Aerial broadcast | Anytime during the year. Optimum is prior to rainy season. | Distribute uniformly under canopy. Do not apply to frozen or snow covered ground |
| OR Velpar L 2-4 ml per 33 sq ft of canopy diameter | OR Hexazinone | Individual plant treatment. Anytime during year | Optimum is prior to growing season | Apply undiluted Velpar L to soil within 3 ft of stem base. Use exact delivery handgun applicator. Do not apply to frozen ground. Do not use on clay soil. |
| OR Arsenal 1 gal per 100 gal water | OR Imazapyr 2 lb per 100 gal water with 0.25% surfactant | Individual plant treatment or ground application | Anytime during growing season when growing conditions are good. | Spray to wet. |

Bibliography

- (1) Engle, D.M., C.D. Bonham, and L.E. Bartel. 1983. Ecological characteristics and control of Gambel oak. J. Range Manage 36(3)
- (2) Harrington, M.E. 1989. Gambel oak root carbohydrates in roots of Gambel oak sprouts following herbicide treatment. J. Range Manage 42(6)
- (3) Duncan, K.W., K.C. McDaniel and M.J. Renz. 2005. Chemical

weed and brush control for New Mexico rangelands. New Mexico State University Cooperative Extension Service Circular 597. 18p.