

Sheep Grazing in Conifer Plantations

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During the summer of 1978, a lightning-caused fire burned over 2,000 acres of mixed conifer forest in the Tahoe National Forest of California. By the following spring much of the area had been replanted to conifer seedlings, a standard procedure following wildfires.

Typical of the Northern Sierras, wildfire and other surface perturbing activities encourage resprouting of native brush species. On this site, deerbrush is the dominant shrub and, as a result of the wildfire, sprouted profusely throughout the burned-over area, causing the area to be completely reoccupied with a brush-dominant cover one year after the fire. Needless to say, the hardy brush won the competition for limited soil moisture required to establish young conifers, and seedling survival in the plantation dropped to a mere 10%. The plantation was considered a failure.

If this fire had burned five years earlier, the plantation

would have been treated with an aerial application of phenoxy herbicide to retard brush sprouting and promote the establishment of young conifer seedlings. However, foresters were compelled to look elsewhere for tools to manage the competing brush in forest plantations following a court suggested suspension of aerial herbicide application by the United States Ninth Circuit Court. Likewise, a vocal component of citizens in the mountain community of Downieville, located adjacent to the burned-over lands, provided added incentive to find an alternative method for controlling brush with herbicides.

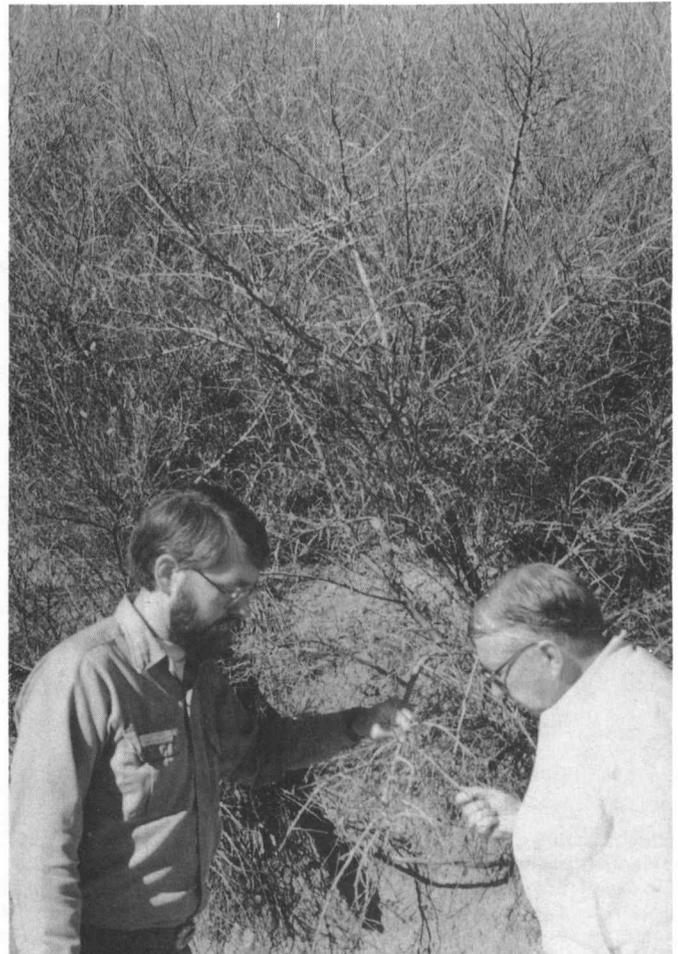
Control Options

The timing was critical to establish this plantation before the brushfield totally dominated the burn. Aerial application of herbicide would have been the most cost efficient of the traditional control methods, with current costs averaging

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Free growing ponderosa pine in grazed area of plantation.



Deer brush, (*Ceanothus integerrimus*) ungrazed area.

about \$70 per acre. Mechanical treatment, (where slope and soils permit), costs from \$100 to \$200 per acre. Hand clearing brush, the most costly method, averages several hundred to over one-thousand dollars per acre, and would have provided only short-term results because of the immediate resprouting characteristic of brush cuttings.

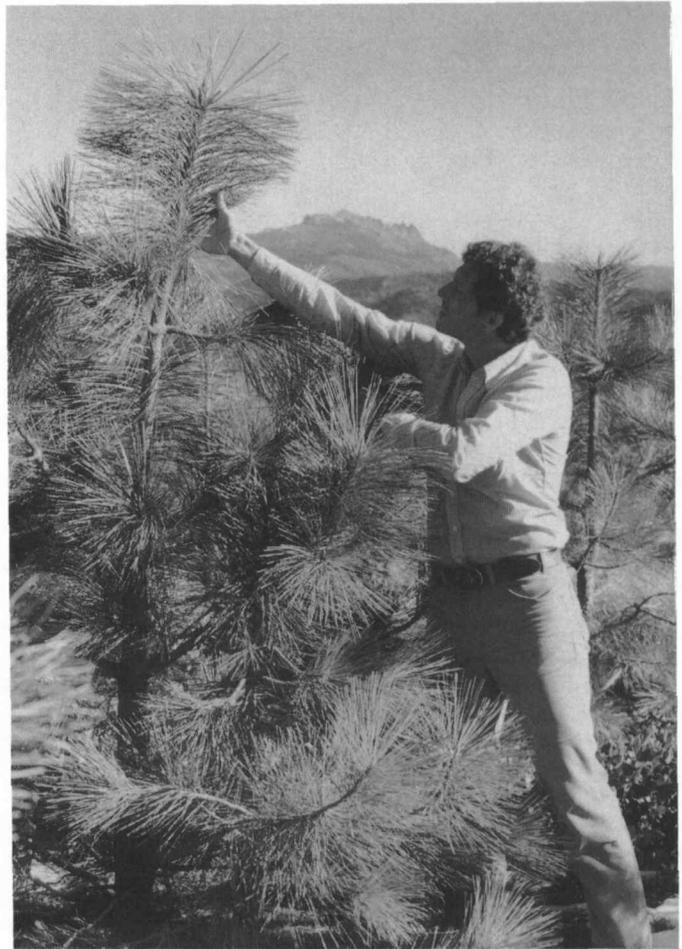
A literature search indicated livestock grazing of plantations to control invading brush would be a token approach at best. Most plantation grazing efforts had been focused in other areas of the country and were usually grazed by cattle. Also, documented applications in California pointed to high levels of damage and mortality to planted seedlings by indiscriminant browsing and trampling by livestock. Silviculturists had little reason to consider grazing within plantations when the culture of professional values forbade grazing anywhere near young trees. Although several examples of plantation grazing can be found in California, standard procedures called for grazing only after young trees had become established, the plantation had been treated by other methods, and resprouting brush was well on the way to becoming established. To graze the same year young seedlings are planted, and graze heavily to keep the brush down, was indeed a novel effort. However, a couple of motivated silviculturists, David Thomas and Phillip Aune of the Tahoe National Forest, with some encouragement from a range conservationist ranger (the author), worked out a program to graze the plantation with sheep in lieu of other more costly methods of brush control. Calvert McPherrin, of McPherrin Sheep Co. near Live Oak, Calif., comes from a second generation of woolgrowers, with years of experience grazing sheep in this part of the Sierras. Considering McPherrin's success at grazing sheep in a nearby burned-over area, his was a logical operation to contact as prospective grazer on the new plantation.



Exclosure within plantation showing grazed area in background.

An agreement was reached to graze 1,000 head of dry ewes over a 600-acre section of the burn. Grazing would begin immediately, with an objective of heavy grazing in areas planted three years or more, and light to moderate in plantations less than three years old. The grazing season would be from June through October.

The results were most gratifying. Sheep have successfully

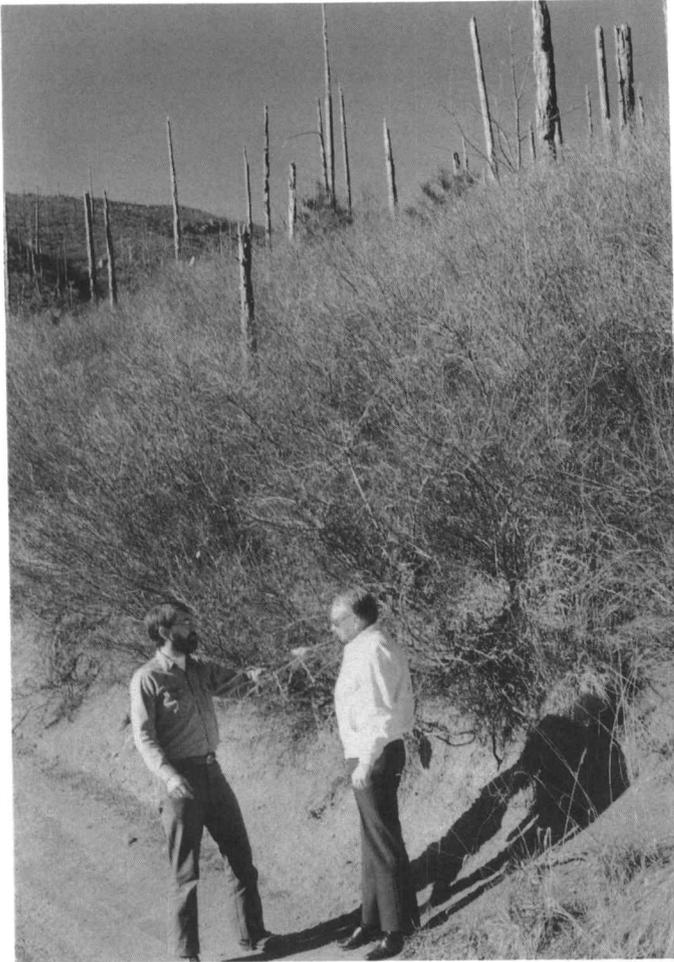


Young pine growing free from brush competition through grazing.

grazed this area since 1981 and have met the pre-planned objective of reducing brush competition favorable for conifer establishment. Silviculturists were pleased to see a savings with no monetary investment in plantation maintenance. The grazing permittee, Calvert McPherrin, was likewise pleased to see his dry ewes leave summer range in excellent condition for winter lambing.

As with any grazing prescription used to accomplish a vegetation management objective, sheep grazing within plantations requires careful planning, execution, and monitoring to meet the desired outcome. Following are some management guidelines suggested for consideration in plantation grazing:

- 1) Select only those areas with brush species found palatable to sheep. (deerbrush, bittercherry, black oak-sprouts, and wedgeleaf ceanothus are highly palatable. Greenleaf manzanita, whitethorn, and chinquapin have low palatability). Browsing of conifer seedlings is assured if desirable brush is not available!
- 2) Season of use is a critical factor in utilization of less desirable browse species. Greenleaf manzanita and whitethorn will be browsed early in the season. Desirable species will be utilized season-long.
- 3) Age of sheep appears to be critical to minimize browsing damage to conifers. Lambs and young sheep show a



Ungrazed portion of burn, brush averages 8 feet in height.

tendency to graze anything, conifers included, while older sheep are more selective to the more palatable species only.

4) Sheep require water sources relatively close to the plantation being grazed; if natural sources are not available, provisions for water must be made.

5) Bedding and "shading up" areas need to be provided in areas on or near the plantation where damage can be sustained.

6) Close coordination with the livestock operator is critical to the success of grazing in plantations. Direct contacts with the herder are necessary to "force feed" some areas to achieve desirable results. Periodic monitoring by a silviculturist is also critical.

Advantages of Plantation Grazing

1) Obtain vegetation control of unwanted and competing brush in forest plantations where palatable brush species are present.

2) Create up to 30% scarification of vegetation for site preparation to plant trees.

3) In this situation, the Forest Service received \$1,350.00 per year in grazing fees on the allotment, resulting in a net income of .30 to .40 cents per acre per year of plantation grazed. Traditional methods of maintenance would have resulted in considerable monetary investments to accomplish the same results.

4) Wildlife biologists' assessment of the area grazed revealed enhanced values to the wildlife habitats for a number of wildlife species by providing a variety of openings and age classes of brush.

5) Grazing of livestock is a socially accepted form of plantation maintenance and, in this area where a number of local citizens were opposed to herbicide spraying, obtained excellent local acceptance.

6) Damage to tree seedlings was limited to 1 to 2%.

7) Sheep effectively decreased vegetation densities of preferred brush species and maintained or increased the range value by keeping desirable vegetation to a low height, therefore utilizable to livestock and wildlife on a sustained basis.

Summary

Sheep and cattle grazing of conifer plantations in California National Forests has been used to some extent for several years. However, the potential for this kind of grazing has not been significantly realized. Currently, draft National Forest Land Management Plans in California project approximately 50,000 acres of regeneration harvest (clearcut) per year on lands that will resprout to palatable brush species if not controlled.

Certainly livestock grazing can provide a significant contribution to plantation site preparation and maintenance, save considerable expenditures of dollars otherwise committed to this same effort, and provide food, fiber, and products otherwise not realized from these lands. Today, many areas of our public grazing lands are the focal point of competing pressures from other uses and users; perhaps we should take a look at providing lands such as forest plantations for grazing uses as an alternative to some of those areas traditionally grazed and under the eye of critical interests. After all, much of our public land grazing in the future must consider the objective of vegetation management through livestock grazing. Such an emphasis is not only good business, it's good range management!

Literature Cited

- Thomas, David F. 1985.** The use of sheep to control competing vegetation in conifer plantations on the Downieville Ranger District, Tahoe National Forest: 1981-1984. Symposium for Weed Control for Forest Productivity in the Interior West. Spokane, Wash., February 6, 1985.