

## SHEEP AND DEER GRAZING ON LODGEPOLE PINE PLANTATIONS

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The pumice region of central Oregon covers a little more than two million acres, most of it covered by ponderosa pine or lodgepole pine. Most of this area is administered by the U.S. Forest Service. Livestock grazing has been carried on intermittently since the late 1800s. Differences of opinion between professional foresters and graziers as well as occasional browsing damage to pine seedlings have resulted in livestock grazing being maintained at a level below its optimal potential.

This study was designed to quantify tree damage by sheep and deer as influenced by season of grazing and forage conditions. Sampling areas were in Klamath County, Oregon, at the eastern edge of the Chemult District of the Winema National Forest. All study plots were established on the lodgepole pine/bitterbrush/western needlegrass habitat type since it comprises such a large percentage of the pumice region.

### EXPERIMENTAL PROCEDURES

Four forage classes were established in order to evaluate the effect of associated forage on tree browsing.

High Shrub - High Herbaceous (HS-HH) ----	(>1400 shrubs/ac >67 lb/ac)
High Shrub - Low Herbaceous (HS-LH) ----	(>1400 shrubs/ac, <67 lb/ac)
Low Shrub - High Herbaceous (LS-HH) ----	(<1400 shrubs/ac, >67 lb/ac)
Low Shrub - Low Herbaceous (LS-LH) ----	(<1400 shrubs/ac, <67 lb/ac)

Two sites for each forage class were sampled in two geographic areas (Bootleg and Jack Creek) for a total of four sites per forage class or 16 sites total. Ten transects, each 100 feet long, were randomly located in each site for a total of 80 transects per area or 160 total. Shrub density and herbaceous production were measured solely to categorize sites into forage classes. Density was measured at the beginning of each field season and herbaceous production was measured not more than three days before sheep grazing.

One hundred lodgepole pine seedlings were selected and tagged in each forage class for a total of 400 trees per geographic area. Criteria for selection were two-fold. First, trees had to be the nearest healthy seedling to each 20-foot point along each transect. Second, the seedlings had to be three feet or less in height.

Each seedling was checked the day before sheep were to graze through the area. This was done to establish some degree of certainty that any new browsing which might occur the next day was indeed attributable to sheep and not to deer from some previous time. The day after sheep grazed through a sampling area, each seedling was checked again. Any evidence of new browsing was then attributed to sheep.

The sheep band consisted of 2,250 ewes and lambs. The herder was instructed to graze the sheep through the plantations in the same manner as he would a forested area of comparable size.

### RESULTS AND DISCUSSION

Only two of the 800 tagged seedlings were browsed by sheep during the 1975 trials and 38 seedlings during the 1976 trials (Table 1). No seedlings were browsed by sheep after July 19 either year.

Table 1. Number of lodgepole pine seedlings browsed by sheep during the combined 1975 and 1976 grazing seasons

June 30	July 19	July 29	August 10	August 28	September 16
38	2	0	0	0	0

Sheep normally did not browse seedlings in areas of high shrub density (Table 2) but did in areas of low shrub density. In areas of low shrub density, seedling browsing was reduced by high herbaceous production.

Table 2. Number of pine seedlings browsed by sheep by forage class

	Forage Class			
	HS-HH	HS-LH	LS-HH	LS-LH
1975	0	0	2	0
1976	3	0	9	26

Deer browsed an average of 13.7 percent of the seedlings each year from 1973 through 1976.<sup>1</sup> (Table 3).

There was some indication that progressively more tree browsing by deer occurred as total forage decreased (Table 4).

Sheep did not show a preference for planted versus naturally regenerating seedlings. Deer, however, exhibited a marked preference for planted seedlings.

<sup>1</sup>The Chemult Ranger District had data available on deer browsing for 1973 and 1974. These data have been included with data from this study.

Table 3. Total number and percent of seedlings browsed by deer between 1973 and 1976.

	Seedlings browsed	Percent
1973	35	4.4
1974	280	35.0
1975	59	7.4
1976	65	8.1
	Mean/year	13.7

Table 4. Total number of lodgepole pine seedlings browsed by deer by forage class, 1973-1976

	Forage Class			
	HS-HH	HS-LH	LS-HH	LS-LH
Seedlings browsed	92	102	104	141

Management recommendations based on results of this study include:

- (1) Allow sheep to graze lodgepole pine plantation in the Oregon Pumice Region after mid-July.
- (2) Implement logging techniques which will reduce damage to the shrub component of the vegetation, primarily bitterbrush.
- (3) Reduce the intensity of slash removal after logging, again to reduce damage to bitterbrush.