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Tally,

Attached are some statements that may be used in reply to Dr. Larrimer's request for information on forest and range provinces in the state.



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Enclosures
ALHormay:LTG

August 26, 1946
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NORTHEASTERN CALIFORNIA PROVINCE

Introduction

The cash farm income from livestock and livestock products in California in 1942 was \$275,000,000.00. This consistently exceeds the combined value of products from fisheries and lumbering, is roughly equivalent to the output of the mining industry, and is surpassed only by the income from fruit and nut crops. Capital investments in range lands and ranching, stock yard, packing and distributing facilities outweigh many times the valuation of livestock.

California produces only about two-thirds of the meat it consumes, and the demand for meat is increasing with a rapidly increasing population. Ranges and suitable tillable lands are therefore under heavy pressure to produce more livestock. At present about one-third of the total livestock are produced on range lands, and the remainder are supported by cultivated lands.

There is an inadequate amount of summer forage in the State. This is putting undue pressure on existing summer ranges, with the result that they are being overtaxed and are failing to produce their maximum potential capacity. This summer forage deficit can be met by developing summer pastures on agricultural land in the valleys, by providing suitable supplements to annual type forage when it is dry, and by increasing production on summer ranges through better management and artificial reseeding.

6. Description of Province

The most extensive and important summer range area in the State lies in

northeastern California, an area of about 8,152,000 acres. This area is bounded on the North by Oregon, on the East by Nevada, and is cut off from the rest of California by a line running from Lake Tahoe northwest through Mt. Lassen and Mt. Shasta to the Oregon line.

Ecological

Northeastern California is a plateau of volcanic origin ranging in altitude from 3,000 to 6,000 feet. Scattered over it are numerous low buttes and mountains formed from old volcanic cones. Extensive lava beds and old flows with flat to rolling topography make up much of the area. Between Mt. Lassen and Lake Tahoe volcanic and granitic formations are intermixed. Large plains and valleys occur throughout the central and eastern portions of the plateau, while smaller flats are found interspersed among the mountains in the higher, more rugged national forest lands along the western edge in the Sierra Nevada and Southern Cascade Mountains and also in the northeastern part in the vicinity of the Warner Mountains.

The average annual precipitation is about 20 inches, ranging from 10 inches in the lowland to 40 inches in the higher mountains. The soils produce excellent forage for livestock and game, especially in the more moist lowlands.

The proportion of forest and other land cover types in the region are shown in the following table:

Table 1 Acreage of cover types Northeastern California

	<u>Acres</u>	<u>%¹</u>
Pine	1,386,000	17
Pine-fir	682,000	8
Pinon pine and Juniper	1,225,000	15
Great Basin sagebrush	3,648,000	45
Grass (meadows, etc.)	407,000	5
Cultivated	408,000	5
Other	408,000	5
TOTAL	8,152,000	100

¹ Based on proportions in Modoc and Lassen Counties. See Weilanders Forest Survey Release No. 4.

The important grazing types are pine, piñon pine and juniper, grass and Great Basin sagebrush.

Land Management and Ownership

Practically all the accessible land in northeastern California is used in some way for the raising of livestock, principally cattle and sheep. The tillable lands are used mainly to grow feed for livestock. Also extensive areas of commercial timber land are grazed by livestock.

The value of livestock in northeastern California is a little more than \$9,000,000.00, or about 6 percent the value of the livestock in the state. This region, which comprises about 8 percent of the land area of the state, produces approximately 8 percent of the state's beef cattle, 3 percent of its dairy cattle, 6 percent of its sheep, 8 percent of its horses, and 2 percent of its mules and hogs. Because of the character of its ranges it is a heavy beef cattle producing area.

A little more than half the area (52% in ~~northeastern California~~) is in Federal ownership, 47% is in private ownership, and less than 2% are State and Indian lands (Table 3.) ^{33%} of the Federal lands are within National Forest boundaries, and 18% are in the Honey Lake Grazing District. The Division of Grazing has jurisdiction over 3,457,700 acres (42%) in this region, and the Forest Service has jurisdiction over about 3,846,000 acres (47%). Combined, they represent 89% of the area in northeastern California. The Grazing Service actually administers about 1,506,000 acres (44%) of the land within its jurisdictional boundaries and the Forest Service administers about 2,717,000 acres (71%) within its boundaries (Table 2). About 799,900 acres of private land lie outside the boundaries of the national forests and the Honey Lake Grazing District. Approximately 28% of the land inside forest boundaries and about 55% inside the Grazing District are privately owned.

Table 2 - Land Jurisdiction in northeastern California

Jurisdictional units	Total area		Administration or ownership within jurisdictional units						
	Acres	Percent	Federal	Private	State	Indian	Acres	Percent	
Grazing district	3,457,700	1,508,900	44	1,903,900	55	41,000	1	3,900	-
National forests	3,646,000	2,717,000	71	1,088,300	28	40,000	1	700	-
National monument	46,000	45,660	99	400	1	-	-	-	-
Other (outside Federal unit boundaries)									
Private	799,900			799,900	100				
State	2,000					2,000	100		
Indian	400							400	100
Total	8,153,000	4,371,500		3,792,500		83,000		5,000	

7. Problems:

Extensive areas of the important grazing types (meadow, pine timber, sagebrush, and pinon - juniper) have been heavily deteriorated by overstocking and untimely use. It is estimated that northeastern California ranges are producing less than half of former capacity. Through better management and artificial reseeding these ranges can be improved and summer grazing capacity greatly increased.

Systems of grazing management that encourage natural reproduction of the native forage plants have to be developed. Most range units encompass two or more forage types and it is necessary to coordinate their grazing to make most efficient use of the forage. For this purpose information on grazing capacity, forage nutritive value and season of grazing are needed for each type.

Some of the most heavily deteriorated sites can only be rehabilitated satisfactorily and in a reasonable time by artificial reseeding. Suitable species and planting methods have to be developed for specific sites and conditions.

8. Research Program:

This Station has been conducting a range research program in northeastern California since 1931. The objective of this program has been to develop methods of managing northeastern California ranges, particularly national forest allotments, so as to obtain the maximum production of livestock and to build up soil fertility and maintain a satisfactory forage stand, and to integrate grazing with other land uses like timber growing, wildlife production, recreational and watershed uses.

Funds received since 1931 have permitted close study to be made of the grazing value and management possibility ⁱⁿ of cut-over pine timber ~~range~~ ^{type} and a preliminary study to be made of the comparative grazing value of pine timber and meadow types. In addition, studies of the growth, reproduction and general ecology of the bitter brush, the key browse in northeastern California, have been carried on. This species not only makes up a considerable proportion of the total summer forage on many ranges but it provides green forage in the fall and keeps livestock weights gaining at a time when they would normally lose. Bitter brush has been deteriorated or killed on extensive areas of range by heavy grazing and fire and methods are being devised to reestablish it by proper management of ~~grazing~~ and artificial reseeding.

In 1945 funds were appropriated for artificial reseeding experiments with various forage species. Only through artificial reseeding can some of the more heavily deteriorated portion of the range be brought back into production in a reasonable period of time.

9. Results to date:

Out-over pine timber range has been shown to have high grazing value for cattle and properly managed cattle grazing does not interfere with timber production. To encourage natural reproduction of forage and maintain the productivity of the type some form of deferred and rotation grazing has been shown to be needed.

Studies of bitterbrush during the past four years have shown that in order to get adequate reproduction and to maintain a ^{thrift} sturdy condition of the plants moderate grazing and periodic protection from grazing are needed. Germination and reseeding experiments ^{that} are showing the species can be established artificially.

It is too early to judge the results of the artificial reseeding tests with other species since the first plantings were made only last fall. More than 100 species of grasses, ^{forbs} ~~ferns~~ and shrubs are being tested for adaptability to different soil sites. Land preparation and planting methods are being developed for different forage types and soil conditions.

10. Research Plans for 1947:

Information obtained on the grazing value of pine timber range will be prepared for publication. This will be followed by publications on the results of studies of the germination and artificial seeding of bitterbrush.

Tests of the comparative grazing value and coordinated use of timber and meadow types will be continued for another season.

11. Research Plans for Next 5 years:

During this period studies should be made of

1. Grazing value and management of meadow, sagebrush and juniper types, comparable to the study made of the pine timber type.
2. The coordinated grazing management of combinations of these types as they occur in range units.
3. The value of bitterbrush during fall and winter in maintaining livestock weights.
4. Artificial reseeding of desirable forage species.
5. Certain phases of the timber type study dealing with changes in grazing capacity resulting from logging, natural reproduction and season of grazing will be continued.