

The Grasslands of the West

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The grasslands of our country are becoming increasingly important to the national agricultural economy. The present trend is toward increasing the acreage devoted to pasture and range for livestock production. In particular, grasslands are of significance to the economy of the Western States—the 17 States located roughly west of the 95th Meridian. Much of this vast area depends on the range livestock economy. Grazing lands of the West vary widely from the sub-humid and grassland plains in the eastern part across the forested mountains and highlands and over the shrubby desert to the Pacific Coast.

Nearly 60 percent of the pasture and range used for livestock grazing in this area is privately owned land. Table 1 shows the areal relationships by States of the different types of grazing land. Of the 728 million acres of pasture and range in these western States, 237 million acres are Federal range and 84 million acres are forest and woodland pasture. The larger portion, 407 million acres or 54 percent of the total, is permanent pasture and range—the figure used in the Conservation Needs Inventory.¹ The acreage in the first column which is the privately owned

non-Federal pasture and range is shown in Figure 1.

About 84 percent—five acres out of six—of the pasture and range in the U. S. mainland States is in these western States. It is estimated that less than ten percent of this total acreage may be considered as pasture or tame pasture with introduced grass species.

Procedures

A sample survey in every county was made showing soil, slope, erosion, and other land conditions. County Conservation Needs Committees used these

data after they were expanded to the county area and other applicable information in estimating land use shifts and conservation needs. Going programs in 1958 and certain other guidelines were provided for making these estimates.²

This privately and locally owned grassland is land in perennial grasses—generally known as range and pasture, irrigated and dryland. Excluded is all grazing land in the National forests and public domain as well as large privately owned areas with trees and shrubs of more than ten percent canopy. That is, grazing land with ten to 40 percent tree canopy such as mesquite and chaparral land is not included. The definition for range and pasture used for the Inventory is as follows:

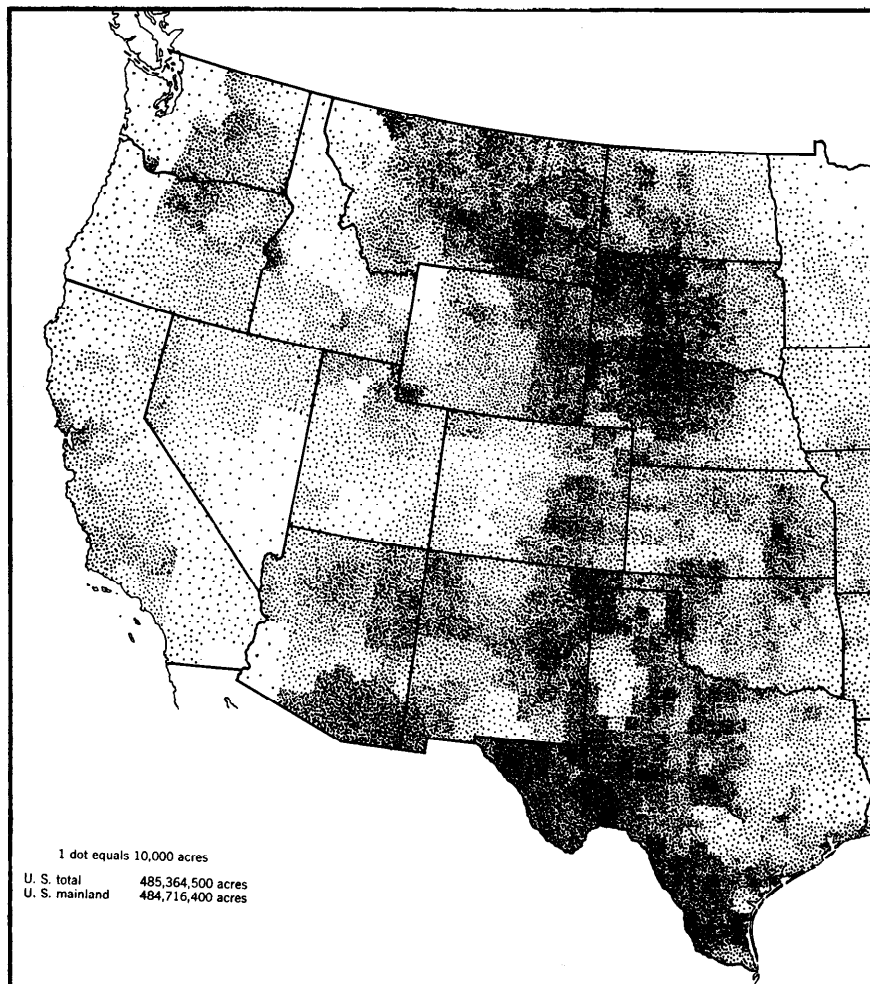


FIGURE 1. Pasture and range on private and non-federal public land, 1958.

¹The National Inventory of Soil and Water Conservation Needs was made as a cooperative effort by eight agencies in the U. S. Department of Agriculture. Two reports have been published on this Inventory—"Agricultural Land Resources" AIB 263 and "Basic Statistics," S.B. 317.

²Basic Statistics of the National Inventory of Soil and Water Conservation Needs, Stat. Bull. 317 USDA.

Table 1. Pasture and Range by type, region and State, 1959.

State and Region	Private, Open Perm. Past. & Range ¹	State & Indian Woodland Past. & Range ²	Federal Range ³	Total Pasture & Range
	1,000 acres	1,000 acres	1,000 acres	1,000 acres
North Dakota	14,224	329	1,160	15,713
South Dakota	26,700	411	1,825	28,936
Nebraska	24,579	764	383	27,726
Kansas	18,405	1,040	116	19,561
Northern Plns.	83,902	2,544	3,484	89,930
Oklahoma	15,291	7,562	259	23,112
Texas	94,161	22,151	930	117,242
Southern Plns.	109,447	29,713	1,189	140,349
Montana	43,142	4,128	15,540	62,810
Idaho	7,766	3,518	19,076	30,360
Wyoming	28,638	578	21,130	50,346
Colorado	21,549	6,783	14,619	42,951
New Mexico	37,637	7,710	20,104	65,451
Arizona	27,011	7,889	23,223	58,123
Utah	9,172	2,994	27,352	39,518
Nevada	7,671	700	51,492	59,863
Mountain	182,583	34,300	192,536	409,419
Washington	7,300	3,432	2,496	13,228
Oregon	10,287	5,425	20,212	35,924
California	13,546	8,973	17,010	39,529
Pacific	31,133	17,830	39,718	88,681
Total	407,062	84,387	236,927	728,376

¹Data from the Conservation Needs Inventory including private, State, local government and Indian land used for grazing.

²Major Uses of Land and Water—Agr. Econ. Rept. No. 13, Table 17—Includes forest and woodland pastured in farms and woodland and other non-Federal forest grazed or classified as usable for grazing not in farms.

³IBID

"Land in grass or other long-term forage growth that is used primarily for grazing. Pasture and range includes grassland, non-forested pasture, wild hay harvested in States west of the Mississippi River, and other grazing land with the exception of pasture in crop rotation. It may contain shade trees or scattered timber trees with less than ten percent canopy, but the principal plant cover is such as to identify its use primarily as permanent grazing land."

The Inventory portrays the physical conditions of the land and cover as of January 1, 1958.

Kinds of Land

The sample soil survey provides a picture of the different kinds of land in these western

States. Delineations were made by land use, soil, slope, and erosion. This survey presents a general view on how the land is being used with regard to its capability and what problems are associated with the different kinds of land.

Conversion of the survey data

Table 2. Pasture and Range by Regions and Capability Classes, 1958

Region	Land Capability Classes								Total
	I	II	III	IV	V	VI	VII	VIII	
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	
Southern Plns.	1,345	15,161	17,118	9,991	5,007	31,076	29,747	3	109,447
Northern Plns.	465	6,558	8,503	8,503	2,063	29,804	21,902	39	83,902
Mountain	232	2,054	10,572	15,370	833	82,652	68,991	68,991	182,583
Pacific	168	1,161	2,896	3,732	123	13,308	9,325	423	31,130
Total	2,210	24,934	45,155	36,596	8,026	156,840	129,965	2,344	407,062
Percent	1	6	11	9	2	38	32	1	100

to the land capability classification indicates a wide difference in the kinds of land used for range and pasture. About 70 percent of the total was in Land Capability Classes VI and VII—land which has "severe or very severe limitations that . . . restrict its use to pasture, range, woodland, recreation, water supply or wildlife food and cover" (Table 2). However, nearly one-fifth of all the pasture and range is in Classes I, II and III—land suited for and having no serious limitations for the production of field crops. Also, about nine percent of the range and pasture acreage is in Class IV—land that has severe limitation on the kind of crops to be grown or the number of years it will produce a cultivated crop. Very small acreages are in Classes V and VIII.

This then shows that about 109 million acres of the privately owned range and pasture in the western States is land suited for the cultivation of crops, or about 27 percent of the total. It is a significant acreage devoted to this use, particularly since more than two million acres is in Class I land with no limitation of use and suitable for the highest uses.

Considerable variation in the proportion of grassland in Classes VI and VII is evident by geographic regions with about 70 percent of the grassland in these two classes for the 17 western States; the Great Plains had nearly 60 percent while the

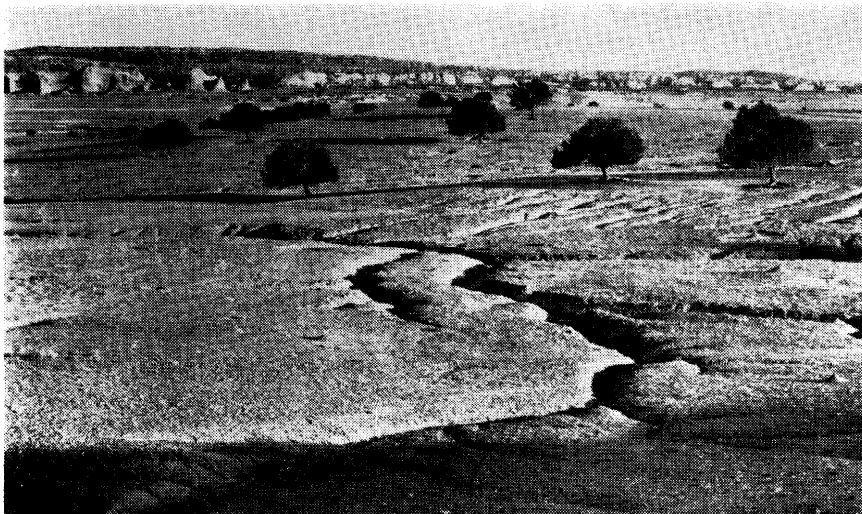


FIGURE 2. Denuded and severely eroded range site which had formerly been in excellent condition.

Table 3. Dominant problems on pasture and range, 1958

Dominant Problems	Total Area	
	1,000 Acres	Percent
No problem	2,210	1
Erosion	217,085	53
Excess Water	15,736	4
Unfavorable Soil	128,850	31
Adverse Climate	43,181	11
Total	407,062	100

Mountain region was 84 percent. It appears that in the more arid States, less of the high-capability land is used for grassland or proportionately less of the total grassland acreage is used for pastures in these States.

Conservation Problems

The dominant conservation problems associated with the land were delineated on soil maps of the sample plots for the grassland as well as all the other kinds of lands. Except for 2.2 million acres of Class I grassland which have no problems, all grasslands were delineated into the four different types of conservation problems (Table 3). More than half of the land or 217 million acres has an erosion problem, land that is susceptible to erosion and has had past erosion damage (Figure 2).

The remainder of the land has problems of unfavorable soil, ad-

verse climate and excess water. Nearly 129 million acres of the grassland have unfavorable soil characteristics in the root zone which are the dominant limitations in their use. Adverse climate is the major hazard or limitation in use on 43 million acres of grassland. Poor drainage, wetness, high water table and over-

flow are the dominant hazards on nearly 16 million acres.

Conservation Treatment Needs

In estimating the conservation treatment needs for pasture and range, county committees had several available sources of information. Data on the kinds of lands and problems existing on them were obtained from the soil surveys. Local records and committeemen's knowledge of range and pasture conditions in the counties provided other bases for estimating the amounts of the different kinds of land which had been adequately treated or needed no treatment, and that acreage requiring conservation treatment for maintenance and improvement of the grassland.

Nearly three-fourths of the pasture and range acreage needs conservation treatment or is feasible to treat (Table 4). On the other hand, more than 109 million acres have been adequately treated and are protected from deterioration. About 25 million acres of this total of 417 million acres are expected to move from other uses to grassland by 1975.

Estimates of treatment needs for these grasslands vary widely by regions and States. The largest acreage is in the eight States comprising the Mountain region and the smallest in the three Pacific States. The proportionate acreage needing treatment was only 58 percent for the



FIGURE 3. Pasture established with Weeping Lovegrass.

Table 4. Pasture and range needing treatment

State and Region	Total Area	Not Needing Treatment		Needing Treatment	
	1,000 Acres	1,000 Acres	1,000 Acres.	Percent	
North Dakota	14,523	5,775	8,748	60	
South Dakota	25,904	9,428	16,476	64	
Nebraska	25,369	14,760	10,609	42	
Kansas	19,629	5,776	13,853	71	
Northern Plains	85,425	35,739	49,686	58	
Oklahoma	18,333	5,890	12,443	68	
Texas	97,682	11,580	86,102	88	
Southern Plains	116,015	17,470	98,545	85	
Montana	42,717	12,444	30,273	71	
Idaho	7,420	1,343	6,077	82	
Wyoming	28,571	9,536	19,035	67	
Colorado	22,225	5,972	16,253	73	
New Mexico	38,330	11,965	26,365	69	
Arizona	28,545	3,456	25,089	88	
Utah	9,117	1,690	7,427	81	
Nevada	7,874	1,506	6,368	81	
Mountain	184,799	47,912	136,887	74	
Washington	7,174	2,106	5,068	71	
Oregon	10,391	2,480	7,911	76	
California	12,931	3,771	9,160	71	
Pacific	30,496	8,357	22,139	73	
Total	416,735	109,478	307,257	73	

Northern Plains and a high 85 percent for the Southern Plains.

The 307 million acres of pasture and range needing treatment are shown in the following three categories of problems (Table 5).

More than half of this acreage is in the Southern Plains where this problem accounted for a fourth of its total acreage. Conversely, it accounted for only eight percent or one-twelfth of the total acreage in the Mountain region. Estimates also show that nearly a third of the cover establishment acreage is needed on the pasture only in the Western States.

Establishment of a plant cover is needed on land that is being converted to pasture and range (Figure 3). Also needed is the re-establishment on grassland having a poor stand or plant cover. This acreage totals nearly 46 million acres or 15 percent of the acreage needing treatment. Included in this acreage is some range land which is infested with

woody and noxious plants.

The plant cover is inadequate on about 84 million acres but can be improved by the addition of minerals, partial seeding, and natural thickening of stand by

deferred grazing or mechanical measures (Figure 3). This acreage is nearly twice that for the establishment of plant cover. This problem accounts for about a fourth of the acreage needing treatment. Percentagewise, the cover improvement problem varied only slightly by regions with more than half the acreage in the Mountain region.

The third category of problems on the pasture and range in the Western States is the protection of the plant cover (Figure 5). The 178 million acres needing this protection accounted for 58 percent of all the pasture and range needing conservation treatment.

Estimates were made of the several problems from which the pasture and range needs protection. Some of these problems are beyond the control of the individual landowner while others can be corrected or alleviated with measures that have proven effective. Probably the important protective measure to keep in effect is adjusting the grazing to the available forage in the face of recurrent periods of drought and low grass production.

About 90 percent of the pas-

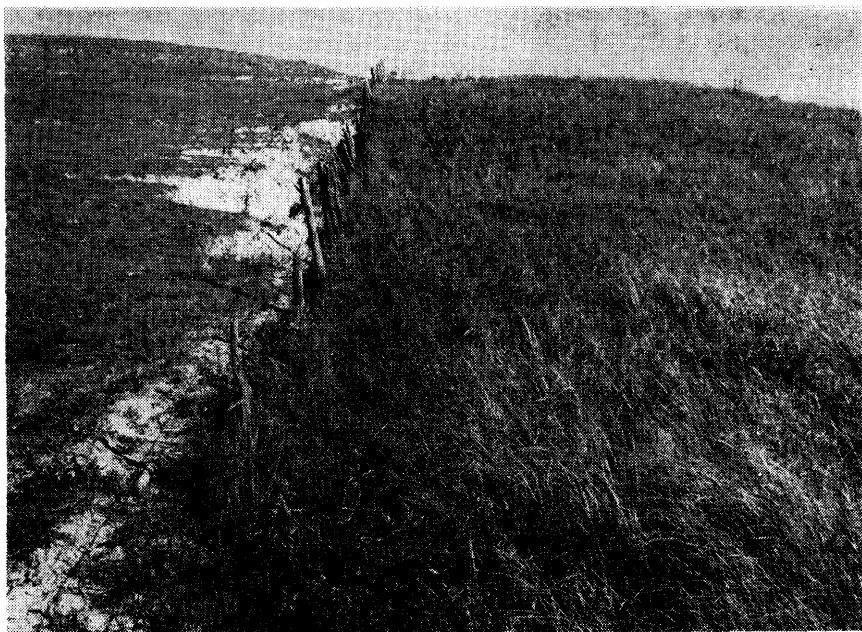


FIGURE 4. With the proper care, range cover can be improved from area on left to that on the right.

Table 5. Pasture and range needing establishment and improvement of plant cover and protection only.

Region	Needing Treatment		Establishment of cover		Improvement of Cover		Protection Only	
	1,000 acres	Per-cent	1,000 acres	Percent	1,000 acres	Per-cent	1,000 acres	Percent
N. Plains	49,686	100	7,230	15	10,630	21	31,826	64
S. Plns.	98,545	100	23,650	24	22,433	23	52,462	53
Mountain	136,887	100	11,168	8	44,075	32	81,644	60
Pacific	22,139	100	3,662	16	6,604	30	11,873	54
TOTAL	307,257	100	45,710	15	83,742	27	177,805	58

ture and range needing protection only is in an overgrazed condition (Table 6). Grazing conditions of this land can normally be improved by managing the livestock using the land. About three-fourths of this overgrazed land is in the Mountain and Southern Plains regions.

Protection of the western grasslands against fire hazards is needed on an estimated 69 million acres. Fire control measures such as firebreaks or barriers designed to check or stop uncontrolled fires on rangeland need to be installed for adequate protection. About 70 percent is in the Mountain and Southern Plains regions.

Nearly 30 million acres of these grasslands need protection from the erosion of wind and water. This includes land which is gullied or seriously washed or windblown and requires control measures to prevent further deterioration. Such other measures are good livestock management, location of watering facilities and the protection of vegetative cover in critical areas. More than two-thirds is in the Mountain region.

More than 53 million acres of privately owned pasture and range was estimated to need protection against the encroachment of noxious and woody plants which has destroyed or threatens the grass cover. A large acreage with this encroachment was included with the regular establishment and improvement program. Also, large acreages were classified as woodland.

Summary

Of the 728 million acres of grazing land in the 17 Western States, about 407 million acres are privately owned pasture and range which comprises about five acres out of every six in the U. S. mainland. This acreage

varies widely by states and regions.

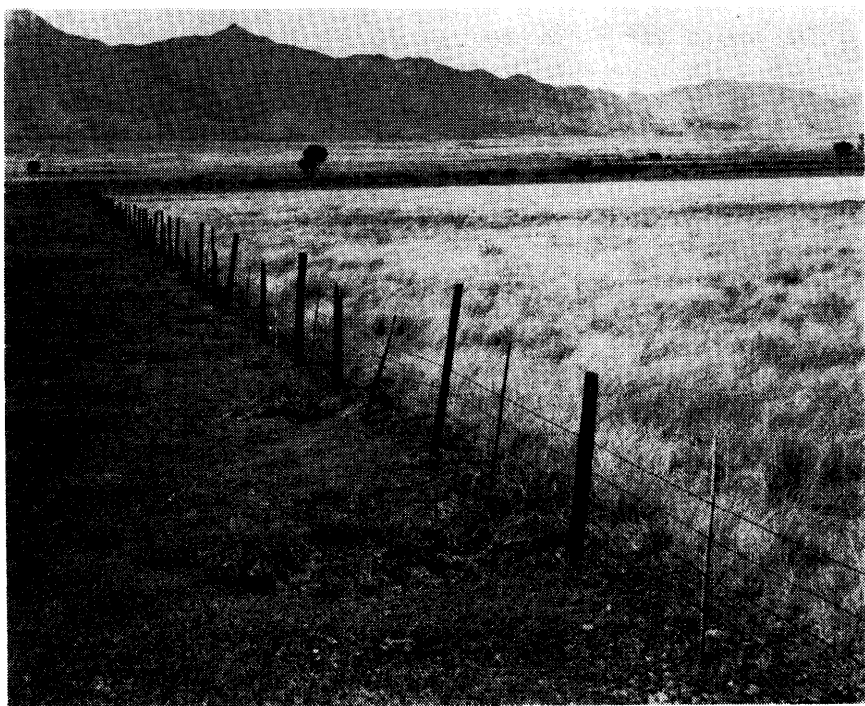
About 70 percent of this pasture and range is in land capability classes VI and VII. However, more than 72 million acres are in Classes I, II, and III, land suitable for the production of crops.

Erosion is the dominant problem on more than 217 million acres of pasture and range which is more than half of the total. Unfavorable soil as a problem is on 129 million acres.

About 307 million acres of the Western States' grassland needs conservation treatment which is about 75 percent of the 417 million acres. Establishment of the plant cover is needed on nearly

Table 6. Pasture and range needing protection of plant cover.

Regions	Area Needing Protection	Needing Protection from			
		Over Grazing	Fire	Erosion	Encroachment of Plants
	1,000 Ac.	1,000 Ac.	1,000 Ac.	1,000 Ac.	1,000 Ac.
N. Plns.	31,826	30,742	9,117	2,099	2,062
S. Plns.	52,462	49,634	19,174	4,114	28,692
Mtn.	81,644	67,782	30,338	21,022	20,339
Pac.	11,873	9,416	10,037	2,100	2,290
Total	177,805	157,574	68,666	29,335	53,383

**FIGURE 5.** Range on left is in a deteriorated condition due to pressure of livestock grazing.

46 million acres, improvement of cover on about 84 million and protection of the grass cover on nearly 178 million acres.

About 90 percent of the pas-

ture and range or more than 157 million acres that need protection only is in an overgrazed condition. Nearly 69 million acres need protection from fire haz-

ards. About 53 million acres of grassland need protection from woody and noxious plants as well as considerable acreage from erosion.