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Maintaining Short-Grass Ranges

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Maintaining Short-Grass Ranges

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Short-grass pastures or range lands in eastern Colorado, consisting principally of blue grama and buffalograss, can best be maintained by stocking with the proper number of animals. If properly stocked, sustained production of grass year after year is realized and optimum livestock weight gains are obtained. Range forage is ordinarily the most economical feed in any livestock enterprise, and its maintenance at maximum productiveness should always be a major objective in any grazing plan.

Three steps are desirable to maintain the forage on any range.

First: The condition of the range should be ascertained and understood accurately.

Second: Proper grazing rates must be established and applied.

Third: The degree of forage use and trend of range condition should be checked periodically.

By following this procedure the range is classified as to its immediate condition and it can be established whether or not adjustments in stocking are necessary. With this information it is then possible to modify rates of grazing to improve forage on depleted areas or to maintain conditions on previously well-used ranges. Once the range has been classified and properly stocked, it is essential to check the forage use periodically in order to observe current results. By close observation it can be established whether or not the current rate of stocking is under, over, or properly utilizing the forage, and what future changes in stocking rates are necessary.

Judging Short-Grass Range Conditions and Forage Trends

Short-grass range conditions may be conveniently divided into four classes: Excellent, good, fair, and poor. These may be distinguished primarily by the amount of ground covered by the vegetation. Additional criteria, however, should be observed before a given range is definitely assigned to a condition class; these include growth characteristics of the major grasses, presence or absence of shrubs and herbs, kind of growing season (wet, average, or dry), condition of the soil, and time of year when the examination is made.

Excellent Condition.—This class of short-grass range is characterized by an almost continuous sod of blue grama and buffalograss (Fig. 1). At the end of the grazing season, and in dry years, the

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Fig. 1.—Ranges in excellent condition produce a maximum volume of forage and have a good mixture of palatable grasses.

turf may appear to be broken into bunches separated by spaces of bare ground 1 or 2 inches wide. The most conspicuous feature of this range-condition class, however, is that a more or less continuous sod or turf is formed by the short-grasses.

Perennial herbs are common to abundant, although not conspicuous, and are generally scattered throughout the forage cover. Taller grasses such as bluestem wheatgrass and needle-and-thread may occur, especially in the better growing seasons. Annual weeds such as Russian thistle, stickseed, and lambsquarters are usually scarce or absent. Pricklypear cacti are seldom found on such a range.

Under careful control this class of range may be maintained in excellent condition. Such areas, however, are generally limited in extent, and care must be exercised that stocking based on these sites does not result in overgrazing surrounding ranges which are in good or only fair condition if livestock have access to both.

Good Condition.—Ranges in this class consist of a broken sod, the pieces of which are separated by spaces of 3 to 6 inches in which bare ground is visible (Fig. 2). Sod pieces are not pedestaled or elevated above the ground surface, and sheet erosion is not evident. Taller grasses may occur as individual plants or clumps in wet and average growing seasons.

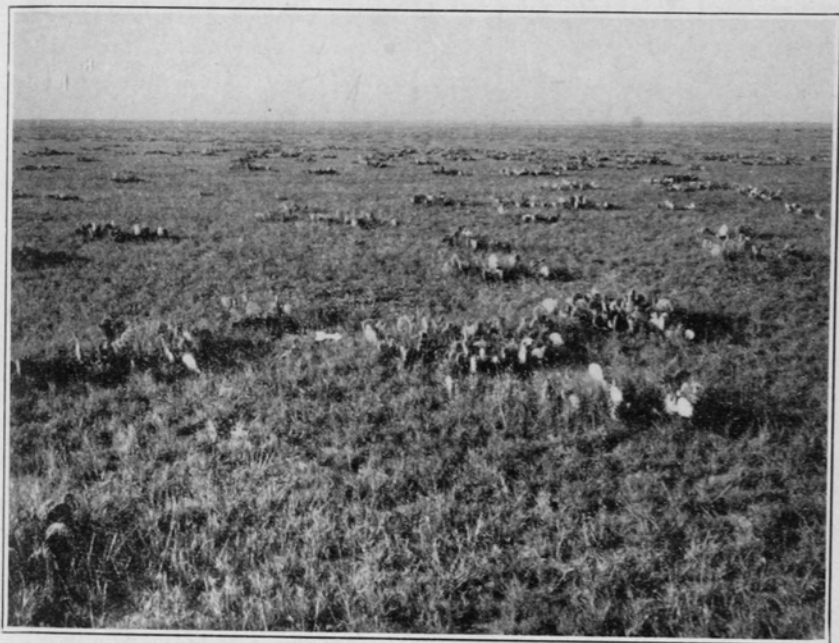


Fig. 2.—Although this range is in good condition generally, cactus control would be a desirable practice.

Perennial herbs are a normal part of the forage stand but are seldom conspicuous except in abnormally wet seasons. Weeds such as stickseed, woolly Indian wheat, lambsquarters, peppergrass, and tansyleaf aster may temporarily obscure the short-grasses in late spring and early summer, following periods of excessive precipitation. In dry years, practically all weeds may be absent.

The management objective on ranges of both the good and excellent classes should be to maintain them in that condition. On very good soils and in favorable locations where moisture is plentiful, due to underground drainage or runoff from surrounding hillsides, a range in good condition may be changed to one in excellent condition by conservative use. As the majority of eastern Colorado ranges are potentially capable of maintaining themselves at least in good condition, this should be the aim of proper management.

Fair Condition.—The short-grass sod on ranges in fair condition is broken into bunches separated by spaces at least 6 to 12 inches wide (Fig. 3). The sod pieces may be slightly pedestaled and sheet erosion is generally evident in the bare spaces.

Taller grasses as a rule are very seldom found on this class of range. Perennial herbs, particularly those of fair palatability, are

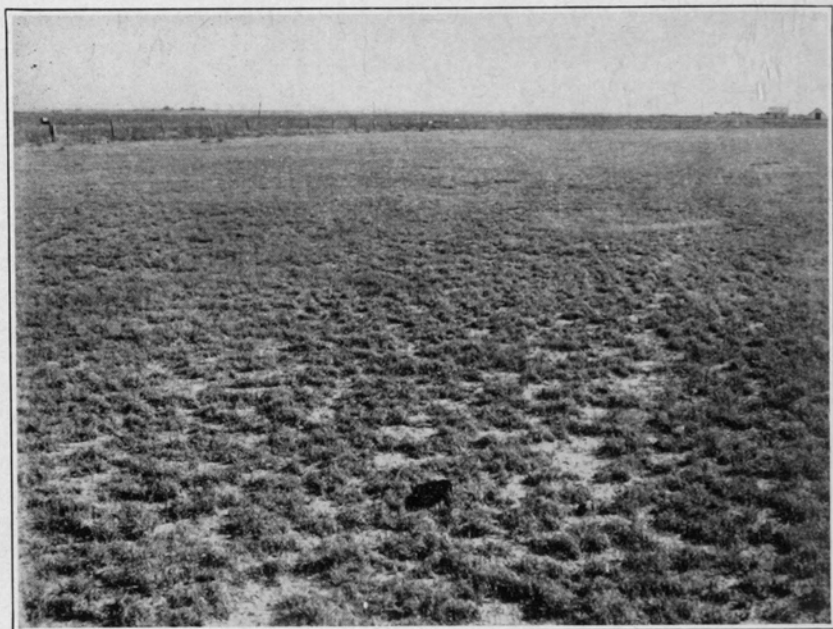


Fig. 3.—Proper stocking will increase the forage cover and bring back many desirable grasses and herbs which are not found on ranges in fair condition.

rare or inconspicuous. Annual weeds may be conspicuous following a wet spring, but if the spring and early summer are fairly dry, they may be practically absent. If the range is recovering from one or more years of drought, sixweeks fescue may be prominent between the short-grass sod.

The fair-condition class usually indicates a combination of drought and overgrazing. The major objective of management should be improvement to at least the good condition. Proper grazing should include a margin of safety sufficient to prevent overgrazing on this class of range in all but the most extreme drought years.

Poor Condition.—Short-grass in this condition grows in scattered tufts or bunches separated by spaces of 1 to 4 feet or more (Fig. 4). The tufts are frequently pedestaled or raised above the general ground level. Sheet erosion is usually evident between the grass clumps and the ground is generally cracked after summer rains. Weeds, particularly annuals, may form extensive stands or may be almost absent, depending on the seasonal distribution of rainfall. Pricklypear cacti are sometimes very abundant.

Poor condition primarily results from drought and overgrazing. The objective of management on such areas is to bring about improve-

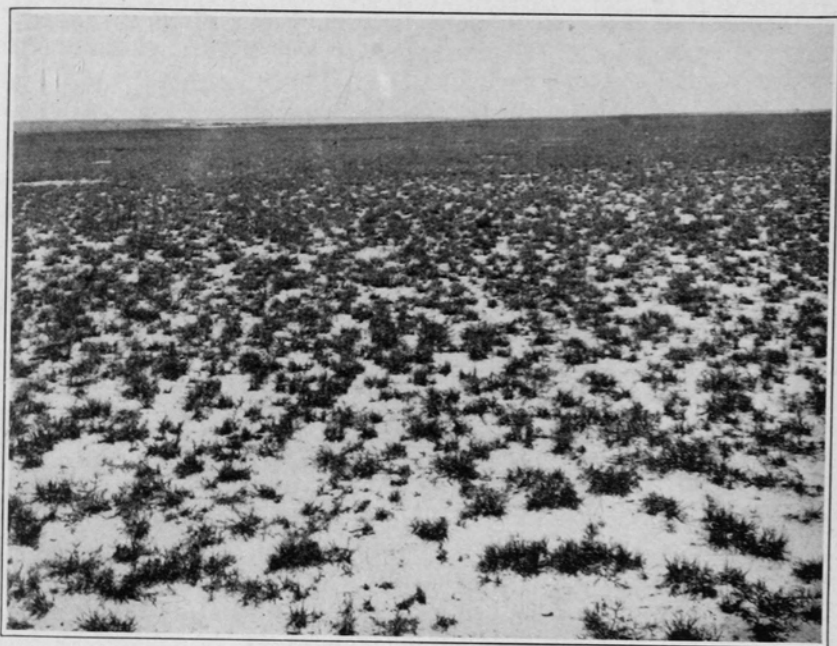


Fig. 4.—Conservative grazing will eventually change this poor range into one which is fair or good.

ment to a fair or good condition by conservative use. Heavy stocking over a period of years will not permit the short-grass cover to fill in the bare spaces between the grass tufts, and it may result in invasion of undesirable or noxious species such as stickseed, Russian thistle, and cactus. Natural recovery may be a slow process if soil depletion has resulted from long misuse. Ranges with exceedingly poor stands of native grasses may require reseeding or other treatment, and in many instances should not be grazed at all (see back page).

Range Deterioration.—Signs of range deterioration include loss of vigor of the forage, decrease in density of the vegetation, decrease in numbers of the better plants, increase in amount of bare ground, more low-value plants, and accelerated wind or water erosion.

The short-grasses are the most important species to watch. They are a constant feature of the vegetation through all the changes from an excellent range to a range in depleted condition. Remember that on ranges in excellent condition these grasses form a turf or sod. Deterioration is evidenced by disintegration of this sod into smaller and smaller pieces until only tufts of the original grasses remain. At the same time, the spaces of bare ground between the sod pieces become progressively larger and larger.

Range Improvement.—The signs of range recovery include increase in vigor, density, and numbers of the better forage species, and decrease in soil erosion. Improvement is a slow process, particularly on ranges which have been depleted to the extent that much of the topsoil has been lost and the grasses are growing on pedestals or raised mounds of earth.

The first signs of recovery are not always clearly indicated by the remnants of the short-grass cover. Release of grazing pressure or cessation of long-continued drought is frequently followed by extensive growth of weeds. Natural revegetation of deteriorated ranges usually begins with weedy species since their seeds are most likely to be present in the soil and awaiting favorable conditions for their germination.

Range recovery is generally difficult to recognize because of its slowness. The most positive indications of improvement will be found on key areas or sore spots, such as trails, driveways, bedgrounds, congregating spots, areas with thin soil, gully slopes, and heads of canyons. Evidence of reduced erosion or increase in forage cover on these areas is usually evidence that the entire range is recovering.

Proper Stocking

The grazing capacity of a range area is the maximum number of livestock the unit will support over a period of years without injury to the plants or the soil. The best index to the grazing capacity of an area is an accurate record of actual use by livestock, combined with a knowledge of range conditions and trends of deterioration or improvement through the years.

In cases where proper stocking has not been estimated to a fair degree of accuracy, the following approximate grazing capacities are suggested for eastern Colorado ranges:

Range condition	Acres per animal-unit month ²
Excellent	2½
Good	3¾
Fair	5¾
Poor	10

These estimates will be subject to revision after trial with careful range inspection and records of actual use. Ranges in condition intermediate between the classes listed above will require appropriate adjustment of livestock numbers to secure proper use. If proper

²An animal unit is considered to be a 1000-pound breeding cow or a horse. A calf is 25 percent of an animal unit; yearling 60 to 70 percent; 2-year old, 85 to 95 percent; a sheep 20 to 25 percent. Animal-unit months are obtained by multiplying the number of animal units by the number of months in the grazing season.

stocking is achieved, poor and fair ranges may be expected to show improvement, and eventual revision in number of animals will be necessary.

Variations in Range Conditions.—On pastures or ranges of considerable size more than one forage condition is usually found. The grazing capacity of the area as a whole should be computed by ascertaining the animal-unit months for each condition class separately. For example, a pasture of 325 acres has the following acreages in fair, good, and excellent condition:

Condition class	Acres	Acres per animal-unit month	Animal-unit months
Fair	230	5.75	40
Good	75	3.75	20
Excellent	20	2.50	8
Total	325		68

The number of acres in each condition class divided by the acres required per animal-unit month equals the number of animal-unit months of grazing capacity, a total of 68 in this instance. This pasture would easily support 11 mature dry cows for a 6-month grazing period.

Checking Forage Use

Proper grazing implies a definite limit to the degree of utilization that should be attained by the end of the grazing season. It has been determined through intensive studies under experimental control and from extensive records of stocking rates and range conditions throughout eastern Colorado that **1¼ to 1½ inches of leaf stubble should remain on short-grass ranges** when the forage has been properly used. Removal of a greater amount of blue grama and buffalo-grass will eventually result in loss of plant vigor, disappearance of other palatable grasses and herbs, accelerated erosion, and decreased weight gains of livestock.

When to Check Utilization.—A periodic inspection of the range or pasture is desirable as a means of ascertaining the degree of use of the important grasses. Needed adjustments between amount of forage remaining and number of weeks or months left in the grazing season can be made only if an occasional inventory is taken. A mid-season check is desirable on summer ranges since the bulk of forage growth in short-grass areas is essentially complete by July 15. The utilization check at the end of the season, however, is the most important of all.

The final utilization check on summer and fall ranges will usually be made in late fall. It may be desirable to make the examination in late October or early November, even though grazing is not complete, in order to avoid snow-covered ground which may be encountered at a later date.

Ranges grazed in winter should receive their final utilization check before new growth appears in the spring. The old or previous year's vegetation very rapidly disintegrates after new growth begins, and consequently observations on utilization should be made before this time. All checks should be made not later than April 1 in eastern Colorado.

Stubble-Height Measurements as a Method of Checking Utilization.—Stubble-height measurements at the close of the grazing season on the two major species, blue grama and buffalograss, are an excellent means of estimating utilization. If the average leaf length of these species is approximately $1\frac{1}{2}$ and $1\frac{1}{4}$ inches respectively, then the range will as a rule be properly utilized.

Leaves of blue grama may be measured by placing an ordinary rule at the base of a plant with one hand, and grasping a bundle of leaves near the ground surface with the other; the fingers then should be allowed to slide upward until the estimated **average** length of the leaves is reached, and the measurement is recorded as shown by the rule. Leaves which are attached to flower stalks should not be included in the measurements. Do not measure flower stalks.

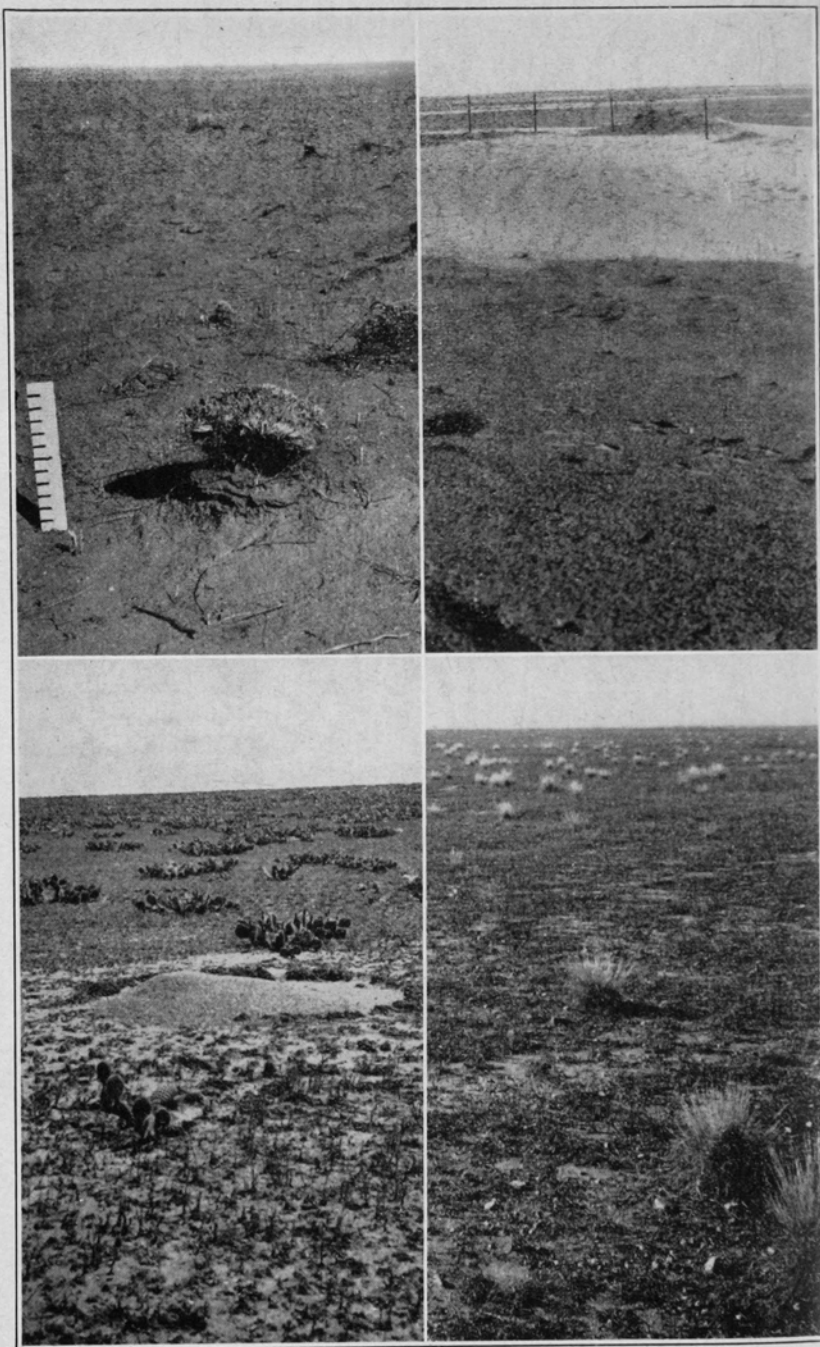
Buffalograss leaves are somewhat more difficult to measure because they arise from both the ground surface and from runners. Those arising directly from the soil may be measured in the manner described for blue grama, but the latter must be measured from the point of attachment to the runner. In no event should any portion of the runner be included in the measurement of leaf length.

The average leaf length of short-grasses as determined by 100 measurements will sample the ordinary pasture with sufficient accuracy. The simplest method for locating the grass clusters to be measured is to walk over the range and at intervals, e. g., every 5th, 10th, 50th, or other pre-determined number of paces, stop and measure the cluster of grass which occurs nearest the toe of the right shoe.

Take only one measurement and then proceed the required number of paces to the next measuring point. Measure the cluster nearest the toe of the shoe whether or not it is grazed or ungrazed, in the center or near the edge of a piece of sod, or whether the leaves are long or short. Record the average length to the nearest quarter inch. Make measurements in all parts of the pasture before computing the average length.

Other Observations to Make in a Check of Utilization.—A general examination of the range should be made in addition to the measurements of leaf length. The soil should be observed for evidences of accelerated erosion. At least one-fourth of the seedstalks of grasses should remain at the end of the grazing season. If palatable shrubs are present, the twigs and leaves produced during the last growing season should not be grazed on the average in excess of 20 to 30 percent of their length. Some of the current twig growth should be entirely ungrazed and none of the woody growth of previous years should be used. Livestock should be in good flesh and if there is indication of marked loss in weight in the latter part of the grazing season, overuse of the forage is indicated.

Many areas should not be grazed. Reseeding, contouring, or planting sod pieces may be necessary as a first step in restoring depleted ranges. See your County Agent.



Upper left.—Wind erosion following overgrazing in drought years may remove most of the top soil on short-grass ranges.

Upper right.—Soil drifting from cultivated fields destroys thousands of acres of range lands in eastern Colorado.

Lower left.—Overgrazing, drought, and grasshoppers have denuded this area of grasses. Artificial restoration is the best means of reclaiming it as range land.

Lower right.—Recovery of weedy ranges may be hastened by reseeding and protection from wind erosion.