

## Livestock As a Tool of Environmental Management

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You may not be aware of it, but in the western United States proper livestock grazing management is man's most important wildland management tool. Wildland lands in this region total about 855 million acres. A large portion of this acreage, about 728 million acres, is grazed by domestic livestock.

These lands yield many products and values that are important to the people of the country. Some of these are: meat, hides and wool from livestock grazing, timber, water, wildlife, recreation, esthetics, and open space. The nation could hardly survive without these resources.

It should be appreciated that all these resources stem directly or indirectly from vegetation. Vegetation is the basis for livestock and wildlife production. The yield of clear, usable water from the watershed is determined by the amount and kinds of plants on the land. Soil erosion and soil fertility are controlled mainly by vegetation. Many esthetic values stem directly from vegetation. Most recreational pursuits such as hunting, fishing, hiking, camping, and photography relate to vegetation. The amount and quality of these resources are determined by the kind and density of plants on the land. Therefore, good land management consists essentially of good vegetation management.

In the last 100 years, since settlement days, great changes have occurred in the vegetation on wildlands in the western United States. Many of these changes resulted from improper management of livestock grazing. Large numbers of animals were grazed seasonlong or yearlong continuously year after year. As a consequence desirable plants were killed and reduced in amount and undesirable plants have increased. The overall vegetation cover on the land has been thinned and much top soil has been washed away reducing soil fertility. Most of the damage occurred by 1900 before the government and private land owners gave much thought to land management. Emphasis was placed on opening up and developing the West. Unfortunately, these wildlands are continuing to deteriorate because of improper livestock grazing and for other reasons.

Rehabilitation of these lands is dependent on changing the vegetation to a better kind and making the vegetation cover thicker. How can this be done? Man has but a few tools with which to objectively change or manipulate vegetation -- these are livestock grazing, logging, artificial revegetation, and chemical and mechanical measures. The latter includes such practices as plowing, discing, chaining and bulldozing. The most important and powerful of these tools is livestock grazing. It can be applied on most of the wildland area in the West.

Improper livestock grazing can be highly destructive to the wildland environment. Proper livestock grazing management on the other hand is man's most useful tool for manipulating wildland vegetation and for increasing and enhancing the yield and quality of wildland values.

The Bureau of Land Management is responsible for management of about 174 million acres of the wildland area in the West. Management objectives on these lands have been spelled out in Public Law 88-607 -- the so-called Classification and Multiple Use Act of 1964. This Act states in essence that lands retained in federal ownership shall be managed for domestic livestock grazing, wildlife (this means all forms of wildlife from insects to big game animals, because they all play a role in the scheme of things in the wildland environment), outdoor recreation, timber, water production, watershed protection, wilderness preservation, and other public values. Further, the Act calls for high-level, sustained production of the various resources so as to best meet the present and future needs of the American people. It calls for quality production and not necessarily the greatest dollar return or greatest unit output. This is an almost overwhelming responsibility. The Bureau looks to this board for advice and counsel for best management of these lands.

Meeting these objectives is not such a difficult task when it is appreciated that all the resource values stem from vegetation. The objectives can be realized through proper management of vegetation. And proper management of vegetation can in the main be realized through proper management of livestock grazing.

The range manager, therefore, plays a major role in wildland management and assumes great responsibility for increasing and maintaining the productivity of the land. Private rangeland managers no less than public rangeland managers assume this responsibility.

It is commonly thought that ranges deteriorate primarily because of grazing by too many animals, and that they can be improved by grazing with the proper number of animals. This is not true. The basic cause is not too many animals, but continuous grazing.

The plant makes its food in its leaves. If the leaves are grazed off closely and continuously for a period of years, the plant dies for lack of food. Close use of preferred forage plants is unavoidable because of the grazing habits of livestock. Livestock prefer some plant species and the vegetation on some areas to others and invariably graze them closely. The pattern of use is much the same from year to year so desirable forage plants are killed out and inferior ones take their place. In view of this it is clear that plants must be rested from use at times so they can make food.

Resting the range from use at proper times is the foundation of a sound grazing system, and is in fact the basis of rest-rotation grazing management. This type of grazing is now being applied with good results on many ranges throughout the West -- on yearlong and seasonal ranges, on gentle and rugged terrain, and in arid as well as moist areas. It can be applied anywhere.

In this system rest is incorporated in the grazing cycle to allow plants time to make and store food, ripen seed and for reproduction to establish. The amount of rest needed for these purposes is determined by the kinds of plants on the range. Thus, a rest-rotation grazing system is designed for the particular range.

To practice rest-rotation grazing management the range must be divided into pastures or units. The number of pastures may be two or more. One or more pastures are rested and the others grazed each year.

The basic grazing and resting treatments that apply to a pasture over time are:

1st year	Graze (seasonlong or yearlong)	
2nd year	Rest	To allow plants to make and store food and recover vigor.
3rd year	Rest	To allow seeds to ripen. Graze thereafter to trample seed into the ground.
4th year or longer	Rest	To allow reproduction to establish.

Such a sequence of resting and grazing treatments constitutes a grazing cycle. The cycle of treatments is repeated until objectives are realized. The treatments may then be altered to meet new objectives as they come to view.

Rest-rotation grazing management was first applied on a practical scale on the Harvey Valley cattle allotment on the Lassen National Forest in northeastern California. The allotment is about 21,000 acres in size, and is grazed with 500 cattle for a 4-month summer season. The main vegetation types are meadow, dry grassland, sagebrush, and conifer, mainly pine. The allotment was grazed by large numbers of cattle and sheep in the past and is heavily deteriorated. The rest-rotation program was started in 1952.

Desirable forage plants such as tufted hairgrass and Nevada bluegrass, which were reduced to a low amount in meadow types by past grazing, have increased significantly to date. The vegetation cover on many of the heavily deteriorated sagebrush sites has thickened. The plant composition consists mainly of sagebrush, rabbitbrush, buckwheat, needlegrass, squirreltail, about the only kinds of plants the soil <sup>can</sup> ~~will~~ now support. However, these plants, though not the most desirable, have value for livestock and wildlife and most important for controlling soil erosion.

Under this program a dense stand of cheatgrass -- a rather undesirable annual plant -- on an old sheep bedground covering several acres has been replaced entirely by better perennial plants.

Desirable forage and cover plants are re-establishing on livestock concentration areas -- on preferred meadow types, openings created by logging in the timber stand and around watering places. Vegetation is establishing even on the banks of earthen stock-water tanks. These tanks now provide ideal habitat for waterfowl, and food, cover and water for many other kinds of wildlife. Aspen sprouts now are growing to good size and furnish appreciable forage for both cattle and big game. Bitterbrush, a valuable browse, is being kept in a highly productive condition.

Soil erosion is being controlled over the entire range because of increased vegetation. Gullies in some meadows have been entirely revegetated. Erosion control on watersheds and ranges throughout the West depends mainly on establishing an adequate cover of vegetation on the land.

A question often asked by foresters is: Can rest-rotation grazing be practiced on forest lands without interfering with the growth of the trees? This question is answered in part by results on the Harvey Valley allotment. Here pine trees established from seed grew to a height of 8 to 10 feet in 12 years, unaffected by livestock grazing. Nearby, outside Harvey Valley, under continuous grazing trees established in the same way were only 1 or 2 feet tall in 12 years. All these trees were grazed, rubbed and trampled and looked more like bushes than trees.

Proper livestock grazing works in several ways to restore and maintain the productivity of wildlands. Livestock "plant" seed by trampling. Seeds of all kinds of plants -- grasses, forbs, shrubs, and trees -- are planted so all multiple-use purposes are served. Livestock are the only means by which this planting can be done over the entire 728 million acres of range land in the West. In the forest, livestock can be used to remove plant competition around young trees and increase tree survival. Of great importance, livestock can be used to reduce fire hazard -- to remove the flash fuel on the range and forest floor minimizing the occurrence of fires of conflagration proportions. Accumulated old growth on ungrazed plants has a stifling effect. This growth can be removed by livestock in many cases resulting in greater and more thrifty herbage production.

Livestock grazing, properly timed, stimulates the growth of many plants. A case in point is bitterbrush. Under grazing with cattle this plant is hedged into a form which makes overuse by any kind of grazing animal virtually impossible. Such plants are highly vigorous and when rested from use produce considerably more herbage than ungrazed plants. Furthermore, the growth is all within reach of the grazing animal. Several other important browse plants can be shaped in this manner.



Cattle are now being used as a tool specifically to generate more food for big game animals. Near Bishop, California for example, cattle are being used to produce more bitterbrush for deer on a critical winter range. For many years this range was grazed only by deer and only in winter. Under this use bitterbrush plants were weakened and killed. Little reproduction has established in recent years. The food supply for deer has been declining. A rest-rotation grazing program with cattle was started on a portion of this range in 1966. The bitterbrush plants on the area are being hedged into good form and already more usable feed has been produced for deer.

Just this year the Idaho Fish and Game Department, Bureau of Land Management, Forest Service, Idaho Department of Land, and stockmen in cooperation set up a rest-rotation grazing program with cattle on a large range area back of the town of Boise, Idaho. This area is a critical deer winter range and an important watershed. Fires in the past denuded large portions of the area causing severe floods in Boise and the surrounding country. Two important needs on this area are more feed for deer and reduction of fire hazard.

Most of the livestock on the area were removed in the recent past with the view of leaving more feed for deer. After attending one of my grazing management training sessions in 1968, representatives of the various groups agreed that cattle should be put back on the area under a rest-rotation grazing system. This year, cattle were back on the range. It is too early to report grazing results. But an important thing has been accomplished to date. The participants in this project have reached a common understanding of problems and objectives and the means by which these can be resolved. They are discussing and communicating as never before. They have a common goal -- producing a maximum amount of desirable vegetation on the land.

Proper livestock grazing management is indeed man's most important tool for maintaining the productivity and quality of the wildland environment.