

Range—the Land, Its Management, the Profession

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Range—a word with many meanings. The dictionary has some 48 definitions ranging over such diverse applications as “the extent to which variation is possible, a chain of mountains, a cooking stove, to stretch out in a line, and, an area or tract that is or may be ranged over, especially an open region for the grazing of livestock.”

When a person does think of range as something other than the kitchen stove, he is likely to envision the “Old West”—a mental picture that includes longhorn cattle, hard-riding cowboys, the lonely shepherd, and other stereotypic images. These ideas are incomplete—as well as being somewhat misleading. Although the dictionary reference to an open region for the grazing of livestock gives a general idea of what we are talking about, it certainly is not the whole story. Today’s concept of range should be expanded from this simple definition.

To begin with, imagine the planet Earth as seen by its voyagers to the moon. It is an impressive sight because for the first time man can see the finite limits of his world. This Earth is a rather insignificant speck in the universe where man lives and where he must make his living.

Actually, only about a third of the earth’s surface is man’s home, since approximately two-thirds is occupied by the seas. Man uses the sea to a certain extent and it is reasonable to expect he will make more use of it in the future, but he does not live there. From the beginning of time man has pursued his way on land and thus he is bound to it and its resources.

CONSIDERING THE APPROXIMATELY 34 billion acres of land on the earth, we know from observation that it comes in a fantastic array of forms, textures, colors, and abundance of living things. It also has been extensively modified for special purposes. Land may be categorized in any number of ways, but one scheme of classification that is helpful in understanding the basic characteristics of land includes five broad categories classified as types of land.

The first is *nonproductive* land such as high mountain peaks, areas covered by glaciers or permanent snow, and barren deserts. These areas are termed “nonproductive” because photosynthesis, the direct utilization of solar energy by plants for

the manufacture of food, is relatively unimportant. Nonproductive lands comprise about 15% of the total land area.

The second of the five categories of land is *natural forest land*. Forests occupy 28% to 30% of the earth’s total land area.

The third category is *cultivated land*. The native plants have been replaced by domesticated species that have special economic value to man. Only about 10% of the total land area is under cultivation.

The fourth category includes the *urban complexes*. They are not only the major metropolitan areas, but towns, villages, and other man-made works. It is estimated that 3% to 4% of all land is in this residential-industrial category.

And the fifth major category, which includes the remaining 40% or more of the earth’s land surface, is *rangeland*.

In this broad system of land classification, the categories of nonproductive land, forest land, and rangeland are classified on the basis of their natural characteristics that have developed over long periods of time. Cultivated land and residential-industrial land, however, are so classified because the pre-existing natural conditions have been modified to accommodate specific utilitarian uses.

These five major land categories may also be referred to as “ecosystems.” Simply put, an ecosystem is a system formed by the interaction of a community of organisms with their environment. In actuality, ecosystem structure and function are quite complex. Looking further into the category of range ecosystems, or rangeland, there are many different types. Natural grassland, of course, is one of the more obvious types that comes to mind, but range ecosystems also include most deserts, shrub communities, savannas, tundra, many wetlands (such as a coastal marsh), and alpine communities. The common denominator of these diverse types, the characteristic that makes them rangeland, is that the potential natural vegetation consists of grassy, herbaceous, or shrubby plants.

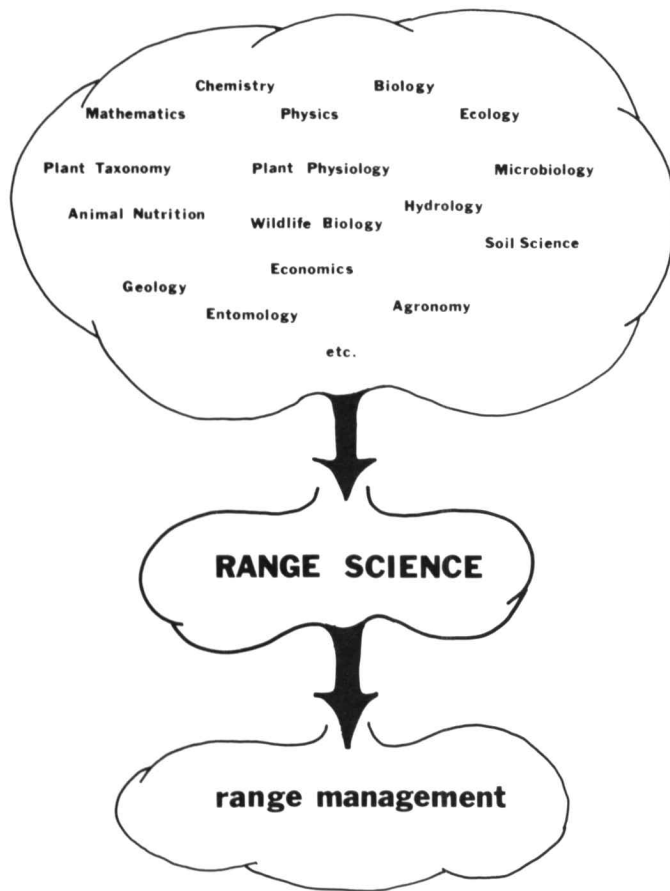
SOME RANGELANDS HAVE BEEN or may be seeded to native, introduced, or domesticated plant species. In the Uzbek region of the Soviet Union, interseedings of *Kochia*, or summer-cypress, have been planted to increase the amount of winter forage. The practice of seeding rangeland sometimes leads to problems in distinguishing between range and cultivated land. However, as a general rule we can say that if the land is subjected to a high degree of modification and manipulation, such as periodic seedbed preparation, frequent fertilization, irrigation, mechanical harvesting, or other “farming” practices, then it is considered to be an agronomic ecosystem rather than rangeland. The management of range ecosystems on the other

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Slides contributed from SRM members worldwide are gratefully acknowledged.

Editor’s Note: This article was adapted for publication from the Colorado Section public relations slide narration. Narration was prepared originally in 1972 by Francis Colbert, former Executive Secretary for SRM, and Thane Johnson, former Information and Education Committee Chairman and 1978 president, Colorado Section. It was presented by multi-visual media at the SRM annual meeting in Boise in 1973 and San Antonio 1978.

The slides and narration are available by purchase from the Colorado Section. The script is OK for adaption to local slides.



Range Science is a synthesis of knowledge drawn from many disciplines.

hand, is based primarily on ecological principles.

At the other end of the range ecosystem spectrum, it is noted that the dividing line between rangeland and forest land often is not distinct. From a practical standpoint, an arbitrary distinction between the two kinds of land frequently is made on the basis of current management objectives. Many forest lands do support an understory or periodic cover of herbaceous vegetation and, hence, are amenable to certain range management practices.

UP TO THIS POINT, range has been considered as a *type of land*, without regard to any *type of use*. However, considering the inherent nature of rangelands, it naturally follows that they are frequently suitable for grazing. This is a use that is usually associated with livestock, but implicit in the term is the use of rangelands by wildlife. Range ecosystems are the native habitat for most large herbivores, as well as for many species of upland birds such as the sage grouse and myriad smaller animals such as the prairie dog, the coati mundi, the jack rabbit, and the wide-ranging coyote.

Water is a most important component product of rangelands. Since rangelands comprise nearly half the earth's land area, the value as watershed, providing both water quantity and water quality, is extremely significant.

Recreation is another use of rangelands. Hunting and fishing are always popular, and perhaps no less so are camping, riding, hiking, rock hunting, or just plain looking. Other rangeland values include their use as scientific study areas, the habitat for many endangered species, such as the much talked about blackfooted ferret, and the preservation of a healthful environment. Properly

managed rangeland reduces the incidence of airborne dust, flooding, and stream siltation.

Another point to be emphasized in explaining the general concept of rangeland, is that as type of land it is not restricted to just the west. Range ecosystems are common in the southern states; and the Midwest, which was predominantly rangeland before the development of agronomic ecosystems, still has significant areas of range. Similarly, rangelands are found throughout the world—in Mexico, much of Africa and Asia, the Middle East, South America, Australia, New Zealand, and Canada. Even parts of Europe are still in range—as illustrated by the native pastures in Devonshire, England. And, to dispel one other common belief, range is not necessarily "open." Compared with the fields and tame pastures of cultivated lands it often gives the appearance of being interminable, but for all practical purposes it is fenced.

It logically follows now that one ask, "What is range management?" Agronomy pertains to cropland and forestry to forest lands. Thus, by analogy it can be said that range management is the *husbandry*, that is the careful and thrifty conservation, of the resources of another specific kind of land. The purpose of such husbandry is to maintain or enhance the inherent productiveness of the land while using it to meet man's needs.

Man has a centuries-long history as pastoralist, but almost without exception this practice has led to a deterioration of natural pastures and, ultimately, to widespread erosion. Such maladjustments of the natural equilibrium of range ecosystems usually are not self-correcting, except perhaps over very long periods of time, so the need to do something about it gave rise to the present day science and art of range management.

There are many techniques available to range management. But, since on most range ecosystems there is a close interrelationship between the vegetation and the grazing animal, a focal point of range management is the control of grazing. This involves a determination of available forage, determining the kinds and proportions of animals to be grazed, including not only domestic animals but native herbivores as well, and deciding on the most suitable season for grazing use. Grazing management requires control of the distribution of livestock by herding, fencing, and water development. And, intensive grazing management is effected by the initiation of grazing systems designed to recognize the critical requirements of plant growth as well as livestock production. Since wild herbivores are not easily manipulated, the proper harvesting of these species is an important aspect of grazing management.

There are times, however, when the management of grazing may not be immediately sufficient; for example, when range deterioration is severe with sites occupied by long-lived invader species such as juniper or mesquite, when poisonous plants such as halogeton or larkspur are especially abundant, or, when one wishes to counteract the immediate effects of wildlife.

In such cases, other techniques are useful in manipulating one or more of the range ecosystem components. Mechanical control of the vegetation is often employed with chaining or using a tree crusher. Fire can be good as well as bad, so prescribed burning may be judiciously used to reduce undesirable brush in order to enhance natural productivity or to maintain a desired equilibrium. Selective herbicides are very effective tools to use in manipulating vegetation, although great care must be exercised in the use of chemicals to make sure they do not adversely affect other components of the range ecosystem. A classic example of the

biological control of vegetation is the use of a specific leaf-feeding beetle on the undesirable St. Johnswort. It is often difficult, however, to find just the right organisms for effective biological control, and there is always the possibility that the control organisms or their after effects may create more problems than they solve. The seeding of rangelands is undertaken where it may be reasonably expected to result in a permanent vegetative cover amenable to range management practices. The fertilization of rangelands is another technique that is being extensively investigated.

IN SUMMARY, THE PRIMARY CONCERN of range management is the *vegetation* of rangelands, and it is most often the case that good management of this vegetation for livestock production also is good management for other range products and values. To add perspective to the concept of range management, it should be understood that *range science* is the organized body of knowledge that forms the basis for the practice of range management. Although unique in itself, range science is a synthesis of knowledge drawn from many disciplines.

Almost a century ago, Major John Wesley Powell, soldier, educator, explorer, naturalist, and the real father of the conservation movement, recognized there was a kind of land that was not forest land, nor was it always suited for cultivation. Powell termed this other kind of land "native grazing land" and noted that its husbandry called for unique management principles. It was from this early recognition that the science and art of range management developed, but the 1930's mark the beginning of professional range management as it is known today.

Out of the Dust Bowl of that decade there emerged a group of scientists and land managers, men with diverse backgrounds and training, who had learned by hard experience what Powell had said earlier, "Range is a distinct kind of land." This realization gave great impetus to the development of range science as a unique discipline and led to the formation, in Salt Lake City in 1948, of a professional association known as the American Society of Range Management. The following year the Society was incorporated under the laws of Wyoming as a private, nonprofit organization and in 1971 its name was changed to Society for Range Management.

Emphasizing the worldwide distribution of range ecosystems, membership in the Society for Range Management represents over 40 countries. Members are ranchers, research scientists, government agency administrators, technical assistance personnel, teachers, students, and people associated with business and industry. Such a group, at once so diverse but drawn

together by their common interest in the world's rangelands, collectively forms the broadest, most knowledgeable, and most objective organization dealing with this vital natural resources base. The objectives of the Society are to develop understanding of range ecosystems and of the principles applicable to the management of range resources; to assist all who work with range resources to keep abreast of new findings; to improve the effectiveness of range management in obtaining from range resources the products and values necessary for man's welfare; to create a public appreciation of the economic and social benefits derived from rangelands; and to promote professional development of its members.

The Society for Range Management publishes two bimonthly periodicals. The *Journal of Range Management*, which has been issued continuously since 1948, contains articles of general interest, research reports, management notes, technical notes, viewpoints, and book reviews. *Rangelands* carries national and international news of interest to the profession and discussion of current affairs germane to rangeland management and use. Special publications, such as books, information brochures, glossaries, periodical indexes, and other material, are also issued from time to time.

Each February the Society holds an international meeting where the individual member has the opportunity to participate in technical discussions, seminars, and symposia, and to become acquainted and "chew the fat" with rangeland managers from all parts of the world. At the local level, geographical Sections of the Society hold meetings and field tours to examine first-hand applied range management and problems of immediate interest. Many Sections also are active in youth work, sponsoring "range camps" and other activities for young people.

The science and art of range management have developed under a philosophy of *stewardship* that considers ecologic, economic, and social criteria. This stewardship must be the concern of both individuals and society as a whole because the land is the heritage of generations yet unborn as well as the ultimate source of all wealth. W.C. Lowdermilk has said, "...the condition of land and its natural resources is a measure of the stability, of the success, and of the promise of a people. It is no more possible to build a safe and prosperous social structure on eroding and wasting lands, than to build a house on sinking sands."

Rangelands comprise more than 40% of the earth's total land area. Insuring their stability, productiveness, and rational use through range science and range management will help make a better tomorrow for all people. ●

Extension Range Management Specialist at the University of Wyoming. The position (75% extension and 25% research and/or teaching) is intended to provide statewide leadership in rangeland education and information programs for all range users and managers. A M.S. in range management is required. A Ph.D. in range management or associated discipline with a B.S. or M.S. in range management is preferred. A demonstrated knowledge of western rangelands is essential, and communi-

cations and public relations skills necessary. Appropriate experience in teaching, research or extension activity is desirable. Contact *Dr. Fee Busby, Chairman of Search Committee, Division of Range Management, College of Agriculture, Laramie, Wyo. 82071*. Closing date for applications: November 1, 1979, or thereafter until an applicant has been selected.