THE PUBLIC RANGE AND ITS MANAGEMENT

A Report

to the

President's Council on Environmental Quality

by

Thadis W. Box

Don D. Dwyer

Frederic H. Wagner

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Importance of Public Range -

The public ranges--herein defined as all publicly owned lands grazed by domestic livestock and wildlife in the 11 western conterminous states--have been important to the people of this region since settlement. But only recently have they become an issue of national importance, and has their full value been realized nationally.

Public lands constitute roughly half the area of the 11 western states and about one-fifth the area of the 48 conterminous United States. In some states, federally owned lands alone constitute well above half the area (e.g. 86% of Nevada, 66% of Utah, and 64% of Idaho).

Roughly three-fourths of the western public lands are grazed by domestic livestock (CAST 1974), and the vegetation on them supplies about 12% of the forage for livestock in the 11 states. These lands also produce a major fraction of the wildlife for public hunting and viewing, serve as watershed for culinary, agricultural, and industrial water, and provide the bulk of outdoor recreation for people in the West and non-westerners who travel tnere.

The energy and mineral resources of the western, public lands have recently added a new dimension to their importance. Major amounts of coal, oil, tar sands, oil shale, uranium, and geothermal steam occur on them, often on rangelands. Regardless of the national energy policy at a given time, the public lands of the West will play a major role in the nation's energy future and whatever hope we have of attaining national energy independence.

Through much of the nation's history, rangelands have been largely ignored by Congress and by the general public in the midwestern and eastern thirds of the country. Passage of the Taylor Grazing Act in 1934 and publication of Senate Document 199 (1936), entitled The Western Range, were the first steps toward recognition at the national level that rangelands hold significant value.

The writings of many early 20th-century conservationists gave little attention to range or rangelands (Van Hise 1910, Paul and Barnes 1914, Van Hise and Havermeyer 1930, Parkins and Whitaker 1936). Even Dana (1956) in his classic text on forest and range policy payed scant attention to range as compared with forest land, perhaps because rangeland was not considered important by policy makers. A widely used text by Allen and Leonard (1966) has one chapter entitled "Grasslands" which contains ten pages out of 432 and carries the total message for rangelands and their management.

It is only in the past decade or two that increased mobility of our public, more efficient communication systems, and the development of a national environmental conscience have focused attention of non-westerners on the public rangelands.

If non-westerners have been slow to realize the full worth of the western public ranges, the same has not been true of residents in the 11 western states. These lands directly affect the economy of the region, the status of local government, and the lives of people close to the land. The land-management agencies are a visible and important part of the social structure, and their policies and decisions have far-reaching social and economic ramifications.

In some cases, a change in federal policy on rangelands could cause severe hardship for already economically depressed people. For example, in northern New Mexico the elimination from federal ranges of only 57 animal unit months of grazing per rancher would reduce the real income of 990 subsistence-level minority families by 20% (Gray 1973). Although this is an extreme case, it is an example of the profound interrelationships that exist between public rangelands, the organizations responsible for their management, and the residents of this region.

Public rangelands in the West are being subjected to increasingly intense and complex crosscurrents of pressure. The U.S. population is now growing at the lowest rate in its history. If the current child-bearing rate continues, population is expected to increase some 30 percent before it reaches ZPG in the first half of the 21st century. But actual growth rates in some areas are much higher than this owing to geographic shifts inthe country's population.

Many of the states with the fastest growing populations are in the West. This growth is in part occasioned by growing exploitation of minerals and fossil fuels, and in turn produces increased pressures for water, outdoor recreation of all forms, and space. Most of this growth produces increasing demand for animal products from the public range, while at the same time demanding other goods and services which compete for that production.

These increases in domestic pressures are paralleled by growing demands produced by continuing, rapid world population growth. As needs mount for the increasing flow of American farm products into world markets, there are rising pressures for the production of animal products

from native forage in order that feed grains can be released into those markets. As demands from all sources grow, there will be growing pressures for increased supply of animal products to ease the price increases that inevitably will occur.

Concurrent with these rising pressures for greater productivity from western rangelands are growing counterpressures from environmental groups. There is a widespread impression among these groups that the western ranges are overgrazed, and there are periodic threats to take legal action to bar all livestock from public lands. Paradoxically, pressures rise from some quarters of these same interests to protect growing numbers of "wild" horses and feral burros.

Clearly the entire public rangeland arena is one of political, scientific, and management complexity. And it is destined to grow more complex.

This is not a fact!

It is a biological fact that all vegetation has evolved a capacity to withstand some degree of herbivorous removal without long-term or lasting damage. Each site, with its vegetation, has a potential yield which it can give up without loss of productive capacity. It is, of course, also a fact that any site can be overutilized and its productivity reduced below its potential. Many of the public ranges are in this latter state.

The great challenge facing American range management today, and in the decades ahead, is to manage the grazing lands in such a way that all can be improved to their potential, and then maintained in this state while producing the goods and services demanded for fulfillment of human needs. Failure to meet this challenge will at best result in a

resource producing at less than its potential during times of growing need, and at worst a progressive loss of productive capacity which ultimately results in the demise of a resource essential to the well being of a nation.

Federal Agency Responsibilities

Each American has a stake in the condition and management of the public ranges. Although those nearest to the public land areas reap the most direct benefit from them, people who never see the federal range expect them to be managed in such a way that they too will benefit. Although there has been a continuing debate on whether the public lands should be put in private hands, the nation continues to reaffirm that it is in the public interest for federal agencies to manage the land for the broad "public interest."

The federal ranges are managed by a number of agencies in several Departments of the federal government. Some, such as the USDA Forest Service and the USDI Bureau of Land Management have major efforts in grazing management as part of their multiple-use objectives. Others such as the Department of Defense or the National Park Service consider range management only incidental to their major objective.

The Forest Service

The Forest Service has the longest range management history of any federal agency. It traces that history back to the late 19th century when the Forest Reserve Act of 1891 separated the forests from the Public Domain. The Forest Reserve Act of 1897 provided for the administration and development of policies for forest management, but from the beginning the management role was broadly interpreted.

Authority to regulate grazing was initiated with the Organic Act of June 4, 1897 (PLLRC 1970). Regulations for administering grazing were initiated July 1, 1905. The depleted and overgrazed conditions of the grazing lands associated with the forest reserves were much as those which later triggered the Taylor Grazing Act of 1934. The degraded conditions dictated that one of the major responsibilities of the Forest Service was to regulate grazing so that range conditions might improve on the National Forests.

From the beginning of the Forest Service, lands were managed for several goods and services.

Gifford Pinchot early established the multiple-use concept of management as a result of pressure from Secretary Wilson even though the Multiple-Use Sustained Yield Act was not passed until 1960.

The grazing objectives of the U.S. Forest Service are conservation, development, and utilization of the forest range, development of the range resources to their seasonable attainable potential, management of the lands for sustained grazing in harmony with interrelated uses, and promotion of stability of family ranches and farms within local communities.

The administration of the Forest Service lies in the U.S. Department of Agriculture with the national level administration in Washington, D.C. Nine regions are each supervised by a regional forester and in each region are specific forests and districts supervised by forest supervisors and district rangers. The Forest Service administers 49.3 million acres suitable for grazing (PLLRC 1970).

Grazing lands under Forest Service management are intermingled with forest lands although many millions of acres do not have commercial

forests on them. Most of the Forest Service lands are above 5000 ft. elevation and have an annual precipitation exceeding 12 to 13 inches. The general climatic and edaphic conditions are such that the land responds reasonably well to proper management and range improvements.

The Bureau of Land Management

There were predecessors to the Bureau of Land Management (BLM) beginning with the General Land Office (GLO). The GLO was in existence from 1812 through 1946 and was a single office designed to handle all public land matters. In June, 1934, the Taylor Grazing Act was passed as a result of recognition that the general condition of the public range was not good and getting worse. With this Act, the Grazing Service was formed. Secretary of the Interior Ickes' original estimate of $150,000 to operate the Grazing Service proved inadequate, so support for managing the Public Domain has suffered from the beginning.

The Taylor Grazing Act was designed at the onset to administer only grazing and thus lacked the broad-based legislation of the Forest Reserve Act and the implied multiple-use management early established by the Forest Service.

In 1946 the GLO and the Grazing Service were consolidated into the Bureau of Land Management. In the 48 contiguous states the BLM manages about 176 million acres. The Director resides in Washington, D.C. There are 11 state directors in the West and 63 district offices. Two Service Centers carry out specialized functions in Denver and Portland.

Until passage of the Taylor Grazing Act in 1934, the federal government exercised no control over the use of rangelands now administered by the BLM.

Specific objectives of the BLM program are to conserve and regulate the public grazing lands, to stabilize the livestock industry dependent on them, and to aid in proper use of private lands and waters dependent on public grazing lands; and in general to promote the highest use of the public lands within grazing districts (Clawson 1971).

The grazing lands of the BLM are largely arid, the majority of them receiving less than 12 inches annual precipitation. Too, they occur at lower elevations where temperatures are higher and winds more common than lands of the Forest Service. BLM lands respond more slowly than Forest Service lands to management and range improvement practices because climate is adverse and highly variable. Soils are largely infertile, saline and poorly developed.

The most extensive vegetation types of BLM range are northern desert shrub types dominated by sagebrush and saltbush (Artemisia and Atriplex), pinyon pine and juniper, and southern desert shrub (mesquite and creosote bush).

In 1967 BLM lands were grazed at the rate of 13.3 acres per animal unit month (Clawson 1971). This means that an average acre produced only 70 pounds of harvestable forage. It is obvious that BLM has the responsibility for managing most of the land lowest in productive potential in the U.S. In addition, the land it received to manage in 1934 was already seriously depleted. Those are difficult conditions to overcome.

Other Federal Agencies

Compared to the F.S. and the B.L.M., other federal agencies have small amounts of land to administer and that land usually has fewer demands for conflicting uses due to the legislation establishing them.

USDI Fish and Wildlife Service. This agency has broad authority to manage areas within the National Wildlife Refuge System. It has no enabling authority to define guidelines for domestic grazing. It does provide for domestic grazing using it as a tool to manage for wildlife objectives. The F&WS manages 4.8 million acres of land suitable for domestic grazing.

Bureau of Reclamation. This Bureau has broad authority to grant grazing leases on lands withdrawn or acquired and being administered under federal reclamation laws. It has 4 million acres of grazeable rangeland (PLLRC 1970).

National Park Service. Grazing in National Parks was authorized by an Act of Congress in 1916. Yellowstone National Park was excepted. As a policy, domestic grazing is being phased out of the National Park System. There is no specific statute set to regulate grazing so guidelines for grazing management are at best vague (PLLRC 1970). There are 1.4 million acres in the National Park System outside of Yellowstone.

Bureau of Mines. The Bureau of Mines has statutory authority to lease their lands though only one lease has been negotiated by the Bureau (PLLRC 1970).

Department of Defense. Lands under the control of the Army, Navy and Air Force may be leased for grazing. There are statutory guidelines for lease arrangements but not for management. There are 3 million grazeable acres in the Department of Defense.

Energy Research and Development Agency. This agency has no statutory, regulatory, or administrative authority to administer grazing on lands under their control. A memorandum of understanding with the

BLM places the administration of grazing on ERDA lands under jurisdication of the BLM.

Indian Lands. Lands owned by Indian Nations are technically private lands. However, since they were once held in trust by the U.S. Government, many of the earlier reports list them as public lands.

The Change in Range

Range plant communities are never static. They are constantly changing due to fluctuations in the environment that produces them. Natural factors such as fire or drought may cause some plant species to decrease in relative abundance while plants more tolerant of the adverse conditions increase. For instance, studies during the drought of the 1950's in the Great Plains (Albertson and Weaver 1956) showed that tall prairie grasses died and were replaced by shortgrasses due to drought alone. Other, man-initiated alterations such as deforestation or overgrazing may cause sudden and abrupt, as well as gradual, changes in plant cover.

However, changes are seldom due to a single cause. Usually combinations of factors such as climatic variations, grazing, burning, or deforestation lead to the conditions substantially different from those observed even a few years earlier.

Although changes are to be expected in plant communities and those changes can come from many sources, the world's rangelands have a pattern of change so drastic following the introduction of domestic livestock that overgrazing must be considered as one of the major causes for range deterioration. Similar patterns of range deterioration can be demonstrated on all continents where we have records of technological man and his

livestock arriving in a new location. First, man overestimates the carrying capacity of the range. His animals have grazing selection patterns different from the native herbivores and grazing pressures are put on plants at seasons different from native grazers. Some species are weakened and others become more abundant. Herds continue to build beyond the basic carrying capacity and the range deteriorates. The numbers of livestock that can be supported decline and usually fall well below the original carrying capacity due to the loss of important and productive plant species.

This pattern has occurred in Africa, Australia, Asia, and elsewhere, but nowhere has it been more dramatic or better documented than on the ranges of the western United States.

Conditions on the Arrival of the First Europeans

Numerous accounts of "seas of grass belly deep to a horse" abound in the early journals of explorers. No studies were made that can be considered scientific assessments of production by today's standards, but the optimistic reports of unlimited forage led to the establishment of domestic livestock herds as soon as dangers of Indian wars diminished.

Detailed descriptions of range sites suitable for comparison with present conditions are largely lacking. The impression of the western range as described by the first few hardy souls who crossed it generally left the notion that much good cow country was there in the West and ready for development. An attempt was made to describe the virgin range in 1936 (U.S. Senate 1936), but the description lacks detail for comparison with current range conditions. Other general descriptions of vegetation prior to use by European man are contained in older

ecology books (Weaver and Clements 1938), but they too do not give an accurate assessment of the western range prior to settlement by white men. Thus we must rely on the subjective and sometimes poetic descriptions of valleys filled with forage stirrup deep to horses. The true conditions cannot ever be appraised. Although we are impressed by descriptions of pristine regions filled with game and grass, there is good evidence that many of the more arid regions were bare and eroded when the first European man arrived.

Early Attempts at Range Assessment

Regardless of the conditions that the first settlers found, it is apparent that the "unlimited range" soon proved to be a myth. Devastating droughts in the 1880's occurred. These periods of below-normal rainfall came at a time when livestock populations were high and the first of the major livestock die-offs spread through the West. When the rains came, the land was denuded and widespread erosion contributed to loss of range productivity.

In 1895, Jared G. Smith surveyed the western ranges and wrote:

> There has been much written in the last 10 years about the deterioration of the ranges. Cattlemen say that grasses are not what they used to be; that the valuable perennial species are disappearing, that their place is being taken by the less nutritious annuals. This is true to a marked degree in many sections of the country (Smith 1895).

Although this statement of Smith's is one of the earliest official admissions of deteriorating range, livestock associations in Texas and Arizona (Colville 1989), Mormon Church records in Utah (Clegg 1976), and other organizations throughout the West were complaining about the depleted condition of the ranges. In many areas the change from virgin range to barren wasteland occurred quickly (one to three decades after settlement).

A whole series of range surveys in the West showed similar depleted conditions. Various reports from the Southwest (Smith 1895), Pacific Northwest (Colville 1899), the Great Basin (Kennedy and Doten 1901) and the Red Desert of Wyoming (Nelson 1898) show that the western range was overgrazed and depleted prior to the arrival of the 20th century. Uncontrolled grazing on "free range" had taken its toll. The conservation movement was beginning to take shape in a few minds, and a long, difficult task of bringing grazing under control and improvement of the range was to begin.

Bringing the Range Under Control

The first effective control of grazing came with the establishment of the National Forests and regulations to administer grazing in 1905. By 1910 range studies to set carrying capacities were being established. In 1911 James L. Jardine developed the first standardized procedure for classifying ranges into conditions and carrying capacity (Sampson 1923). This method was to continue to be used, with modifications, until the mid-1930's (Standing 1933). Some managers of Indian lands adopted the USFS procedures as early as 1912-1915 but no assessment was made on the other "free range."

Almost immediately after the establishment of the USDA Forest Service, attempts were made to control grazing and reduce the numbers to the carrying capacity of the range. Long, hard battles were waged between users of the range and the agency involved, but slowly and surely, the ranges administered by the Forest Service were brought under control. To illustrate, in 1914 at the beginning of World War I there were 1.62 million cattle and 7.6 million sheep on the National Forests. In 1920 these numbers were 2.12 and 7.32 million head, respectively. At the

beginning of World War II, 1941, there were 1.2 million cattle and 4.7 million sheep. In 1946, 1.22 million cattle and 3.7 million sheep (Saunderson 1950). According to Saunderson (1950) numbers of cattle and sheep were reduced 55% between 1920 and 1950. Indian ranges, although not strictly public ranges, were also brought under management.

The remainder of the public ranges--those on the public domain--remained open to anyone, and unregulated grazing was the rule. It was not until the Taylor Grazing Act of 1934 established guidelines, and a grazing service to administer the act, that range use could be regulated. Even then, the slow process of adjudication was to delay true control of the grazing. With the passage of the Taylor Grazing Act of 1934, and the general concern over dust bowl conditions caused by the 1930s' drouth, the first national range assessment was published. It was entitled The Western Range and became Senate Document 199, 74th Congress, 2nd Session.

Senate Document 199, 74th Congress

The Senate Document represented the first nationwide gathering of data on America's vast range resource. It included a summary of western range use at that time and an assessment of its condition. It showed that over half (57.5%) of the public ranges were in poor condition (severe or extreme depletion)(Table 1). Another 26.4% was in fair condition, making a total of 83.9% of the range in poor or fair condition. National Forest lands were in the best condition of any ownership with 45.5% in good condition. The Public Domain (later BLM) lands were the worst of the lot with only 1.5% in good condition.

This difference in condition between federal lands is shown by estimated trends in range condition between 1905 and 1935 (Table 2).

Table 1. Percent depletion of rangelands by ownership in 1935 (from U.S. Senate 1936).

Ownership	Percent by Depletion Class			
	Moderate Depletion	Material Depletion	Severe Depletion	Extreme Depletion
Federal				
National Forests	45.5	40.0	12.0	1.5
Indian Lands	6.6	35.8	54.0	3.6
Public Domain	1.5	14.3	47.9	36.3
Other Federal	2.0	21.2	50.1	26.7
All Federal	16.1	26.4	38.1	19.4
State and County	7.1	47.4	37.0	8.7
Private	11.7	36.9	36.4	15.0

Table 2. Trends in range forage depletion from 1905-1935 (after U.S. Senate 1936).

Land Control	Percent of Land by Trend Class		
	Improved	Declined	Unchanged
National Forests	77	5	18
Indian Lands	10	75	15
Public Domain	2	93	5
Other Federal	7	81	12
State and County	7	88	5
Private	10	85	5

About 77% of National Forest lands had improved during the period and only 5% declined. On the Public Domain only 2% had improved and 93% had declined. Evidently the attempts to control grazing after the establishment of national forests soon after the turn of the century had allowed the ranges administered by the USDA Forest Service to improve. On the other hand, the Public Domain was still considered "free range" and excessive numbers of livestock were causing a continued deterioration of the range resource. Other federal lands and state and county lands showed trends similar to that of the Public Domain.

Private lands and Indian lands administered by the Bureau of Indian Affairs showed some improvement, but even on privately held lands the majority declined in condition during the 30-year period.

In addition to describing conditions prior to 1935, Senate Document 199 (1936) discussed the status of range research, made proposals for future administration of the public ranges, discussed the federal government's role in private range management and, in general, provided a reference point for past and future management.

The creation of the Grazing Service (later BLM) after the enactment of the Taylor Grazing Act and the establishment of the Soil Erosion Service (later SCS) created institutional support for Public Domain and private-land range management. Added to the progress already made by the Forest Service, all rangelands had some sort of technical support for their management available in the late 1930's soon after publication of Senate Document 199. Although each agency had a different approach to management, and each used different methods of assessment, range management of all rangelands was at last available nationwide.

Public Land Law Review Commission Report

In 1968 a national inventory of range conditions was made in response to the studies being conducted by the Public Land Law Review Commission. The forage resource portion of the public land study was contracted to Pacific Consultants. They analyzed data furnished by the federal agencies and reported the data summarized in Table 3 (Pacific Consultants 1968).

Agencies that normally do not include grazing in their program (National Park Service and U.S. Fish and Wildlife Service) indicated that two-fifths of their land were in good or excellent condition with three-fifths in fair or poor.

The USDA Forest Service and the Bureau of Land Management data showed that about four-fifths of their ranges were in fair or poor condition (Table 3).

This analysis for the Commission marked the first national inventory of range conditions since publication of The Western Range in 1936. However, care should be taken in comparing it directly with the 1936 study, because the early study did not report the status of the range in technical range condition terms. The state of the range management art advanced much during the 32-year interval. The range condition concept was introduced during the intervening years and some standardization of terms occurred.

Due to the different techniques used to measure range condition in 1966, there is some doubt in our minds that a direct comparison between agencies or years is justified. Although the techniques used by all agencies supposedly measure "deviation from potentional", the measurement techniques and intensity of sampling vary both between and within agencies.

Table 3. Percentage of land in three condition classes in 1966 by federal agency.*

	Percent by Condition Class		
	Good or Excellent	Fair	Poor
USDA Forest Service	20	44	36
BLM	19	52	29
National Park Service	45	28	27
Fish & Wildlife Service	41	46	13
Bureau of Reclamation	15	35	50
Department of Defense	28	60	22

* Adapted from Pacific Consultants (1968). Data are rounded to give relative percentages in three major classes.

We think that an assumption that three-fourths of the western range were producing at less than half their potential is a fair assessment of range productivity in 1966. This marks some improvement since the 1936 study which estimated that 83.9% of all federal land was in poor condition in 1936. Most of this improvement apparently occurred on the Public Domain. In 1936, the estimated percentage of land in good condition was only 1.5% on the Public Domain, according to The Western Range (U.S. Senate 1936). In 1966, 18.9% of the BLM grazing lands were in good or excellent condition (Pacific Consultants 1968).

The Forest-Range Environmental Study

In 1972 the Forest Service published an update of the nation's range resources and an analysis of future demands popularly known as the FRES report (USDA Forest Service 1972). This publication discussed inventory concepts and procedures, the resource situation as of 1970, the demands for outputs from the range, and suggested alternative mixtures of resource use to provide the goods and services demanded by society.

Its major strength was that it set a systems framework for range use and recognized the multiple-use demands upon the nation's rangeland. As a document for assessing condition of the ranges at that time, it left much to be desired. Apparently the authors relied heavily on the data previously collected by Pacific Consultants (1968) for the public ranges and the U.S. Department of Agriculture's inventory of soil and conservation needs (USDA 1971) with update for the agencies involved. Range conditions were reported by "ecogroups" rather than by agency, making direct comparisons with earlier reports difficult.

Individual State Reports in 1974-75

In 1974 an in-house publication was developed by the BLM state office in Nevada entitled "Effects of Livestock Grazing on Wildlife, Watershed, Recreation, and Other Resource Values in Nevada." The report was a highly critical, self study of the BLM's grazing operation in Nevada. It showed that the BLM was understaffed in the state and that the rangelands were undermanaged, e.g. "All districts have a severe shortage of personnel. Area managers have 2 to 3 million acres under their administration, and have only two or three other employees to assist them. . ." (BLM 1974).

The Nevada report, although originally intended as an in-house self study, became the catalyst for action by environmentalists and land users alike, all pointing out that BLM had admitted that they were not doing their assigned job properly. Suggestions for improving the Nevada situation were numerous and varied, ranging from transferring the public lands to private ownership to removing grazing (Hamilton 1974) to hiring more and better-trained range conservationists (Box and Sisson 1975).

After the publicity of the Nevada report other western states issued an in-house study on the conditions of the ranges and these were further combined into a range condition report for the Senate Committee on Appropriations. Several major problems seemed to occur in most of the states.

The lack of personnel, as discussed in Nevada (BLM 1974) existed in every state. In addition, the amount of money spent on range management had declined in the preceding 10 years. In Colorado, the

actual dollars used for range work declined about 20% between 1965 and 1974. When this figure was adjusted for inflation and higher salaries, the effective reduction was about 50% in the 10-year period (BLM 1975a).

Most states simply were not implementing basic range management principles. The Nevada report describes plans made on livestock response rather than vegetation response (BLM 1974).

In many cases there was a tendency to do nothing unless full-scale, rest-rotation schemes could be implemented. The Colorado state report, in discussing the livestock management situation, states: "It has been a common practice to do nothing until full-fledged management can be implemented. There are numerous allotments where a lesser degree of management can be effected at little cost until funds are available for the ultimate . . ." (BLM 1975a).

We are quite concerned that this tendency to do nothing prevades the BLM. For instance, all state reports we reviewed (BLM 1974, 1975a, 1975b, 1975c) showed a lack of basic management data. In many cases such fundamental data as carrying-capacity estimates or range-condition and trend studies had not been conducted since the mid-1960's or earlier

Almost all the state reports indicated that compromises were made during the adjudication process that resulted in a failure to bring stocking rates in line with carrying capacity. Yet none presented convincing data that the ranges have been monitored in such a way that the agency knows what the true carrying capacity of the range is today, in most cases 15 years after adjudication. The state reports usually suggest that insufficient forage was assigned to wildlife in the adjudication process, but again no data are presented to prove or disprove the statement.

might you!

Another area where BLM inaction shows in its own reports is in the area of wild horse management. Its data show an annual feral equine population increase of about 20% each year since enactment of the Wild Horse and Burro Act. The Wild Horse and Burro Advisory Board, many State BLM Multiple Use Advisory Boards, Conservation groups and livestock organizations have all passed resolutions asking that the wild horse and burro populations be reduced to 1971 levels, yet the populations continue to grow.

yes

State BLM studies tend to indicate that BLM-administered rangeland is not in as good condition as adjoining private land (BLM 1975a) or National Forest lands (BLM 1975c). In most cases, the BLM expects range conditions to decline under the present level of management (BLM 1975c).

Review of the state documents convinces us that the BLM believes its ranges are not now properly managed and the condition will continue to decline under its present stewardship. We are quite concerned that BLM has allowed its range management capabilities to deteriorate. It appears that the BLM decided in the 1960's to disassociate itself from grazing and become a multiple-use management agency. This move appears to have had disastrous effects on the total resource management. Instead of broadening its range-condition and trend work and expanding carrying-capacity studies to include wildlife and recreation, to get the basic resource data necessary for multiple-use decisions, there appears to us to have been a rejection of the basic resource surveys because they were "range" studies.

good

The contrast with the other major resource management agency, the Forest Service, cannot be escaped. Although the Forest Service has often been accused of being "tree oriented" and serving the timber

industry, it has never abandoned its role as the nation's foresters. It has added onto this role a concept of total land stewardship and has brought other resource uses along with its forester assignment.

We believe that some of the attitudes shown by BLM people who want to disassociate themselves with "livestock and grass", or who do not want to be known as range people are at the root of the problem of rangeland management on the Public Domain. Pride in the job and respect for the resource appears to us to be fundamental to high performance. We are appalled at the low level of funding and the conditions under which BLM works, but we are also concerned when their own reports indicate that "It has been a common practice to do nothing until . . ." (BLM 1975a).

Range Condition Report of 1975 Prepared for Senate Committee on Appropriations

As a result of the so-called Nevada Report (BLM 1974), the Senate Committee on appropriations asked the Bureau of Land Management to prepare a nationwide assessment of range conditions. The report (BLM 1975d) showed that about 17% of the land was in good or excellent condition and about a third of the land was in poor or bad condition. The reported trend was 19% improving, 68% static, and 16% declining. yes

A strong case was made for more intensive management of the public lands. Conditions were projected using current management practices, an intermediate management level (about doubling the inputs) and a high management level (almost tripling inputs). It was claimed that the current management level would add about 8 million acres to the good condition class by the year 2000; the intermediate level, 21 million acres; and the high management inputs, 78 million acres. Unfortunately,

the three management levels were not described in sufficient detail to allow an assessment of the accuracy of the projection.

The report discusses allotment management planning, multiple-use planning, public involvement, and other procedures in the BLM for determining proper range use. It serves more as a process document of how BLM operates than as a new and accurate assessment of range conditions. good

Although there are some indications that the ranges improved considerably between 1936 and 1961, figures in the various reports show no change in the past 15 years. We find it hard to believe that the range could remain static for 15 years. We think it is more likely that data have not been collected in sufficient quantity to show any change. For instance, the Utah report states "It is believed overall conditions have improved during these past 10 years, but this belief cannot be verified since studies do not exist on all allotments to determine present conditions . . ." (BLM 1975b).

During the decade of the 1960's many public land managers seemingly were encouraged to shift their attention from grazing to other uses. With fewer people to handle the grazing management, it may have resulted in less actual management on the public ranges. This process of diluting the management available was intensified with passage of the National Environmental Policy Act of 1969. Many of the best range mangers were reassigned to writing environmental impact studies and few experienced range managers were left to manage the land.

The Resources Planning Act Report of 1974

In 1974 Congress passed the Forest and Rangeland Renewable Resource Planning Act. The Act required the Secretary of Agriculture to

(1) periodically assess the national situation relating to forest and range resources under all ownership, and (2) to make program recommendations regarding those forest and rangeland resources managed by the Forest Service.

The results of the first assessment have recently been released (USDA 1976a) along with a summary (USDA 1976b) and a recommended renewable resource program for the Forest Service (USDA 1976c). The Act requires that a second assessment be made in 1980 and one each 10 years thereafter.

The assessment leaves much to be desired since few new data are added. The information for range condition, amount of land by ecosystem, etc. are taken from the FRES report. In turn, many of the data for the FRES report came from older reports or broad estimates made by agencies. In our opinion, the RPA assessment is a good first cut at assembling information already on the shelf, but does little to add new data that can be used for management. We appreciate that the time table for preparation was short and funds were limited, but for the assessment to be useful, the 1980 document should stress a complete new assessment with data gathered during the next 5 years.

The assessment as it is currently published is lacking in detail to allow evaluation of the probability of reaching the projections. For instance, such critical items as lack of sufficient information on the season when the forage can best be used, the class of livestock, and the specific location of the ecosystem under discussion detract from the assessment's usefullness.

The program suggested for National Forest lands includes a mix of management input levels to obtain the kinds of goods and services from the land that society desires. The "goal mix" selected in the

RPA program is goal VI, one with relatively high amounts of inputs and providing multiple uses to the public. Under this goal mix the range goal is to "provide forage to the extent benefits are commensurate with costs, without damaging land productivity." (USDA 1976b). This goal presupposes an increase in red meat demand and a move toward more grass-fed animals. Management inputs would be increased to raise AUM's from the present 11.3 million on National Forests to 16.3 million in 1980 and 20.4 million in 2020. In addition, the program proposes to improve range condition for other values such as wildlife habitat and watershed.

Changes in Livestock Numbers

The number of livestock using the public range has declined continuously since records have been kept. Although there are no accurate records available, the most drastic reductions in livestock numbers probably occurred soon after the abolition of the free range. Adjudication procedures continued until the 1950's, but most ranges had some grazing control by World War II.

Sheep numbers have declined continuously on both Forest Service and BLM land since 1947 (Table 4). Cattle numbers using National Forest land have remained about stable since 1947, but have increased about 1 million head on BLM land. This increase is probably due to a shift from sheep to cattle operations during the period.

Total numbers of animals using the public range can be misleading since most of the rangeland is used only seasonally. A more accurate estimate of change in livestock use is found by examining the animal unit months of grazing authorized on the public lands (Table 5). Total

Table 4. Millions of head of livestock authorized to use federal ranges between 1947-1972.

	USFS		BLM		Total	
	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep
1947[a]	1.3	4.1	2.2	7.6	3.1	11.6
1966[b]	1.4	2.4	3.2	6.9	4.6	9.3
1972	1.3	1.7	3.2	5.1	4.5	6.6

[a] Data from Pacific Consultants (1969).

[b] Data from CAST (1974).

Table 5. Animal unit months of forage consumed by livestock on USFS and BLM ranges at three time periods.

	USFS	BLM	Total
	1000 AUMs		
1935[a]	11,925	21,648	33,573
1966[b]	7,989	13,275	21,264
1972[c]	6,390	11,999	18,308

[a] Data from U.S. Senate (1936).

[b] Data from Pacific Consultants (1969).

[c] Data from CAST (1974).

grazing use has declined on federal lands from about 33.5 million AUMs in 1935 to 18.3 million AUMs in 1972. These figures represent those AUMs authorized, the actual use figure usually being considerably ~~larger~~ SMALLER.

One can argue that since the number of livestock using the public ranges has declined, this is evidence that range productivity has declined. Others maintain that the reductions were made to allow the range to improve and that indeed they have. In fact, no hard data exist to prove either case.

Opinions Differ on Range Condition

Opinions about the current condition of the western ranges vary across a spectrum from "about right" to ones of concern that ranges are seriously degraded. These differences in view arise in part from differing chronological perspectives, from the vantage point and conventional impressions of different interest groups, from different assessment techniques being used, and perhaps from a geographical perspective and because objectives have changed.

If current range conditions are compared with those of presettlement times, the impression may be one of significant degradation. York and Dick-Peddie (1958) in southern New Mexico, and Cottam (1961) in Utah have emphasized the vegetative changes since settlement times which, in their opinions, have been caused by overgrazing. Yet, comparison of current range conditions with those prevailing at the turn of the century, or in 1934 when the Taylor Grazing Act was passed, may lead to a different view. Patterson (1952) attributed the increase in pronghorn antelope and sage grouse in Wyoming in the first half of this century to improved range conditions during this same period. Smith

(1949) reported the return from shrubby vegetation on foothill ranges in Utah—a condition originally induced by livestock grazing--to the original bunchgrass type. This reversal was apparently induced by reductions in livestock and heavy browsing by deer.

Among the interest groups, the environmental organizations tend to consider that the rangelands are currently in degraded condition. The current law suit brought by the Natural Resources Defense Council against the Bureau of Land Management would seem to epitomize the view of this block.

The views of wildlife specialists are somewhat ambivalent. The traditional sense of competition for resources, and to some degree animosity, between livestock and wildlife interests may tend to predispose the latter toward a view of range overuse and competition with wildlife. In some cases--for example Great Basin pronghorns and Intermountain bighorn sheep--this may be true. Yet wildlife managers know that the vegetative changes produced by heavy livestock use around the turn of the century favored the increase in deer during the first half of this century. And there is some speculation that current declines in deer numbers throughout the West may in part be due to improvement of vegetation from the livestock standpoint but a decline of vegetation conditions from the deer standpoint.

Among livestock interests, the views are predictably on the side of range improvement. Many of the more progressive stockmen have worked with public agency employees and university range management specialists to improve the ranges on which they graze their animals. And they naturally assume that their attitudes and efforts typify the entire industry.

With some exceptions, employees of the agencies responsible for managing the public rangelands tend to the view that the ranges are in better condition today than they were 40 years ago. Having fought the battles of reduced grazing quotas over the past few decades, and having been involved in such range-improvement efforts as brush control, seeding, fencing, and water development, they understandably hold these views.

One could hardly argue that any of these views is wholly without bias. Clearly, the stockmen's views are colored by their vested interest. But by the same token, environmentalists' views become stereotyped almost to the point of cliche. It is easy to reside east of the Mississippi and pontificate about the sorry state of the western rangelands.

Using federal agencies as an example, especially the Forest Service and BLM, we and others have observed that opinions with regard to public lands and their management generally follow a pattern established by the agency. Very often we hear opinions from district-level managers which very well reflect beliefs of Washington-level administrators even though there is good reason to question the beliefs. No doubt this reflects that, even though communication overall is considered inadequate, the "party line" gets through and sufficient rewards exist for those who promote it. In addition there is psychological value to being a non-critical member of the organization rather than one who judges disapprovingly the institutional opinion.

We believe that agency bias is to be expected and should not necessarily result in better or worse management. When people join a

group--whether an agency, a social group, or a church--they invest of themselves in the group and, in turn, the group becomes a part of them. Criticism of the group or its policies becomes criticism of self. Therefore, it would be unusual for an agency employee to stray far from the stated policy or objectives of the agency. We are not suggesting blind loyalty, but a dedication of purpose that leads to the defense of an agency viewpoint. This dedication to a goal can lead to improved management--the loss of purpose can lead to poorer stewardship. Earlier we contrasted the Forest Service employees' pride in being foresters to the BLM personnel's apparent reluctance for being the nation's range managers.

yes

Opinions often differ between the Forest Service and the BLM on policy and management activities, but rarely do the personnel in one agency recognize the merits of a differing viewpoint in the other.

We note that while many institutions have been doing a good job holding public hearings on various planned programs, there is an apparent fear of personnel being public spokesmen. There is the tendency to want to remain anonymous in any bureaucratic organization. BLM personnel seem to stand behind and even promote BLM policies, but would gain immeasureably if the people could show more latitude in fitting programs to local needs and seeing problems as opportunities rather than insoluble dilemmas.

Why Do Agencies' Own Estimates on Range Condition Conflict with Their Own Estimates and Estimates of Others?

The wide variety of opinions regarding the current condition of the public range largely stems from inadequate information on the base resource,

even the land area managed within a given agency. Not only is there insufficient inventory data on the national level, it is not sufficient at the state level. We do not feel there is any planned attempt on the part of the agencies to mislead. We feel there are simply so many different estimates available--all inaccurate--that any organization or person attempting to summarize them is doomed to yet a new estimate which conflicts with the others. The available documents which present information on land area and condition frequently have two major published sources of data, the PLLRC (1970) report and the FRES (1972) report. Both of these contain data developed from estimates obtained from various other federal agencies. Since the particular goal at the time when an estimate is made will determine procedure, techniques and accuracy of sampling, it is safe to assume that each estimate has its own bias because of its intended use. The reader may have a separate goal from the person who collected the data and the two interpretations may be completely different.

The unfortunate fact is that the available evidence is not sufficient to formulate a comprehensive judgment on the present condition of the public range, and no one has adequately compiled and analyzed what evidence there is. Until some systematic attempt is made to assess the current state of the western rangelands, opinions will continue to differ and remain at the hypothesis stage.

Summary of Changes

Techniques for measuring range condition are imprecise at best, even today. Those estimates made through the years have been made for many purposes and using variable techniques. Even though the range has

been viewed through different eyes and measured against new technology at each major assessment, we believe that some sound generalizations can be made.

First, it is our opinion that virtually all the western range had been grazed exploitatively in the 1800's and that by the beginning of the 20th century only those lands poorly watered or with some other natural protection could be considered in good condition. The major range deterioration in North America occurred within three or four decades after the arrival of domestic livestock at a given point. For most of the West this was between 1850 and 1900.

Between 1905 and 1935, National Forest rangeland improved, but productivity of other ranges continued to decline (see Table 6). It was during this period that grazing was brought under control on the National Forests and range management as a science began to emerge. Some range management publications began to appear in the 1910-1930 period, the first range courses were taught in colleges, and range research projects began to emerge (Stoddart, Smith and Box 1975). It appears that isolated improvement was made on private and Indian lands during this period, probably only in restricted areas where the emerging art of range management was taught and/or practiced.

In the next 30-year period, between 1936 and 1966, we believe that the federal rangelands improved some. Although there appears to be little or no difference in the percentage of good or excellent range, the amount of range considered to be in poor or bad condition was estimated to have declined from 58% in 1936 to 33% in 1966. At the same time, the amount of fair condition range increased from 26% to 49% (Table 6).

Table 6. Percentages of all federal land in three condition classes.[a]

	Percent by Condition Class		
	Good or Excellent	Fair	Poor or bad
1936[b]	16	26	58
1966[c]	18	49	33
1972[d]	18	50	32

[a] All data rounded to the nearest percentage point.

[b] Data adapted from depletion categories in Senate Document 199 (1936). Moderate Depletion was used to represent good condition; Material Depletion, fair condition; Severe and Extreme Depletion, poor or bad condition.

[c] Data adapted from Pacific Consultants (1968).

[d] Data from Forest Report No. 19, USDA Forest Service (1972).

This shift from poor to fair condition was more pronounced on the Public Domain lands (Table 7). We believe that the reported overall response of Public Domain ranges was small because they were extremely depleted by excessive "free range" use at the beginning of the period, and the arid nature of most of the Public Domain ranges does not allow them to respond quickly to management. A move of one condition class in 30 years can be considered a successful response to management.

We seriously doubt that there is any real difference in the conditions represented by the figures reported in 1961, 1966, and 1972 (Table 7). This information is probably all from the same data base, and even though there was updating between surveys, the methods of reporting varied, and any real difference in the range could be masked by the way in which the data are presented. Our personal observations are that foothill and mountain vegetation improved during the decade of the 60's but that few desert ranges changed enough to be obvious without intensive sampling. Unfortunately, few detailed condition studies have been made on the desert ranges since 1966.

Current Management of Public Ranges

Administrative Organization

The Forest Service and BLM both have an administrative structure that could be adequate for managing public ranges. Yet, there are few who would say that management of public ranges is as good as it should be. In fact, it is rather obvious that the present low condition of the public range begs for more attention.

In evaluating present condition and current management we must recognize that arid and semi-arid ecosystems respond slowly to management

Table 7. Percentage of land administered by BLM in three condition classes.

	Percent by Condition Class		
	Good and Excellent	Fair	Poor or bad
1936[a]	1.5	14.3	84.2
1961[b]	16.6	53.1	30.3
1966[b]	18.9	51.6	29.5
1972[c]	17.6	50.0	32.4
1975[d]	17.0	50.0	33.0

[a] Source: Senate Document 199, 75th Congress, 2nd Session. Range condition classes were not reported as such but are inferred from percent depletion figures: moderate depletion = good or excellent; material depletion = fair; severe and extreme depletion = poor.

[b] Source: Pacific Consultants (1969).

[c] Source: Forest Resource Report No. 19 (1972). These figures include all federal ranges and are not from the same data base as those reported above.

[d] Data from USDI Range Condition Report (1975).

changes. The trend for most of our ranges could have been upward over the past decade. But that trend could also be static or downward. Many BLM grazing districts have not made detailed range condition and trend studies since the mid 1960's (BLM 1974b). Simply stated our techniques and manpower for the broadscale measurements we need on millions of acres of rangelands have been inadequate.

The state structure of the BLM offers some problems and some advantages over the regional structure of the Forest Service. The major disadvantage of the state structure is that each of the 11 states has slightly different policies. Since state lines do not follow natural, ecological boundaries or land ownership borders, a number of problems arise. One is that a unit of land which is ecologically uniform may be subjected to two or more management policies if it happens to be divided by one or more state boundaries. Another is that one rancher may find his operation under two or more state directors.

An advantage of state organization is that it should be closer to and more responsive to the land user. If the users are powerful special interest groups this could be a disadvantage as well.

Allotment to Regional Level

Planning occupies a large share of the time available to federal agency personnel. In both major range-management agencies, a framework is available to develop management plans that will suit individual allotments and still fit into overall objectives for land management at the regional level. However, it is not being accomplished at the rate we think it should. Allotment management plans of the BLM are far behind schedule. In vast areas of many states they are non-existent.

In fact it was only the impetus of the NRDC suit that overcame the inertia existing in the agency. Under the BLM system, management framework plans are not available and used for directing the allotment management plans.

While the Forest Service has better marks than the BLM at both the allotment and regional level for planning and management it is far from being home free. We feel the better progress of the Forest Service is due to better financial support and a more professional approach to planning and management. ??

We believe that the public now expects, and will demand in the future, that grazing on the public ranges be part of a larger multiple-use plan for the public lands and that this plan, in turn, will be tied to state and/or local land-use plans. Although both the BLM and the Forest Service claim to have efforts in broad-scale multiple-use planning, we find that the approaches of the different agencies bear completely different results at the local area.

In general the U.S. Forest Service's approach of making the broad multiple-use plan and then fitting the grazing program into the multiple-use plan is better accepted by users, environmentalists, and professional managers than the BLM approach. In the BLM approach, the Allotment Management Plan is developed as a grazing plan and later subjected to environmental analysis. We believe that this approach will continue to pit user groups against one another and lead to less than ideal management.

Author does not understand process.

Range Improvements

Improvement in public range hinges on techniques and methods of management applied to the land. There are two main methods available

to the land manager. One is stock control, a reduction in number of animals to allow vegetation to improve. The other includes a number of practices which involve more refined methods such as vegetation management, reseeding, and intensive grazing systems.

Because the public ranges are diverse and complex, varying with soil, elevation and climate, all of the methods for range improvement must be available for application to each unique piece of land. It is improbable that any one method will fit all the diversity of vegetation types. A single rest-rotation grazing scheme, for example, while recognized as an excellent management tool in some situations, cannot possibly be suited for all ecological types--e.g. for desert as well as mountain range. It must be considered for use where appropriate along with many other possible improvement practices.

We are particularly concerned at the heavy reliance that is currently being made on "recipe type" grazing systems. For instance, the allotment management plans on all the BLM pilot areas being evaluated as part of the Natural Resources Defense Council suit are equating a Hormay-type rest-rotation scheme with good, intensive management. This type of system simply has not been adequately tested in most vegetation types and has great potential for range destruction as well as range improvement. Even the "plant requirements" on which the recipe formulas are based are usually not known. Some projected benefits such as improved hydrology on intensive management systems, have not been tested adequately and have been challenged by range hydrologists using computer models of BLM's own plans with their own assumptions (Gifford and Hawkins 1976).

Let us be quick [illegible]ay that we are not opposed [illegible]est rotation or intensive management. We support intensive management and consider it a must for improving the productivity of our ranges, but we think it should be locally adapted and based on sound science. In addition, the range improvement programs will dictate closer supervision by better-trained range managers who can study the results of the program and change the procedures when necessary. Frankly, we do not see the commitment in funds for adequate management manpower and scientific inquiry needed to make the intensive programs work.

In most arid shrublands, a simple reduction in livestock numbers is not going to result in measureable range improvement in a reasonable period of time. Once woody species have invaded or increased in numbers, they will not be reduced by removing livestock. In most cases, livestock reduction must be accompanied by direct action such as appropriate brush-control measures and revegetation.

Management agencies, then, to accomplish the task of range improvement must have sufficient funding levels, personnel, and expertise to attack the problem, not simply apply passive management and hope everything works out.

Response to Needs and Pressures

The federal agencies are in the public eye, so are subject to rather immediate reaction of the public to current issues.

For the BLM this pressure historically came from ranchers and grazing organizations. Now we see BLM and FS brought under fire from all sorts of interest groups at the local as well as the national level. These agencies appear to us to react to these pressures rather than developing sound plans for land use based on resource potential.

We feel federal agencies managing public lands should develop resource plans which use the biological and physical limitations as well as potentials of the site as the basis for management. Too often they allow certain management practices to be forced upon them through pressure by politics or interest groups to meet short-term demands.

When Environmental Impact Statements on grazing were called for the federal agencies responded. However, criticism of them developed and now BLM is reacting to NRDC charges of inadquate range management. The Forest Service, by using a somewhat different approach from the BLM, appears to have met the most serious criticisms adequately with their multiple-use plans. The major difference as we see it between the two agencies is that the Forest Service adopted a multiple-use approach to allotment management while the BLM chose a more narrowly based approach limiting their EIS primarily to the action of intensified grazing management. We feel the broader approach is more appropriate.

Current management differences on the public range between the Forest Service and BLM are based in history. The Organic Act of 1897 gave the Forest Service the statutory, regulatory, and judicial power to manage public lands positively, even forcefully. Additionally, the Forest Service early established that grazing was a privilege, not a right, through grazing withdrawal and reallocation. In contrast, the BLM inherited less responsive and less productive land, came into being late in the scene, and never thought it had the legislative muscle to fully manage their public land. The Taylor Grazing Act was too broad and ill-defined as far as specific mandates to improve the range.

We feel it is [illegible]kable the public ranges are [illegible]ell off as they are given the indifferent treatment they have received at the hands of Congress and administrative budget makers in Washington.

Current Status of Knowledge for Management of Public Rangelands

The ability to manage any resource is dependent on data that is current and applicable to the goals of the manager. In the long run both current data and basic knowledge generated through research are essential.

Administrative and Management Data Base

The Forest Service and BLM both suffer from deficient data on which to base management. Inventory data at the allotment and district level on range sites, condition classes, and wildlife populations vary from fair to totally lacking. In many cases, data necessary for proper management simply do not exist. The extensiveness of the areas under stewardship and personnel inadequacies virtually preclude adequate inventory at the present time.

Fundamental knowledge of plant response to grazing is incomplete and fragmented. We have not progressed beyond the hypothesis of Stoddart and Smith's (1943) first edition of their range management text. In fact we have not even tested many of the hypotheses they proposed because "intuitively they feel good."

There are no satisfactory measures of goods and services provided by public rangelands, other than grazing. For example, we cannot quantify the value of sighting a rare and endangered species nor can we really justify economically managing rangelands for their survival.

All in all, public land managers are indeed handicapped in their management programs because management data are not available for them to use.

Research Data Base

Good management can only come from good research. Research on rangelands and their management has generally been scant and disorganized, with narrowly based objectives. The latter two most probably are a result of the first. It is not too surprising to find that range research has lacked organization and well-defined logical objectives. The rangeland area to research is so vast, the need so great, and the money available so small that an organized approach has been impossible. Research in forestlands and their management was well underway prior to 1900. It was apparently easy to plead a case for trees since they were well known and had so many indispensable uses. Grass and shrubs on the other hand were obscure, obviously plentiful, and had little conspicuous use. The land on which they grew was virtually valueless, low in productivity and occurred in most inhospitable places. This attitude toward rangelands is not uncommon today.

Research on rangelands has never been plentiful. Shortly after the turn of the century a number of grazing studies were started, but they were largely simple measures of animal response. The first studies to measure the results of grazing intensity, plant response, and grazing management were not started until the 1930s.

Reasons for Inadequate Research

The reasons why the research data base for range management is so inadequate appear to be several. The first and most obvious is the low

funding level for range research. Virtually all of that research is done in USDA (primarily Forest Service and ARS) and in a few western universities. The Bureau of Land Management, the only agency with range management as its central purpose, has never had a research arm of its own. And while numerous state agencies conduct research on forest and wildlife management, none to our knowledge conducts any range research purely from a livestock perspective. That research which is funded by state fish and game departments is done with primary focus on wildlife-livestock range interrelationships.

A major result of the low funding level is of course a limited manpower resource for range research and this low level has declined. Table 8 shows that the range research category is the only one which declined in scientific years input to research between 1972 and 1974. In the western region there are only 61.3 SY's devoted to range research. This includes Forest Service, Agricultural Research Service, and Agricultural Experiment Stations. By contrast there were 65.9 SY's in forest utilization research alone and a total of 504 SY's in all forestry research, less the 20.1 in range. This clearly points out the glaring deficiency in research on the western range.

compared

504
23
484

A concerted national effort for research on rangelands has never existed. Since 1960 the scientific years of rangeland research has diminished by every measure. Not only that but the effort classified as range research is overestimated because much of the reporting includes scientific years research activity in fringe areas such as genetics and entomology. Range research has never even achieved the status of a separate category for reporting purposes.

get

Table 8. Scientific years (SY's) in research in selected natural resource disciplines for the western region.[1/]

Discipline	1972 SY's	1974 SY's
FORESTRY		
Inventory	23.5	28.1
Timber Management	90.1	109.8
Forest protection	123.0	133.3
Forest utilization	65.5	65.9
Water	76.2	101.7
Forest, Range, Wildlife and Fish Habitat	74.3 (Range 21.3)	46.0 (Range 20.1)
Recreation	8.9	18.9
Alternative land use	2.8	19.1
Technical assistance	0.0	1.3
Total Forestry	437.4	524.1
FORAGE, RANGE, AND PASTURE	---	147.4 (Range 41.2)
Total Range - 1974		61.3

1/ Data from Current Research Information System, USDA, CSRS, Washington, D.C.

A second reason for the low research base is the dilution of effort over the past 10-20 years from what we believe is the central need in range research. That need, in our opinion, is to elucidate the effects of different grazing patterns on the vegetation in particular, and other components of the ecosystem in general. This involves both empirical, long-term observation of the effects; and analyses of the mechanisms of these effects in terms of plant physiology, plant community dynamics, soil physics, chemistry, and biology, and others.

Much of recent range research has diverged into entomology, noxious weed investigation, plant pathology, shrub culture, and other areas. While we do not question for a moment the worth of these areas, the result of their growth has been to divert funds from already limited resources away from what we consider to be the highest priority research needs.

Long-term grazing studies have all but disappeared due to inadequate funding. Data from these are essential if we are to appropriately assess the impact of grazing on all resource values.

A third reason for the low research data base may lie in the low productivity level of the research which has been conducted. Whether conducted through agency research arms, or on campus through agricultural experiment stations, such research has tended to get long-term funding. This is as it should be, for empirical studies of grazing effects on vegetation are of necessity long-term studies. The major long-term grazing studies on such range areas as the Jornada del Muerte in New Mexico, Santa Rita in Arizona, and Desert Experimental Range in Utah have provided some of the most important insights of any grazing research in the world.

But the values [illegible] long-term funding have their [illegible]de-offs. The pressures for productivity in terms of accomplishment and publication may not be as strong as in the case of competitive, annually peer-reviewed research. Projects also have a way of settling into a pattern without advancing into new directions as often as might be fruitful.

In total, there have been a number of superb range research projects over the short history of this science. But not all have been as productive or innovative as could be desired.

Start

Staffing and Personnel

Even in the best of times management agencies have not had an adequate number of trained range management professionals. We believe that the problem has been intensified rather than helped in recent years. For instance, economy moves have caused both the BLM and the U.S. Forest Service to combine grazing districts, ranger districts and forests. Each economy move means fewer people being asked to do more with less funds. In addition, qualified range people are being asked to do many non-range jobs because many times they are the best-trained ecologists on the staff. The lack of adequate personnel to supervise range work is reported vividly by the BLM: ". . . there is no supervisory technique which would adequately allow for the supervision of AMP's, HMP's or any other plans. When four people are charged with the administration of 4,500,000 acres of BLM land including 11 AMPs and with 50% of the entire resource area time spent in the office, no significant supervision can be realized" (BLM 1974).

In brief, there simply are not enough people to do the job. Secretary Kleppe at the 1976 meetings of the Society for Range Management

4 Boyd, T.W., and Douglas H. Harper, 1976, The public range and its management: A Report to the President's Council on Environmental Quality.

said that "condition of rangelands has declined in the past five years since the advent of NEPA." The reason is that personnel needed on the land have been required to work on Environmental Impact Statements. Less attention is being given the land and it is suffering from it. The National Resource Lands, according to Secretary Kleppe, are largely in unsatisfactory condition (83%) with only 17% being in satisfactory condition.

There has not been sufficient recognition that range management requires professionally trained personnel. Agencies must provide opportunities for field personnel to attend shortcourses and seminars, even obtain additional college degrees. They should contract with universities to provide the kind of up-dating the agency feels its personnel needs.

Personnel should be assigned to problems within the scope of their training and experience. We have often observed that personnel not suited to a position have been placed there out of expedience. This is usually bad for the person involved and bad for the public land.

Managing public land is an important trust and the job is enormous. To accomplish the task will require leadership on the part of our federal agencies. This leadership is not as strong as we would prefer to see it. There is a deficiency of professionalism on the part of BLM in general and it needs attention. Leadership depends on professionalism. An attitude is emerging as well that has us troubled. It is a kind of "no matter what we do we will be criticized" attitude which is leading to inactivity and lack of positiveness.

A good-self image is important to the professional. This self-image is developed as the individuals have larger and larger successes in their work. Failures are disasters in building self-image.

One measure of professionalism is activity in professional societies. The major professional group that serves the range management profession is the Society for Range Management.

Range managers are not now certified so it is difficult to obtain an adequate measure of professionalism in any of the management agencies. One measure that can give an indication of professionalism within an agency is the participation of its members in professional organizations.

The Society for Range Management was formed in 1947 and its meetings and journals are the major source of new information on the management of rangelands. Membership in the Society can be considered as one attempt by an individual to keep current in his field. There are now over 4,000 members of the Society worldwide. The number of individuals in each agency is shown in Table 9.

We are concerned that only 353 people in the agency charged with management of the largest portion of range resources are involved in the professional society of their field. We believe that membership in the appropriate professional society is only a minimal statement of professionalism—it only reflects an attempt to keep current.

Leadership in the professional society represents an attempt to direct or mold the profession. In the past 20 years, the three major management agencies have held 32.5% of all elected or appointed national offices in the Society for Range Management (Table 9). Individuals in the USDA Soil Conservation Service have held 14.7% of all national offices

Table 9. Activities of management agency personnel in the Society for Range Management, 1957-1976.

	BLM	USFS	SCS
Number of members 1976	353	776	572
Number of national elected offices[a]	12	16	23
Number of appointed national offices[b]	7	29	30
Number of individuals holding national office	5	18	14

[a] National elected offices sampled were President, President-elect or Vice-President, and members of the board of directors. The total possible offices were 180.

[b] Appointed offices sampled were editor and editorial board. The total possible appointments were 180.

compared to the USFS's 12.5% and BLM's 5.3%. We are again concerned that BLM is apparently weak in developing leadership or directing the future of the profession they should embrace. In the past 20 years, only 5 BLM people have held national office and 3 of these made their professional reputations in universities or USFS before joining BLM.

Most of these weaknesses can be overcome. A significant need is additional professionals given good opportunity to develop leadership qualities necessary to meet the challenges of the public range and its management.

Need for An Independent Assessment of Range Conditions

It should be clear by now that we consider the overall effort so far expended in the protection of an extensive and valuable resource inadequate. Proper management should consist, in our opinion, in the enactment of sound management practices by adequately staffed organizations, acting on the basis of a rich body of research information, and taking continuing state-of-the-resource inventories to check the validity of the management practices.

As we have discussed, and as the differences in opinion attest, we do not at present even have a sound picture of the current state of the public grazing lands. A first step in the direction of placing public grazing-land management on the sound footing we believe it needs would seem to be an assessment of its current state and trend.

Senate Document 199, The Western Range, was the first real benchmark of range conditions, coming as it did within two years of the passage of the Taylor Grazing Act. It summarized the condition of the western grazing lands as of 1936, pointed out the dire conditions as of that date, and recommended steps to improve those conditions.

A similar assessment made now would provide a new benchmark of range condition which would serve three main purposes. (1) It would provide a basis for comparison with the 1936 conditions, and thereby give some indication of trend. (2) That indication would provide a picture of the degree to which the 1936 recommendations were carried out, and the effectiveness of the provisions of the Taylor Grazing Act. (3) Once completed, the assessment could serve as a basis for policy recommendations for future management directions: executive action, new legislation, and enhanced research and educational programs.

In our opinion, the assessment should be carried out by a non-governmental group for several reasons. Range management by public agencies is currently under attack from many quarters. If the assessment were to conclude that range conditions have improved markedly in the past 40 years and are continuing to improve, this conclusion would carry more creditibility in the eyes of these critics if done by a non-governmental group.

Furthermore, this assessment would de facto constitute an appraisal of the agencies' accomplishments. It would surely be difficult for any agency to be objective in evaluating its own accomplishments, or that of a sister organization. Again, if the evaluation is positive, it would be preferable for an independent assessment group to render that judgment.

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