

# Public Land and Natural Resource Issues Confronting Animal Scientists and Livestock Producers<sup>1</sup>

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**ABSTRACT:** Livestock producers using public lands in the West were once concerned primarily with efficient systems for livestock production. Historically, this concept began in 1934 with the passage of the Taylor Grazing Act. Management activities on public lands continued to focus on sustainable livestock production until the 1970s, when the public began to demand enforcement of the Multiple Use Act and the National Environmental Policy Act. During this time, species listing under the Endangered Species Act became more active. Unfortunately, so many species are listed or are being considered for listing that it becomes impossible to develop biological information on causative factors for listing or recovery plans for each one. Peer-reviewed science that addresses management needs is often unavailable, and articles from the gray literature have been used in management plans for both threatened and endangered

species and for public land. Personal biases of both scientists and land managers can influence the development of land management plans, especially in cases in which scientific information is minimal. The Land Grant System is well positioned to develop research applicable for public lands. Animal scientists need to be involved in interdisciplinary teams. Livestock producers need to overcome the stigma that livestock grazing is not a sustainable use. Rangeland in poor condition, whether public or private, should be improved if livestock managers are to change the public perception that grazing degrades rangeland. To accomplish this, education and peer pressure should be used. Another approach needed is activism on the part of producers and animal scientists. The public is demanding a voice in public land management. Working groups seem to be the emerging pathway to cooperatively develop management plans.

Key Words: Public Land, Livestock Management, Sustainability, Biodiversity

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## Introduction

Public land livestock producers and animal scientists were once concerned primarily with efficient systems of livestock production. Land bases were managed for the long-term output of livestock products. However, during the last 25 yr substantive changes have developed in how the public views the management of private and public lands (Wilkinson, 1992).

A key issue in the West today is the concept of sustainable development (Wilkinson, 1992). Sustainability was once defined as being able to produce a

given amount of product from a given amount of land for perpetuity. More complex definitions have been proposed (Vavra, 1996). Sustainability can be defined as the overlap between what is wanted and what is ecologically possible (Bormann et al., 1994). Implementing these new concepts of sustainability in the West present a challenge to animal scientists, livestock producers, public land managers, and the public.

Butler (1995) identified communication between livestock producers and public land managers in the West as the number one problem in implementation of such actions as ecosystem management. The public as well must be included in the communication equation. In fact, the public is increasingly interested in participatory democracy and often demands more involvement in decision making and policy formulation (Svejcar, 1995).

In this article, I have discussed, through examples, some of the issues that need resolution on Western rangelands and some of the problems that hinder resolution. Some general ideas for resolution are also discussed.

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## Historical Perspective

It is necessary to understand the past and how we have arrived at this point in time from both a political and biological standpoint in order to plan a course for the future. Also, developing this understanding helps the various participants in the public lands discussion gain perspective and understand each other.

Concern for long-term productivity and stability in the livestock industry in the West probably has its first roots in the severe winter of 1885–1886, and the drought of 1891–1892 (Holechek et al., 1989). At that time, livestock numbers were estimated at 35 to 40 million in the 17 western states. In some areas, losses as high as 85% were estimated. These events precipitated the end of free-ranging livestock and the advent of fencing and hay production for winter feeding. Overgrazing remained a problem, but at least minimal management was initiated. However, tremendous damage to the range resources continued to occur.

The Taylor Grazing Act of 1934 was championed by the livestock industry to put an end to unrestricted use of the remaining unattached lands in the West. Forest lands had already come under restricted grazing by the Forest Reserve Act of 1891. Across the West, livestock production was put in balance with perceived sustainability: the long-term output of livestock products. Livestock grazing was now restricted by allowed numbers and season of use.

The 1950s were a time of intensive management inputs on public land (Holechek et al., 1989). Water developments, brush control, seedings, stocking rate adjustments, and grazing period adjustments resulted in an improving range resource. Through this time period, the use of public lands for livestock production was sanctioned by the American public. In fact, the thought persisted that this was the only viable use of most of the West. Lands were still managed for sustained livestock production with little thought to other resources.

During the 1960s, public concern over the environment and natural resources accelerated (Holechek et al., 1989). The Multiple Use Act of 1964 changed the management of public lands in the West by mandating that they be managed for multiple uses, such as wildlife and recreation. Timber and grazing management plans had to take into account compatibility with other uses. The scene was further complicated by the passage of the National Environmental Policy Act of 1969. Federal agencies now had to develop Environmental Impact Statements on management actions that affected federal lands. Livestock grazing on federal lands was reduced 29% between 1960 and 1993 (Holechek et al., 1989).

During the 1970s and 1980s the environmental movement expanded into a major political force. The more radical groups called for the removal of all livestock, the cessation of timber harvest from public

lands, and the curtailment of water diversion for irrigation. The Endangered Species Act became a tool of the special interest groups to restrict commodity production on all lands and water diversion for irrigation. Between 1967 and 1995, 1,446 species were listed as threatened or endangered. A recent Supreme Court ruling reinforces the Endangered Species Act in that private lands will be included in preservation efforts for threatened and endangered species.

## The Issues of Science and Scientists

There has been an almost universal call for science-based management of grazing and other natural resource uses of the West. However, the questions of what is science, whose science, how to get more science, and how to apply that science appear immediately as one attempts to make sense of policy regarding public lands. Of the 1,258 species listed, and the 3,000 species being considered for listing (U.S. Department of the Interior, 1992), very few have been researched sufficiently to allow for science-based recovery plans. In fact, there is an unknown amount of misinformation being used in developing recovery plans.

The number of species that have been listed without the benefit of science-based documentation is unknown. Bury and Corn (1995) found that circumstantial and anecdotal information was used to support the contention that the desert tortoise (*Gopherus agassizii*) has suffered a long-term decline. The authors further state that data supporting long-term decline in abundance and distribution of tortoises have never been published. The conservation community and many scientists hold a belief in the decline, and this belief has promoted management actions that are potentially harmful to tortoises (Bury and Corn, 1995). The basis for important decisions on tortoise management are unrefereed, unpublished reports. Knopf (1987) voiced a similar concern after he reviewed the literature being cited in management plans for riparian areas in the West. He found that 85% of the literature cited in those management plans was from the gray literature and not from peer-reviewed research papers.

Endangered kangaroo rats in California provide other interesting examples. Protection of the giant kangaroo rat prevents reestablishment of native perennial vegetation (Schiffman, 1994). Kangaroo rats depend on exotic weeds for food, and they cache the seeds, which in turn promotes continued establishment of the weeds. The Kangaroo rats continually disturb their habitat, which also favors the establishment of weeds. Kangaroo rats and weed mutualism presents an intractable management dilemma (Schiffman, 1994). Restoration of valley grasslands, where the kangaroo rats occur, to conditions in which native plant species dominate may be impossible.

The endangered Stephen's kangaroo rat (*Dipodomys stephensi*) prefers shrub-free habitats. Most of the remaining potential habitat is now in shrub cover, probably due to fire control. Price et al. (1994) suggest that any habitat management plan for kangaroo rats include shrub control. Drastic modification of a "natural habitat" is something that most preservation-oriented biologists do not comprehend.

The point to be made with these examples is that restoration and maintenance of a species, endangered or not, is complicated and may have unanticipated effects. It usually is not a simple case of preserving the status quo or removing factors such as livestock grazing. Animal scientists need to be involved in management planning for public lands to prevent the use of what may amount to misinformation.

Bias within the scientific community is also a consideration. In an informal survey, Duncan (1994) found that the overwhelming majority of scientists responded that they had biases. Bury and Corn (1995) illustrate this point very well in the case of the desert tortoise. The authors reported that some reviewers of their manuscript suggested it not be published because it might be used by opponents of tortoise preservation. It is interesting to note their term "opponents of tortoise preservation." Such is probably not the case. I doubt anyone would be against conserving the tortoise per se. People would more likely oppose the lock-out of vast acreages of land based on a preconceived notion that cattle grazing is bad for the tortoise.

The notion that livestock grazing is inherently an evil thing is one of the major problems animal scientists must contend with. The Society of Conservation Biology recently published their position statement on livestock grazing on public lands. The position statement calls for the drastic reduction of livestock grazing in the West and to allow grazing only where it can serve a positive ecological role (Society for Conservation Biology, 1994).

Fleischner (1994) identified the ecological costs of livestock grazing as the loss of biodiversity; reducing population densities for a wide variety of taxa; disruption of ecosystem functions, including nutrient cycling and succession; changes in community organization; and change in the physical characteristics of both terrestrial and aquatic habitats. Fleischner (1994) went on to call livestock grazing the most pervasive land use in western North America and the single most important factor limiting wildlife production in the West.

In a later issue of the same journal, Brussard (1994) criticized the attitude of Fleischner (1994) by stating "instead of creating a grazing is bad, no grazing is good dichotomy, conservation biologists would be more effective by asking and answering: How can livestock grazing be managed to have the fewest

impacts on biodiversity and ecosystem integrity? Virtually no information on this salient question was offered in the articles on grazing in the September 1994 issue." Gall and Staton (1992) called for cooperation between agricultural and conservation biologists to ensure continued production of high-quality food and fiber for all the earth's people and to protect biological diversity.

Bryant (1982) reviewed 214 papers on the impact of livestock grazing influences on wildlife. The author found more studies in which livestock grazing had a positive rather than a negative effect on wildlife species. Studies involving waterfowl were deleted from this compilation. Knopf (1996) criticized grazing/wildlife interaction papers as often being flawed by poor design (inadequate controls and replications) of studies, abusively grazed sites carelessly construed to represent proper range management, and investigator advocacy for a fisheries or wildlife resource. As the previous citations indicate, the attitude of scientists can often influence study design, interpretation of results, and tone of the resulting article.

## Management Issues

The backgrounds of the employees of federal land management agencies also can influence decisions on public lands. Wagner (1994) reported a decline of public trust in agency professionals. Within the public land management agencies, there is a tremendous variation in how land management is approached. Pro- and anti-livestock, as well as neutral, attitudes exist. There is not much consistency within an agency or between agencies. Butler (1995) reported that in the last 15 yr 50 to 80% of all range managers in the Forest Service have come from urban environments of populations of 50,000 or more, and many of these are from cities in the eastern half of the country. These people are the first-line communicators with livestock producers in regard to grazing management on public lands. It is not easy for people from different cultural backgrounds to communicate (Butler, 1995).

Management plans may also reflect the cultural backgrounds and(or) biases of the designers. Houle (1995) described her experiences dealing with various public land and wildlife management personnel and their preconceived notions against cattle grazing while conducting a raptor ecology study in northeastern Oregon. Again, animal scientists need to be involved with the formulation of plans and the public comment process of public land management.

In fact, grazing systems developed on public lands are designed by personnel with a plant ecology background and perhaps a token amount of animal behavior and nutrition knowledge. Grazing systems should first and foremost be designed to sustain the

range resource. However, the design has to be compatible with livestock behavior and nutritional needs. Neither the U.S. Forest Service nor the Bureau of Land Management has hired an animal scientist to evaluate grazing management from the perspective of viability to livestock production.

### Toward a Solution

Probably the biggest problem livestock producers and animal scientists have to recognize and overcome is the burden of the past. We have to accept that in the past livestock were sometimes grazed to the exclusion of other values and resources. However, Society totally supported this activity, and the government legislated for it. It was part of western expansion and economic growth. We need not bear guilt, but we do have to live with lowered water tables, reduced streamflows, reduced water quality, soil losses, sedimentation, weed invasions, insect plagues, and a host of other problems. The legacy is not only environmental degradation, but equally important to livestock producers, reduced income and increased expenses.

However, many past problems were the result of improper grazing and incomplete knowledge. We can develop, and in some cases already have developed, grazing systems that are ecologically responsible and that can be an important management tool for conservationists (Curtin, 1994). The author goes on to say that low-tech farming may not only preserve the landscape and community structure, but also may represent our best chance to preserve family farms and other smaller farming and ranching operations.

Today, we need to develop systems that are ecologically and economically sustainable. Previous discussions in this paper pointing out the extensive listing of threatened and endangered species and the lack of science in management plan formulation direct us immediately to the need for more research. Vavra (1996) suggested research approaches for developing ecologically sustainable livestock systems. The Land Grant System is designed to meet the needs for this type of research and the resultant technology transfer. Even though animal scientists may have little training in the area of environmental impacts of livestock production, they can and should be members of interdisciplinary teams. As a matter of fact, wildlife and fisheries biologists are no better trained in environmental impacts of livestock production.

The Land Grant institutions of the West have been criticized for being invisible in the public forums where land management policies are debated and decided and unable and unwilling to grapple with natural resource problems, choosing instead to chase big science (Marsten, 1992). The author goes on to

question the nature of research conducted by Land Grant scientists because most of the funding is directly or indirectly (through agriculture committees of Congress and state legislatures) from commodity groups. Wagner (1994) explained this in a different light. He revealed that most Land Grant faculties had rural backgrounds and were trained by scientists who also had rural backgrounds, so they all tended to be commodity-oriented by virtue of cultural background. However one argues, Marsten (1992) does make an excellent point. What is needed is the higher order of research and thought to adapt the traditional way of life and natural resource economy of the West to the search for sustainability. He goes on to say that this new role would not replace current and traditional research but would build on these results and create a framework to guide future work. The role of scientists in natural resource issues has changed over time. In the expansion phase of the United States the role of scientists was to survey and describe the continent's resources, to prospect those resources, and to make them available for commercial use (McEvoy, 1992). Current interest is more on how animals and plants live in their environments and how they are affected by human disturbance. We were previously involved with increasing the amount or efficiency of production and not non-economically oriented endeavors. At one time, an animal scientist who suggested to a department head or director of the agricultural experiment station a research project on the relationships of livestock grazing and neotropical migrants (songbirds) had better have tenure.

McEvoy (1992) defines science as a struggle among scientists, and between scientists and citizens, over what counts as "reality." Animal scientists and producers need to be involved in the planning process on public lands to participate in that "struggle" McEvoy (1992) so aptly describes.

If livestock producers develop ecologically sound management methods on their own operations, then trust is built with the public and public land managers for the use of public lands. By the same token, producers that are practicing poor land stewardship should be brought into the educational process if poor practices are the result of ignorance. Peer pressure should be applied to others using poor practices by choice. There is no way we can afford operators functioning at levels that cause environmental degradation. The radical special interest community uses these individuals as examples of the unsustainability of animal production systems.

We must also accept the inevitability that in some cases livestock grazing may not be ecologically acceptable. We should demand scientific scrutiny of such cases but still be prepared to compromise. In some cases in the restoration of riparian zones, total

livestock exclusion at least for a period of years during recovery is the best management practice (Elmore and Kauffman, 1994). Again, there is a need to build credibility with diverse interest groups. If as animal scientists and livestock producers we can show a concern for environmental protection in cases where exclusion is necessary, then credibility should be gained.

The second approach needed is activism. Both the Federal Land Management Policy Act and the Public Rangelands Improvement Act require public input in the development of planning documents. Wagner (1994) found that the public is becoming more assertive and politically active, frequently challenging professional land managers' decisions. He went on to say that policy setting is being taken out of the hands of the professionals and assumed by various ad hoc combinations of interest groups. The author also noted a lack of consistent pattern to these groups. Svejcar (1995) identified two basic types of groups: those formed to deal with a specific issue over a set time period and those formed to foster communication, interaction, and education and that may or may not tackle specific projects. Both livestock producers and animal scientists need to be involved in both types of groups. However, developing and working in one of these groups is no simple matter. Education on group organization, management, process, and function are necessary. The companion paper by Glimp et al. (1998) provides excellent insights into the education process.

Wilkinson (1992) foresees a future in which western states and communities will be deeply involved into the process of wrestling with, and gradually implementing, the ideas embodied in sustainable development. The author envisions good science, good laws, and good communities coming together in the idea of sustainability. That really summarizes what is confronting animal scientists and livestock producers. The other issues mentioned herein are all challenges to accomplishing the end product of sustainable livestock production systems that provide for both economic and ecologic viability of the western United States.

### Implications

Public land management in the West is undergoing an evolutionary change. The public is showing a lack of trust in professional land managers and demanding a voice in developing land management plans. Special interest groups that are opposed to livestock grazing are active in the public opinion process. These groups often have an open agenda to end livestock grazing on public lands, and some scientists have the same

agenda. Animal scientists need to be involved in research, in the public comment process, and with working groups involved in public land management. Animal scientists and livestock producers need to work toward the development of production systems that are economically and ecologically sustainable. The best way to ensure continued use of public lands for livestock grazing is to develop sustainable systems and to gain the public trust. Involvement with diverse groups in the management or research process requires education on how to effectively function in these types of groups.

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