

Range Management: An Obituary Born 1930–Died 1998

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RANGE MANAGEMENT HAS COME a long way, but perhaps the old adage that all good things must come to an end pertains to our profession. It is not clear when the end began. There was a subtlety to it. No one is quite sure when the disease started to spread. It started out slow or chronic, but in the past 3 or 4 years it has become acute. It is now a rapidly moving possibly fatal disease and it appears that it will be very difficult to overcome. Therefore it seems fitting to prepare an obituary for what was once a thriving profession.

It all began with a few dedicated ecologists, botanists, and foresters who, by and large, came from the Midwest and East to the West. The first decade of this century (1898–1909) saw the emergence of pioneers in the art and science of rangeland management. Prominent among these were H.L. Bentley, F.E. Clements, F.V. Coville and P.B. Kennedy. More appeared through their publications in the second decade (1910–1919): A.W. Sampson, W.R. Chapline, J.T. Thornber, H.L. Shantz, E.J. Seton, C.D. Marsh, J.E. Weaver, C.L. Forsling, J.T. Jardine, O.A. Beath and C.E. Fleming. Growing interest in range management was evident through the research and publication during the 1920's by these: R.S. Campbell, J. Dixon, A. Leopold, K.W. Parker and M.W. Talbot. The 30's, which included several drought years, encouraged many young ecologists and others to take up the art and science of range management in one or another of its aspects: H.H. Biswell, W.A. Dayton, E.C. Crafts, E.W. Nelson, J.F. Pechanec, G.D. Pickford, J.H. Robertson, H.M. Saunderson, P.B. Sears and L.A. Stoddart. All of these, along with a host of others too numerous to mention here, started a new profession, that of *managing rangelands*. Their early studies were rather simple and effective. Their management prescriptions were practical and direct but often resisted. A cadre of new students were educated in several new schools and the *Society for Range Management* was born in 1947. The profession has grown steadily, numbering over 5,000 in the society and with many more non-society members who hold jobs as range conservationist, range scientist, or jobs with similar titles.

Currently, most range managers and range scientists are perceived as being only involved with the business of livestock production (cattle and sheep). We have been

singularly unsuccessful at informing the public of what we are about. That we have been for the past 60–70 years working steadily and successfully toward better management of *all* the multiple uses of rangeland resources seems lost in the current environment debate. That the ecological health of the western range has been improving for several decades and that wildlife populations dependent on these rangelands have been prospering is largely ignored as irrelevant. Despite inadequate to meager resources devoted to management of public rangelands, much progress has been made. The perception that we are *only interested in and knowledgeable about the grazing of livestock* has continued unabated.

RANGE MANAGEMENT STUDENTS acquire a broad ecological and management oriented education. Class work includes chemistry, biology, mathematics, statistics, computer science, soils, plant taxonomy, plant and animal ecology, plant physiology, animal science, watershed management, economics, multiple use management (most students have some class work in wildlife management, forestry or both), and remote sensing/GIS. They understand how rangeland ecosystems work and how they can be managed for their products while maintaining biodiversity and reducing environmental degradation.

It is no secret that heavy grazing (overgrazing), was commonplace just before and after the turn of the century. Aggressive settlement of the West did not allow for conservative resource use. Certainly there are still grazing problems on specific sites and much work is yet to be done. It has been a source of great frustration to the range management profession that due to emotionally driven legislation and litigation we have been prevented from reasonable management of wild horse and burro herds. Wild horses have created ecological disasters and political problems without abatement.

In the public rush to environmentalism, vocally driven by the extreme groups, this well-fed society (largely urban) has gone from indifference right past conservation to preservation. In response to this public reaction, academia and agencies are simply following. Resource management programs are giving way to conservation biologists and programs strongly tempered by preservationists. University and agency administrations have learned that active environmentalism pays dividends in terms of public support and subsequent appropriations

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and grants. Uninformed but highly publicized authors carry forward unabated the banner of "grazing by cattle is bad" (Ferguson and Ferguson 1983, Jacobs 1988 and Rifkin 1992). This is reinforced by the activities of other federal agencies, e.g., the General Accounting Office.

THE SOCIETY FOR RANGE MANAGEMENT and the range management profession in general surely must take a much more proactive approach. We must spend much less time talking to ourselves and dramatically increase the time professional range managers spend with the public and with disciplines interested and involved in the environment. We must find ways to increase a popular perception of range management as well as improve our scientific credibility among other ecological disciplines. Our profession has generally discouraged articles appropriate for general interest outlets as scientifically wasteful endeavors. It seems crystal clear that those in our profession can't simply stand by and hope these unpleasant things will go away. They won't.

Livestock have become the "scape-goat" for a multitude of perceived environmental woes. Ludicrous statements that livestock grazing of the Western range has wrought greater ecological havoc than any other endeavor of mankind appear frequently and without substantiation. Livestock are proclaimed to be the reason for the demise of almost all species of large mammals including the coyote, the grizzly bear, the antelope, the mule deer, and the big horn sheep as well as eagles, prairie dogs, desert tortoises, and several species of fish.

Environmental extremists claim that riparian vegetation has been destroyed, stream channels gullied, and fisheries eliminated solely because of livestock grazing. Many factors, man-caused and natural, adversely effect streams. Certainly urbanization, transportation systems, impoundments, and diversions as well as climatic and tectonic induced changes in base level (Masters et al. 1991) have caused major changes in riparian systems. It is becoming quite clear that planned management with such tools as controlled livestock grazing, prescribed fire, and greenstrip seeding can restore diverse and desired plant communities that resemble prehistoric vegetation better than no management, uncontrolled grazing, or uncontrolled recreational use.

Other misconceptions are abundant. For example, the Nevada Biodiversity Initiative (1991) states that "a series of factors, primarily human alteration of wildlands, currently threatens or has reduced biodiversity in Nevada." These types of unsubstantiated statements are accepted and promoted as if they are intuitively true. Yet there appears to be no evidence that Nevada for example has, in fact, significantly lost faunal or floral species.

The feeling is that if livestock had never been allowed to gain a foothold on public lands there would be abundant game and stands of waving grass even in the deserts. Not many people have read the journals of early European

explorers and American trappers who travelled in the arid regions of the West during the early part of the 1800's.

Heavy grazing by livestock or wildlife can impact riparian areas as witnessed by the Lamar and Gardner Rivers in Yellowstone Park. Also there is considerable concern relative to livestock grazing even on private land where private ownership rights are eroding.

It should be remembered that other than total digestible nutrients, the most deficient nutrient in human nutrition is quality proteins and they are best supplied by meat. By the year 2020 we have to double the world's food supply on fewer acres. The necessary animal protein cannot come from feeding concentrates; they will be directly consumed by humans. The only other source is rangelands.

Preservationists are generally in favor of a complete cessation of livestock grazing on public lands and in many cases on private ground. The more militant of these organizations are even more demanding. We have all heard by now that one of these groups has actually produced a brochure urging their adherents to hunt cattle: actually shoot them down. The best rifles and ammunition, the best time of year to hunt cattle, etc., are all described.

THERE IS AN ONGOING STRUGGLE by the environmental movement to control land and resource use. The under-current of this movement is one of taking man out of the natural world—protecting nature from man. Recently, Dick Crow in his comment in the *Western Livestock Journal* (February 24, 1992) quoted "Fossil Bill" Kramer, a man who has been active in the environmental movement for over 30 years but now questions what is happening. Kramer suggests that "these organizations have gradually become viciously anti-human, which they are today. In fact, I'm talking about the whole spectrum of the environmental organizations across the country, and also the animal rights groups, all viciously anti-human. I think they are terrible and an imminent threat to our society." Concern for our environment is appropriate and much needed.

To lock up renewable natural resources and deny their use in support of our society is preposterous and dangerous. It is ironic that in the name of environmental concern people are trying desperately to prevent grazing (a natural process based on renewable forage) and thereby shift our country's dependence even more to non-renewable resources and unsustainable technologies. Agencies such as the Environmental Protection Agency and the U.S. Fish and Wildlife Service are actively involved in various programs designed to take a "new" look at natural ecosystems. Their efforts directed at environmental monitoring, creating gap-filling natural areas, and designating rare and endangered species are influencing rangeland management. Often these efforts are directed at preventing reasonable use of natural resources.

There have been cries of massive subsidies to western ranchers. This is a smoke screen and a surrogate issue in

support of a cattle free agenda. The importance of food production using natural process not depending on fossil fuels is worth continuing. Coordinated Resource Management and Stewardship programs have tried to bridge this gap and develop better supported land management plans. Yet controversy continues to escalate. Antigrazing activists call these desperate attempts to justify grazing on public lands. Range managers are suspect and often are viewed as apologists for the western livestock industry. However, range trained people generally have an excellent working knowledge of the ecology and management of the western rangelands and they most likely have the best practical understanding of biological diversity and ecosystem function.

IN SPITE OF THIS, range managers and scientists may soon become *persona non grata* in the federal land management agencies. It appears that the federal agencies, whose responsibility it is to manage the use of natural resources are becoming increasingly preservation oriented. Range management budgets and hiring are declining while more biologists, cultural resource specialists and recreationists are being hired. The federal agencies will likely capitulate in the near future thereby precluding sustainable multiple use of renewable resources on vast areas of rangelands.

This will lead to the demise of the profession of range management with the final death knoll sounding somewhere before the end of the decade. Our demise is indeed unfortunate since we don't know of one range conservationist, range manager, range user, or range scientist that doesn't have the best interests of the land and the ecosystems in mind. It is probably safe to say that, to a person, all of these people are interested in the wise use and judicious management of all our rangelands in a multiple use context.

This is all very confusing and discouraging to many. Where do the answers lie? Clearly the trend is towards a declining social acceptance of resource use. This shift is the product of affluence and urbanization. Range management must develop and certainly has developed a greater commitment to butterflies, benthic invertebrates, skinks, rare and endangered species, and water quality among other things. There is a strong commitment on the part of many people to insure that our natural systems are protected from man. Yet in a more holistic view, it is more important that man learn to live within natural systems, extracting his livelihood from the renewable resources of these systems on a sustainable basis. All living organisms must sustain their populations by using the resource in their environment. Man needs to learn to live with nature, not apart from nature.

Range scientists are keeping abreast of the latest approaches to studying and understanding rangeland ecosystems. Although this idea has recently been somewhat discredited by Bonham (1991) there is a strong cross-over between basic ecology and range management. Range scientists are using ecophysiology, molecu-

lar genetics, ecosystem modelling, multivariate statistics, knowledge based expert systems, remote sensing/GIS, landscape ecology, and other scientific disciplines to assist in new understanding of rangeland ecosystems. Most of these scientists still hold to the idea that we are working with a natural resource that can be used and managed without resource damage.

Fortunately there is still a significant ongoing effort relative to range management in many of the less developed countries where the people still maintain a seriousness relative to the wise use of rangelands. These countries do not yet have the luxury of being able to just lock up their resources. In these countries there is a need to wisely use natural resources to support their people and considerable work to be done and education to be accomplished in order to promote sound multiple use on rangelands in a holistic and sustained use framework. If we continue to postpone the advancement of range science in the United States until population levels dictate crisis needs of food and fibre production, the result would be that we are actually following rather than leading the so-called developing countries.

IN SHORT, A USEFUL SCIENCE was born, developed and now may be about to die. The final date for the demise of range management appears imminent. What will the epitaph for the art and science of range management be? She was a good science, a good discipline loved by many, loathed by others.

Survivors include many retired bureaucrats, a handful of scientists and managers truly interested in wise land use with emphasis on the use, a few working bureaucrats (many have been replaced by workers with a strong preservationist bias) and many ranchers. There is also a legacy found in the published literature and on the rangelands where well-preserved grasslands and shrublands continue to function as they evolved and where the resource is in excellent condition after being wisely used for over a century. The use of these lands is multiple where livestock, big game, rodents, lagomorphs, invertebrates, fungi, reptiles, amphibians, and people can live in harmony. These lands stand as a monument to good range management and to the members of the profession who love these lands and the products found there including the solitude, the wildlife, the sunsets, and the smell of rain on dry soil.

Perhaps someday there will be a rebirth of range management, an awakening, a return to utilization of rangeland resources for mankind. This will possibly be the result of crisis circumstances that could once again lead to a period of over-exploitation of renewable resources to meet short-term human needs. Hopefully vestiges of the science and art of range management will have been retained upon which to base this rebirth.

Authors' Note—The authors are hopeful that this scenario will not come to fruition. However, if we remain silent range management will indeed fail. It appears to us

that the wisest among us must be prompted to speak out and teach the uninformed about range management; that we are about the management of a kind of land with multiple uses and that these lands offer manageable resource values to mankind in perpetuity. We sincerely hope that it is not too late.

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Mice and Management on the Mount Haggin Wildlife Management Area

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The abundance of small mammals can be a sensitive measure of success or failure of livestock grazing programs on Western rangelands. The abundance and variety of rodents can serve as an indicator of general health of the vegetative resource.

The Montana Department of Fish, Wildlife and Parks undertook a project to examine the effects of a planned grazing system on various types of wildlife (elk, Frisina 1992; sandhill cranes, Frisina and Canfield 1986) on the Mount Haggin Wildlife Management Area (Fig. 1). The study reported here includes small mammals (Fig. 2) and associated predators.

Rodents form a major portion of the prey base for raptors (Phelan and Robertson 1978, Hamerstrom 1979, Simmons et al. 1986) and thus are the major focus of research reported in this article. This portion of the study examines how the grazing system affects the potential supply of mice as prey.

Livestock Grazing System

The Mount Haggin grazing system is a three-pasture system incorporating approximately 18,000 acres.

The three pastures are similar in size, approximately equal in livestock grazing capacity, and are fenced from

each other. Fencing allows control of livestock but permits access by free-roaming wildlife. Cattle graze the pastures from June 15th through October 15th each year. The grazing level is set at 4,000 AUM's annually. Under the system each pasture receives one of three grazing treatments annually. The treatments are:

A Treatment: Available to livestock throughout the grazing season; grazing by livestock primarily during the growing season; rangeland is also available to free-ranging wildlife.

B Treatment: Grazing by livestock *after seed-ripe*; range land is also available to free-ranging wildlife.

C Treatment: Rested, available for wildlife use only. Rested from livestock grazing.

Each pasture receives one treatment annually and all three of the treatments during a three-year time period. Two-thirds of lands in the system are grazed during a single *grazing* season, but only one-third is grazed during a single *growing* season. Following cattle grazing of a pasture during the growing season (A Treatment), the pasture is rested from livestock grazing for two consecutive growing seasons by following the A Treatment with B and C Treatments, respectively. B Treatment pastures are not grazed until the end of the growing season, when plants have produced viable seeds. This approach enables plants to maintain maximum vigor and food storage, which promotes rapid post-grazing recovery. Grazing rotation thus allows for the maintenance of healthy,

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