

# Elk and Livestock Competition

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The need for proper management of the range resources of Western United States has been recognized for many years. It has only been recently realized that to secure adequate management, game populations as well as livestock numbers must be held to the limits of the food supply. Competition between livestock and game such as deer and elk on both private and public land appears to be one of the major land use problems of the West. The purpose of this paper is to present the historical, biological and economic aspects of the situation so that land managers and other interested groups may be more fully informed on this question.

At the turn of the century elk populations were at an all time low. In some areas the native population had been completely eliminated. Since 1910 big game numbers have increased as a result of public interest in wildlife conservation. Elk numbers increased from an estimated number of some 50,000 to 70,000 in 1910 to about 300,000 in 1952 (Hickie, 1953). The major increase came in the period 1920 to 1940 when the increase was about 500 percent. Between 1940 and 1952 the rate had dropped somewhat but the population is still on the rise. Hunter take is gradually increasing and is about 15 percent of the winter herd. This leaves an increment equal to from 5 to 10 percent of the winter herd as the annual rate of increase in elk numbers.

The development and use of western lands for crop production and livestock grazing resulted in the occupation of a considerable portion of the original home of elk and deer (Koch, 1941; Murie, 1951). The expansion of game

populations on these lands has created conflicts of interest in the use of western range and forest lands. Leek (1911) and Graves and Nelson (1919) report the earliest occurrence of a conflict of interest. Shoemaker (1930), Roberts (1930) and Smith (1930) recognized the problem in the Southwest and in Montana prior to 1930. Pickford and Reid (1943) in Oregon report competition for forage between elk and sheep on high summer range. Olson (1945) describes how the problem developed with the Nebo herd in Utah. Craighead (1952) indicates actual and potential competition between livestock and elk in Jackson Hole, Wyoming; Mitchell and Lauckhart (1948) describe the problem of elk management in the Yakima Valley of Washington. In Montana two large acquisitions of private range land by the State Fish and Game Department were made mainly to reduce the complaints by stockmen because of elk depredations to range and hay stacks. Other states have purchased land to extend the amount of range for wintering elk (Rutherford, 1954). Late and special hunts on elk, fencing projects and even herding of elk are all examples of attempts to alleviate pressure by elk on private land (Cooney, 1952). Hall (1952) recently reported on an elk-sheep range problem area on the Sitgreaves Forest in Arizona where sheep summer range is important elk winter range. Hanson (1952) reports on the problem in Canada. These examples indicate the extent of the situation. However, it is best to point out that for the most part they are local in nature. It is a significant fact that if these problems are not solved locally they may eventually

become quite extensive with unfortunate results both to livestock and game interests.

## Food and Range Requirements of Elk and Livestock

An adequate understanding of the overall situation requires consideration of elk food habits and requirements and the utilization of ranges by elk. The observations of Murie (1951) in Jackson Hole, Schwartz (1943) in western Washington, Rush (1932) in Yellowstone Park, Young and Robinette (1939) in Idaho, Cowen (1947) in Alberta, De Nio (1938) in North Idaho and Montana, Cliff (1939) in Oregon and Pickford and Reid (1943) in Oregon, Schwan (1945) in Colorado all testify to the fact that elk, of all large herbivores, have perhaps the most diversified food habits. While elk are mainly grass eaters, they can do well on herbs and shrubs, adjusting to the available food supply. In winter feed studies conducted by the Montana Cooperative Wildlife Research Unit and the Montana Fish and Game Department, elk were found to have a distinct preference for hay over bunchgrass or browse. Elk calves increased in weight when hay was available in adequate amounts. Both cattle and elk were found to consume forage proportionate to their respective weights. For example, a 500 pound cow elk will eat about one-half the amount a 1,000 pound domestic cow will take (Morris and Hungerford, 1952). From lignin studies it appears that hay is more readily digested than grass and both are more digestible than browse by elk (Geis, 1954).

The ancestral home of elk appears to have been of considerable extent. In Montana, elk apparently occupied the plains, foothills and high mountains (Koch, 1941). Allred (1950) indicates that the salt desert in Wyoming was part of the winter range of elk. An early photograph of elk on salt desert in Western Colorado has been seen by the writer. Evidence of this type clearly indicates that

present winter ranges are not typical, and it suggests the remarkable adaptive power of the animal. While elk herds are largely confined to forested and semiforested areas, their natural home apparently included considerable open country. However, only in the high forest country are elk in least conflict with agriculture. The use of haystacks by elk is one of the most frequent sources of conflict between ranchers and state fish and game departments. When snow deepens or temperatures drop sharply, elk will move to hay stacks even though range feed is available.

summer range and the spring and fall range for both cattle and sheep. This seasonal range is in shortest supply for domestic livestock. While consideration is given to the needs of both elk and livestock on public lands, this is not necessarily done by the livestock operator on his own lands. Since a fair proportion of this seasonal range is privately owned, elk in many places are dependent upon the generosity of the rancher for a critical food supply.

Some sportsmen have been interested in livestock reductions on public lands to provide more feed

men to reduce livestock numbers for watershed and wildlife needs.

Elk occur mainly in small herds widely distributed over the West and in a few large herds such as the Sun River herd, the Northern Yellowstone and Gallatin herds of Montana, the Selway-Lochsa herd of Idaho, the Yakima and Olympic herds of Washington, and the Jackson Hole herd of Wyoming. The small herds are near their maximum population relative to the winter food supply (Rasmussen, 1949). If these are managed to restrict populations to present size through more intensive hunting, problems of small herds will be largely met. Most stockmen will accept this situation relative to their own and public lands. Haystack damage can be minimized by the use of high stack fences or baling and hauling of hay close to ranch buildings.

The problem of existing large herds will require a different solution in each case. Mitchell and Lauckhart (1948) describe a successful solution to the problem of management of one large herd, the Yakima herd. Reduction of livestock numbers on summer range was not the solution. Land acquisition of necessary winter range from sportsmen's funds provided the necessary winter range. This area should be able to supply a high level of hunting opportunity for some 1,500 to 2,000 hunters and yield 500-700 legal kill. The Sun River herd in Montana has been brought under relatively good management by a combination of land acquisition, fences and riding, so that a herd of some 3,000 elk have the finest combination of summer and winter range to be found in the West (Figure 1). This herd has been producing about 500 elk to some 1,500 hunters (Cooney, 1952). Hanscum (1952) indicates an extensive feeding program is used in Wyoming. This is at best a doubtful approach to the production of elk in small or large herds.

The Northern Yellowstone and Jackson Hole herds represent two of the largest in the country that

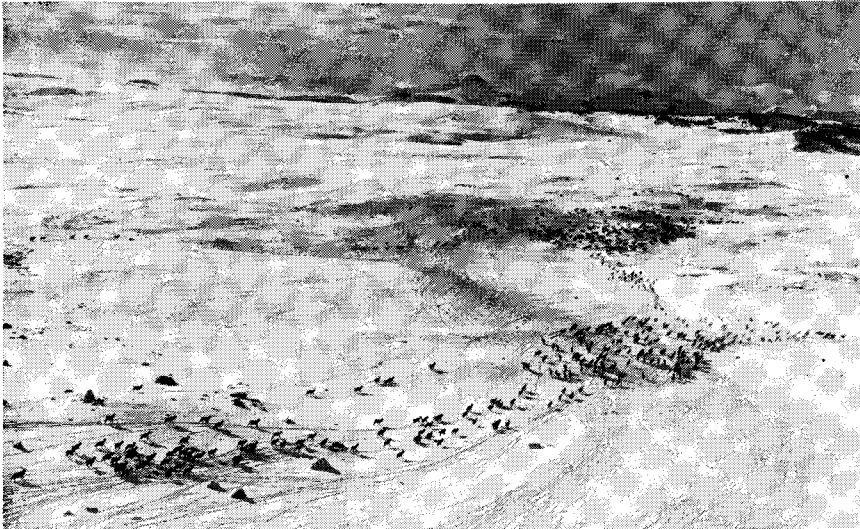


FIGURE 1. A large group of elk on winter range, Sun River Game Range. Photographed Jan. 20, 1948, by Bob Cooney, Montana Fish and Game Department.

While many individuals indicate that competition is minimized because elk will more likely use steep slopes and high ridges that are little used by cattle, existing populations of livestock and elk in many areas are competitive. Range feed is involved, range damage does occur, and elk do die of starvation. Murie (1951) states that competition will occur regardless of the fact that some areas of use do not overlap.

#### **Economics Aspects of the Problem**

Conflict of interest between livestock owners and sportsmen centers largely around the needs of elk for winter range. Elk winter range overlaps the lower portion of cattle

for elk and deer. They fail to recognize that most public lands in the West are mainly suitable for summer range or too far removed from elk to relieve the problem. Further, this approach intensifies the suspicions of stockmen relative to public land management and he often acts negatively to the whole situation, (Stoddart, 1950; Carhart, 1948; Pauly, 1941; Woodward, 1953; Nichol, 1936). A sensible solution to the problem becomes submerged and lost in a flood of emotion by both interested groups. Stockmen must and do recognize that game has a place on public lands. Sportsmen must likewise realize that public land administrators have required stock-

have yet to be properly managed. Land acquisition was only a partial solution as both herds have not been brought into balance with the food supply. Harvesting has been below the annual increment. Heavy die-offs from starvation have occurred in some years. Needless to say, further removal of livestock from adjacent ranges will prolong the problem when more intensive harvesting is definitely needed (Murie, 1951; Craighead, 1952).

Those who argue that game numbers be increased on public lands as the rightful portion of the sportsman's share in the national resource must carefully consider the fact that public lands have limitations in providing winter range for game. Livestock numbers on public lands, particularly on National Forests, have steadily declined to the present time. This reduction represents a substantial number. In Montana and North Idaho, the reduction of livestock amounts to 78 percent of sheep use and 47 percent of cattle use based on 1925 numbers. Elk have increased about 356 percent and deer about 419 percent. While it is hazardous to equate feed requirements and forage use, present stocking rates of game and livestock indicate that they now share more or less equally in the forage supplied from public lands in this region. If the amount of forage used by game on private lands is included in the estimate, it would be safe to assume that the above statement is based on more than just figure juggling.

There is also the question of offsetting value of feed. Some sportsmen feel that because of the relatively low rentals on public range, ranchers should be willing to permit use on their own lands. This is at best a weak argument. Grazing permits and rental charges on public lands represent only a portion of the real costs of feed from public land. Ranches using public lands have investment costs in their own properties derived from the combined use of public and private lands. This feed is not as cheap

as it appears to be. Furthermore, grazing of livestock on public land represents a legitimate business opportunity which should be recognized as such. Also many ranches have livestock that do not graze on public land but winter game on their own land. It is only when game numbers make serious inroads on feed supplies that the rancher resents their presence.

With steady increase in hunters, particularly of big game, there will be increasing demands for hunting opportunity. The sportsman interprets this to mean that more animals and more land will be needed. He fails to understand that the answer will be found mainly in good management of existing game populations.

#### **Need for More Intensive Game Management**

Game production can be increased significantly without interference with range livestock industry by increasing the harvest of all big game species except mountain sheep, moose and mountain goats. On the basis of the winter population of a herd, Rasmussen and Doman (1947) have calculated that the cattle industry harvests 30 percent of the herd annually while 20 percent or less of the herd is harvested from existing elk populations under present management. The annual harvest of deer is much less than 20 percent. Harvesting rates could be increased one-fifth or more on elk and as much as 100 percent on deer without increasing the present base population of either species. Another possibility for increased game production may be found by replacing elk with deer in some areas. Deer, being less competitive with cattle and consuming about one-third as much forage as elk, could supply greater hunting opportunity to more people.

In some situations it may also be desirable to increase game production, particularly of elk, by land acquisition of strategic winter range in private ownership, such as ranches with good winter range

possibilities and other seasonal forage. These ranches should be characterized by having a very low percentage of land in meadows or cultivated acreage. Likewise, snow conditions should be such that standing forage will be available through the winter. Suitable ranches will be isolated from or at the margin of an extensive ranching community.

Many ranchers will object to such an approach to increased game production for reasons such as the need for expansion of existing ranches, loss of tax revenue for school districts, and increased trouble from more elk in the country. Some sportsmen will complain because money will be diverted from other game work.

These arguments can best be answered by stating that the present pattern of game and livestock production has developed under a combination of American economic and political rules, public land policies, and a frontier tradition. It implies that no single factor of the combination can govern the method of resolving the problem. Those who wish to reestablish a wilderness condition or direct the land use back to wildlife habitat should be willing to pay the price in the open market. Outdoor recreation cannot be provided by the public from federal lands alone as in the case of game. These lands are limited in their capacity to do this and also meet all demands on resources required by a growing population. Ranchers must be tolerant of attempts at acquisition of private land for game so long as they may have an opportunity to bid on the same property. Assessments on the land to meet school district costs should remove a major criticism of the loss of these lands from tax rolls.

#### **Conclusion**

In conclusion, one final point remains, how best to approach and solve a conflict of interests involving game and livestock. Here, again, some examples may illustrate possible solutions. Mitchell

and Lauckhart (1948) describe a cooperative approach by bringing all interested parties together for a thorough analysis of the problem and agreement on methods of solution. Olson (1943) indicates how a "Board of Elk Control" was established in Utah to deal with the conflict between ranchers and sportsmen over big game problems. In Montana, similar steps have been taken in the Bitterroot Valley, including a series of community forums, special meetings and field trips over a period of three years. After a common understanding was reached on the overall problem of land use for water, timber, livestock and game production, a plan was developed for the best management of all the resources including game and livestock. This is the only feasible approach, with an intelligent, fair and informed public representing all interests in the land. How to get proper land and resource use is truly a "grass-roots" questions and requires a "grass-roots" approach.

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#### AUSTRALIAN PASTURE AND RESEARCH TOUR BEING PLANNED

The Division of Plant Industry, Commonwealth Scientific and Industrial Research Organization of Australia is planning an organized tour covering the eastern pastoral areas and research centers of Australia following the Seventh International Grassland Congress to be held in New Zealand in November 1956. If sufficient interest is shown, the tour would last 10 or 11 days and include such important pasture areas as those near Brisbane, Armidale, Sydney, Canberra, Deniliquin and Melbourne.

The cost of the tour including accommodations will be about 35 pounds Australian (about \$100). Transportation costs may be subsidized, in which event the cost might be reduced to 20 pounds (\$56). Anyone interested should write to

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