

The Economic Aspects of Livestock-Big Game Relationships as Viewed by a Game Administrator

THOMAS L. KIMBALL

*Executive Director, Colorado Game and Fish Department,
Denver, Colorado*

I was very interested in reading in the July 1955 issue of the *Journal of Range Management* my good friend Ernest Chilson's remarks concerning the viewpoint of a livestock producer on the economic aspects of livestock-big game relationships. While there may be some of the points mentioned in the article on which livestock operators, sportsmen and Game and Fish Department officials might agree, I feel there is a wide divergence of opinion on a good many of the comments made.

Perhaps the first and most important conclusion which has been reached after years of intensive study by range management experts is that on range lands which are in good to excellent condition, with a variety of plants available, little competition for forage exists between cattle and deer. To this extent I think the livestock producer and range management officials would agree.

Generally speaking, an individual species of big game or domestic stock has its own individual preference for specific palatable plants found on range lands. In many instances, those particular plants found palatable by deer would not be used by cattle if the ranges were properly stocked by each class of animal. As palatable forage production is decreased or eliminated by overuse by either or both domestic stock and big game animals, the extent and degree of competition between the game and livestock increases proportionately. As a simple illustration, if on winter range lands sagebrush formed 100 per cent of available forage

during certain periods of time, direct competition would exist between animals regardless of plant preference or palatability.

Statements have been made that game populations have been allowed to spiral upwards over an extended period of time. While this is generally true, the increased production of game has been brought about principally by an ecological change in the vegetation types, assisted by the regulation of the kill. Extensive grasslands have in the last fifty years turned to browse ranges, creating an environment which is ideally suited for the production of the species of the deer family. In my opinion, this is the primary reason for a spiralling increase in the number of deer; and it is questionable that this increase has deprived cattle of any fair share of forage and browse, except on those ranges which have been overstocked with cattle during the past two decades and continue to be overstocked at the present time with both cattle and deer. This issue will be resolved only where there is available some method of proper evaluation of forage production along with an accurate determination of domestic stock and game plant preferences and use. Reliable information of this type would provide a formula for stocking ranges properly with both game and domestic stock.

Investments in Land Improvements

Many stockmen who range on federally owned or controlled land

attempt to follow good range management procedures by the development of permanent water and the fencing of pasture areas designed to obtain more complete and uniform utilization of forage. In the Arizona example cited (E. W. Chilson, *Jour. Range Mangt.*, July 1955), consisting of approximately 193,000 acres of which 76 per cent was national forest, 19 per cent private land and 5 per cent state land, stockmen expended \$116,000 over a 20-year period for capital improvements on a range development program.

Although I am not currently familiar with the Forest Service program in Arizona, I do find that the Forest Service spent \$98,315.77 in Colorado *one year* on fences, reseeding, water development, etc. I would say this would indicate considerable interest and an action program by the federal agency charged with the responsibility for administering the land. The Colorado Game and Fish Department has spent over \$500,000 in one year in the development of reservoirs, fencing and reseeding for the improvement of range conditions.

Greatest Benefits to Game

While it may appear that because of increased game populations the federal agencies are providing the greatest benefits of land use to game, I would like to point out that the change from grasslands to browse created an environment which has a much higher deer carrying capacity than ranges in a pristine state. While it is true that the ecological change in the composition of plants was initiated many years ago, the fact still remains that unrestricted use and intense overgrazing by livestock, fires, and clear cutting of timber in the early years were the important factors most responsible for plant composition changes and the creation of an environment suitable for big game. Severe livestock overgrazing in the West during the period of the open range has greatly reduced the actual

carrying capacity of most of our public ranges. Subsequent ecological changes in vegetation and continued heavy use have generally deteriorated range soils and diminished the ability of the range to improve and produce additional forage for increased use.

The fact that livestock use has been reduced for range protection on the national forests, and big game increased, can be misleading when expressed in percentage decreases and increases. How do the numbers of livestock and game compare? On Colorado national forests during the past 20 years cattle and sheep have been reduced about 40 percent in numbers, and during the same period, using game population estimates, the accuracy of which could be seriously questioned, elk have increased 167 percent and deer 379 percent. Assuming these figures to be accurate, however, there are still four cattle to every elk and two sheep to every deer on the national forest lands in Colorado, supposed to be owned, in theory at least, by the people of the United States.

Reductions have been made in the use of domestic livestock on federal ranges, but reductions have been made primarily because of the inability of the range to support the over-optimistic carrying capacities for domestic stock made in the early days. Cattlemen and sheepmen, as well as federal officials, now recognize that their initial estimates of range carrying capacity for domestic stock were much too high, and a good many ranchers are in agreement that permitted numbers should have been much less many years ago, even prior in most instances to the upsurge in game populations. Also, the indicated great percentages in game populations are somewhat misleading. In the early settlement days of the West, the pioneers utilized game populations for food. There were few, if any, game laws, and the numbers of game were drastically reduced with some of the more palatable game species completely extirpated from large

areas of suitable environment. We could, therefore, expect with restoration of game populations the percentage of increase to be quite large, but the actual number to be much less as compared with numbers of domestic stock ranging on public lands.

I would therefore sincerely challenge the accuracy of the statement that big game populations have been a major factor in forcing the great reductions in livestock numbers over federal ranges. I would also sincerely admit, however, that most game and fish departments have been unsuccessful in removing surpluses of deer in time to maintain suitable range conditions for deer. Most states, including Colorado, have failed to recognize the problem early enough to make corrective action as effective as it should be. Many of the states have recognized the necessity of cropping game surpluses, but have been unable to do so because of uninformed sportsmen's organizations, sentimentality of the general public over shooting the females of the species, and the lack of positive action by policy-making boards or commissions.

There is also the tendency for each individual hunter to judge game population by his own success in hunting. If he kills his game, there is plenty. If he comes home empty handed, there is no game and the season should be closed. Never does he challenge his own ability to locate game nor the accuracy of his shooting.

Speaking for Colorado, I think that the Game and Fish Department has now recognized the necessity of keeping the game populations in balance with range conditions. In all instances, the length of the season and the bag limits on game animals are now determined by two major factors:

1. The trend in game populations.
2. The trend in game range conditions.

If game populations are up and range conditions poor, liberal sea-

sons and bag limits are allowed. In a good portion of Colorado, for example, an individual hunter may take an unlimited number of deer by purchasing a license and tag for each animal taken. In other areas, a hunter may take two deer of either sex on one license, and throughout the entire State permission is granted for the taking of one deer of either sex as a bag limit. Certainly, under such regulations, it would be an injustice to state that the Game and Fish Department has not recognized the need for an adequate harvest of big game animals where conditions warrant.

The Efficiency of Production

The efficiency of production has been suggested as a means of dividing forage resources between domestic stock and big game. The efficiency of production has been defined as getting the highest possible net financial returns in the long run over the cost of production. The success of a livestock operation, no doubt, depends upon the efficiency and quality of a ranching operation. The success or failure of such an operation is usually told in the net profits. Unfortunately, no similar comparison can be made in the game and fish field. I suppose if we could pass the ownership and authority to manage game to an individual it would be a most successful operation, and that the net profits from such a program conceivably might be much greater on range lands than a similar production operation of domestic livestock. Sportsmen are charged only a relatively small fee for the privilege of hunting game. In some instances, where larger big game animals are killed, the cost of obtaining such meat is no greater than the purchase of beef or mutton. In addition, there are the esthetic values which cannot be counted in dollars and cents. There is the joy that comes from the great out-of-doors, the thrill of getting a buck in the sights of a rifle, and the satisfac-

tion of merely getting away from all of the normal routine operations of making a livelihood and the tensions accumulated in this fast moving, modern world. While this cannot be measured in terms of high finance, it is certainly one of the pleasures that make life worth living and cannot be discounted in the American way of life.

Cost of Land Rentals and Grazing Fees

Many of the livestock operations in the West depend upon grazing permits on public lands. In most instances, public lands are U. S. national forest, B. L. M. or state lands. These lands belong to the people of the United States and to the people of the States. The government agencies responsible for the administration of federal lands have adopted a policy of multiple use. The protection of watersheds is considered the most important use of these public lands. Lumbering, mining, grazing and wildlife production are also recognized as legitimate and worthwhile uses of these lands. The lumber operator pays a stumpage fee for logs taken from public lands. The individual and the company paying such fees are expected to make a profit on such operations. The mining interests and the grazing interests likewise pay fees for use and are likewise expected to establish a profitable operation. Small fees are paid by the sportsmen in the way of a hunting license, which is only a privilege to hunt game which may be located on the land.

In Colorado, there are 1,949 individuals who are permitted to graze cattle on the national forests, and 508 individuals who are permitted to run sheep. These stockmen graze cattle 571,670 animal unit months and graze sheep for a total of 1,389,566 sheep months. These livestock operators pay the Federal Government 56 cents per head per month on cattle and 10 cents per head per month on sheep for the privilege of running stock on lands owned by the people of

the Nation. The Colorado Game and Fish Department owns lands on which bids were let for domestic livestock grazing. The high bid which was accepted brought \$4 per animal unit month for cattle. Such differences would indicate that stockmen are paying only a small percentage of the actual value of grazing animals on public lands.

Also, the U. S. Forest Service sent to the counties of Colorado in lieu of taxes \$282,985.41, or 25 percent of all of the receipts taken from all uses by the Forest Service during 1954. Sportsmen, I feel, pay their fair share of taxes. They pay taxes on arms, ammunition and fishing tackle, which goes to support the proper management of wildlife. They pay taxes on gasoline and on automobiles and trucks necessary to the pursuit of their sport. They buy groceries, liquid refreshments, meats and produce of all types and kinds. They stay in motels and hotels. They are a most important cog in the economy of many small localities in game and fish territory. They support dude ranchers and guides, and if they were to be suddenly curtailed, the blow to the economy of any state in the West would be such that it would bring serious repercussions.

Cost of Vandalism

A legitimate complaint which most private landowners have is vandalism, which is done by what we like to think is a small minority of the people who love the out-of-doors. The game and fish departments and the great majority of the true sportsmen are as much interested in preventing damages and vandalism by hunters as is the private landowner himself. Great strides, in my opinion, are being made in this respect, and we in Colorado are hopeful that the individual hunter will consider the vandal as much a thief and felon as an individual who commits one of the more generally recognized major crimes.

Efficiencies of Herd Control

It is recognized by game officials

everywhere that game herds are more difficult to control and to manage than livestock herds. I feel, however, that game and fish departments have come a considerable way in recent years in providing means of properly determining the trend in game numbers and in providing the necessary management tools for cropping the surpluses of those herds. There are still improvements which must be made if we are to do a proper job of surplus cropping with the advent of industrial development and population increase. We in the West are obtaining sufficiently high human populations that we will soon be able to divert sufficient hunting pressures to control any of our big game herds.

Efficiencies of Processing

No fair-minded individual would expect a hunter who is non-skilled in a butchering process to compete with the efficiency of commercial meat processing plants. I am sure that a cow shot on the range, dragged through the dirt, dust and mud to a vehicle, hauled on a fender for three or four days in the sunshine to a home and then cut up by an unskilled butcher would taste no better than a deer or elk which was processed in a similar manner.

It is true that in many instances game meat thus processed is wasted. We do, however, have laws prohibiting the wasting of game meat and many have been prosecuted for such action. Game departments have also placed literature and information in the hands of most hunters, telling them explicitly just how to properly take care of the meat once it is killed. As the costs of hunting go up and the value of game meat increases, I am sure that the efficiency of processing and getting the game meat to the family table will improve immeasurably. The wounding loss of big game, I feel, is greatly exaggerated. Most states have laws which require guns delivering sufficient foot pounds of energy to kill game. Every advantage is being

given to the hunter through the development of telescopic sights and the improvement of semi-automatic firearms to the point where there is now little excuse for a wounded animal to escape.

Efficiencies of Utilization

It is conceivable that cattle or sheep that are confined to feeding pens would utilize less forage than game whose radius of action may cover several hundred square miles. The actual travel of game would perhaps burn up more energy and weight than could be produced on beef for the same amount of forage. I have been unable to find any authentic information on the differences of the metabolic rate in cattle, sheep and game. The metabolic rate would perhaps be the most effective way of measuring the efficiency of the utilization of forage.

Summary

1. It is conceded that ranchers make heavy investments in capital improvements designed to improve range condition and the utilization of forage by stock. Agencies of the federal and state governments also expend large sums of money for the improvements on lands under their control and management.

2. Big game animals share the benefits of water improvements made by ranchers. Livestock producers share the benefits of reseeding, water development and range improvements performed by the federal or state agencies responsible for the management of the land and by state game and fish departments.

3. It is conceded that the management and production of livestock are more efficient than the management and production of big game. This is largely true because of the difficulty of determining numbers of game, of confining game

to designated areas and the inefficient method of harvest.

4. A much larger labor force is employed in the fishing and hunting field than in the production of livestock on range lands. The manufacturers of guns, ammunition, fishing tackle and the persons employed to manage wildlife and take care of the needs of the sportsmen during the hunting and fishing season are much greater in number than those involved in the production and marketing of livestock raised on range lands where big game is found. As previously mentioned, there are 2,457 individuals who have permits to graze domestic stock on national forest lands in Colorado, which provides the habitat for most of our big game, while 532,000 people purchase hunting and fishing licenses annually for the privilege of participating in this type of recreation.

The tourist industry of Colorado, before the advent of uranium and airplane factories, was the second largest industry in the State, of which hunting and fishing is a most important integral part. Random surveys in 1948 within the State have shown that the individual license holder spends about \$150 per year while hunting and fishing, representing an annual expenditure of approximately \$80,000,000 per year going directly into the business cash registers within the State. We can assume in 1956 the expenditure is much greater as many more licenses have been sold and the purchasing power of the dollar is less.

5. Livestock producers pay rentals and annual fees for the use of publicly owned range lands, which is only a small part of actual value. Game and fish departments, through license funds, contribute considerable sums of money for the improvement of range conditions and recreational facilities on federal and state lands. Livestock pro-

ducers pay on a per head basis for livestock, while federal agencies pay local counties 25 percent of all receipts in lieu of taxes. Sportsmen also pay sales taxes, taxes on arms and ammunition, gasoline taxes and all other federal and local taxes while in the pursuit of hunting and fishing. It is recognized that livestock production, if efficient, can be carried on with greater control and dispatch than that which is exercised over big game numbers. We like to feel, however, that our methods are improving and certainly could not be considered inefficient and haphazard.

6. Because of inadequate information on metabolic rate, it is difficult to determine the efficiency of forage utilization as compared between game and domestic livestock. In any event, this subject is purely academic because the most important product of western ranges is water which can be obtained in quantity and quality only if the forage density and composition are satisfactorily maintained. If the ranges are kept in such a condition, soil erosion is retarded and excessive deposits of silt prevented from entering streams and reservoirs. Thus the forage utilization allowable to accomplish this objective would be so low that competition between game and domestic livestock would not exist.

7. In view of mounting surpluses of farm commodities of all types, including beef, it is questionable whether or not there should be any increase in livestock production at the present time without provisions for additional markets.

8. Research efforts should be conducted toward developing a proper measure of forage production and comparative use by domestic stock and game on public lands and an equitable distribution made where research findings have determined the measure of competition, if any.