

# Big-game Animals on Private Range

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The economic impact of biggame animals using private land resources is a controversial topic that is continuously growing. Wildlife is a unique natural resource because we all "own" it, yet not all of us pay to maintain it.

There is hardly any other natural resource that affects such a diverse segment of our population, nor is there any other resource that incites the emotions as do topics concerning wildlife. The landowner suggests one management decision, the sportsman demands another. Even the nonusers of wildlife demand an input into its management. The problems arise when common ground solutions cannot be found.

One of the specific problems that is occurring in Utah is winter feeding of big-game animals by individuals. This is occurring even when there is sufficient natural forage to maintain the herds. This trains the animals to come to the valleys and even into the towns. The winter of 1983-84 was very harsh with many places getting 200 percent of normal snowfall. Deer and elk feeding was undertaken by the Utah Division of Wildlife Resources at several locations. Consequently, the animals soon learned that food could be found at the feeding stations. The first hard snowfall of the winter of 1984-85 brought far more animals down into the valleys than usual; and in many Wasatch Front communities, they have spent the entire winter in backyards. Of course, starving animals inspire sympathy, and the value judgments from each of us are different concerning what should be done. The point is, the artificial feeding of big-game animals is a very expensive solution. To maintain wild and free-roaming herds we must develop or improve existing winter range to maintain these animals. This has long-term value, supplemental feeding does not. A solution, not popular with many, would be to reduce the size of the big-game herds to better match the forage supply.

**A significant challenge for range managers is** to provide a way to produce sufficient winter and early spring forage for existing or increasing big-game populations on decreasing amounts of land. New schemes are needed to revegetate these critical areas with browse and stiff-stemmed grasses that can be reached by wintering animals. Economic incentives coupled with financial and technical assistance to private landowners for range improvement could increase forage supplies to meet the needs of big-game and livestock. The manpower to do habitat manipulation can come from many sources. Boy Scouts, hunting clubs, and other outdoor organizations are almost untapped resources. If the labor obtained is donated, the cost is significantly reduced.

Another need is development of a way to accurately measure the impacts of big-game animals on private lands.

Measuring the damage done to haystacks is relatively easy; but, when it comes to measuring the use and/or permanent injury of rangeland forage and croplands, the job becomes exceedingly difficult. A consistently reliable and mutually accepted method of measuring this type of impact could greatly increase the cooperation between professional managers and private landowners and give them a common base in the decision-making process.

**Are we dealing with an age-old problem** of big-game conflicts with other uses of land or have new factors compounded the problem? Housing encroachment on traditional big-game winter range is one of the most significant factors that has affected, and will further affect, Utah big-game herds. Our expanding population pushes housing developments further up the foothills every year. This trend will continue until the economic benefits of wildlife production becomes the "best return" alternative (which may never be the case) or the bulk of the big-game winter ranges are all converted to housing. Thus, there may be cases where feeding big-game animals every winter or lose the entire herd is the only solution. Should research efforts be directed toward development of efficient methods of feeding? Or, should the attempt be to improve or reestablish big-game winter ranges where the potential for success is very low?

There are areas in Utah where big-game herds spend the entire year on private land. Although in most areas of the state this is not the usual situation, it is still prevalent enough to warrant consideration.

Production and harvesting of game animals is increasingly finding a place in the management schemes of landowners. In many places, there is an increase in the selling of trespass permits and hunting club memberships. Often the economic benefits from wildlife are what make a farm or ranch economically feasible. As one rancher puts it, "I see selling trespass permits for hunting on my land as a way to support my cows, instead of me having to work in town to support them."

As wildlife-based enterprises become more widespread, landowners are going to have more interest in the decision-making process concerning herd management. When there is a lack of cooperation between landowners and professional big-game managers, landowners can considerably hinder the management of the big-game herds, and problems with damage-related lawsuits will intensify.

## Case Study

A case study examined the costs and related benefits of big-game animals on private landowners near Coalville, Utah. About 95 percent of the study area is privately owned; it contains some of Utah's most productive big-game rangeland. This area is referred to as Deer Herd Management Unit 19 of the Utah Department of Wildlife Resources. This unit includes about 331,100 acres of land of which 72 percent is

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**Table 1. Damage costs caused by deer and elk in the study area.**

	Use and damage costs by both deer and elk					
	Use of rangeland		Use of cropland		Fence maintenance and related costs	Total damage value
	Deer	Elk	Hay	Other		
Acres	52,308	31,350	3,896	520		
Dollars	63,815	117,249	39,609	6,964	6,550	233,287

summer range and 28 percent is winter range. Big-game animals use most of the land at some season of the year.

The deer and elk herds in the area migrate in elevation as the seasons change. Therefore, landowners who support the animals during the winter months rarely have significant numbers of big-game animals on their land during the fall hunting season. In this area, some pay the costs of producing wildlife while others receive the benefits from the lease of hunting rights.

**Farmers and ranchers in the area were randomly selected** and either interviewed or sent questionnaires. The final response was about 50 percent of the total number of farmers and ranchers in the study area. They were asked to make a reasonable estimate of damage caused by big-game animals' use of their forage resources. Average estimated loss or damage was \$9.35/acre for elk and \$6.15/acre for deer on cropland, and \$3.75/acre for elk and \$1.22/acre for deer on rangeland. Of course, some areas may have incurred extensive damage and some little, if any, damage (see Table 1). No estimate of total value of the crops or vegetation was made in the study.

It is assumed in the analysis that crops and hay consumed by big-game could have been sold, rangeland forage could have been available for domestic livestock, and money spent to maintain fences could have been used for other purposes. Landowners' estimates might be inflated, although it would be difficult to determine by how much.

#### Forms of Impact

The most prevalent impact on private land occurs on rangeland forage, but big-game also use croplands (predominantly hay) and can cause severe damage to haystacks.

Hunters and recreationists also cause problems when they leave gates open, cut fences, and trespass. Preventing or correcting these types of impacts may be a considerable financial burden to some resident landowners.

#### Who Is Impacted?

The large tracts of land in Deer Herd Unit 19 are located at the highest elevations. The landownership patterns at the lower elevations are such that there are many small parcels of land and, thus, many landowners to deal with.

The big-game herds spend the summer and fall months in the high country. About the first of December, the animals start to migrate down to the foothills.

The winter months are spent almost entirely on lands of owners who do not receive any of the benefits from leasing hunting rights in the fall. Forty percent of the landholders in the area do not lease their lands because either their parcel of land is too small to sell trespass permits or they do not have any big-game animals on their land during the fall hunting season.

The highest economic returns from selling hunting leases go to the 15 percent of the "high country" landowners who control 68 percent of the total land in the study area. Of these landowners, only 4 percent receive any winter damage to crops or hay. The animals all migrate below their property during the winter months. One of these ranchers said that he receives less damage when the winter is more severe.

Herein lies the most significant problem in the area; 15 percent of the landowners receive the economic benefits of leasing hunting rights while 40 percent of the landowners support the big-game concentrations through the winter.

#### Benefits

Table 2 shows the average return per acre, total acres leased for hunting, and total returns received by farmers and ranchers from the lease of hunting rights in the unit.

**Table 2. Monetary benefits from the lease of hunting rights.**

Size of land parcel (acres)	Dollars received per acre (average)	Total acres leased for hunting	Total Monetary benefits to landowners
1-100	\$0.20	3,450	\$ 690
100-500	0.25	8,920	2,230
500-1,000	0.34	37,350	12,699
1,000-5,000	0.39	91,487	35,680
5,000-10,000	0.41	27,463	11,260
<b>TOTALS</b>		<b>168,670</b>	<b>\$62,559</b>

These returns and other nonmonetary benefits associated with the presence of big-game in the area are not necessarily available to pay the costs associated with game but are important when making management decisions.

Economic evaluation of wildlife is a very difficult and controversial subject. Gross value (measured by expenditures of money or time) can be calculated with some degree of accuracy. This methodology indicates the general importance of wildlife but does not reflect value above the cost of using the resource. Net value estimates that theoretically solve this problem must be based on information that is difficult or impossible to obtain. Consequently, the following estimate of the economic benefits of big-game has limitations, and its accuracy is subject to question.

Hansen (1977) determined a big-game hunting user value of \$47.44 and a nonconsumptive use value of \$1.68 per user a day. Figures from Hansen (1977 and 1979) and interviews with Utah Division of Wildlife Resources personnel (1984) were used to derive a conservative estimate of 2,950 big-game user days per year in the area and an amount of \$207,463. This is almost \$26,000 less than the estimated costs associated with big-game.

The economic benefits of big-game in the study area also are reflected in willingness-to-pay, as determined by the amount sportsmen pay to join one of the local hunting clubs. Two of the five hunting clubs in the area offered information. Those two clubs stated that dues total \$150,500 annually. Individual memberships ranged from \$50 to \$250 per year, with some requiring a \$2,000 initial (one-time) membership fee in addition to the annual dues. Sportsmen pay a considerable amount for hunting rights, perhaps as much as it costs landowners to support the herds.

Big-game may bring additional nonmonetary benefits to local residents, state residents, and society as a whole. These benefits also should be considered when making management decisions relative to big-game.

### Conclusion

The case study indicates that more research is needed in

the area of range/wildlife economics. The benefits derived from wildlife are difficult to assess with the methods of travel cost, user day, willingness-to-pay, or similar methods. There are no reliable methods to measure the economic impact of big-game use of private land.

The study does point out the inequities associated with migratory big-game animals. Those landowners incurring damage or impacts are often not able to share in the economic benefits from big-game animals.

### References

- Hansen, Christopher S. 1977.** A report on the value of wildlife. U.S. Department of Agriculture, Forest Service, Intermountain Region.
- Hansen, Christopher S. 1979.** A report on the value of wildlife. U.S. Department of Agriculture, Forest Service, Intermountain Region.
- Utah Division of Wildlife Resources. 1984.** Information obtained through interviews with personnel.

## The Future from the Past?

Dan Fulton

Cowboys and Merino sheep are two of the more prominent adjuncts of range management, so last spring my wife Mary Ann and I went to Spain to see their origin. We were in Spain a little over three weeks, taking one bus trip of 14 days and another of 10 days. These were conducted by two different well-known and reputable tour agencies. The guides, on both tours, were very able persons, highly trained in art, architecture, history and philosophy. They might have been a little deficient in agricultural training. We frequently, and almost always unsuccessfully, tried to determine the annual precipitation at various spots in Spain. We did know from reading our *Encyclopedia Americana* before leaving home that the average annual rainfall in the interior is no more than 16 inches. We did see much of Spain where a few centuries ago a hundred or so out-of-work, grub-line-riding, cowboys put their horses on a couple of sail boats and captured North and South America.

We visited many fine galleries and museums where the guides talked with great knowledge on art. We visited many great cathedrals where the guides had opportunity to display their knowledge of architecture. The many miles we travelled gave them ample opportunity to expound their philosophy and history. We saw only a few close-herded sheep between the fields and olive groves. There were also some cattle. Once we saw five head of cattle herded by two men. Both guides lectured us on the Spanish economy which had a 20 percent unemployment and after giving this figure speculated on the causes.

Both guides told us of the rule of Ferdinand and Isabella and the defeat of the Moors at Granada in 1492 ending the period of 800 years of Moorish rule of Spain. This was the year that Columbus sailed to America bringing the golden age to Spain. Following that, both guides went into stories of

the Inquisition and left us with an inference that the Jews and the Moors had been very good entrepreneurs and that the eradication of many of them during the Inquisition was the root of much of the current problem.

Recently Mary Ann and I attended the National Range Conference at Oklahoma City. Everyone was optimistic and hopeful for the future, determined to do what is needed for rational management of our resources for our needs. The tone of the Conference was synopsisized by Dick Whetsell, chairman of the closing session ". . . Opportunities for the Future" in "What is best for Rangelands of the World." Leonard Wilson stressed an upbeat tone and opportunities of the future. We were told to look at the total of our resources, that we have responsibilities, and that laws and regulations are not good solutions. We left the Conference much encouraged and hopeful of progress in attainment of the science and the art of Range Management. As one of the organizers of the conference said, "It is a breath of fresh air." Might it bring about tenure that will give an incentive and make possible better management of some of our national resources.

Comparing the words of the Conference to what we heard on our trip to Spain, one possible alternative occurs to us: A few centuries from now an American tour guide might be lecturing a group of tourists from off planet telling them that in the 20th Century we had some good range managers but they were burned at the stake so we didn't get the job done. Let us not repeat the past.

