

THE WIND RIVER BIGHORN HERD - A NEW APPROACH
TO SHEEP HABITAT MANAGEMENT

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Wildlife managers have always recognized the importance of critical game ranges in sustaining bighorn sheep herds. A sheep herd in western Wyoming near the small town of Dubois was stabilized and substantially increased by furnishing critical winter range through a series of land acquisitions, land trades and agreements on land use with the Bureau of Land Management, United States Forest Service and private landowners. This paper is presented to point out what can be done with a sheep herd through this type of program and may be of benefit to other states and localities in planning programs to maintain or increase bighorn sheep populations.

DESCRIPTION OF AREA

The area in which the program was initiated lies along the Northeast slopes of the Wind River Mountains in West Central Wyoming. The critical sheep winter range lies between 7,500 and 10,000 feet in elevation. During mild winters, the winter ranges are extensive while they become quite limited during periods of heavy snow cover.

The principal range lies on windswept ridges and rims along the Torrey Creek and Jakey's Fork Creek drainages. These are ancestral ranges for bighorn sheep as evidenced by Indian pictographs and archaeological discoveries of tools used by Indians constructed out of bighorn sheep horns and old Indian trap sites located in the area. The lower extremes of the sheep range are characterized by low snowfall, windswept ridges, steep canyon rims for escape cover and desirable grass vegetation. An old burn on forested lands within the range occurred in 1931 and further furnished some 3,000 acres of generally open range land. The land status consists of some private lands and lands administered by the Bureau of Land Management, U. S. Forest Service and the Wyoming Game and Fish Commission.

EARLY STUDIES ON SHEEP RANGE

Several research studies were conducted in the middle 1950's to evaluate sheep populations and determine factors limiting populations. Approximately 300 to 400 sheep were using the entire range at this time. Their distribution was highly localized on one rim of Jakey's canyon with extremely limited forage available over most of the area due to competition with domestic livestock, principally horse use. Lamb survival was very low, between 5 and 10 lambs per 100 ewes. At that time, it was recommended that our department acquire by purchase some of the critical private lands lying adjacent to BLM and USFS lands.

LAND ACQUISITION PROGRAM

Two critical land purchases were made in the Whiskey Mountain area lying between Jackey's Fork Creek and Torrey Creek. The first purchase in 1954 consisted of some 1,668 acres of deeded land and some additional state lease land and isolated tracts of BLM land. This purchase was primarily made for a winter elk range. In 1957, an extremely important sheep winter range of 1,661 acres of deeded lands was purchased and added to the original lands obtained in 1954. These two acquisitions were obtained for approximately \$147,000 and are worth many times that amount today if placed on the market. A series of land trades were completed in which lower lands of little wildlife value were exchanged for additional private lands adjacent to important rim areas highly preferred by sheep. One Forest Service land permittee voluntarily relinquished a horse use permit along a critical rim area. Additional sheep forage was reserved on Forest Service and Bureau of Land Management lands through a cooperative agreement and habitat management plan initiated by all three agencies -- the Wyoming Game and Fish Department, the U. S. Forest Service and the Bureau of Land Management.

Efforts to acquire and reserve winter range in this area for sheep extended over a period of some fifteen years and involved many individuals. Private land-owners, and personnel of the Bureau of Land Management, United States Forest Service and Wyoming Game and Fish Department are to be commended on their efforts to reserve sufficient winter forage for bighorn sheep. These efforts resulted in land acquisitions, land trades and management of agency lands to primarily increase and benefit bighorn sheep.

COOPERATIVE AGREEMENT & HABITAT MANAGEMENT PLAN

A cooperative agreement was signed in 1969 among the Wyoming Game and Fish Department, the United States Forest Service and Bureau of Land Management. This agreement was a formal declaration of the importance of this range for bighorn sheep with the following objectives:

1. to improve the habitat and forage conditions within the area for bighorn sheep
2. to maintain the population of bighorn sheep in balance with the forage production potential of the area
3. to maintain the area in public ownership for public purposes
4. to determine and implement the most practical and economical plan of administration to eliminate unnecessary duplication of effort, travel and supervision.

A formal habitat management plan was signed in December of 1970 among the three agencies. It was prepared by a small committee of technical personnel

with representatives from each agency. The plan defined the area of concern and had four principal objectives:

1. to produce optimum forage for wildlife, primarily wintering bighorn sheep
2. to obtain a better distribution of bighorn sheep over the range
3. to minimize competition among domestic livestock, other wildlife species and bighorn sheep
4. obtain a better understanding of the ecological needs of this sheep herd.

Specific items in the habitat management plan include methods of population control, fence construction for protection of range, continued production and use studies to evaluate range conditions, use and competition, timber harvest practices, plans for additional land acquisition and exchanges, access developments, temporary road closures and techniques for habitat management evaluation.

PROGRAM RESULTS

The effect of the total acquisition and management program has been impressive. Today, some 8,500 acres of winter range are primarily managed for bighorn sheep, and they have responded. Within the Whiskey Basin Winter game range, sheep have increased from an estimated 300 animals in 1955 to approximately 700 animals today with a total wintering herd estimated at nearly 1,000 animals. Lamb survival has increased from approximately 6 lambs per 100 ewes in 1956 to between 30 and 50 lambs per 100 ewes, depending on winter conditions. Table 1 illustrates the hunter harvest from this area over a fifteen-year period. A total of 555 animals have been taken through legal hunter harvest. An active program of live-trapping and transplanting of sheep was initiated to control populations. A total of 468 sheep have been removed from this range since 1956. Data on annual catch and sex and age classes of animals live-trapped are illustrated in Tables 2 and 3. Live-trapped animals have been used to re-introduce bighorn sheep into ancestral ranges or supplement existing herds in other sections of Wyoming. Through cooperative efforts, additional animals have been delivered to South Dakota, Utah and New Mexico.

Another benefit of forage improvement has been desirable changes in sheep distribution. Today there is a general uniformity of distribution over much of the winter sheep range where it previously was highly concentrated. It has been necessary to increase elk harvests in the winter range area to minimize their competition with bighorn sheep. The competition from other wildlife species, such as mule deer and moose, have been of little significance to sheep.

Additional public benefits have been achieved in this program, including ~~fishing access to lakes and streams~~, improvement of forage conditions for other species of wildlife and assurance of public access to large public land areas on the adjacent Shoshone National Forest.

Table 1. Hunter Harvest of Bighorn Sheep from South Dubois Herds, 1956-1970

Year	Sex & Age Restriction	No. Permits	Harvest
1956	3/4 curl	36	20
1957	3/4 curl	48	20
1958	3/4 curl	36	14-58
1959	3/4 curl	40	18
1960	3/4 curl	52	22
1961	3/4 curl	64	28
1962	3/4 curl	76	34
1963	3/4 curl	132	34
1964	3/4 curl	132	41
1965	sheep either sex & 1/2 curl	136	77 (includes 8 ewes)
1966	either sex and 1/2 curl	144	77 (includes 12 ewes)
1967	1/2 & 3/4 curl	116	38
1968	1/2 & 3/4 curl	116	50
1969	3/4 curl	116	35
1970	3/4 curl	116	47
			Total 555

Table 2. Bighorn Sheep Numbers Removed by Live-Trapping - South Dubois Herds, 1956-1971

Year	Number
1956	8
1957	35
1958	26
1959	5
1960	6
1961	0
1962	0
1963	22
1964	80
1965	86
1966	71
1967	18
1968	0
1969	12
1970	76
1971	23
	Total 468

Table 3. Sex and Age Classes of Bighorn Sheep Numbers Removed by Live-Trapping from South Dubois Herds, 1956-1971

Females		Males	
Lambs	78	Lambs	72
1 yr.	22	1 yr.	31
2 yr.	34	2 yr.	15
3 yr. & Older	205	3 yr.	7
Total	<u>339</u>	5 yr.	3
		6 yr.	1
		Total	<u>129</u>

Total animals removed 468

CONCLUSIONS

A habitat improvement program for bighorn sheep can and has worked on a specific bighorn herd in Wyoming. It required effort and persuasion on the part of Game and Fish Department personnel and cooperative efforts on behalf of agency personnel--but was accomplished. The net effect of available critical winter forage has resulted in substantial herd increases and higher productivity rates.

As bighorn herd populations increase, it becomes important to provide adequate methods of population control. With each increase in forage afforded by land acquisition or forage reservations, the herds increased. They also distributed themselves over the total winter range more equitably. Live-trapping and transplanting has been the method chosen in this instance to control populations and will have to be a continuing and regular practice to control herd size.

It is hoped this paper will stimulate other states and sections of Wyoming with similar situations to improve bighorn sheep populations through a course of cooperative land acquisition and forage reservation.

DISCUSSION

QUESTION BY BILL RUTHERFORD, G & F, COLORADO: When do your lamb losses occur?

REPLY BY CRUMP: We figured the major lamb losses occurred from about the first part of the winter in November and December through the spring period. We attribute much of it to predation because of malnutrition. We were getting the lambs, and they were living through the summer period. We ran

weekly ewe-lamb ratio counts during the summer. We didn't notice, in this particular area at that time, the die-off in late summer that has been experienced here in Colorado.

QUESTION BY EUGENE DECKER, CSU: Where were the lambing grounds in relation to that wintering ground?

REPLY BY CRUMP: Just above the area. In this particular portion, the very steep slopes along Jakey's Fork, at what we call the Three Sisters Rocks. There are very steep cliffs here. The lambing grounds are at the very top of these cliffs. This is adjacent to the winter range and during a light winter, it would have been used as winter range.

QUESTION BY GUS SWANSON, CSU: Did you also provide as good a winter forage in the areas where sheep were released?

REPLY BY CRUMP: No. In some of the areas, for instance Laramie Peak, we have quite a good sheep habitat in an ancestral range. We have put quite a number of sheep in there. They have shown encouragement. We have had seasons in there for the last several years. We have areas where we do not have any major competition. We have some other areas in the state that need a program like this very badly. We need to coerce the Forest Service, BLM, and private landowners into a similar program. Sheep ranges are so few in relation to deer ranges or elk ranges that we hope to encourage this in other areas. I think it is a very workable program, and it is successful.

REPLY BY SWANSON: You spoke of the fire in 1931 as being so fortunate. Are you planning fires especially for management?

REPLY BY CRUMP: Well, I think Ladd Gordon handled that pretty well in his article in New Mexico Wildlife. I think he has some real strong points. We have frequently over-protected the forest as far as wildlife is concerned. I can think of nothing that is more of a wildlife desert than some of the heavily timbered forests in northern Idaho.

Incidentally, the fire of 1931 was not planned. It was the result of a whiskey-making expedition. This was back in prohibition days. Apparently, their distilling fire got away from them.

The fire did enhance the range. There is no question about that.

QUESTION BY BRUCE GILL, G & F, COLORADO: You mention your lamb-ewe ratios were about 5 to 10 lambs per 100 ewes before your acquisition program. What are your lamb-ewe ratios now?

REPLY BY CRUMP: It depends on the severity of the winter and other factors. We typically will have from 30 to 50 lambs per 100 ewes now. We will see yearlings all over that herd next winter.

QUESTION BY C. E. WILLIAMSON, USFS, COLORADO: Concerning your transplants of sheep where you put them on top of existing herds, how do you compare the success of this with transplanting to empty areas?

REPLY BY CRUMP: We have attempted in several areas to supplement populations of bighorns. We did it in the Bighorn Mountains on the Eastern Slope. We did it out at Lander where we were working with marginal herds. They have not been as successful as plants in direct ranges where sheep were absent. I don't think that you can really have a cause and effect relationship here. In most of the areas in which we have diminished in total sheep populations, the sheep are practically gone from them. We are just working with remnant herds. We have some other major factors that are keeping these populations down: timbering practices, grazing, water, things of this nature.

I don't think we have been as successful in areas where we have supplemented. We have quite a number of areas we intend to introduce sheep into.

QUESTION BY JOHN RUSSO, G & F, ARIZONA: In the past, Wyoming has contributed quite a bit to disease and parasite studies. What mortality have you experienced in your trapping?

REPLY BY CRUMP: Our mortality is relatively low, less than 3 percent. This covers the trap site and also holding in pastures for later release. There is such a thing as TLC (Tender Loving Care) which you cannot have too much of. This is not always evident. It's something that I think is important in handling any animal, lots of TLC.

QUESTION BY JOHN RUSSO: Have you had any opportunity to study some of these lambs for lung conditions and this sort of thing?

REPLY BY CRUMP: Incidentally, every sheep in Wyoming has lungworm. We don't worry about it.

QUESTION BY STEVE HAWKS, BLM, IDAHO: How did you solve the problems of sheep distribution?

REPLY BY CRUMP: We did it in several different ways. Protection from livestock and subsequent regrowth caused shifts in distribution. Removal of sheep by trapping also had an effect. We also used a progressive salting program, one of the few salting programs that worked. We moved the salt a little each year to draw sheep to other areas.

QUESTION BY JACK GRIEB, G & F, COLORADO: You have a habitat management plan for this area. What does your harvest plan look like? What are your goals and objectives?

REPLY BY CRUMP: Our harvest is going to evolve around 3/4-curl sheep. This really doesn't affect the population much. In order to control the population increase in the area, we are going to have to depend on intensified trapping and transplanting. The general public is more receptive to a trapping and transplanting program providing you get it through. This is extremely important. If you notice some of our figures, we haven't done too well in some years, depending on weather conditions, depending on how much elk bother us and other things. Our principal objective is to keep this herd at about the level we have now. We hope that with the construction of this fence this coming summer on the BLM ridge, that we will acquire another 1060 acres of land that will further re-distribute these sheep so we will have better distribution.

COMMENTS BY GUS SWANSON, CSU: I would like to comment that we had some very significant papers here that have illustrated a gradual solution to a very important need in the wildlife field--that is to have experiments. We have done so much work, of many different kinds, of the descriptive or observational type. It is very rare in the wildlife field that we have investigations which actually involve experiments. This was brought out very clearly by Peter Larkin who recently visited CSU and spoke on the future of research in the natural resources area. I would like to emphasize the privilege we have had in hearing the first paper by Lyman Nichols in which he described a real experiment, where he had control, a population which was not hunted, and two populations in similar environments which were being hunted at two different levels. This type of study in the wildlife field is so rare that it needs emphasis.

Then, I would like to congratulate Mr. Dunaway also on what looks like might be an experiment if it goes through. I would like to suggest that there be a control as well as your effort to modify your present heavy use. It would be so much more conducive to us five or ten years from now if there was a control as well as the experiment.

CLOSING COMMENTS BY EUGENE DECKER, CSU, CONFERENCE CO-CHAIRMAN

During the past two days, we have heard and discussed a series of presentations concerning a group of magnificent wild animals, the wild sheep of North America. We have learned much about the status, problems and programs related to sheep management in various parts of the continent. In several cases, the reports were encouraging, resulting from successful action programs which have increased sheep populations and/or restored them to former ranges. As a result, the recreational hunting opportunities also have improved.

However, I feel that there are two major problems encountered in wild sheep management that must be overcome. The first is that sheep are considered a "minor" game animal in many areas. We professionals must strongly influence our administrators and governing bodies to assign a high priority to the sheep and their habitat. Deer, elk and livestock now are receiving the major considerations in wildland usage. It is time that the sheep be given a fair portion of range and space resources. This must be done if the sheep are to be maintained and hopefully increased. I feel that there is no better qualified group anywhere than you here today, to accomplish this needed change.

The second problem I see is the "hang-up" of many managers and administrators that "we don't know enough yet." I contend that we already know enough about sheep to better manage them than we are now. The animals need positive action programs now, not at some indefinite time in the future. We do know many management projects that will benefit sheep. I urge all of you to implement such programs.

If we can work to overcome these problem areas, I predict that the status of the wild sheep will be improved in many areas by the time of our next conference.