RE-INTRODUCTION OF BIGHORN SHEEP IN WASHINGTON

Rolf L. Johnson, Washington Department of Game,
Olympia, WA 98504

ABSTRACT

Native populations of California and Rocky Mountain bighorn (Ovis canadensis californiana and canadensis) were extirpated from Washington State about 1925. In 1957, California bighorns were obtained from British Columbia and re-introduced to Okanogan County. Washington State obtained Rocky Mountain bighorns in 1972 from Alberta and re-introduced them to the northeastern corner of the State. Methods of trapping and transplanting these sheep to other areas of the state are discussed. Limited entry 3/4 curl ram hunting was initiated in 1966 and has expanded as sheep populations increased. California bighorns have been successfully re-introduced to 10 locations in Washington, and Rocky Mountain bighorns to 2 locations. Washington's current mountain sheep population includes 500 California bighorns and nearly 50 Rocky Mountain bighorns.

Washington State was historically inhabited by 2 subspecies of bighorn sheep, the California bighorn and the Rocky Mountain bighorn.

Although records of geographical distribution and separation of 2 races in Washington State are not well documented, the California bighorn probably inhabited most of the eastern side of the Cascade Mountains (Buechner 1960). Evidence that California bighorns were once relatively abundant in Washington has been presented by several authors. Dalquest and Hoffmeister (1948) report that Professor Dyche collected 54 California bighorn sheep on Mt. Chopaka in 1889 and that skulls from most of these sheep are preserved in the Museum of Natural History, University of Kansas.

Johnson (1975) summarized evidence indicating areas of native mountain sheep habitation and sightings of sheep in Washington State. Rocky Mountain bighorns inhabited only the northeastern and southeastern corners of the state. Both areas were parts of major population centers in adjacent states. The California bighorns' range once extended from the Canadian border south to Mount Adams. The Cascades include little suitable sheep habitat, however, so most of the range is marginal. Since most sheep populations inhabit isolated mountains, historic distribution was probably much like that shown in Figure 1.

MATERIALS AND METHODS

In 1957, Washington State Department of Game acquired 18 California bighorns from British Columbia for re-establishment in Washington. British Columbia Fish and Wildlife Branch biologists advised initial release of these sheep in a 500 acre confined pasture. Originally, a corral type trap was built inside the 500 acre release pasture. When a band of sheep was needed for transplant, the trap was

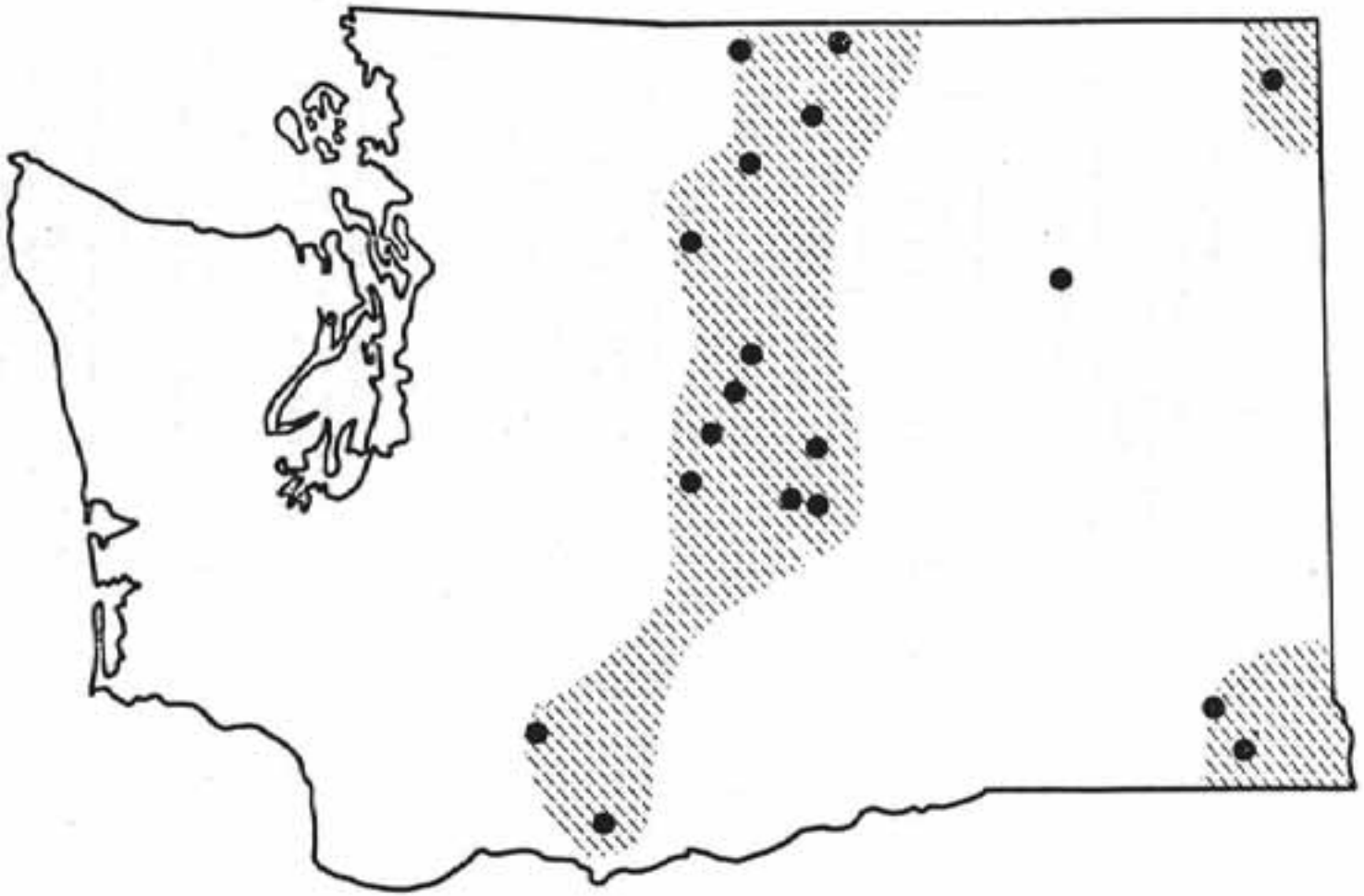

Figure 1. Historic distribution of bighorn sheep in Washington State. Dots indicate areas where skulls or skeletons have been found.

baited with alfalfa and salt. All trapping was done in the winter. When the desired sheep entered the trap, the local Wildlife Recreation Area Manager closed the gate, catching the sheep. The first 2 transplants from the Sinlahekin pasture were also released into fenced pastures. The sheep were transported in the Department's 2½ ton stocking truck. Plywood sides and canvas top made the bed dark and enabled the sheep to be transported without any restraining devices. Later, when all sheep were released to the wild, similar corral traps were erected in winter feeding areas. Recently, we have used a drop net to trap sheep in some areas. Nearly half of our sheep trapping has been from free-roaming bands.

Baits used for attracting sheep to trap sites were initially alfalfa and salt. Recently, we have used fermented apple pomace as the primary bait along with the alfalfa and salt.

Initially sheep were transplanted without any drugs but in recent years all sheep have been treated as reported by Foreyt (These Proceedings of the Northern Wild Sheep and Goat Conference).

RESULTS

Washington State carried out an active bighorn sheep transplanting program in the 1960's and early 1970's. Initially, we released the sheep in a confined pasture on the theory that unless confined the sheep would wander from the release site and be lost by dispersal. By confining them to a 500 acre pasture, we hoped they would adopt the region as their home territory. In fact, the bighorns adapted well to the Sinlahekin pasture and rapidly increased in numbers.

In January 1960, we transplanted 6 sheep from the Sinlahekin pasture to a pasture on the Wooten Wildlife Recreation Area in southeastern Washington. In February 1962, we transplanted 8 sheep from the Sinlahekin pasture to a pasture on the Colockum Wildlife Recreation Area. The sheep were kept in pastures in all these areas for at least 3 years and then released.

Game Department biologists noted no sudden loss by dispersal. Therefore, in 1967, they released sheep on Clemans Mountain without confinement. These sheep maintained group unity and subsequent releases were made without confinement.

From the original transplant at Sinlahekin and from later releases at the Colockum and Wooten pastures, we have now transplanted California bighorn sheep to 10 areas of eastern Washington (Figure 2). The current wild population of California bighorn sheep in Washington is estimated at 500. In addition, we recently transplanted a small band of sheep to a 700 acre pasture on the Colockum Wildlife Recreation Area.

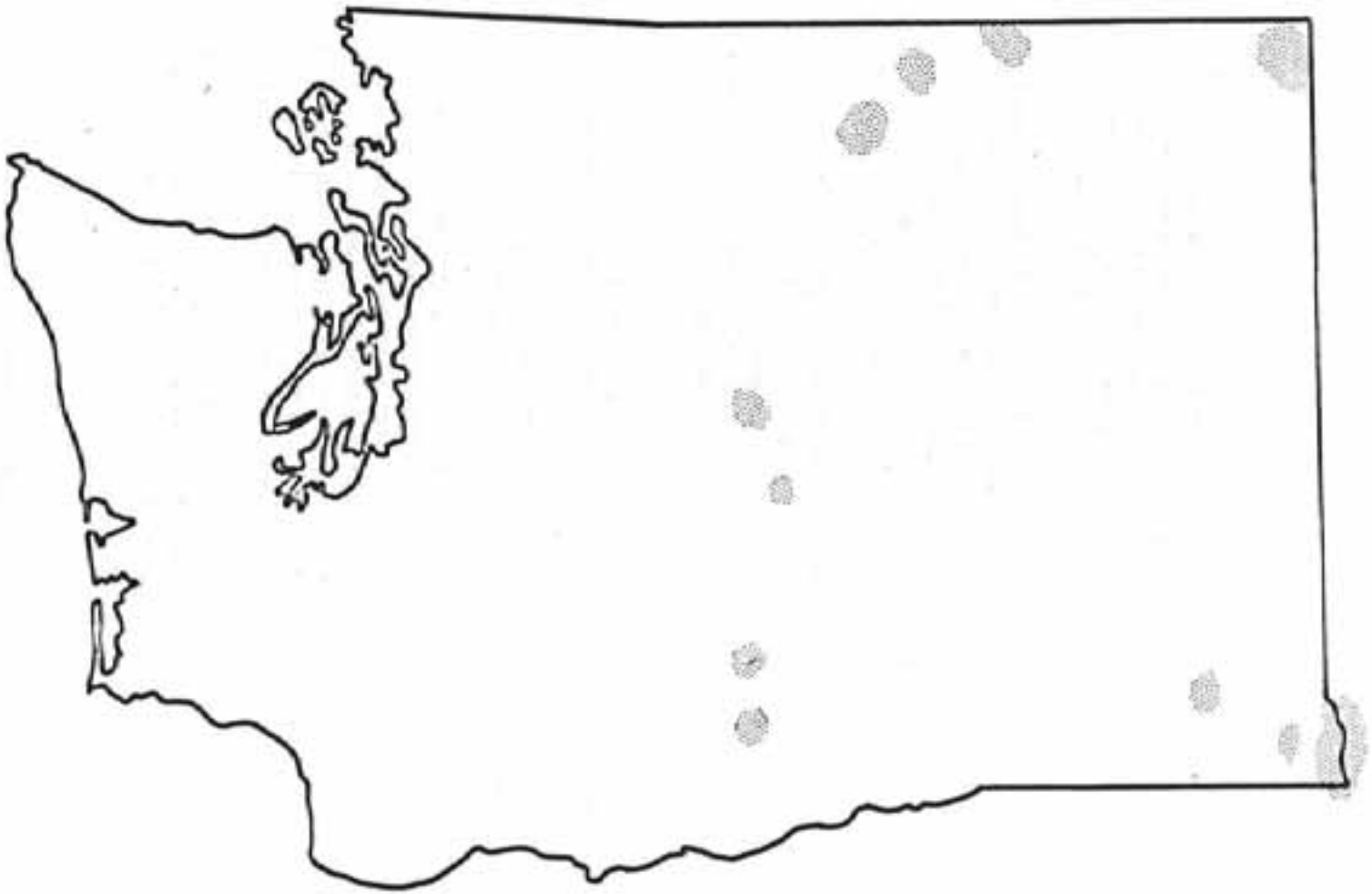

Figure 2. Current distribution of bighorn sheep in Washington State.

Re-establishment of Rocky Mountain bighorns in Washington was initiated with the release of 18 bighorns on Hall Mountain in 1972. In 1977, game biologists captured a band of 10 sheep from Hall Mountain and transplanted them to Joseph Creek Wildlife Recreation Area in southeastern Washington. Despite dispersal to Idaho and Oregon, productivity has been excellent and the Rocky Mountain bighorn population in these 2 areas has increased to nearly 50.

DISCUSSION

Re-establishment of bighorn sheep in Washington has been successful. However, a number of procedures have changed over the years, including release philosophy, trapping methods, and baiting.

The first re-introduced sheep were held in pastures for a few years before their liberation to the wild. Later transplants were made directly into the wild. We found that sheep released in confined pastures had higher productivity and lower mortality than those released directly into the wild. Furthermore, when sheep were monitored periodically and fed in the winter, we had a better handle on herd health and knew when losses occurred. The high cost of building fences in sheep habitat, however, makes the confinement approach a financial burden.

The original philosophy in re-introduction of sheep was to transplant small numbers of sheep to various areas of the state. Administrators felt we could get a better start using this "shotgun" approach to re-establishment. Nearly all of our transplants have been of 6-10 sheep. Although we have been successful with these small transplants, future releases will be larger when more sheep are available.

When we began releasing sheep directly to the wild and stopped winter feeding, our trapping methods also changed. Initially, the sheep in pastures were easily captured in corral traps inside the pastures. Later, when sheep were released from pastures to adjacent ranges they were fed alfalfa during the winter. These sheep were caught in corral traps within or adjacent to their former pastures.

In the early 1970's we noticed bighorn declines in our original release areas. Because of the declines, bighorn transplants were temporarily suspended. When the major impetus of our bighorn sheep transplanting subsided, so too did the winter feeding. In response to cessation of winter feeding, the sheep no longer returned to the old winter feeding sites and we could no longer effectively use corral-type traps in the original release areas.

In recent years, we have used a drop net to trap sheep in 1 area and a corral trap in another. Both methods work well where sheep can be baited to a trap site. Unfortunately, this has not always been possible. For the last several years, winters have been relatively mild in Washington State, and because bighorns were not pressed for adequate forage, they would not accept supplemental feeding of alfalfa.

Apple pomace has been used effectively in a number of states to bait sheep to a trap site. We tried apple pomace in the winter of 1978. Our apple pomace, obtained from a commercial apple juice company, had additives and pressing agents added to the apples during squeezing. Last year we used pure apple pomace and successfully baited sheep to a trap site. Apparently, the sheep prefer their mash straight.

We concluded that the key to sheep trapping in Washington was effective baiting, rather than trapping techniques.

During the first few years of our re-establishment program, the key elements in site selection were historic range, ownership, and winter forage availability. Nearly all of our sheep have been released on Game Department land. This factor has been very beneficial in managing for sheep. After reviewing our success and failures over the last 23 years, we have changed a key element in release site criteria. We now believe that escape terrain may be more important than winter forage availability. In addition, an environmental assessment report is now completed for each potential sheep release. We believe mountain sheep should be re-introduced only on historic ranges and not in areas where competition with mountain goats (Oreamnos americanus) or cattle could occur. Washington State had limited mountain sheep habitat and most good sites have already been stocked.

HUNTING

Productivity has been good, particularly for sheep held in the pastures during their first few years after introduction in Washington. By 1966, the sheep population had increased so fast the Game Department set a limited-entry hunting season for 3/4 horn curl rams. Each year since then, except for a special either-sex season in 1973, bighorn sheep hunting has been regulated by the 3/4 curl horn rule. Since 1966, 113 bighorns have been legally taken in Washington State. We currently have 1 rifle unit, 2 archery units, and 1 muzzleloader rifle unit.

Over the years, we realized that many hunters had little knowledge of sheep hunting and did not understand the 3/4 curl horn rule. Changes have been made to make the description more definitive and understandable. Our 3/4 curl regulation and description is similar to that used in British Columbia and we now hold a voluntary sheep hunter orientation session.

Overall, the bighorn sheep re-introduction program has been very successful. From a start of 18 bighorns in 1957, we now have about 550 bighorns in Washington State. Nearly all of the good release areas have been stocked, but bighorn range is quite limited in our state. The future of our program looks promising although bighorn hunting opportunity will always be limited in Washington State.

LITERATURE CITED

Buechner, H.K. 1960. The bighorn sheep in the United States. Its past, present and future. Wildl. Monog. 4:1-174.

Dalquest, W.W. and D.F. Hoffmeister. 1948. Mountain sheep from the State of Washington in the collection of the University of Kansas publications, Lawrence. Trans. Kansas Acad. Sci. 51(2): 224-234.

Johnson, R.L. 1975. Bighorn Sheep 1974. An evaluation of bighorn sheep in the Sinlahekin area of northcentral Washington with notes on other Washington sheep. Wa. Dept. of Game, Olympia. 40pp.

QUESTION - RESPONSES

Bryan Stotts: You said those sheep stayed close to your release sites. How big of a range do they set up, permanent, when those sheep are released. Do they keep flowing on away from there eventually or do they just set up a home range right around the enclosure site?

Rolf Johnson: In the primary release area they would go maybe 5 to 10 miles away to the highest mountain and then they would come back. Now, we would get some wanders that would go 30 or 40 miles away and may or may not come back.

Wayne Heimer: If escape terrain is so important, what is it that they need to escape from?

Rolf Johnson: We had a graduate student working on sheep in the Blue Mountains, and he felt that coyotes were a major factor in the demise of one of our sheep populations, a major factor in mortality. I think he is right. I think that coyotes were a major controlling factor on the sheep.

Jim Peek: Didn't the Colville Tribe try to plant bighorn up in there; were you guys involved in that?

Rolf Johnson: They haven't put any sheep up there. They put elk in that area against our wishes, but no sheep, yet.

Malcolm Ramsey: One of the questions asked earlier this morning about inbreeding, obviously an increase in 18 to 500, you probably haven't seen any signs of deleterious effects of inbreeding in the new population, or is there any evidence that you have seen?

Rolf Johnson: I think we would have to say we don't know, and it could very well be a possibility. What we did was take the first 18 and put them in the Sinlahekin pasture. Then we took 6 sheep to one pasture and 8 to another. Two of the areas the sheep population went up to around 150, in each area and then took a nose dive. It recovered somewhat. Probably that was the factor; there are some other factors involved, such as predation, such as lack of escape terrain that have also been factors in that. But, I think there is a study going on at the Ikanagan Game Farm right now on inbreeding, perhaps Daryll Hebert could comment on that.

Daryll Hebert: Just a few words. Some of the people that were up in Penticton two years ago heard Al Battrell and Ray Peterson talk about the genetics work that they are doing. We had 2 years of marked rams breeding out, rams breeding with specific ewes over a 2 year sequence and also trading rams to breed with different ewes so we can look at the effects of ram breeding the same ewe 2 or 3 years or breeding their offspring or whatever. I think we will have the third year data this year, but it's really just in the start. That sort of study has to be taken over a much longer time period. At least we've got the thing set up so that we can look at that sort of affect of inbreeding. It will probably be another 2 years before there will be some results to report.

Kurt Becker: Do you feel confining the sheep in pasture for several years before you release them has been a casual factor in creating these sedentary herds?

Rolf Johnson: No. We got our sheep from the Williams Lake area, Riske Creek, B.C., and they were not migratory. I'm talking about California bighorns. Our California bighorns throughout the state are non-migratory. They're all introductions, their not migratory. However, our Rocky Mountain bighorns that we got from Alberta, they just go all over. They even go either to Oregon or Idaho; those up north go to Canada in summer. They just go all over. And so, I think it's mainly different genetic stock that we got.

Dwight Smith: What was the time frame from the introduction of 6 or 8 sheep up to 150 and then the nose dive in population; how long a period did that cover?

Rolf Johnson: About 11 years.

Dwight Smith: From 8 up to 150?

Rolf Johnson: Right.

Dwight Smith: And now at that point it will suddenly decline?

Rolf Johnson: Well, we lost 50% in about 3 years; a 3 year period. There was one year, the winter of "68"; it was a severe winter I might say, we lost a whole lot of deer and sheep and that was the real big one that we lost most of the lambs.