

WHAT ARE THE EFFECTS OF BIGHORN TROPHY HUNTING?

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My presentation today will be in three parts as follows: What does the trophy sheep hunter want? What are some of the biological consequences of his activities? And finally what are some of the influences of the Boone and Crockett Club on trophy sheep hunting?

In Alberta, during the winter of 1972, we surveyed approximately 500 resident sheep hunters by questionnaire and asked their views on sheep hunting (Carr 1972). Some of the highlights were as follows: we were surprised to find that there appeared to be considerable recruitment of new sheep hunters each year, since the greatest percentage of hunters indicated that it was the first year that they had hunted bighorns. However, a large percentage of sheep hunters persisted for about 10 years before they began to drop out.

With reference to horn size, we found about half of the respondents were satisfied with our present "4/5 curl" size limit. About 25 percent of the hunters wanted a full curl law and the other 25 percent would have been satisfied with a 3/4 curl law. Most hunters were looking for horn bases of 14-16 inches and horn lengths of 36-40 inches. About 20 percent wanted broomed horns and about 20 percent wanted unbroomed horns. The majority would have been satisfied with either. Several other criteria were mentioned by hunters with reference to horn size, and many listed their personal standards based on Boone and Crockett scores. About 15 percent of the respondents had killed a trophy sheep that had met their expectations; however, they continued to hunt bighorns.

We asked the hunters if Alberta bighorns should be managed so that only large trophies (8-12 years) are made available to a few people, or smaller rams (4-6 years) are made available to more people, or somewhere between. We did not elaborate on the biological implications of such a program, i.e., the range requirements are nearly double when managing for an old herd compared to the range required when managing for a young herd (Wishart 1970). Forty-five percent of the hunters wanted management for the larger rams, 15 percent wanted smaller rams and 40 percent wanted management for the 6-8 year age class.

From 1966 to 1968 we had a November season during the bighorn rut in Alberta and the result was a very high harvest rate of older and larger rams, so we asked about having a hunting season during the rut again. About a third of the hunters were not in favor of having a hunting season during the rut. Most of the reaction was to have a separate definition for a larger legal trophy for rut hunting seasons.

Finally, we asked what percentage of the ram kill should go to nonresidents. (Incidentally, about 60 percent of the nonresident sheep hunters that hunt in Alberta come from the eastern USA and about 10 percent from California.) Approximately 85 percent of the resident sheep hunters in Alberta felt that 30 percent of the ram kill or less was fair to all nonresidents. I might add, the answers

ranged from no kill to no restrictions for nonresidents.

The foregoing was presented to give some idea of the hopes and expectations of a sample of sheep hunters. Next, I would like to discuss some of the biological consequences of trophy sheep hunting. In recent years I have read some rather disturbing articles by my colleagues (Geist 1971, Morgan 1973) suggesting that shooting mature rams is detrimental to the quality and survival of bighorns. I question their rationale and I would like to present a rebuttal.

First, not only would sheep hunters like to harvest large horned (36+") rams, but they are obliged by regulations to harvest rams with a good horn curl. However, it does not follow that rams with good curls have large horns. Rams that have small, slow-growing horns have small horn diameters and "tight" curls, and rams that have large, fast-growing horns have large horn diameters with "big" curls. Thus, a small ram horn with a 10" diameter will reach a full curl at about 31½", and a large ram horn with a diameter of 13" will not reach a full curl until about 41". The most important point here is that, as a rule, rams grow horns to about the same fraction of a curl and arrive at that point about the same time regardless of the horn length. In other words, the curl of a ram horn can be either a miniature, the same, or a large replica of another ram horn of the same year class (slides).

Generally speaking, then, sheep hunters remove large, medium and small horned legal curl rams in direct proportion to their frequency in the population. Trophy hunting does not selectively remove the very largest horned rams, rather the rams of all horn sizes with legally acceptable curls. A case in point is in Alberta where most of the rams harvested are just 5 to 7 years old. The average horn length of all rams harvested has been only 32" (range 26"-42") and less than 15 percent of the annual harvest has been rams with horns exceeding 36". Incidentally, about only half of the available legal rams are harvested annually in Alberta.

There is an interesting record of some ram horn measurements taken over 100 years ago in Alberta by the Earl of Southesk. The rams were taken in the northern part of their range and the horn dimensions were not significantly different from measurements that are recorded in that general area today.

I would like to reemphasize that the impact of trophy hunting on horn development is negligible, particularly when one stops to consider the major environmental influences on horn growth. I have alluded to environmental influences on horn growth in a previous presentation (Wishart 1969). At that time, I recorded abrupt and significant differences in horn sizes between northern Alberta and southern Alberta bighorns due to dramatic differences in winter weather and range quality. In addition, I applied Bergman's rule and Allen's rule to North American wild sheep and compared horn mass/body weight ratios from Alaska to Mexico. The ratios were predictable by the laws of thermoregulation, i.e., by comparing north and south; Dall sheep have light weight horns/heavy weight bodies and desert sheep have heavy weight horns/light weight bodies. The data presented on horn weight and body weight of North American sheep suggested that horn size has a significant role in temperature regulation. Cowan (1940) stated succinctly that the ultimate maximum size of skull and horns in any area

is a composite result of genetic and age factors, no doubt conditioned by environmental circumstances.

I would like to make a few comments on the hypothesis that hunting harassment and the harvesting of mature rams causes desertion of traditional ranges that would normally be learned by succeeding generations. First of all, under the present cull laws in North America there is plenty of opportunity for young rams to learn the traditional routes of their elders, even if their elders are only 4 or 5 years old. The chain of tradition is not likely to be broken unless rams are harvested before they reach the age of 2 or 3, i.e., the age when they generally join the older ram bands.

Secondly, I believe that hunter harassment has considerably accelerated the extension of sheep ranges in recent decades. For example, the heavily hunted bighorns of my old study area at Sheep River in Alberta have been shot in every possible tributary leading from their traditional summer range and also tributaries of traditional summer ranges of other herds. In recent years bighorns have been observed on an isolated mountain where there have been no historical records of sheep before. During the past hunting season, rams returned early to their winter range which had been established as a sanctuary for less than two years. In order to avoid hunters the sheep arrived prematurely on a winter range that was primarily set aside for protection from the coal and cattle industries. The reverse occurs on park boundaries where hunters have influenced mature rams to extend their stay on park summer ranges until the hunting season is over. Although some traditional bighorn ranges may have been lost due to hunting, some new ranges have most certainly been gained.

Finally, I am not convinced that under natural conditions older rams are that important in extending bighorn ranges. I have been most impressed with the unusual wanderings of young bighorns. As is the case with most species, the function of surplus young is usually to disperse and apparently search for new range or some extension of the existing range. I think it is rather significant that there are now examples of some remarkable and rapid range extensions of transplanted bighorns without any guidance from older sheep - e.g., Wyoming.

To summarize, I believe the suggested functions of mature rams have been oversold with very little evidence. In view of our present knowledge, I do not consider trophy hunting a detriment to horn development or to range expansion of bighorn sheep.

Finally, where does the Boone and Crockett Club fit into the scheme of things? I believe O'Connor (1973) and Morgan (1973) have done an excellent job of expressing our outrage at what the record book has done to the status of decent mountain sheep hunters. I can imagine the club began to keep records because of man's innate desire to know what is highest, lowest, biggest, smallest, fastest, slowest, etc. This peculiar human phenomenon is best illustrated by the popularity of the Guinness Book of World Records which started circulation less than 20 years ago and now has worldwide distribution and is published in 12 different languages. The need to know upper and lower limits possibly helps us as individuals to know where we fall into the scheme of things. For some who have not found their place in the scheme of things, what better place than to be in possession of something that tells the world you are in the top ten. The

unethical practices that hunters have undertaken to make "The Book" (Boone and Crockett), particularly in recent years, has now created an aura of suspicion and lack of credibility for almost anyone listed in the record book. I have had to provide testimony at a number of court cases in recent years that involved mostly guides and outfitters who had obviously sold their souls to their clients and proceeded to cheat by taking rams out of season and out of the parks to meet the demand.

And recently, some of the Indians in Alberta have redirected their hunting rights toward the illegal lucrative sale of ram heads. Nowadays, any hunter with a big ram is immediately suspect.

I was talking to Ian McTaggart Cowan a few years ago at a conference on ungulates in Calgary and I told him the highlight of my trip to New York some years ago was seeing Simpson's ram in the New York Museum of Natural History. Cowan replied that he and Jim Simpson had worked closely together in the national parks during the 1940's and Simpson told him that when he died, Cowan could publish where Simpson actually killed that ram. I understand now that the ram was taken off Aylmer Mountain in Banff National Park. I think it was probably appropriate that the number one bighorn was recently destroyed in a house fire in southern Alberta. That ram was shot in Blind Canyon in 1911. Blind Canyon was a game preserve in 1911 (G. R. Kerr, pers. comm.).

These days I find it very uncomfortable to be associated with outfitters and some of the big sheep killers. I have had that same sensation in associating with falconers (falconry is illegal in Alberta). I have read that a white gyrfalcon will bring up to \$30,000 from the right Arab. Just recently I attended a peregrine conference in Connecticut where there was a general concurrence that in order to alleviate illegal trade and the feeling of distrust, all falcons in captivity must be permanently marked. Herein lies a lesson for registering trophy heads. Possibly there should be another book for legally registered, permanently marked ram heads. However, do we really need to know No. 220 when a record of the most massive horns and possibly the longest horn is all that is required, e.g., as Guinness has done with the argali. Do we really need to know who shot the animal? Possibly the location of the head may be of interest, such as in a museum, but hopefully not in Bill Foster's Bighorn Restaurant.

In the final analysis, the state of the bighorn rests in the political process of land use decisions. I would hope that some of those decisions will be influenced by the groups involved at the forthcoming workshop at Missoula on the management biology of North American wild sheep. The sponsors are the Boone and Crockett Club, National Audubon Society, and the Wildlife Management Institute. At the moment, I consider the Boone and Crockett Club a strange bedfellow with this prestigious group because of their less prestigious record book.

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