

RESUME OF BIGHORN MANAGEMENT IN COLORADO

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Basically I'll take the opposite approach of Wyoming. For all practical purposes we don't have a bighorn sheep management program in Colorado. Our herds for the most part are being ignored. We don't know our population structure, our ranges or migration patterns.

In considering the human population pressures that some of our herds are experiencing, this is rather appalling, but I have to give management the benefit of the doubt. We are using two management tools in Colorado - those being a limited amount of hunting as well as some trapping and transplanting.

Could I have some slides, please. Presently in Colorado we are hunting 15 separate areas with rifles and we also have 4 new areas which are open only for archery hunting. Our season structure looks something like this. In 1972 we had both 23 days for rifles and archery. In 1973 the season days were increased to 25 for rifle and 30 for archery. We had 14 areas open for rifle in 1972 and one for archery. We've increased the archery areas to 4 in 1973 and to 15 areas for rifle.

The permits available have been steadily increasing since the early 1970's for rifle and archery, from 20 to 60 in 1973. In 1974 our permits haven't been issued, but we anticipate a slight increase in the number issued. The number of applicants is also appalling in Colorado, as we're having a tremendous population explosion along with increased numbers of hunters who are interested in bighorn sheep hunting. You notice for rifles we had 633 applicants in 1972, 743 in 1973 and this has been the trend since our first bighorn sheep seasons were established in 1953. Just a tremendous increase in the number of people who want to go bighorn sheep hunting. The annual harvest has pretty well stayed the same. We're harvesting somewhere around 26-27 head a year. In 1972 our archery hunters did not harvest a sheep, but in 1973 they did harvest 2 animals.

Our commission has just said that we can, in some of our areas, harvest half-curl rams. Up to this time we have played around with full curl regulations as well as half curl. It's bounced back and forth, and personally I meet this new regulation, where a hunter can take a half-curl ram, with mixed emotions. As I say, we've been playing with different types of curl regulations in the harvest. This is about a 10 percent sampling of the number of rams that have been harvested from our areas since our 1953 season. You can see that most of our rams are harvested before they're 10 years of age. Also we're taking very few full curl animals, as we have found in some of our observations and our hunting seasons that most of our rams are broomed-off before they can be harvested. We've even some rams that are broomed so badly that they will be half curls for the remainder of their lives.

Now there are two methods of trapping that are presently being employed in Colorado - that being our normal corral trap, which I'm sure is being used in Whiskey Basin, and a drop net that was first used by Jim Erickson in the Yukon, I believe, to trap Dall sheep. Our drop net trapping season has been very successful for the last two years. This is baited with an apple mash and alfalfa. Last year we trapped somewhere around 75 animals and in this past year we're over 100 head. What this trap net does is allow us to go right into the sheep range. We don't have to wait for the sheep to come to us, but we can go right to the sheep. You can see what it is like after the trap is dropped. It is like trying to wrangle pretzels out from under this net. The first time we dropped it, it took us 3 hours to work 6 sheep out of the net, but as I say, with this technique we can go right up into the sheep area and trap. Some of the animals are held in captivity for our research program and many of them are released. Management for the most part has continued to use the normal corral trap that has been used in Colorado for a number of years.

Our research program has been kind of extensive, and in 1971 our commission designated us within our Colorado Division of Wildlife to try to determine the cause of the continual decline of our sheep populations. We approached this problem from the hypothesis that poor nutrition was the probable cause of our decline. We jumped into a tremendous research program to determine some of our range attributes and to compare ranges that we considered good to what we considered poor sheep ranges and try to really determine what a good sheep range was, based on the sheep population using that range at the present time.

This is Daubenmire's system that we used on our range transects. Sometimes our transects were very easy to read and sometimes, as you can see, reading what was in the Daubenmire frame wasn't easy. Along with this we tried to determine food habits of our bighorn sheep on three ranges and you can see here that sedges and grass species made up most of the diet. We determined food habits by the fecal microanalysis technique which does have some inherent errors.

Along with determining food habits, we wanted to determine the nutrient availability to the sheep on these ranges, so we looked at such things as protein, as this graph shows, the seasonal changes in protein availability to the sheep on the range and the majority of our trace elements. These were all determined by atomic absorption techniques and for the most part are deemed fairly accurate. Another study that we had was to try to manipulate the amount of vegetation and increase the amount of forage available on both our alpine and subalpine sheep ranges. This sounds very similar to what Alberta has just mentioned they are starting to do.

We used four different levels of nitrogen, an atrazine herbicide to manipulate the vegetation and phosphorus on the test plots. This is our alpine study areas (it was also tried on our subalpine areas) and you can see that the vegetation responses are readily apparent from our first year's work.

Our second year's work and many of our phosphorus fertilizations or nitrogen fertilizations are very dependent on water availability, and since last year was a very dry year we did not get much of a vegetation response.

Along with some of our other studies, we're attempting to trap and treat sheep as a means of trying to relieve the lungworm burden of the sheep to try to get a lamb survival the following spring. Last year we trapped a number of sheep and they were treated with four or five different drugs, neckbanded and released. We also kept some of these sheep in captivity as a means of control to see what the lungworm larval output was in their fecal samples. This particular ewe was right up on top of Pike's Peak which is 14,000 feet, during the dead of winter, and you can see the type of trapping conditions that we're experiencing.

Probably one of the things we're most interested in is the causes and nature of our lamb mortalities. We knew from previous studies that our poor recruitment into the herd was directly due to just insufficient survival of our lambs. This part of our study really looked at the pathology of what was occurring in some of our bighorn sheep herds and why our lambs were not surviving.

That is, in a nutshell, what our research has been looking at. For the future our research efforts are going to be looking again at drug trials to try and relieve the lungworm burden within the sheep, but also we're going to be trying to treat heavily used concentration areas of sheep with various insecticides to try to eliminate the snail and/or the first stage of larva before it has a chance to go back and reinfect the sheep. We're also going to look at trying transplanting to extend sheep range. I think this is probably an output of some of Geist's theory that we're going to have to learn how to move sheep onto different ranges to get migration patterns reestablished. One of the things we also hope to do is to start looking a little more deeply into fire ecology as a means of improving some of our sheep ranges.

That's about the extent of Colorado's program at the present time.