

BIGHORN SHEEP MANAGEMENT IN NEW MEXICO

by

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INTRODUCTION

Two subspecies of wild mountain sheep occur in New Mexico: the Rocky Mountain Bighorn (*Ovis canadensis canadensis*), and the Mexican Bighorn (*O. c. mexicana*). We have five distinct herds of Rocky Mountain sheep, and the total statewide population would lie within the limits of 300-425. Our two separate herds of desert bighorn would total between 200 and 275 animals.

The northern bighorn was exterminated from New Mexico around the turn of the century, and the present herds have developed from trapping and transplanting efforts which began over 30 years ago. The desert sheep, perhaps not as vulnerable due to a habitat less hospitable to man, survived the exploitation period until the two remnant herds came under the protection of State and Federal game refuge systems. Both concepts of game management, reintroduction and refuges, have proved successful to the extent that all herds except the newest transplant of three years ago have furnished hunting for trophy-size rams. Last year, twenty-three permits were issued on five of the herds, the greatest diversity of hunting opportunity since 1866 when the Territorial Legislature first enacted laws to protect bighorn.

These encouraging aspects are not, unfortunately, the whole story. All is not peaches and cream! We have two instances where populations appear static, at levels well below the suspected optimum carrying capacity of the habitat. We have had some poaching problems and erratic wanderings of transplanted animals. Also there are several instances of increasing human encroachment and "development" in prime bighorn areas. Thus, I suspect we share many of the successes and potential problems of the other states represented here.

HISTORICAL

New Mexico is fortunate in that several early day travelers have left written accounts of bighorn occurrence and distribution. Indeed, the first known record is provided by Coronado in 1540. In a report describing Hawikuh, the westernmost Zuni pueblo, he wrote: "There are many animals here... and some sheep as big as horses, with very large horns and little tails. I have seen some of their horns, the size of which was something amazing. There are wild goats (ewes?), whose heads I have also seen." Whether he actually saw bighorn in the western Zuni Mountains, or was referring to trophies brought into the pueblos from the lava flows fifty miles to the east, is a matter of speculation.

Somewhat later, in 1825, James Ohio Pattie passing through the San Francisco River canyon, a tributary of the Gila, wrote in his journal: "multitudes of mountain sheep. One of them that we killed had the largest horns that I ever saw on any animal." Following these early explorers we have a more scientific fund of literature contributed by such naturalists as: E. A. Mearns 1892, W. T. Hornaday 1901, Ned Hollister 1905, E. A. Goldman 1908, J. S. Ligon 1927, and Vernon Bailey 1931. A combination of these and other accounts graphically depict the decimation of the Rocky Mountain bighorn which probably will be complete by 1903. Similarly, the loss of a population of desert bighorn in the Guadalupe Mountains, then classified as *O. c. texianus*, can be traced through the writings of Ligon and Bailey. The obituary of this herd is found in Department of Game and Fish records dating as late as 1946. This abundance of early narratives has provided more than interesting reading. It has given us encouragement to revitalize some of these herds through a vigorous program of reintroduction.

MOUNTAIN SHEEP MANAGEMENT

The initial attempt to reestablish Rocky Mountain bighorn in New Mexico was made in 1932. Six sheep obtained from Banff National Park, Alberta, Canada were released in the Pecos area of the Sangre de Cristo Mountains northeast of Santa Fe. This attempt to bring back the mountain sheep did not succeed. The Canadians did not give up on us however and, during the period 1940-42, three more rams and six ewes were made available to us. These were released in the Sandia Mountains, a north-south oriented fault block range with an extremely rugged western escarpment, lying just east of Albuquerque. By 1958, ground surveys indicated a minimum population of 104 animals, with 36 rams. The first hunt was held in 1959, with 20 licenses being available. Only two rams were killed, largely due to severe weather complications. This herd was also hunted in 1960, 1961, 1965, and 1970. Sixty-eight permits have been issued on these five hunts, with twenty-one rams being taken for an average hunter success rate of thirty-one percent.

By 1961, in addition to hunting value, the Game & Fish Department began to view the Sandia herd as a source of animals for transplanting purposes. Three potential release areas were evaluated, with the lower Gila River canyons receiving the highest priority. A large rope-net corral trap was built around a well used artificial salt station. No bighorn were trapped during the fall of 1961, and it was not until September 1964 that three rams and thirteen ewes were captured and transplanted along Sheridan Ridge adjacent to the Gila Wilderness Area. Six months earlier ten additional bighorn from Banff, Alberta (two rams and eight ewes) were released at Turkey Creek. At the time, it was believed these two bands would merge into a single herd. By 1967, however, it was clear that most or all of the Sheridan Ridge band had moved westward into the breaks of the San Francisco River. It is perhaps more than coincidental that these sheep had selected for their home range the same general area where Pattie had reported their predecessors almost 150 years before.

The next in our series of transplants in 1965 also began with bighorn from Banff, Alberta. These fifteen animals were lifted in individual crates by helicopter to an alpine tundra ridge near Pecos Baldy Peak in the Sangre de Cristos east of Santa Fe. This placement of sheep on the alpine winter range has proved highly successful. Because of heavy snow cover in the lower timbered areas, the animals do not scatter, and have a chance to become accustomed to the selected range.

In August 1966 we were again successful in trapping bighorn from the Sandia herd, and nine more animals were scheduled for release in the Pecos. An administrative change-of-heart on the part of the Forest Service regarding Wilderness Area sanctity and helicopter use led to the development of a new technique in transporting bighorn. Crates with wheels were to be pulled the twelve miles into the Pecos Wilderness to the release site by packstock. To keep accidents to a minimum, 3 men per cart were required. Thus the Department of Game and Fish hesitates to recommend this technique for further application. This rough handling did not result in any injury to the sheep so at least another indication of the hardiness of the Rocky Mountain sheep in captivity was obtained. Unfortunately, the same physical stamina or determination to live is seemingly not shared by the desert races of sheep. These two transplants in the Pecos, slightly over five years ago, have developed into a herd of between 73 and 100 animals, a rate of increase which must be close to the maximum.

Our newest bighorn herd began in 1968 with the movement of ten animals from Banff National Park to the Wheeler Peak area north of Taos. This was a winter operation with the crates being lifted by helicopter to the alpine tundra zone as in the first Pecos transplant. The first summer the sheep remained in the selected range, but by the second year some erratic wandering had taken place into lower and less desirable areas. We hypothesize that this movement might have been influenced by summer grazing of domestic sheep on some of the prime alpine habitat. Bighorn again became available for transplant, this time from the Wyoming Game and Fish Commission, during January 1970. These 19 animals were ferried by the helicopter to the same release site north of Wheeler Peak. By late spring, many of these sheep were known to have moved, and a search showed them to be approximately 15 miles to the southeast. They had crossed the Moreno Valley and selected a new home range which fortunately is on a tract of some 50,000 acres owned by the Game Department. It is interesting to speculate whether these Wyoming bighorn knew that the Cimarron Canyon they migrated to is an anglicized name from the original Borrego Cimarron, or literally, wild sheep canyon.

These accounts of our reintroduction efforts fairly well summarize one management approach to the Rocky Mountain bighorn. That is, we actively solicit animals from other areas, and we will continue to attempt to trap the surplus from the Sandia Mountains until transplants have been made in all suitable habitats. Some of our other present herds which are increasing at a rapid rate may also furnish transplant stock if a workable capture technique other than a large, fixed and baited trap can be developed.

A second aspect of our mountain sheep management program is our willingness to issue hunting licenses for old, trophy-sized rams even though herd size and the number of known legal rams are small. We have recently had a hunt where only three permits were issued for a particular mountain range. We also have hunted relatively new herds where large mature rams are considered a biological surplus. Last fall, fifteen permits were issued on three areas where the transplanted herds had been in existence for approximately six years. With intensive utilization such as this, we census very closely and only issue licenses for the number of rams known to be unquestionably legal. We use the three-quarter-curl minimum, but add an alternative restriction of 144 points using a modification of the Boone and Crockett scoring system. We carefully instruct each hunter, classify and measure mounted heads, show photographs or movies and verbally discourage shooting of "border-line" rams. We have experienced very little trouble with hunters taking the small "sickle-horn" rams, or with illegal kills or crippling loss.

We have not had a full-time biologist conducting research on bighorn for several years, so our Area Game Managers conduct the population surveys and habitat evaluations. The New Mexico Game and Fish Department has its own super-charged helicopter; thus we have done quite a bit of aerial survey work the last few years. We recognize the need for detailed investigations into several facets of bighorn population dynamics, but financial and manpower limitations relative to other big game management priorities have kept us from getting into this more intensive phase of Rocky Mountain bighorn management.

The success of our Sandia, Gila, and San Francisco River herds, in habitat types somewhat atypical from those normally associated with Rocky Mountain sheep, gives rise to some interesting speculation concerning the sub-specific requisites of *O. c. mexicana* and *canadensis*. The Sandias have fringes of vegetation common to the Canadian and Hudsonian Life Zones, but they are predominately a Transition Zone mountain range. Much of the lower escarpments and foothills are Upper Sonoran, and the sheep utilize this type too, especially as winter range. The Gila and San Francisco areas are lower in altitude and more xeric. The vegetative associations vary from transition down to Lower Sonoran, and the bighorn, emanating from Banff, Alberta, seem to be doing quite well. Certainly, a much longer period of evaluation must pass before this rather amazing example of bighorn adaptability can be substantiated. It is possible, however, that such an inter-grade area could furnish suitable habitat for either *O. c. mexicana* or *canadensis*.

DESERT SHEEP MANAGEMENT

Management of desert bighorn in New Mexico has followed a different pattern. The Guadalupe Mountain herd perished probably due to the combined hazards of illegal hunting and intensive husbandry of domestic sheep and goats. Similar conditions in the San Andres Mountains undoubtedly reduced this desert sheep population to a very low level. The San Andres National Wildlife Refuge, an area of 57,215 acres, was

established in 1941. From an initial level of approximately 40 animals, this herd has increased to approximately 200. Unfortunately, our surveys have not shown any significant populations of desert bighorn in the vast expanses of suitable habitat adjacent to the Refuge. During the last few years inter-Agency cooperation between the Fish and Wildlife Service and the New Mexico Department of Game and Fish has increased considerably, and three hunts have been held on the San Andres Refuge. Five permits have been allowed per year, and the fifteen hunters have killed thirteen rams. Only one "borderline" ram has been killed, with all the others being trophy size. The southern end of the Refuge in the favored bighorn areas has received almost all the hunting, with obviously a high degree of success. As some of the rougher, more remote portions of the San Andres are hunted, some Boone and Crockett record-size rams will probably be taken.

The desert sheep of the Big Hatchet Mountains were also undoubtedly reduced to a very low level by 1926 when the 105,000-acre State Game Refuge was established. This herd increased to approximately 125 animals by 1953 when surveys indicated a high proportion of mature rams. Hunts were held during 1954 and 1955 and 26 hunters took 17 rams for a 65% success rate. During this extended period of refuge protection the desert mule deer population also built up to a very high level, and extreme competition between sheep and deer existed. Grazing by domestic livestock was also heavy. Several limited deer die-offs had occurred, but the population remained higher than the range carrying capacity. The period 1953-1957 was one of extreme drought, in fact dendrochronological evidence suggests that this was the most severe drought in 700 years. On some slopes, over 50% of the most desirable browse died. The deer herd crashed from a minimum population of 1000 to a level where sightings were very rare by 1959. The bighorn herd also declined to less than 25 animals between 1956 and 1959, when a full-time biological investigation of the desert bighorn was resumed. These studies continued until 1962, but little conclusive information on factors limiting the Hatcher bighorn could be obtained. Some reproduction was noted, also some mortality, and incomplete surveys and incidental sightings up to the present time suggest that this population is just holding its own.

Plans during the 1930's by J. S. Ligon called for capture of bighorn in the Hachets, with young to be raised on "Spanish Goats" as foster mothers. A trap with pole and wire wings was built, and some bighorn reportedly entered it on occasion, but none were ever successfully trapped. During the last few years, our Game Department again attempted to trap desert bighorn, this time on the San Andres National Wildlife Refuge. This project was also a failure. The objective was to raise these bighorn in captivity at our Red Rock Game Farm. A ram was obtained from Nevada for breeding purposes in anticipation of the ewes to be trapped. This ram later died from accidental causes, thus our desert bighorn nursery is still in the theoretical stages. If this project can be carried out successfully, reintroduction into the Guadalupes would probably receive highest priority.

These efforts at trapping and creation of a captive herd, together with development of artificial water sources and predator control in the Big Hatchet Mountains, limited aerial survey work, and cooperative administration of annual hunting season on the San Andres, summarize our Department's management program for desert bighorn during recent years. If we don't know the factors limiting bighorn, we do know those limiting our department's ability to perform more detailed management investigations: money and manpower restrictions. We suspect that other states are faced with the same uncomfortable restraints.