

OVERGRAZING ON DESERT BIGHORN RANGES

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Abstract. Overgrazing by livestock has been recognized by many as one of the more important factors in the early decline of populations of desert bighorn sheep in the Southwest. There is evidence that overgrazing, and perhaps even the mere presence of cattle in desert bighorn sheep ranges, continues to be a major reason for continuing declines of some desert bighorn populations and for the failure of others to increase. In Arizona, overgrazed ranges are also the main stumbling block to the reintroduction of desert sheep to historic ranges.

A few weeks ago in Atlanta, Georgia, Curt Berkland, BLM Director, made some off-the-cuff remarks about problems currently facing his agency. The occasion was the annual Director's Luncheon, a regular feature of the North American Wildlife Conference. Although I'm not a director, I had managed to wrangle an invitation to the free lunch anyway, and I was present to hear Berkland say that the gravest issue confronting the Bureau of Land Management was the burro. In view of other BLM problems I was disappointed at what seemed to be an effort to make the lowly jackass the scapegoat for the condition of National Resource Lands.

Not that I am unaware of and do not appreciate the damage being done by burros to some of our southwestern rangelands. If it were in my power to do so, free-roaming burros in the West would be eliminated down to the last long-eared specimen.

Another large exotic, however, is responsible for much more damage to BLM rangelands than the controversial jackass. By putting the finger on the burro, Berkland chose to ignore a far more important factor in the degradation of National Resource Lands - range cattle. Burros may be a headache to range managers in some areas, but in the Southwest, cattle are a problem on virtually all BLM ranges. In Arizona, cattle would head the list of factors responsible for declining populations of desert bighorn sheep. Cattle are also the biggest obstacle to the reintroduction of bighorn to historic ranges.

One reason why overgrazing in general, and its contribution to degraded bighorn ranges in particular, is such a problem is due in large measure to its being so insidious compared to other impacts on wildlife habitat. It is easier to pin the "bad guy" label on other factors. The impacts of disease, poaching, major highways, dams, and so forth can be demonstrated more convincingly than the effects of widespread and chronic overuse of bighorn habitats by livestock. In fact, it is probably impossible to conclusively establish the role played by livestock in suppressing bighorn sheep populations without comprehensive and costly long term studies. However, while conclusive proof may be hard to come by, the circumstantial evidence alone can be pretty convincing.

One difficulty in trying to put the problem in perspective is the fact that much of the damage done to bighorn ranges by livestock occurred long ago. As one views bighorn ranges today it is difficult to appreciate the long term impact on southwestern habitats that resulted from the unregulated grazing of the 1800's. It is a recognized fact that mountain sheep prefer grass and do best in habitat dominated by climax grasses. It follows that the extreme overgrazing, which was a standard practice for many years after the livestock industry got a foothold in the west and which eliminated perennial grasses from most desert ranges, must have sharply affected bighorn sheep populations, and drastically reduced the carrying capacity for this magnificent animal. While much of the early destructive range abuse was the work of domestic sheep, cattle largely have replaced sheep, particularly in Arizona, and are today the number one problem.

The type of abusive grazing practiced by early livestock operators no longer prevails. Unfortunately, much of the damage sustained

by the habitat in those early years, and the reduction in bighorn sheep carrying capacity that followed, was nearly permanent. Unfortunately, too, overgrazing did not cease, it merely decreased in intensity. Deterioration of many ranges continues.

What about the circumstantial evidence to which I referred earlier? Can a really solid case be made that cattle on bighorn sheep ranges are still adversely affecting bighorn sheep populations and otherwise interfering with desert sheep management? I'm convinced of it. Let's consider some of this evidence.

In New Mexico, the desert bighorn sheep are now restricted to two areas: the San Andres Refuge and the Big Hatchet Mountains. There has been no livestock on the San Andres for about 20 years while the Big Hatchets have been grazed heavily for an indefinite period, probably since the first livestock operator came on the scene. According to R.W. Rigby, Refuge Manager (pers. comm.), the San Andres Refuge now supports a healthy population of about 200-250 bighorn sheep compared to about 50 at the time cattle grazing ceased. In contrast, the bighorn population in the grazed Big Hatchets has been barely hanging on for the past 25 years or more, and currently supports no more than 50 bighorn sheep (Snyder 1975). The problem on the Big Hatchets has been reported by several writers (Gordon 1957; Buechner 1960; Snyder 1975). Buechner (1960), speaking of conditions in the early 1950's reported: "The keenest competition bighorn sheep presently encounter from cattle is in the Big Hatchet Mountains".

Snyder (1975 and pers. comm.) recognized the cattle problem in the Big Hatchets but indicated that drought may also have been a contributing factor. Undoubtedly it was and separating the respective influence of two factors as closely related as drought and overgrazing is not the easiest of tasks. Under any circumstances drought will have an impact on range conditions and on the wildlife dependent on range forage. Drought is most likely to become a problem to wildlife, however, when it aggravates a condition already made critical by livestock overgrazing. Desert bighorn evolved and thrived in the Southwest despite the periodic droughts which are characteristic of the area. Consider too that drought undoubtedly also struck the ungrazed San Andres, but the bighorn sheep population there has increased during the past 20 years.

Competition between desert sheep and mule deer has been another complicating factor in the New Mexico ranges. Again, however, it is another element that has affected both ranges, even though there is a mathematical possibility that such competition has been more severe in one area than another. As a wildlife researcher, I'll have to admit that the fact that desert bighorn sheep on the ungrazed San Andres increased, while those on the grazed Big Hatchets did not increase does not conclusively establish a cause and effect relationship. As I said earlier, the evidence is circumstantial. Now, let's consider the situation in Arizona.

The historical record indicates that Arizona, as well as other western states, had an abundance of bighorn sheep when the white man appeared on the scene. Buechner's (1960) monograph does an excellent job of summarizing the early reports. There is no point in my repeating his data here except to say that bighorn sheep in the state were reported by many observers cited by Buechner to be both abundant and widespread compared to more recent estimates. Not only were they found near sea level in the state's hot, dry desert, but also in higher and colder elevations, including the San Francisco Peaks north of Flagstaff at 10,000-12,000 feet elevation. At the present time, they are confined largely to a number of desert ranges, primarily in the southwestern quarter of Arizona.

Recent population estimates indicate about 2500 bighorn in Arizona, compared to about 3500 in the early 1950's (Trefethen 1973). Factors other than overgrazing are recognized as having contributed to the disappearance of bighorn sheep from many Arizona ranges. Scabies, introduced by domestic sheep in the early years of livestock grazing, evidently played a major role in the decline of the bighorn throughout the West. Yet, when we look at the condition of many historic ranges, it is clear that it was the intense and prolonged overgrazing by livestock that drastically altered conditions and reduced the capacity of these habitats. Even in the absence of disease, the bighorn populations in these

ranges today would not likely be any higher than they are. The habitat simply wouldn't support larger populations.

One of the more convincing bits of evidence that livestock grazing is a depressing influence on bighorn sheep in Arizona is the fact that there are no thriving populations in ranges now grazed by cattle. One apparent exception that may be familiar to some of you, the Kofa Mountains, is not really an exception at all. In the Kofas, the sheep are found on the southern and western parts of the range, while the cattle graze the north and east slopes. Skeptics will charge that this merely indicates that there is no problem, because the two animals segregate themselves according to their preferences in habitat, with the bighorn sheep restricting themselves to the generally rougher southern and western slopes. Perhaps, but it seems unlikely in the face of such evidence as the results obtained by removing cattle from the San Andres Refuge, and also of observations made in Utah, which I will discuss later.

There are ranges in Arizona where bighorn sheep have declined in recent years and where the most visible disturbance to the habitat has been grazing by cattle. Paul Webb (1972) reported one case involving the Ragged Top and Silver Bell Mountains. This area was so overstocked with cattle that many starved to death but not before they destroyed the habitat for bighorn sheep. More recently, we have become concerned about the Sand Tank and Saucedo Mountains, southeast of Gila Bend, where bighorn populations have been declining. In an unpublished in-house report, Bob Weaver, Arizona Game and Fish Wildlife Specialist, reported the results of a helicopter survey in this area in March, 1973. He counted more than 350 steers scattered from the desert floor to the highest peaks. Bighorns, he reported "... have left many of the more desirable areas. . . to seek solitude in the rugged, broken habitat." He predicted that such cattle use would be "... a major factor influencing the eventual decrease of the bighorn sheep."

In Kanab Creek on the west side of the Kaibab Plateau, an area chronically and severely overgrazed by cattle, bighorn sheep sign begins where cattle sign ends (Russo, pers. comm.). Old timers in the area report that the bighorn sheep once ranged far up into Kanab Creek and even into Snake Gulch, a major tributary draining the west side of the Kaibab.

In recent years, personnel of Arizona Game and Fish have been investigating areas suitable for bighorn transplants. There are literally dozens of localities that appear to meet all the criteria established for a successful reintroduction except one: it is next to impossible to find an area of several thousand acres of historic habitat that is not severely overgrazed by cattle. There are several small sites on the tops of mesas, inaccessible to livestock, that are suitable, but there is no adjacent habitat in good condition into which the bighorn can expand.

Arizona's one and only transplant in the southeastern part of the state did well as long as the animals were confined to a cattle-free enclosure of 200+ acres. Since they were turned loose four years ago, the band of 29 animals has apparently neither increased significantly in numbers (best recent estimate indicates about 35 animals) nor expanded their range. Certainly the chronically overgrazed condition of the surrounding rangelands would not be conducive to population growth.

Let's consider briefly the situation in California. Desert bighorn sheep in southeastern California currently are subject to factors other than livestock which are reported to have contributed to the historic reduction of desert sheep in many areas (Weaver 1975). Even here, however, the largest populations of desert bighorn sheep in California are in the San Gabriel Mountains, 510 sheep; the San Jacintos, 280 sheep; and the Santa Rosas, 500 sheep (Weaver 1975). Is it only coincidence that these are ranges from which livestock have been excluded?

Some of the most significant observations on the relationship between cattle and bighorn sheep come from Utah. Wilson (1975) reported that no sheep had been observed in Red Canyon since 1887, the year cattle were introduced to the area. The cattle were removed in 1973 and within six months, bighorn sheep were observed again. Wilson observed essentially the same reaction by desert sheep to cattle in another ungrazed study area where a recognizable group of sheep had been under observation for a 5-year period. The behavior and movements of this group had

become so well known that the animals could be located at will in a matter of hours. When 30 heifers were experimentally moved into the area, the sheep disappeared and were not seen again for eight months, even though the cattle were removed within two weeks. Wilson (1975) felt these observations indicated, in these instances at least, that competition was for space instead of for forage or water.

Whether the problem is space, water, forage, or a combination, the evidence, circumstantial though it may be, is persuasive. If bighorn sheep populations are to survive as anything more than curiosities, the problem of cattle on bighorn ranges is going to have to be addressed soon. In addition to cattle being a problem for existing bighorn populations, overgrazed ranges are also a major obstacle to successful transplants of desert bighorn sheep.

While the land management agencies can be faulted for failing to do a better job of range management, state wildlife agencies are not blameless in this scenario; game and fish departments by and large have neglected their responsibilities. In the 27 years I've been in this field, I've never known of one state agency to take a hard-nosed stand and **demand** that the federal land management agencies or state land departments stop abusing rangelands by permitting more livestock than a range could support. Nor have I known of even one department insisting that wildlife in general, and bighorn sheep in particular, be given equal consideration with other values on our public lands.

Land management agencies themselves have long proclaimed their desires and intent to insure that wildlife receive due consideration under the multiple-use policy presumably in effect. But lip service to an ideal has done nothing better the lot of wildlife on these rangelands. We hear increasingly about the "new leaves" being turned by these agencies and about the grand new era being ushered in for wildlife. So far, however, the millennium for wildlife is nowhere in sight. Cattlemen continue to ride high in the saddle. There are encouraging signs that some National Forest Supervisors in Arizona are trying hard to cope with overgrazing problems but business as usual seems to prevail on BLM and state lands. If anyone questions this, a tour of Arizona's western deserts would soon lay any doubts to rest. Even though this has been one of the driest winters on record and growth of spring annuals has been so poor as to discourage even chuckwallas, thousands of steers have been dumped on the deserts of southwestern Arizona. The consequences to wildlife in general, and bighorn sheep in particular, can only be imagined.

If desert bighorn sheep are to continue as an important, viable component of our southwestern deserts, state wildlife agencies must take a firm stand regarding the cattle problem. While I have absolutely no objection to proper use of other ranges by livestock, I believe there should be **no** livestock, and that includes sheep, burros, horses, and cattle, on ranges as fragile as these desert regions. Precipitation in many years is virtually non-existent and growth of vegetation minimal. Existence is a struggle for wildlife under the best of circumstances, and the competition posed by livestock is intolerable. State wildlife agencies are shirking their responsibilities by not insisting, at the very least, that livestock be kept off all bighorn sheep ranges. And they should demand also that cattle numbers be sharply reduced in historic bighorn habitats to allow range recovery to the point where a reintroduction of the bighorn can be made with some hope for success.

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