

STATUS AND DISTRIBUTION OF ROCKY MOUNTAIN BIGHORN SHEEP IN UTAH

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Abstract: Historically, Utah supported Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) on its northern mountain chains. From the late 1800's through to the 1960's a steady decline in bighorn reduced the once numerous herds to fewer than 100 animals. Beginning in 1966 and continuing up to the present, several transplants and reintroductions have occurred to reverse the trend and restore bighorn to their former ranges. The purpose of this report is to document and review the current status and distribution of Rocky Mountain bighorns in Utah.

During the past two decades several reports have dealt with the status and historical distribution of Rocky Mountain bighorn sheep in Utah (Dalton and Spillett 1971, Stapely 1974, John 1975, Wishart 1978, Thorne et al. 1984). Population estimates have ranged from as low as 200 in 1984 (Thorne et al. 1984) to as high as 350 in 1978 (Wishart 1978). This report documents the current status and distribution of Rocky Mountain bighorn sheep in Utah, specifically reviewing transplant histories. All future references herein to bighorn will refer strictly to the Rocky Mountain subspecies, though both Rocky Mountain and desert bighorn subspecies (*Ovis canadensis nelsoni*) occur in Utah.

Prior to the late 1800's, much of Utah supported large numbers of bighorn, the Rocky Mountain subspecies on the northern mountain chains and desert subspecies in precipitous canyons to the south (Dalton and Spillett 1971). However, by the close of the 1800's bighorn populations had begun a steady decline, which slowed only by the mid-1930's when record lows (possibly as low as 100) were reached (Dalton and Spillett 1971). In 50 years, a few hundred sheep remained where once perhaps thousands had roamed. The usual causes for decline have been cited (domestic livestock diseases, competition, and changes in the habitat quality, human impacts, as well as indiscriminate hunting) though precise reasons are unknown. To date, fewer than 300 Rocky Mountain bighorn sheep are known to exist in the state. Consequently, this subspecies is not legally hunted in Utah.

TRANSPLANT AND REINTRODUCTION HISTORY

Efforts to restore the Rocky Mountain subspecies to former Utah ranges have spanned a 20 year period, including 8 releases within, and bordering, the state (Figure 1). Presently, all Rocky Mountain bighorn

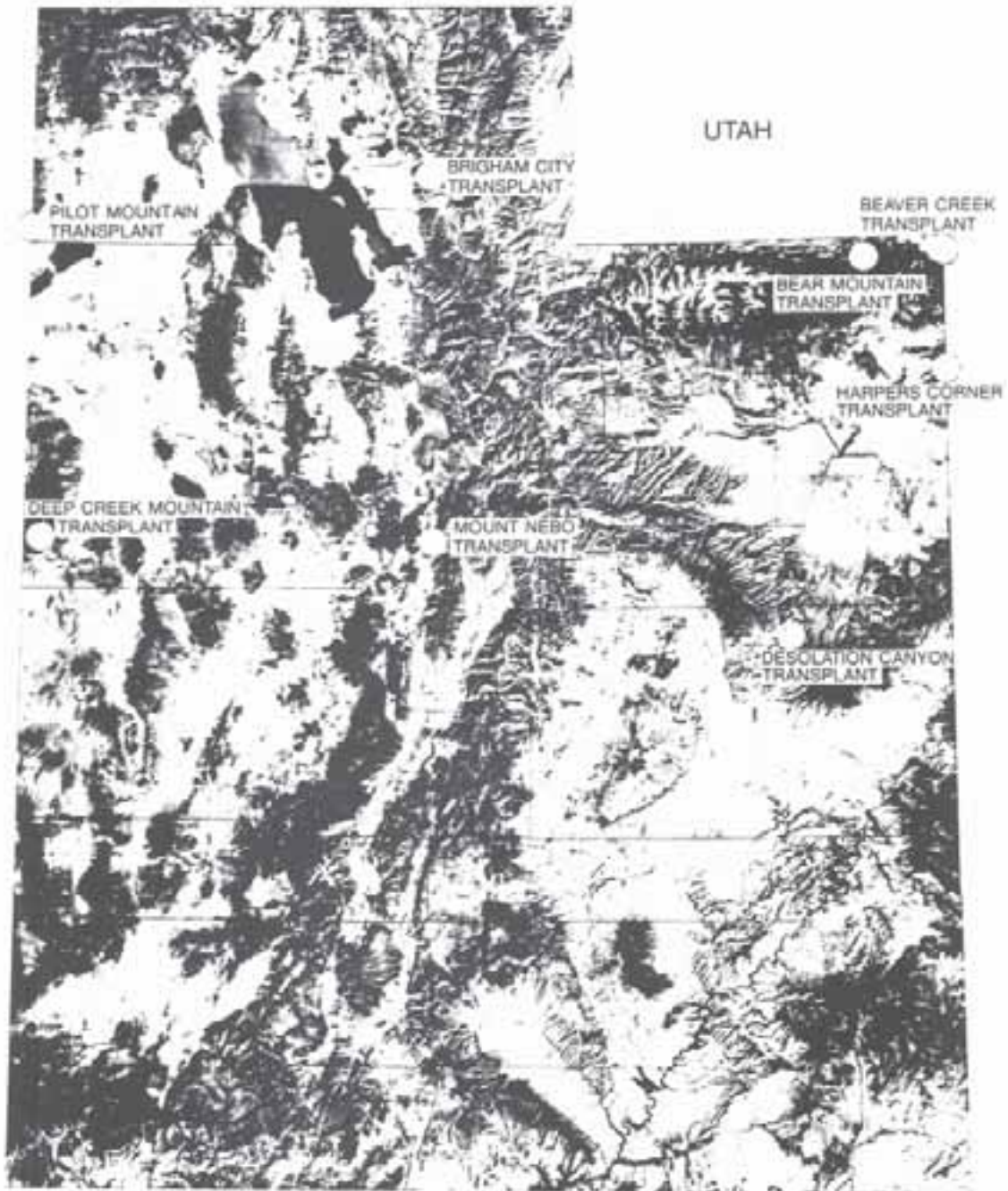


Figure 1. Rocky Mountain bighorn sheep have been reintroduced at eight release sites in Utah.

sheep in the state are the result of these transplant and reintroduction efforts. The following discussion and Table 1 summarize data for each release.

Brigham City Transplant - 1966

In 1966 the Utah Division of Wildlife Resources (UDWR) began the initial efforts to reestablish Rocky Mountain bighorn sheep to their former Utah ranges. These efforts are recounted in detail by Stapely (1974). A 512 ha paddock was fenced near Brigham City, Utah and over a 4 year period a total of 60 sheep were brought in. Plagued by significant human disturbance, illegal killing, and diseases (pneumonia and bronchitis) the transplant faltered. During the severe winters of 1971 and 1972, hard, drifted snows enabled the sheep to escape the enclosure to the surrounding area. In 1973 and 1974, many sightings verified that the sheep had not strayed far, having spread out into the nearby Willard Peak area. However, by 1975, sheep sighting had decreased significantly. Currently none are believed to survive (J. Pederson, biologist, UDWR, pers. comm.). A summary of data is contained in Table 1.

Desolation Canyon Transplant - 1970

Historically, Rocky Mountain bighorn had inhabited the rugged Desolation Canyon area of eastern Utah, as borne out by abundant Indian petroglyphs and occasional sightings up through the 1930's. Though precipitous, the region was extensively utilized by domestic sheep into the early 1950's (Woody 1973). In the 1960's, the Uintah Band of the Northern Ute Tribe (Fort Duchesne, Utah), became interested in reintroducing the bighorn to their former ranges. Extensive field investigations in search of an appropriate transplant site were conducted. As a result, the Florence Creek area of Desolation Canyon was selected. In March, 1970, 9 sheep obtained from Whiskey Mountain, Wyoming, were released. However, prospects for success appeared poor as the only male was a 10-month-old lamb. Efforts to obtain additional sheep were rewarded when Canada's Waterton National Park provided 12 head in April, 1973. Unlike the first reintroduction, this group included 3 adult rams. Subsequent census attempts failed to locate more than a handful of sheep in the Desolation Canyon area. However, in January, 1985, 45 sheep were sighted near the original release site (K. Corts, biologist, Ute Indian Tribe Fish and Wildlife Department, pers. comm.). In addition to the 45 counted in 1985, a small band of bighorns were observed south of the Reservation lands and were suspected to have dispersed from Desolation Canyon (J. Karpowitz, biologist, UDWR, pers. comm.). Presently, Tribal Fish and Wildlife personnel estimate the herd to be between 75 to 100 and slowly increasing (Table 1). Future plans include a study of habitat selection and home ranges to be in 1988.

Mount Nebo Transplant - 1981

Aware of the multiple factors contributing to the failure of the Brigham City transplant effort, the UDWR laid plans for a second reintroduction in the late 1970's. Again, an enclosure was constructed, but this time in the more remote area of Mount Nebo, 112 km south-southeast of Salt Lake City. However, it was not until 1981 that bighorns

Table 1. Status of Rocky Mountain bighorn in Utah, 1988

Transplant	Date Released	Source	Classification	Total	Trend Summary	Limiting Factors	1988 Status
Brigham City	03/08/66	Whiskey Mtn, WY	5 rams, 9 ewes	14	Slowly increased, declined until all extirpated	Human harassment	None existing.
	04/07/66	Waterton N.P., CAN	4 rams, 6 ewes	10		Pneumonia - bronchitis	Transplant failure
	04/29/66	Waterton N.P., CAN	2 rams, 8 ewes	10		Poaching	
	12/09/69	Banff, N.P., CAN	3 rams, 9 ewes	12			
	01/13/70	Banff, N.P., CAN	5 rams, 9 ewes	15			
Desolation Canyon	03/01/70	Whiskey Mtn, WY	1 ram, 8 ewes	09	Slowly increasing	Predation	Highest count = 45
	04/11/73	Waterton N.P., CAN	3 rams, 9 ewes	12		Poaching	Estimate = 75 - 100
Mount Nebo	01/13/81	Whiskey Mtn, WY	13 rams, 14 ewes	27	Increased at first, steadily declined to few remaining in 1988	Inadequate winter range	Highest count = 5 ewes
	01/07/82	Whiskey Mtn, WY	1 ram, 20 ewes	21		Deer & elk competition	Estimate = 10 - 15
Bear Mountain	01/07/83	Whiskey Mtn, WY	6 rams, 13 ewes	19	Steadily increasing	Predation	19L:7Y(fg):31E:13R
	01/08/84	Whiskey Mtn, WY	3 rams, 14 ewes	17		Low lamb survival	Highest count = 70
Beaver Creek	02/08/83	Basalt Ranch, CO	7 rams, 14 ewes	21	Slowly increasing	Lion predation suspected	3L:18E:9R Highest count = 30
Deep Creek Mountains	01/18/84	Whiskey Mtn, WY	4 rams, 12 ewes	16	Steadily increasing	Elk competition	8L:15E:4R
						Domestic sheep pose a threat	Estimate = 35
Harper's Corner	04/13/84	Rocky Mtn N.P., CO	3 rams, 16 ewes	19	Slowly increasing	Lion predation Accidental death	Estimate = 30 - 35
Pilot Mountains	02/05/87	Basalt Ranch, CO	4 rams, 16 ewes	20	Slowly increasing	Lion predation Water availability	6L:14E:4R Estimate = 24

Transplant Totals = 242

Total Estimated Utah Population in 1988 = 239 (low)

Total Estimated Utah Population in 1988 = 309 (high)

became available for the release. In a 2 year period, 1981-1982, a total of 48 bighorn were released into the fenced paddock. In 1981, sheep received supplemental feed weekly, anthelmintic drug treatments (fenbendazole) monthly, and appeared to do well. When the first lambs were born, around June 1, all sheep were released from the enclosure into the surrounding area. This was repeated for the second transplant of sheep in 1982. By summer 1983, it was estimated that the herd had expanded to 55 and was on the increase. However, severe winters in 1983 and 1984, coupled with inadequate winter range (limited area and excessive shrub cover) and intense competition with deer and elk, precipitated a steady decline. During these winters, sheep abandoned the mountainous winter range and fed on grass along a nearby interstate highway. Biologists speculate that this displacement was the result of stress and competition. Complicating matters, domestic sheep and cattle shared the ranges with the bighorn, although it is unknown whether the bighorn and domestic livestock intermixed. Numbers declined rapidly until fall of 1987 when 5 ewes were all that remained of the once expanding herd (P. Tervort, biologist, UDWR, pers. comm.). Relevant data are summarized in Table 1.

Bear Mountain Transplant - 1983

Numerous skeletal remains and petroglyphs of bighorn indicate that the rugged canyons of the Green River corridor of northeastern Utah once supported a thriving population of Rocky Mountain bighorn sheep. After a thorough survey of the area, UDWR personnel selected Bear Mountain, a plateau incised on 3 sides by sheer cliffs, for a future bighorn release. In January, 1983, 19 sheep were released followed by a transplant of 17 more in January 1984. By 1985 the herd was estimated to have increased to 54 animals and by 1986 a post-lambing count numbered 67. In 1987, a total of 70 sheep was confirmed, making the Bear Mountain transplant one of the most promising to date. To more effectively manage bighorn, as well as to enhance transplant success in the future, the UDWR initiated an intensive research project of the Bear Mountain herd in May 1986, which continues to present. This is discussed in more detail in Smith et al. (1988). See Table 1 for herd statistics and additional information.

Beaver Creek Transplant - 1983

In keeping with the established goal of increasing bighorn numbers and distribution within the state of Colorado, the Colorado Division of Wildlife (CDOW) selected the Beaver Creek Drainage and adjacent Cold Springs Mountain, on the Colorado-Utah stateline, for a bighorn release in 1982. Numerous records of early travellers as well as abundant bighorn petroglyphs indicated the area had historically supported sheep. In February 1983, 21 sheep captured at CDOW's Basalt Ranch were released. The sheep remained in the vicinity of Beaver Creek until June, 1983. At that time a radio-collared ram could not be found, apparently having dispersed from the area. One month later, this ram, in the company of 2 others, was found to have joined the Beaver Mountain herd, 43 km to the west. The 2 radio-collared ewes released at Beaver Creek did not disperse and facilitated location of the herd over the next few years. Numbers gradually increased when on December 23, 1986 a total of 30 sheep were observed near the release site (J. Ellenberger, biologist, CDOW, pers.

comm.). The herd spends approximately half its time in Utah. Presently, Colorado has no plans to release more sheep into the area, but will monitor lungworm levels and population dynamics.

Deep Creek Mountains Transplant - 1984

Having established that bighorn sheep once lived in the Deep Creek mountains, UDWR officials planned to reintroduce bighorn as soon as a source of sheep were made available. The Deep Creek mountains offered minimal human disturbance, excellent summer and winter ranges, and insignificant competition from deer and elk. However, domestic sheep in the area have been a concern. In January 1984, 16 sheep were obtained from Whiskey Mountain, Wyoming. Several were fitted with radio-collars then released. Nearly 2 years later numbers had risen to 27, and as of fall of 1987 UDWR personnel censused 35 sheep (P. Tervort, biologist, UDWR, pers. comm.). The UDWR presently censuses the population in the fall and immediately following lambing season. Given a source of sheep, additional transplants to the area are anticipated. UDWR biologists are optimistic for the herd's future. See Table 1 for a data summary.

Harpers Corner Transplant - 1984

Presently, 2 populations of Rocky Mountain bighorn sheep live within Dinosaur National Monument of the National Park Service, both the result of reintroductions. Historically, sheep inhabited much of this area, but in the early 1930's a die-off occurred such that by 1944 no bighorn remained. In 1952 the CDOW transplanted 32 bighorn near the mouth of Ladore Canyon in Colorado, just outside the monument. As of September of 1987, 47 sheep were censused in Ladore Canyon, though biologists suspect more in the vicinity.

To supplement the bighorn population, a second reintroduction was made in April, 1984 when 19 head captured in Rocky Mountain National Park, Colorado, were released within monument boundaries at Harpers Corner, Utah. Reproduction was good in 1984, but the no lambs could be found the following year. Biologists surmised that reproduction had failed, in part, as only 3 males had been released, the oldest being a 2 year old. In 1986 and 1987, reproduction improved and currently 30 to 35 sheep are estimated (S. Petersburg, biologist, National Park Service, pers. comm.). The Green River is all that separates the Harper's Corner herd from the Ladore Canyon herd and Park Service biologists do not feel the 2 populations have yet mixed. The herd spends approximately half of its time in Utah, the remainder in the Colorado portion of the monument. See Table 1 for a summary of herd data.

Pilot Mountain Transplant - 1987

Straddling the Utah-Nevada border, the isolated Pilot Mountains appeared to offer a bighorn reintroduction an excellent chance for success. In February 1987, the Nevada Department of Wildlife (NDOW) acquired 20 bighorns from CDOW's Basalt Ranch and released them into the Pilot Range, 1.6 km from the Utah border (Table 1). As the sheep were expected to spend some time on Utah ranges, the UDWR furnished 6 radio collars and periodically conducts aerial surveys of the herd. Subsequent

observations indicate the herd spends less than 5% of their time within the state of Utah (J. Williams, biologist, NDOW, pers. comm.). On June 5, 1987, 6 lambs were observed, though higher production was expected in the coming weeks. In September 1987, UDWR estimated the herd at 24 animals (M. Welch, biologist, UDWR, pers. comm.). Wildlife personnel became concerned when the BLM reactivated a former domestic sheep grazing permit within the occupied bighorn range. Currently, interagency management plans are being developed to ensure minimum negative impacts to bighorns. Although the transplant is too recent to speculate on its success, biologists are optimistic. Habitat quality and condition appears to be good to excellent and human disturbance minimal.

FUTURE OF ROCKY MOUNTAIN BIGHORN SHEEP IN UTAH

The Utah Division of Wildlife Resources is vigorously pursuing reestablishment of Rocky Mountain bighorn sheep to all available habitats. As evident elsewhere in mountain sheep ranges, a source of sheep for reintroductions is an obstacle. Nonetheless, UDWR hopes to include bighorns from various capture sites in subsequent releases to insure greater diversity and to prevent problems relative to genetic drift or founders effect. A statewide strategic management plan has been drafted to identify and prioritize reintroduction sites, evaluate and improve habitat quality and to closely monitor and manage reestablished populations.

Close coordination with federal land management agencies is developing to identify and improve sheep habitat. An intensive management research project at the Bear Mountain site was initiated in 1986. Results of this research will be utilized for tuning bighorn management throughout the state.

SUMMARY AND CONCLUSIONS

The past 2 decades in Utah have not only seen the extirpation of all native Rocky Mountain bighorn sheep but also the importation of 242 sheep from sources outside Utah. These sheep have been utilized in 15 releases at 8 locations throughout the state. Now, 22 years after the first reintroduction, the minimum statewide Rocky Mountain bighorn population totals 239 animals, or approximately the same number as has been brought in for reintroductions. Considering the highest estimated number of Rocky Mountain bighorn in Utah, 309, at best the state has seen an increase of 28% in 22 years. Of 8 reintroduced herds in 2 decades, 2 have been complete failures while the other 6 have met with variable success. Of the 6 "Utah" Rocky Mountain bighorn herds in existence, only 3 are completely within state boundaries, totalling at least 150, and at most 205. One of these 3 herds falls within the boundaries of the Ute Indian Tribe Reservation. Currently, the Bear Mountain transplant has the highest verified count, though the Desolation Canyon population may exceed it.

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