

Status of Rocky Mountain Bighorn Sheep in New Mexico 2006-2007

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Abstract: Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) numbers in New Mexico have nearly doubled in the last decade. In 2007, approximately 1,000 bighorn sheep occur in 8 populations, residing on state, federal, tribal, and private lands. There are 3 alpine populations located primarily in U.S. Forest Service wildernesses and 5 low-elevation populations that are primarily associated with river corridors. New Mexico Department of Game and Fish (NMDGF) has captured and translocated 245 bighorn sheep in 9 captures from alpine populations since 2001. An additional 23 bighorn sheep were captured and translocated by the Taos Pueblo. Since 2001, bighorn sheep have been translocated within New Mexico to start 3 new populations and augment 2 existing populations. In addition, bighorn sheep have been translocated to South Dakota and Arizona. Carrying capacity in the 8 extant herds is approximately 1,500. All known historical habitat will be occupied with 1 or 2 more translocations. Hunting permits have increased from 9 in 1998 to 19 in 2007, including 2 hunting permits on the Taos Pueblo. Management is guided by the “Long-range plan for the management of Rocky Mountain bighorn sheep in New Mexico 2005-2014”. Primary concerns are woody vegetation encroachment in all habitats, keeping populations below carrying capacity in alpine habitats, minimizing contact with domestic sheep and goats, and mountain lion predation in low-elevation populations. View additional information about New Mexico bighorn sheep on our website at: www.wildlife.state.nm.us/conservation/bighorn/index.htm

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Status and Management Activities

Rocky Mountain bighorn sheep were never widespread in New Mexico, but by the early 1900s were extinct (Buechner 1931). Bighorn restoration began in the 1930s with bighorn from Alberta, Canada, and transplants continue today. In the late 1990s, the statewide bighorn population was estimated at 500 bighorn distributed in 5 populations. Between 2001 and 2007, the New Mexico Department of Game and Fish (NMDGF) translocated 159 bighorn within New Mexico to start 3 new populations and to augment 2 additional populations. Another 56 bighorn were transplanted to

Arizona, and 29 bighorn were transplanted to South Dakota, to assist with their bighorn sheep management programs. By 2007, the statewide Rocky Mountain bighorn sheep population had grown to approximately 975. Carrying capacity of currently occupied ranges is estimated at 1,500 individuals, and there are few vacant bighorn sheep habitats left in New Mexico. The Long-range plan for the management of Rocky Mountain bighorn sheep in New Mexico 2005-2014 was approved by the State Game Commission, and guides New Mexico's bighorn sheep management strategies.

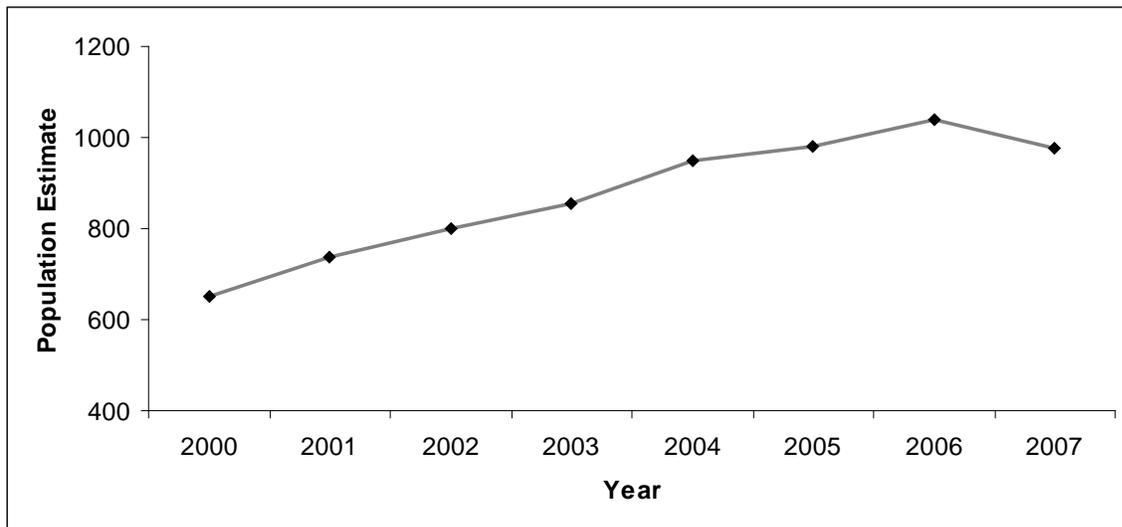


Figure 1. Statewide population trend of Rocky Mountain bighorn sheep in New Mexico, 2000-2007.

Alpine Populations

Three alpine populations are distributed in the Sangre de Cristo Mountains in north-central NM. Several dieoffs associated with large flocks of domestic sheep grazing in bighorn habitat limited or extirpated these herds historically. Conversion of allotments to cattle grazing has greatly reduced the threat of pneumonia transmission. All 3 populations are regulated by amount of available winter habitat, and are at or near carrying capacity. The primary management objectives are to maintain the populations below carrying capacity to decrease the risk of dieoffs, provide bighorn sheep for translocation, and to maximize trophy ram potential.

Pecos: This population was established in 1965 with bighorn sheep from Banff, Canada. This population lives entirely within the U.S. Forest Service's (USFS) Pecos Wilderness Area. It is estimated that this population fluctuates between 325-400 animals. Annual variation is based primarily on winter lamb survival and lamb

production, suggesting that this population is at carrying capacity. To help regulate population numbers, bighorn are frequently captured out of this herd. Since 2001, 169 bighorn have been transplanted to augment or start new herds in NM and other states.

Wheeler Peak: This population was established in 1993 with a translocation of 33 bighorn sheep from the Pecos Wilderness. Currently this herd is comprised of 2 subpopulations. The main population lives within the USFS Wheeler Peak Wilderness, and on Taos Pueblo tribal lands. A subpopulation inhabits Gold Hill, within the USFS Columbine-Hondo Wilderness Study Area. Carrying capacity for this herd is less well understood than in the Pecos, but it is likely that current estimates of 325 bighorn are at or exceed carrying capacity. Recent creation of the Taos Pueblo Department of Game and Fish has resulted in an increasingly collaborative effort to survey and manage the population. Since 2001, a total of 71 bighorn has been transplanted out of this herd, and an

additional transplant of up to 50 bighorn is planned for summer 2008.

Latir: This population was started with a transplant of 56 bighorn sheep from the Pecos Wilderness in 2001. Bighorn habitat is primarily in the USFS Latir Wilderness, and a small portion is privately owned by the Rio Costillo Cooperative Livestock Association. The population quickly increased to an estimated 150 in 2005 and 2006, but declined to approximately 75 animals in 2007. We speculate that the population exceeded carrying capacity for several years and in combination with a high snowfall during the winter of 2006-2007 induced this decline.

Low-elevation Populations

Most low-elevation populations in New Mexico are associated with river corridors. These herds are not as robust alpine herds as they face increased risk from disease transmission from domestic sheep and goat contact, loss of habitat through woody vegetation encroachment, and cougar predation.

Turkey Creek and San Francisco River: Historically, these populations were likely comprised of desert bighorn sheep, but were reestablished in the mid-1960s with Rocky Mountain bighorn as desert bighorn numbers in New Mexico had declined such that they were not available for transplant. Habitat is primarily public lands on the Gila National Forest and Bureau of Land Management, with some private inholdings. Since 2001, 30 bighorn sheep captured from alpine populations have augmented the Turkey Creek herd.

Since 2001, 14 bighorn have been transplanted to augment the San Francisco River herd. In the last decade 2 large-scale dieoffs have been documented, with

mortality patterns consistent with pneumonia outbreaks. In 2006, a confirmed pneumonia dieoff resulted in a loss of approximately 40% of the herd. While the source of pneumonia cannot be confirmed, we hypothesize that rams moving between NM and AZ have contacted a resident domestic sheep herd on private land in AZ.

Manzanos: This herd was started in 1977 with bighorn sheep from the Pecos Wilderness. This small herd faired poorly after a 1997 augmentation. It suffered from high average annual mortality rates from both cougar predation (mortality rate=0.11) and train strikes (mortality rate=0.13). We think this herd has declined to <30 individuals. The Burlington Northern Santa Fe Railroad has proposed building a second, parallel track through the main canyon where the bighorn reside. As part of the mitigation BNSF has proposed building a wildlife fence on both sides of the tracks for the approximately 13 km stretch of the canyon. Existing trestles would provide movement corridors under the tracks. Following the fence construction, NMDGF may consider implementing cougar control, and possibly a bighorn augmentation. A mechanical pinyon-juniper thinning project has been proposed on USFS and private lands in currently occupied bighorn habitat. This herd is in marginal habitat in the southern extent of their range.

Rio Grande Gorge: In 2006, the Taos Pueblo Department of Game and Fish (TPDGF) captured 23 bighorn in the Wheeler Peak herd, and transplanted them to tribal property on the east side of the Rio Grande Gorge. Bighorn were held in a temporary paddock in the Gorge for approximately 1 month prior to release. In 2007, NMDGF captured 25 bighorn in the Pecos Wilderness, and released them on BLM land on the west side of the Rio

Grande Gorge. Although TPDGF deployed just 15 radiocollars, there has been no mortality on those bighorn. There have been 4 adult mortalities on bighorn released by NMDGF, and 4 of 5 lambs died within 8 months of release. A bighorn ewe returned to the capture site in the Pecos Wilderness, a straight-line distance of ~40km. Given the large movements, and presence of several small inholdings of domestic sheep, risk of a pneumonia outbreak appear high. The release has been very popular with the public as the Gorge is a destination for river rafters.

Dry Cimarron: NMDGF transplanted 34 bighorn to the Dry Cimarron in the far NE corner of NM in 2007. Bighorn sheep had been occasionally reported in this part of NM for several years. These were bighorn sheep from the Carrizo Unit in Colorado.

Much of this area is characterized by broken mesas and the Dry Cimarron River drainage. Much of the habitat has been invaded by pinyon-juniper. A recent fire killed this p-j overstory and opened considerable new bighorn habitat. Steep escarpments near the Cimarron River and associated mesas and draws provide sufficient habitat for a moderately sized population. The bighorn reside primarily on private lands and on small parcels of state land. Some bighorn have made temporary trips across the nearby Colorado border. Bighorn sheep from Colorado have also been observed in Oklahoma. Four adult bighorn sheep have died since the release – 1 in the first week after transplant, 1 from a cougar kill, 1 from a fall, and 1 of unknown cause. An augmentation is planned for summer 2008 to populate the remaining habitat.

Table 1. Population estimates of 8 Rocky Mountain bighorn sheep herds in New Mexico, 2000-2007.

Herd	2000	2001	2002	2003	2004	2005	2006	2007
Pecos	350	350	350	350	350	350	350	325
Wheeler	180	200	225	250	300	300	340	325
Latirs	0	56	85	106	128	150	150	75
TC	40	35	45	45	45	45	80	75
SFR	50	65	75	85	105	115	75	65
MZ	30	30	21	20	20	20	20	20
DC	0	0	0	0	0	0	0	35
RGG	0	0	0	0	0	0	23	55
TOTAL	650	736	801	856	948	980	1038	975

Table 2. Translocation history of Rocky Mountain bighorn sheep herds in NM, 2001-2007.

RELEASE HERD	TRANSLOCATION HISTORY						
	DATE	SOURCE	RELEASE AREA	Rams	Ewes	Lambs	TOTAL

Turkey Creek	2005	Latir Wilderness, NM	Watson Mtn.	0	2	3	5
	2006	Gold Hill, NM	Watson Mtn	14	4	7	25
San Francisco River	2004	Pecos Wilderness, NM	Sundial Mtn	2	12		14
Latir Wilderness	2001	Pecos Wilderness, NM	Latir Mesa	7	35	14	56
Rio Grande Gorge^b	2007	Pecos Wilderness, NM	Vista Verde trail-head; w. Taos Jct Bridge	3	17	5	25
Dry Cimarron	2007	Pecos Wilderness, NM	S. of Wedding Cake Butte	4	28	2	34
Arizona	2003	Wheeler Peak, NM					16
	2003	Pecos Wilderness, NM					11
	2005	Pecos Wilderness, NM					29
South Dakota	2004	Wheeler Peak, NM	Badlands NP				30
TOTAL							245

Bighorn Harvest History

NMDGF manages bighorn hunts for trophy quality rams, and therefore has a conservative number of licenses issued each year. The high demand for bighorn licenses are reflected in the number of applicants each year (Table 3). Rocky Mountain bighorn hunting permits have increased from 9 in 1998 to 19 in 2007, including 2 permits sold by the Taos Pueblo for the Wheeler Peak population (Table 3). One youth license was added to the Pecos hunt in 2005. In 2007, the Pecos hunt was split into 2 different time periods to reduce the number of hunters on the mountain simultaneously. Two rams were legally harvested during the first Latir bighorn hunt held in 2007. This hunt has been cancelled

until the population stabilizes following the substantial decline in 2007 and has older age-class rams to offer a consistent high-quality hunt. The state record Rocky Mountain bighorn was taken by a Taos Pueblo hunter in 2005 and scored 198 4/8. The average score of the 10 largest bighorn taken in New Mexico is 192 0/8. One license for either a desert or Rocky Mountain bighorn is auctioned annually through the Wild Sheep Foundation. Since 1990, the auction permit has averaged ~\$104,000, and since 1999 the permit has averaged ~\$130,000. The 2008 license sold for \$90,000. One permit is available via a raffle; tickets are \$20. Since 2000, the raffle has generated an average of ~\$46,000 per year. In 2007, it generated ~\$33,000.

Table 3. Number of licenses issued by NMDGF, Boone and Crocket scores, and draw odds for Rocky Mountain bighorn sheep in New Mexico, 2007.

Herd	# of licenses available^a	Average (range) B&C score of harvested bighorn	First Choice Draw Odds
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Pecos I	5	163 1/8 (144 6/8-176 6/8)	366:1
Pecos II	4	160 7/8 (156 5/8-169 0/8)	108:1
Pecos Youth	1	Included above	355:1
Wheeler Peak	4 ^b	175 5/8 (172 6/8 – 180 1/8)	284:1
Turkey Creek	1	172 6/8	599:1

^a An additional 2 licenses were issued: 1 purchased via auction, and 1 purchased via a raffle. The auction hunter chose to hunt in Wheeler Peak, and the raffle hunter chose to hunt desert bighorn in the Peloncillo Mountains.

^b Two additional permits generally sold by the Taos Pueblo.

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