

ARKANSAS RIVER BIGHORN SHEEP HERD MANAGEMENT PLAN

DATA ANALYSIS UNIT RBS-9

GAME MANAGEMENT UNITS
S7, S47, S49, and S79



Prepared By:
Bryan Lamont and Kyle Deschenes
Colorado Parks and Wildlife

Approved XXXXX by the Colorado Parks and Wildlife Commission



**LIVE LIFE
OUTSIDE**

EXECUTIVE SUMMARY

Arkansas River Bighorn Sheep Herd (DAU RBS-9) GMUs: S-7 (Arkansas River), S-47 (Brown’s Canyon), S-49 (Grape Creek), S-79 (Pueblo West)
Tier 2 Status: Medium to large (i.e., ≥ 75 animals for $\geq 80\%$ of the years since 1986 or since becoming fully established) populations comprised of one or more interconnected herds that are native or have resulted from translocations (George et al. 2009).
Post-hunt 2021 Sex and Age Ratio Estimate: 40 rams:100 ewes, 25-30 lambs:100 ewes
Post-hunt 2021 Population Estimate: 360; Recommended Objective 350-400
3-yr Average Age of Harvested Rams: 2019-2021 Estimate 4.9 years; Recommended Objective 4-6

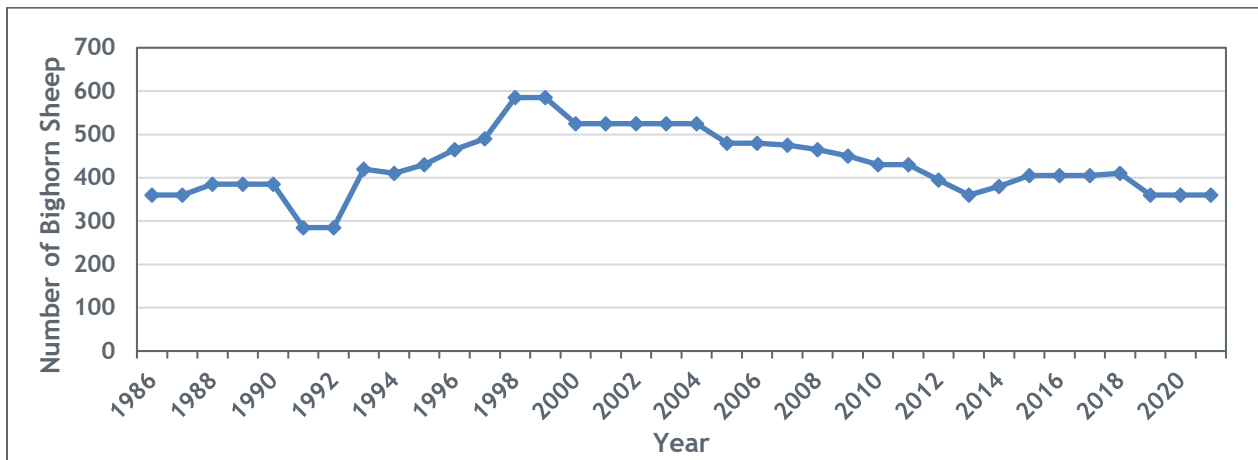


Figure 1. RBS-9 post-hunt population estimates from 1986-2021.

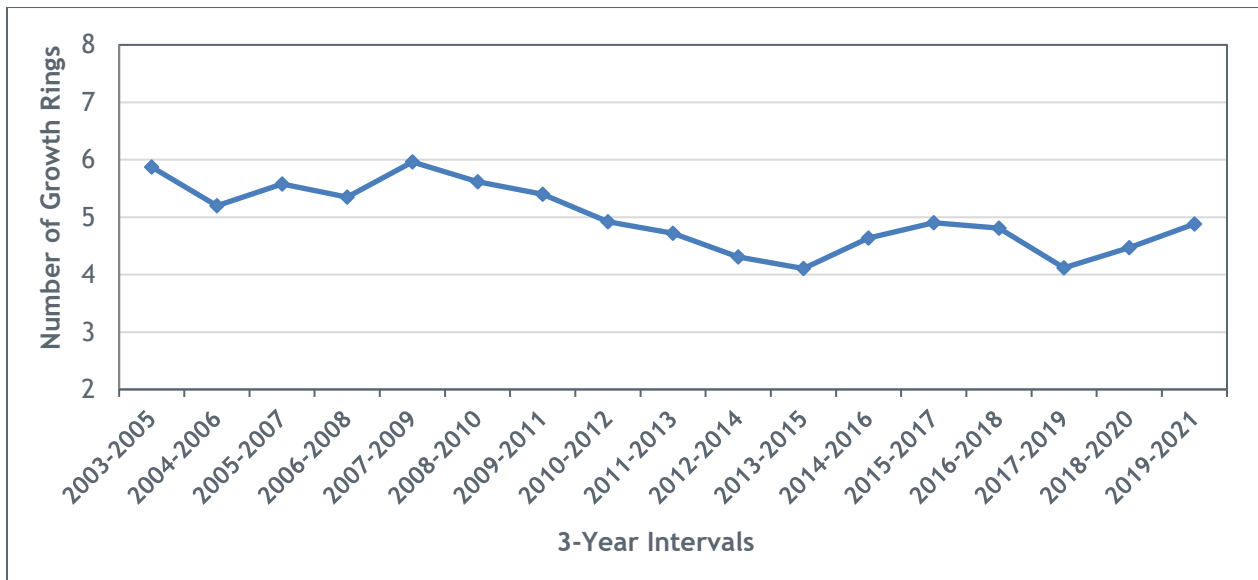


Figure 2. Three-year rolling average age of rams harvested in RBS-9 from 2003-2021. Age based on number of growth rings counted during mandatory harvest checks.

BACKGROUND & ISSUE SUMMARY

Rocky Mountain bighorn sheep Data Analysis Unit (DAU) RBS-9 consists of Game Management Units (GMUs) S-7 (Arkansas River), S-47 (Browns Canyon), S-49 (Grape Creek), and S-79 (Pueblo West). The DAU is 1,488 mi² and includes portions of Chaffee, Custer, Fremont, Park, and Pueblo counties. Habitat in RBS-9, including both summer and winter range, is in marginal condition due to habitat fragmentation, drought, and an increase in invasive plant species, including cheatgrass (*Bromus tectorum*). The 2021 post-hunt population estimate for RBS-9 is approximately 360 animals (Figure 1). The first official hunting season for bighorn rams in RBS-9 occurred in 1953, when 10 licenses were issued and eight sheep were harvested (Bear and Jones 1973). Current hunting license allocations include two rifle ram licenses each for S-07, S-47, and S-49, and three archery ram licenses for S-49. There currently are no licenses allocated for S-79, and no ewe licenses DAU wide. The 3-year average age of ram harvest in the DAU has been 4-6 since 2003 (Figure 2).

MANAGEMENT OBJECTIVES

Population size: The current population estimate in RBS-9 is stable at approximately 350-400 animals. Key limiting factors for this population include winter range carrying capacity and the potential for disease outbreaks. Considering bighorn distribution, winter range capability, population density/density dependence, and the potential risk of contact with domestic livestock, our recommended management objective is: ***Population target 375 bighorns (range 350-400).***

Ram and Ewe Harvest Objective: ***Maintain a 3-yr average age of harvested rams of 4-6 years old.*** CPW will maintain the current harvest regime in the DAU with this alternative. Moderate ram license increases may be possible based on population performance. This objective should provide a quality experience, average levels of crowding, and diverse age-classes of rams. ***Ewe harvest: If warranted based on population performance, provide ewe harvest for hunter opportunity. Currently, there are no ewe licenses available for this DAU.***

Strategies for obtaining objectives and addressing issues: Both preferred alternatives are consistent with CPW's current management in RBS-9. Therefore, CPW does not expect a change in harvest management with this plan. The most significant issues for RBS-9 are limited winter range and the potential for disease transmission from domestic livestock, particularly from domestic sheep and goats (George et al. 2009). There are currently no active domestic sheep summer grazing allotments in this DAU, however there are hobby livestock operations that provide a continual threat of disease transmission. CPW will continue to work with stakeholders and land management agencies to mitigate and address these issues.

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INTRODUCTION AND PURPOSE

Colorado Parks and Wildlife (CPW) manages big game for the use, benefit, and enjoyment of the people of the state in accordance with the CPW's Strategic Plan (2015), and with bighorn sheep management directed under the Colorado Bighorn Sheep Management Plan (George et al. 2009). Bighorn sheep management is also determined by mandates from the Colorado Parks and Wildlife Commission (PWC) and the Colorado Legislature. Colorado's wildlife species require careful and increasingly intensive management to accommodate the many and varied public demands and growing human impacts. The CPW uses a "Management by Objective" approach to manage the state's big game populations (Figure 3).

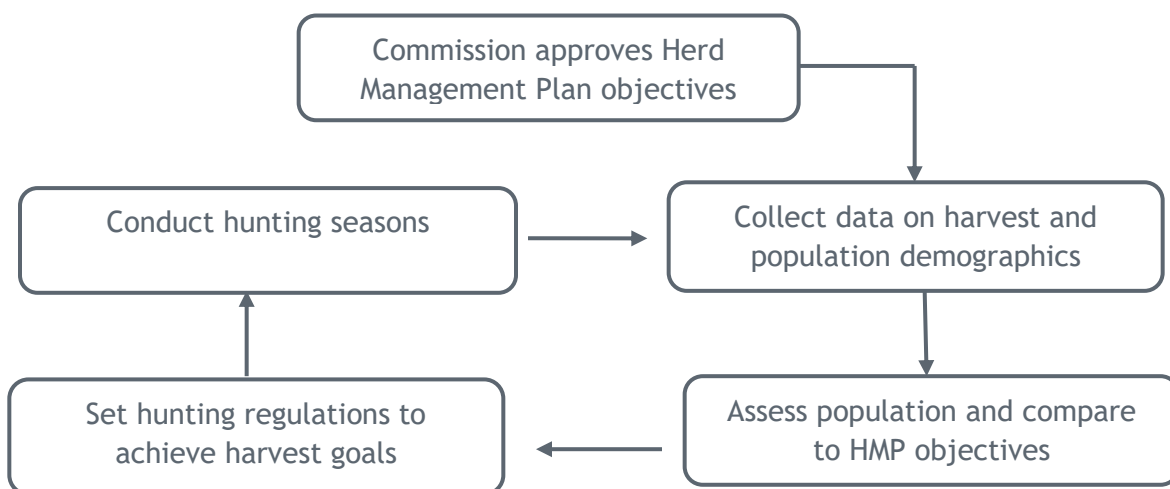


Figure 3. Management by Objective process used by Colorado Parks and Wildlife to manage big game populations by Data Analysis Unit.

With the Management by Objective approach, big game populations are managed to achieve the population objective established for a Data Analysis Unit (DAU). A DAU is a geographic area that includes the year-round range of a big game herd. A DAU includes the area where most of the animals in a herd are born, live, and die. DAU boundaries are delineated to minimize the interchange of animals between adjacent DAUs. A DAU may be divided into several Game Management Units (GMUs) to distribute hunters and harvest within a DAU.

CPW bases management decisions within a DAU on a herd management plan (HMP). The primary purpose of an HMP is to establish management objectives for the DAU. Management objectives for bighorn sheep HMPs may include population size, the ratio of rams per 100 ewes, or the average age for harvested rams. In an HMP, we also describe the strategies and techniques used to reach these objectives. During the herd management planning process, public input is solicited and collected through questionnaires, public meetings, and comments to CPW staff and the PWC. The intentions of the CPW are integrated with the concerns and ideas of various stakeholders including the United States Forest Service (USFS), the Bureau of Land Management (BLM), city and county governments, hunters, guides and outfitters, private landowners, local chambers of commerce and the public. In preparing a herd management plan, agency personnel attempt to balance the biological capabilities of the herd and its habitat with the public's demand for wildlife recreational opportunities. Herd management plans are approved by the PWC, and are reviewed and updated every 10 years.

The herd management plan serves as the basis for the annual herd management cycle. In this cycle, the size and composition of the herd is assessed and compared to the objectives defined in the herd management plan. Removal goals are set. Based on these goals, specific removal strategies are made for the coming year to either maintain the population or move it towards the established objectives (e.g., license numbers and allocation are set, translocation plans are made). Hunting seasons and/or translocations are then conducted and evaluated. The annual management cycle then begins again (Figure 3).

The purpose of this herd management plan is to set population and harvest objectives for the Arkansas River bighorn sheep herd (RBS-9; GMUs S7, S47, S49, S79). This herd management plan will be in place from 2022-2032 with the expectation that it will be reviewed and updated in 2032.

DESCRIPTION OF DAU

Location, Boundaries, Land Management, and Physiography

Rocky Mountain bighorn sheep DAU RBS-9 consists of GMUs S-7 (Arkansas River), S-47 (Brown's Canyon), S-49 (Grape Creek), and S-79 (Pueblo West). The DAU is bounded on the west by Hwy 285, on the north by Hwy 24, Kauffman Ridge, Badger Creek, Fremont CR2, Hwy 9, and Hwy 50, on the east by Hwy 45, and on the south by Hwy 96, Hwy 69, and portions of the Fremont-Custer and Fremont-Saguache County lines, USFS 6 (Hayden Creek/Pass Road) and Hwy 50. The DAU is 1,488 mi² and includes portions of Chaffee, Fremont, Custer, Park, and Pueblo counties. Municipalities include Salida, Cotopaxi, Canon City, and Pueblo West. Primary land managers include private landowners (50%), BLM (26%), USFS (18%), and State Land Board (SLB 4%; Figure 4). Game Management Unit S-68 was removed from RBS-9 and placed in RBS-10 (Vitt and Frankland 2022). The change was made to better align DAU boundaries with bighorn movements in the Sangre de Cristo mountain range. Elevations in the RBS-9 DAU range from around 5,000-12,000 feet in elevation. However, many of the bighorns in this unit spend most of the year in the drier, rockier lower and middle elevations of this range. The Arkansas River and Grape Creek are prominent features that are utilized by RBS-9 bighorn sheep.

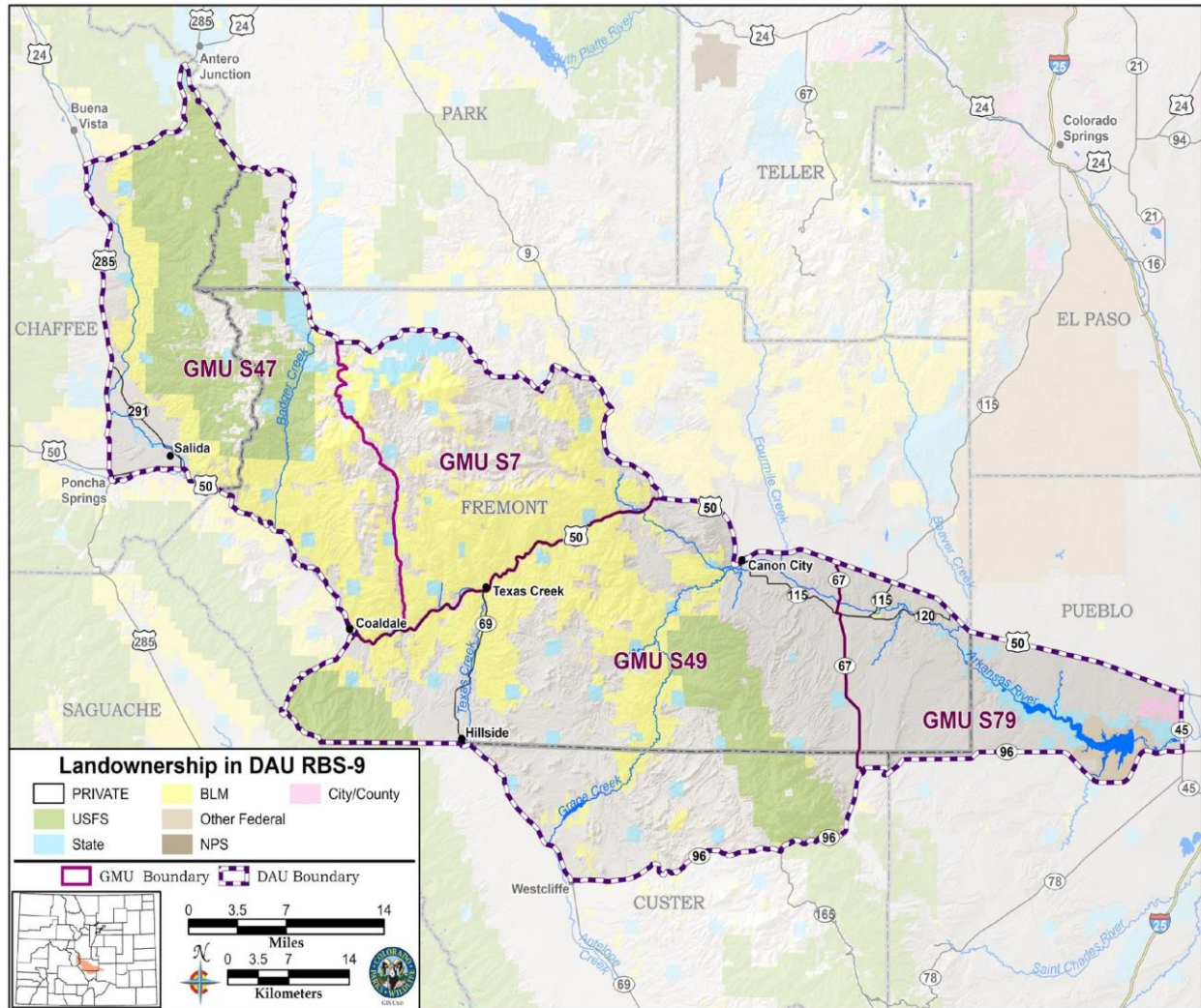


Figure 4. RBS-9 geography and land ownership.

DAU HERD HISTORY

Historic and current population monitoring

The RBS-9 bighorn sheep herd is indigenous to the region, and one of the highly valued native populations in Colorado. Due to inherent difficulties estimating the size of bighorn sheep populations, it's not exactly known how many sheep historically inhabited the RBS-9 geographic area. CPW currently estimates the population to be around 360 animals (Figure 5). Approximately 80 bighorns inhabit both S-47 and S-7 and they are found primarily in the Browns Canyon area, the Badger Creek drainage, and the area north of the Arkansas River between Coaldale and Parkdale. Approximately 175 bighorns inhabit GMU S-49 – the sheep congregate along Grape Creek, but also south of Hwy 50 along the Bighorn Sheep Canyon. There is also a small group of about 25 sheep between Penrose and Lake Pueblo in S-79.

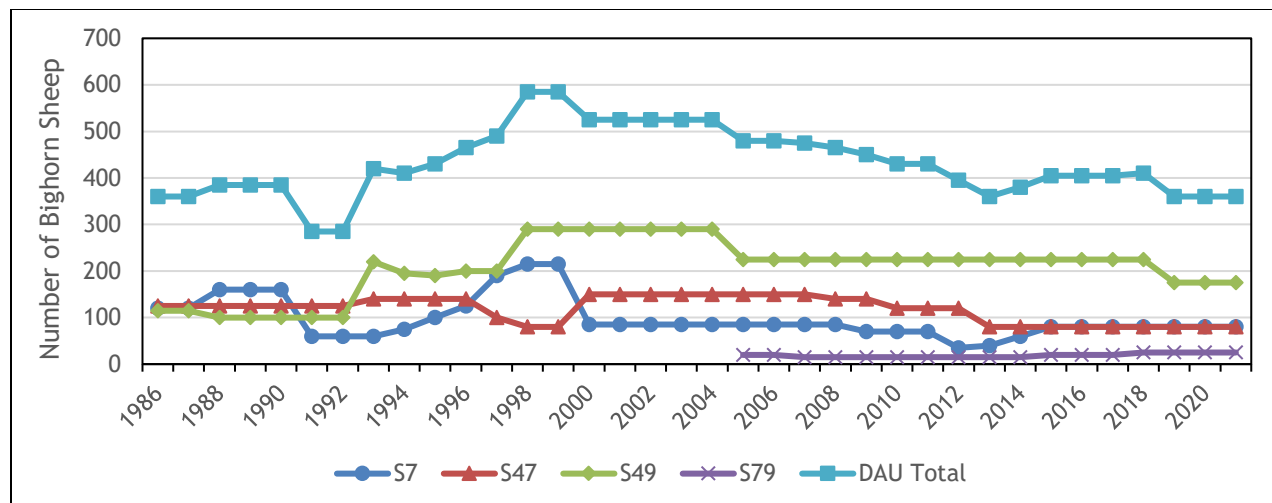


Figure 5. Post-hunt population estimates from 1986-2021 for all RBS-9 bighorn sheep GMUs.

CPW collects periodic inventory data (ground counts and general opportunistic observations) for this DAU during the winter (December through April) to monitor lamb recruitment and post-season ram to ewe ratios. We report the total number of sheep observed from these surveys and the ratio of lambs and rams per 100 ewes. Winter ratios average approximately 25-30 lambs per 100 ewes, and 40 rams per 100 ewes. The decline graphed in the population from the 1990s to the early 2020s is the result of disease issues, habitat limitations from drought and invasive weeds, and improvements to data collection strategies.

Translocations (to and from the DAU)

The accessibility and observability of bighorn sheep in the RBS-9 GMUs has led to many translocations across this unit. From 1980-2021, there were twelve documented translocations into RBS-9 and one out of RBS-9 (Appendix A). Six translocations were into S-47, three into S-49, and three into S-7. These sheep came from the Tarryall Range, Trickle Mtn, Ouray-Jackass Flats, Rampart Range, Avalanche Creek, Georgetown, and Mt. Maestas. The one translocation out of RBS-9 was from S-47 to the state of Oregon. The purpose of these translocations was to supplement existing herds, expand bighorn distribution, and mitigate disease issues.

Hunting and harvest history

Traditionally, bighorn sheep license quotas have been conservative for several reasons. The first is to maintain a quality experience for hunters who draw licenses. In 2022, around 36,000 hunters applied for about 300 bighorn sheep licenses in Colorado. Hunters often wait more than ten years to draw licenses with the expectation of a high-quality hunting experience. More licenses may contribute to hunter crowding and diminish the experience, particularly if sheep concentrate in a few small geographic areas. The second reason is the threat of stochastic events outside of the influence of management. Pneumonia epidemics, in particular, have led to large-scale bighorn population declines which are typically followed by lengthy periods of low lamb recruitment. The frequency, intensity, and duration of any future disease events could impact bighorn sheep hunting opportunities in RBS-9.

The first official hunting season for bighorn rams in RBS-9 occurred in 1953, beginning with 10 licenses (Bear and Jones 1973). Current hunting license allocations consist of two rifle ram licenses respectively for S-7, S-47, and S-49, along with three archery ram licenses for S-49 (Appendix B). No hunting licenses are currently allocated for S-79 due to its small population size and limited hunting access. Currently, there are no ewe licenses offered in RBS-9. The 3-year rolling average age of rams harvested in the DAU has fluctuated between 4-6 years of age over the past 20 years (Figure 6). Since 2003, hunter success rates have averaged 85% for ram rifle licenses and 30% for archery licenses (Figure 7).

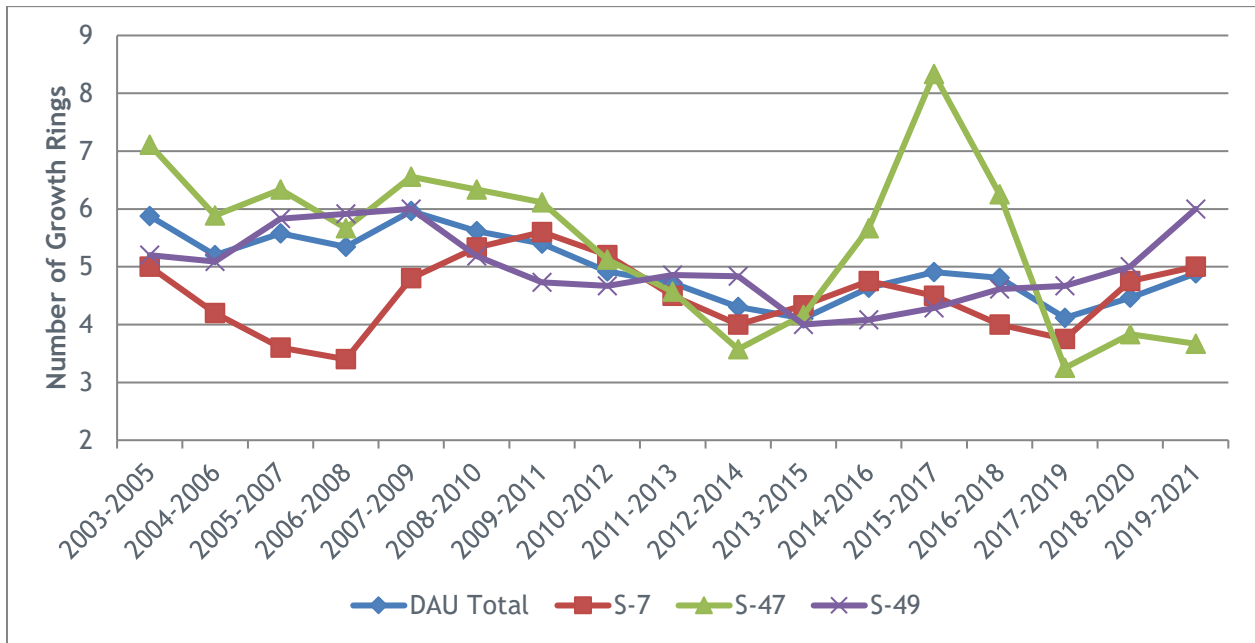


Figure 6. 3-yr rolling average age of harvested rams in RBS-9 bighorn sheep GMUs from 2003-2021. Age is based on the number of growth rings counted during mandatory harvest checks.

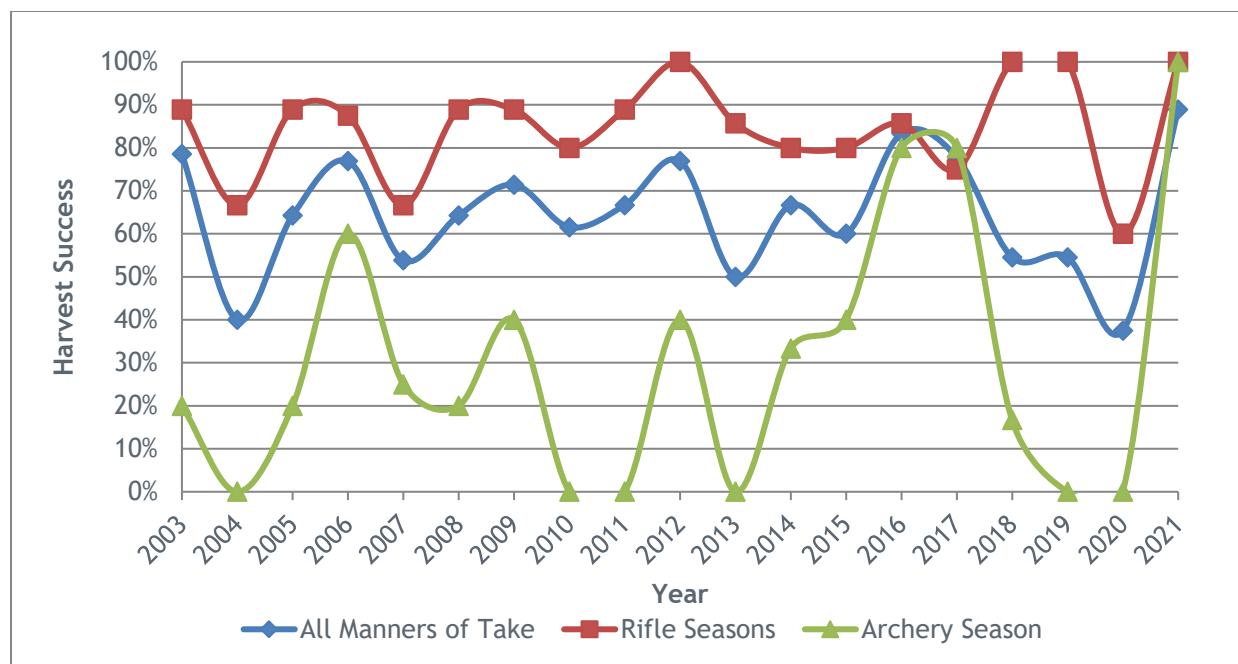


Figure 7. Annual harvest success rates for bighorn sheep hunters in RBS-9 from 2003-2021. Success rates are based on the number of individuals who hunted during the season.

Ram Hunting

Colorado's Bighorn Sheep Management Plan outlines several strategies regarding ram harvest (George et al 2009). Ram harvest rates of 2-5% of the post-hunt population and/or 4-10% of the total post-hunt ram numbers are recommended, as long as winter lamb:ewe ratios exceed 20:100. Ram licenses will be driven by winter lamb:ewe ratios, sheep densities on winter ranges, and average age of harvested animals. Using a 2021 post-hunt population estimate of 360, and assuming a winter lamb:ewe ratio greater than 20:100 (preferably higher) across the DAU, RBS-9 can hypothetically sustain a harvest of between 7 and 18 rams, which is congruent with the current ram harvest in the DAU. Opportunities to increase licenses in this DAU will be considered in the future depending on population performance.

CPW will provide ram hunting opportunities in DAU RBS-9 as long as population performance allows. Ram hunting will primarily be offered for a quality hunting experience but, to a lesser extent, will also be for population management. For GMUs S-47, S-07, and S-49, CPW will manage ram hunting to achieve the average age of harvest ram objective selected during this planning process.

CURRENT HERD BIOLOGY & MANAGEMENT ISSUES

Available bighorn sheep habitat

CPW uses two general methods to delineate and calculate suitable bighorn sheep habitat: 1) mapping by local agency personnel with expertise in the herd, and 2) modeling in Geographic Information Systems (GIS). CPW maps bighorn sheep habitat based on observations collected during systematic aerial and ground surveys, other general agency observations, and reports from hunters and other stakeholders. We base GIS models on physical habitat attributes

known to affect bighorn sheep distribution, including the steep slopes used for escape terrain and vegetation density (George et al. 2009). The quality of the GIS models is cross-referenced with location data collected from radio-collared bighorns, including data generated from VHF and GPS radio-collared animals (Appendix

Based on maps generated through these two approaches, we estimate that approximately 33% or 495 mi² of the RBS-9 DAU is classified as bighorn sheep habitat (Figure 8), with 31% of the DAU being designated as summer range (Figure 8). Suitable lambing habitat (Figure 9) is approximately 10% of the total available area, while winter range is about 22% or 327 mi² (Figure 10). The most limited habitat feature is severe winter range, with only 5% of the DAU or 79 mi² available to bighorns during the worst two winters out of 10. It is during these winters that available forage could be a limiting factor for the population. In general, bighorn sheep habitat in RBS-9, including both summer and winter range, is in marginal condition due to habitat fragmentation, drought, and an increase in invasive plant species, including cheat grass (*Bromus tectorum*).

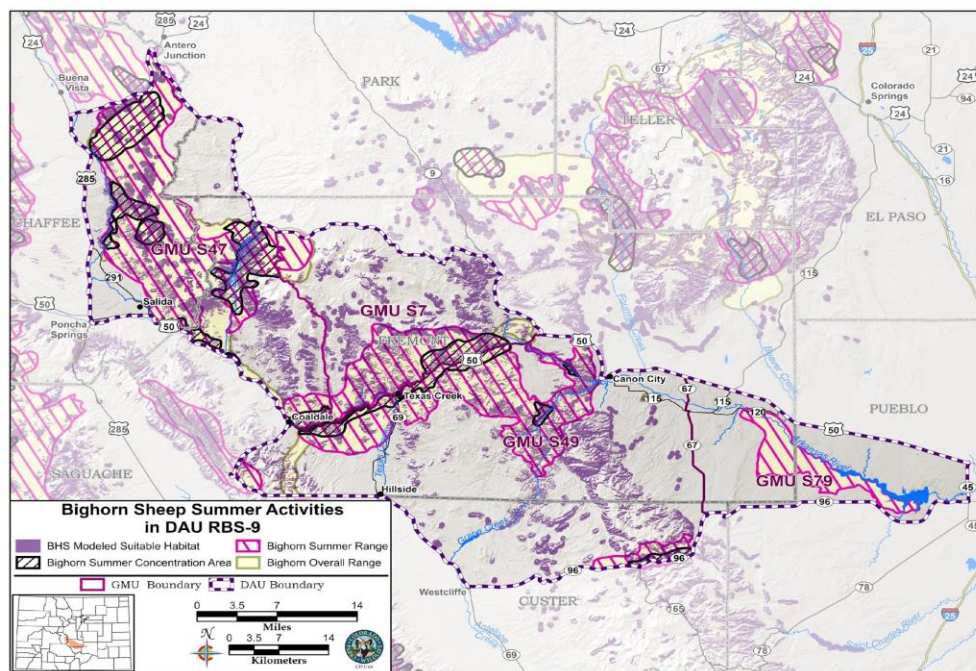


Figure 8. Overall range, summer range, and summer concentration areas for bighorn sheep in RBS-9.

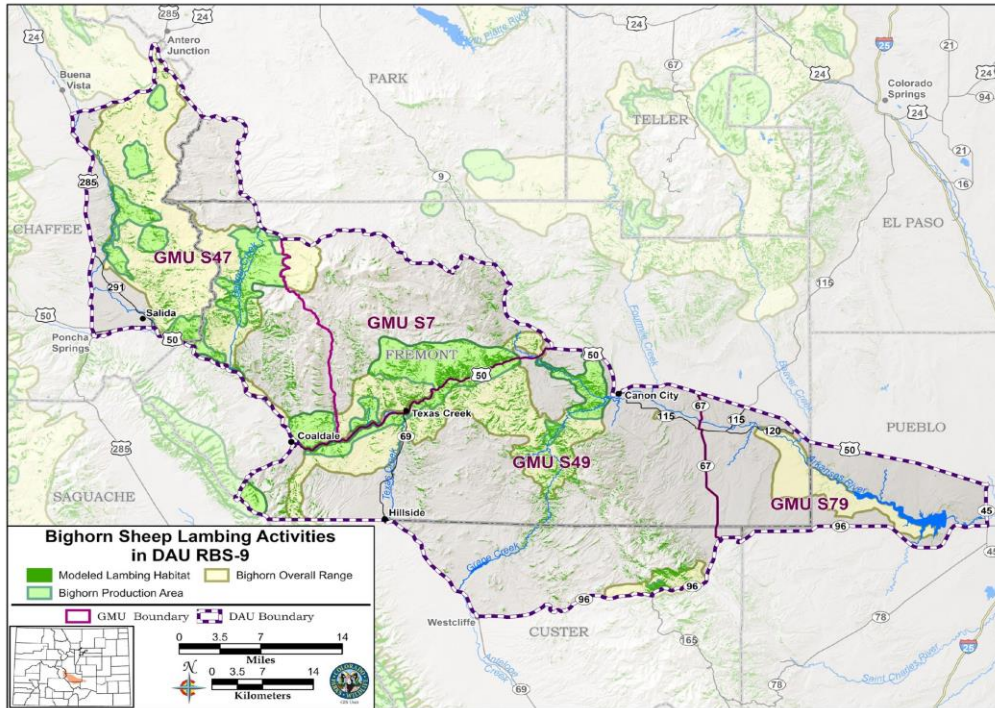


Figure 9. Lamb production areas for bighorn sheep in RBS-9.

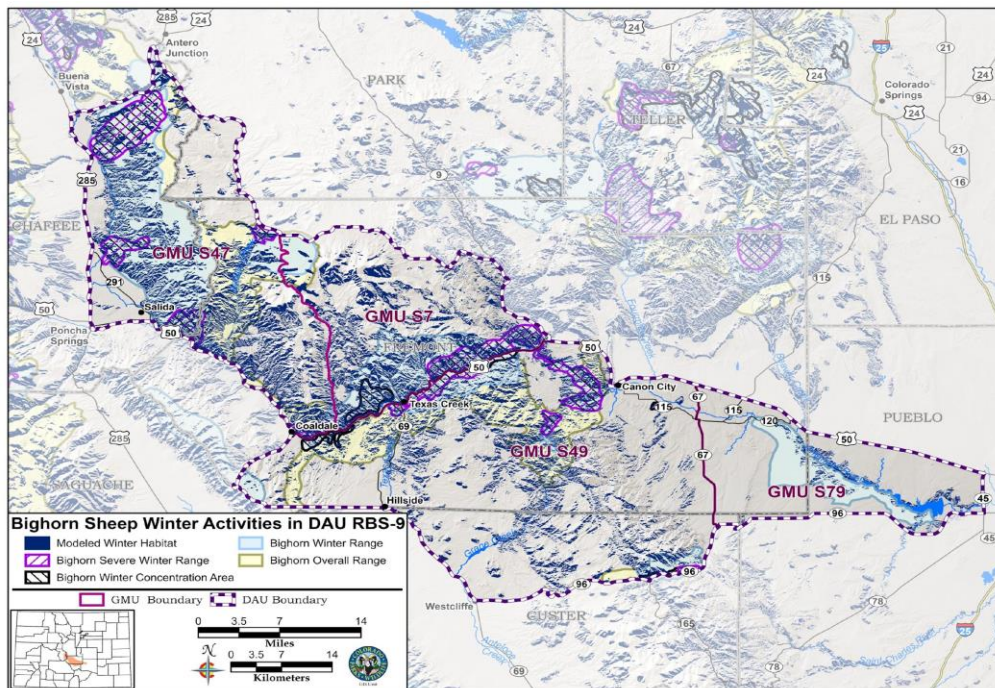


Figure 10. Overall range, winter range, severe winter range, and winter concentration areas for bighorn sheep in RBS-9.

Disease and interactions with domestic livestock

Bighorn sheep are unique among Colorado's big game species with respect to the influence that infectious diseases have on population performance and species abundance. The susceptibility of bighorn sheep to pathogens originally introduced by domestic livestock is regarded as the primary factor limiting bighorn sheep populations in Colorado. Respiratory disease is by far the most important health problem in contemporary bighorn populations. In addition to initial all-age die-offs, pneumonia epidemics in bighorn sheep can lead to long-term reductions in lamb survival and recruitment resulting in stagnant or declining populations over many years (George et al. 2009). Interaction between bighorn sheep and domestic sheep and goats is a significant management issue for bighorn populations (Beecham et al. 2007, Schommer and Woolever 2008, George et al. 2009, Lawrence 2010, WAFWA 2010, Wehausen et al. 2011, Grigg et al. 2017).

Native North American wild sheep species are quite susceptible to polymicrobial-induced pneumonia, the generic term for respiratory disease caused by bacteria in the family *Pasteurellaceae* (Miller 2001) and *Mycoplasma ovipneumoniae* (Cassirer et al 2018). Some strains of these bacteria carried by domestic livestock are particularly pathogenic in bighorns (reviewed by Miller 2001, US Department of Agriculture [USDA] 2006, George et al. 2008, Wolfe et al. 2010).

No active domestic sheep grazing allotments exist on public lands in RBS-9, but several hobby sheep and goat livestock operations are within and adjacent to RBS-9 bighorn overall range. The potential for contact between wild and domestic sheep continues to exist within this DAU; therefore, on-going and future management actions should focus on maintaining effective separation between the species (WAFWA 2010). Pioneering bighorn sheep, particularly young rams, are most likely to co-mingle with domestic sheep and goat livestock. Conversely, stray domestic sheep are also likely to associate with wild sheep groups if they are separated from their primary band. Sheep, wild and domestic, are highly gregarious by nature and are likely to interact with other sheep as they encounter one another.

In addition to the potential for pathogen introduction via interactions with domestic livestock, some respiratory pathogens likely are already endemic in bighorn bands residing in RBS-9 and adjacent ranges. A recent flare-up of respiratory disease in the Granite portion of the S-12 Buffalo Peaks herd (Grigg et al. 2017) could be a source of pathogens.

Badger Creek Bighorn Disease History

Bighorn sheep in the Badger Creek drainage (GMU S-47) have recently suffered from respiratory diseases. For many years, the drainage held one of the most productive groups of bighorns in the state, with 100+ animals utilizing the area as recently as the early 2000s. However, a disease event resulting in epizootic pneumonia reduced lamb survival to almost zero for a decade and nearly wiped out the population. Between 2004-2010, CPW attempted multiple interventions, including supplemental feeding and antibiotics, to improve lamb recruitment (Sirochman et al. 2012, Wood et al. 2013). Despite these efforts, the population continued to decline. In 2013, CPW removed the last 13 ewes from the area and sent them to a lab in Wyoming to evaluate the cause of the disease outbreak (Wood et al. 2017). Very few bighorn sheep were seen in the area between 2013 and 2018.

Badger Creek is a remote, rugged drainage providing ideal habitat for bighorn sheep. It has a combination of grassy slopes providing quality forage, and steep, rocky terrain for lambing

and escape habitats. Therefore, CPW intended on reintroducing bighorn sheep into the drainage following the 2013 removal efforts. We waited until there was a low probability any bighorns with respiratory pathogens remained in the area. In February 2018, CPW captured and transplanted 24 bighorn sheep (8 ewes, 13 lambs, and 3 rams) from the Rampart herd in S-34 to the Badger Creek drainage. Adult survival of the transplanted sheep has been high, and biologists observed 22 ewes, 8 lambs, and 4 rams during helicopter surveys in December 2021. CPW biologists will continue to monitor lamb survival and growth of the herd in the coming years.

Recreational impacts

Perpetually-increasing recreational use from rafters, mountain bikers, anglers, hikers, and off-road vehicles is another primary concern for bighorn sheep in RBS-9. Recreation is a driving economic force in local communities and occurs throughout the year. These communities continue to grow, resulting in rising demands for recreational opportunities, higher impacts on natural resources, and potential increases in habitat fragmentation. Quality wildlife habitat includes food, water, shelter, space, and connectivity, which is imperative to maintaining healthy wildlife populations. Large blocks of contiguous habitat are most likely to promote the long-term viability of a species. Habitat becomes fragmented as land use changes break the landscape into smaller more distinct “patches”. These patches may not provide fundamental habitat requirements resulting in a diminished carrying capacity for the species across the landscape. Wildlife living within fragmented habitat is more vulnerable to stochastic population declines stemming from disease, increased rates of predation, or habitat loss or modifications. Fragmentation often leads to diminished immigration and emigration rates that are vital for promoting genetic diversity, range expansion, and recolonization in the event of localized extirpation. Most wildlife managers agree, with support from the scientific literature, that recreation has the potential to impact wildlife distribution and abundance (Joslin and Youmans 1999, Valdez and Krausman 1999, Papouchis 2001, Taylor and Knight 2003, Keller and Bender 2007, Naylor et al. 2008, Goldstein et al 2010, Courtemanch 2014). The “zone of influence” of recreational activities for wildlife may extend for some distance beyond the actual activity and will vary depending on habitat composition, topography, and a species’ tolerance of human disturbance.

Bighorn sheep inhabit open country and can be particularly vulnerable to disturbance from recreation. For example, sheep will often flee at the sight of humans on a distant ridge, even when they are a considerable distance away (Holl and Bleich 1983, Courtemanch 2014). Ewes with young lambs are particularly flighty and every effort should be made to document and protect lambing and nursery areas from excessive disturbance. Human activity, including recreation, may perpetuate higher densities of bighorn sheep in areas where they seek refuge from disturbance resulting in unintended impacts on the population. The RBS-9 herd has become especially impacted by an increase in dispersed camping, mountain biking, and hiking. In general, recreation has increased significantly over the last 10 years in the RBS-9 area.

The needs of wildlife in the winter should be carefully considered during all land-use and recreational planning. Disturbance from recreation is typically additive during the winter months when bighorns are already using more energy than they can get from their winter diet. Some bighorn populations habituate to human activities during the winter; however, activities such as hiking, mountain biking, snowmobiling, dog walking (i.e. dogs off-leash harassing wildlife), and backcountry skiing all have significant potential to disturb and

displace wintering sheep (Graham 1980, MacArthur et al. 1982, Etchberger et al. 1989, Courtemanch 2014). The RBS-9 population experiences impacts from recreation year-round due to lower elevation habitat that has limited winter snow accumulations. As upper elevation trails experience heavy snow loads during the winter months, recreationists will transition from the high country to the valley floor/river corridor to continue activities such as hiking and mountain biking.

Recreation could limit the overall range of bighorn and discourage the use of suitable habitats impacted by human activities. CPW will continue working with federal agencies, non-governmental organizations (NGOs), Regional Partnerships, and local jurisdictions to evaluate recreational activities and mitigate or discourage those detrimental to bighorn sheep in RBS-9. For example, CPW is actively engaged in the Envision Recreation in Balance Partnership in Chaffee County (<https://envisionchaffeecounty.org/>). Mitigating impacts of recreation on bighorn sheep habitat is specifically addressed in the Partnership's planning efforts.

ISSUE SOLICITATION PROCESS

Stakeholder Input and 30-Day Comment Period

The draft plan was posted on the CPW website for a 30-day comment period. It was also sent to 750 members of the public that have recently applied for or acquired a license in on the the RBS-9 GMUs, county commissioners, federal land management agencies, special interest groups, and the Wild Sheep/Domestic Sheep Working Group for review and comment. Public, agency, and county comments can be found in Appendix C.

MANAGEMENT RECOMMENDATIONS AND FUTURE NEEDS

Herd Management

DAU RBS-9 will be managed as a Tier 2 core population. Secondary core populations (i.e., Tier 2) are defined as those that are medium to large (i.e., ≥ 75 animals for $\geq 80\%$ of the years since 1986 or since becoming fully established), populations comprised of one or more interconnected herds that are native or have resulted from translocations (George et al. 2009). RBS-9 meets the Tier 2 criteria.

The management strategy for the bighorn sheep herd in RBS-9 is to maintain the population at a stable level and reduce the potential for catastrophic disease outbreaks. Currently, CPW's primary management tools are hunting, habitat manipulations and improvements, and disease monitoring.

Reducing the Risk of Pathogen Transmission from Livestock

Regarding livestock and disease transmission, the following management goal is established in Colorado's statewide management plan (George et al. 2009):

- *CPW will strive to prevent introductions of infectious or parasitic diseases from domestic livestock that could adversely impact bighorn population performance and viability. CPW will work cooperatively with the USFS, BLM, and private landowners to minimize the potential for bighorn sheep to contact domestic livestock whenever practicable.*

To this end, CPW advocates strict adherence to recommendations presented in the Western Association of Fish and Wildlife Agencies (WAFWA), *Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat* (2010), and U.S. Animal Health Association's, *Recommendations on best management practices for domestic sheep grazing on public land ranges shared with bighorn sheep* (2009). These types of recommendations and Best Management Practices (BMP's) are only effective if consistently implemented and rigorously enforced. WAFWA managers emphasize the goal of "effective separation," which they define as "spatial and/or temporal separation between wild sheep and domestic sheep or goats resulting in, at most, minimal risk of potential association and subsequent transmission of respiratory disease between animal groups."

Population objective range

The current population estimate in RBS-9 is stable at approximately 360 animals. Key limiting factors in past and current population growth is attributed to habitat limitations, and the potential for disease transmission following contact with domestic livestock. Considering bighorn distribution, winter range capability, population density/density dependence, and the potential risks of contact with domestic livestock, CPW recommends the following management objective:

Recommended Objective: Population target 375 sheep (range 350-400)

- This objective will:
 - Assume risk of contact with domestic livestock is maintained at the current level.
 - Allow managers to consider non-lethal harassment, targeted hunting licenses, or managed culling if individual or small groups of bighorn expand their range into novel areas where the risk of contact with domestic livestock or wild sheep or goat herds of concern is considered too high.
 - Maintain the current density of bighorn sheep across modeled ranges.
 - Allow managers to respond with ewe licenses if densities exceed winter range capacity.
 - Allow for current watchable wildlife opportunities to be maintained.

Ram harvest objective

Ram hunting will continue throughout RBS-9 as long as population performance allows. Hunter crowding, hunter experience, age of harvested rams, and maintaining watchable wildlife opportunities are all factors that are to be considered when discussing bighorn harvest management. The harvest management objectives in this DAU will focus on the average age of harvested ram and will allow for ewe harvest (if deemed necessary) to manage population size and winter range densities.

Recommended objective: Maintain a 3-year average age of 4-6 for hunter-harvested rams.

- This alternative will essentially maintain the current harvest regime in the DAU. Moderate ram license increases may be possible based on population performance. This alternative should provide a quality experience, moderate levels of crowding, and diverse age-classes of rams.

Recommended objective: If deemed necessary, allow ewe harvest as a population management tool as well as to allow for hunter opportunity.

- This alternative allows for ewe harvest depending on population performance and winter range densities.

Strategies for Achieving Objectives

The recommended objectives are supported by the current management for rams within RBS-9. Therefore, it is not expected that significant changes will be needed to achieve the objectives.

Strategies for Addressing Management Concerns

In this plan, we have identified three significant issues to managing bighorn sheep in RBS-9, which include habitat limitations, disease transmission, and recreational impacts. Here are our strategies to address these issues:

- CPW will pursue habitat improvement projects that could benefit bighorn sheep in RBS-9.
- CPW will manage ram harvest to maintain an average age of ram harvested between 4-6 years of age.
- If deemed necessary, CPW will utilize ewe harvest as a tool to keep the population within the objective range.
- CPW will actively comment on land-use proposals that involve domestic grazing and recreation, and to the extent possible, will align comments with the conservation of bighorn sheep.
- CPW will continue active engagement in working towards the goal of balancing recreation with bighorn sheep conservation

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Appendix A. Translocations to and from RBS-9 from 1980-2021.

Date	Trap Sheep Unit	Trap Site	Release Sheep Unit	Release Site	Rams	Ewes	Yearlings	Lambs	Total
2/1980	S-27	Tarryall Range	S-47	Browns Canyon	5	9	0	6	20
4/1981	S-10	Trickle Mt. (Saguache)	S-47	Browns Canyon (Wells Gulch)	5	14	0	0	19
3/1983	S-10	Trickle Mt. (Saguache)	S-49	Copper Gulch (Grape Cr.)	2	11	0	9	22
3/1984	S-10	Trickle Mt. (Saguache)	S-49	Copper Gulch (Texas Creek South)	2	10	0	8	20
1/1985	S-21	Ouray-Jackass Flats	S-47	Browns Canyon	2	15	0	3	20
3/1985	S-27	Tarryall Range	S-49	Copper Gulch (Grape Cr.)	2	10	0	8	20
1/1990	S-34	Rampart Range	S-47	Badger Creek	1	7	2	9	19
1/1992	S-34	Rampart Range	S-7	Parkdale (Taylor Gulch)	3	0	0	0	3
1/1997	S-25	Avalanche Creek	S-7	Cotopaxi (Henthorn Gulch)	2	12	0	6	20
1/1998	S-32	Georgetown	S-47	Browns Canyon	3	0	0	0	3
1/1990	S-47	Browns canyon(Sugarloaf)	Out of state	Oregon					21
2/2014	S-50	Mt. Maestas	S-7	Table Mountain	2	15	0	4	21
2/2018	S-34	Rampart Range	S-47	Badger Creek	3	8	0	13	24

Appendix B. Current RBS-9 licenses issued to hunters through the application process.

<i>GMU</i>	<i>Rifle Ram</i>	<i>Rifle Ewe</i>	<i>Archery Ram</i>
<i>S-7</i>	<i>2</i>	<i>0</i>	<i>0</i>
<i>S-47</i>	<i>2</i>	<i>0</i>	<i>0</i>
<i>S-49</i>	<i>2</i>	<i>0</i>	<i>3</i>
<i>DAU Total</i>	<i>6</i>	<i>0</i>	<i>3</i>

Appendix C. Public, agency and county comments to draft plan from 30-comment period.

Comment 1:

Thanks for the chance to comment Bryan and congratulations on your new position in Salida! Sad to see Jamin leave but it's nice to know you're holding down the fort in Salida. No real comments on the document. I was the NR S-49 archery tag holder last year and my dad had the S-49 twice in the past. Just enough to start to learn about sheep hunting.

Regarding S-49 it felt like water was also a limiting factor along Hwy 50 from Spike buck to Coaldale. I'm sure there are more water sources than could ever know out there but sheep (ewes/lambs) seemed to congregate near Coaldale and around the few limited water sources left in September. I was surprised just how little water there was....for what it's worth.

The new bike trail near Fremont peak is in a horrible location. They were were constructing it last year and it really messed my hunt up. Now that it's built, it could be good access for some hunters for sure, but long-term that trails has to have some impacts on sheep. Damn BLM... Along those lines, the ownership boundaries was surprisingly difficult to navigate. I never felt comfortable hunting where the sheep were because of the ownership issues. I'm sure it's been discussed but it would be awesome to open up a small portion of the canon city property to hunting. Thanks for the opportunity to comment. Good luck in your new position.

Mark Thonhoff

Wildlife Biologist
High Desert District, Pinedale Field Office
Bureau of Land Management
1625 W Pine St, PO Box 768
Pinedale, WY 82941
Desk: 307-367-5357
Cell: 307-389-5048
Mthonhof@blm.gov

Comment 2:

Just wanted to provide some feedback. Excellent write up. I really appreciate the effort in sharing this with hunting license applicants for the GMU's as well as the effort in management practices to provide a quality hunting experience for Bighorn sheep in the area. I share common concerns with you in regards to the drought affecting sheep habitat, and have noticed an uptick in recreational activity like off road vehicles, mountain biking and hiking, namely in S-47 where I spend the majority of my time in the DAU. Last fall and winter many of the trails and roads in the area remained open and I imagine impacted the sheep to some degree.

Regardless I'm happy to see the sheep are near objective. If there is any future volunteer habitat improvement work needing done, please keep my contact information and I will do my best to help out.

take care,

Jack Hendricks
720-384-6738
jrhendricks35@gmail.com

Comment 3:

I read the draft plan and it sounds solid and well thought out to me. My only feedback would be to allow slightly more hunting opportunities - perhaps one or two more tags. I understand that may be wishful thinking though with guys like me hoping to draw a tag someday!

Thank you,

Paul Gerrish

Comment 4:

Thank you for including me in the draft plan review. Most of my experience has been in Unit 49 with an unsuccessful archery tag of my own several years ago and assisting my Dad with his successful rifle tag a couple years ago, but also living in Fremont County for my entire life.

1. There seemed to be a significant shift of population from Grape Creek to the Royal Gorge from my hunt in 2013 to Dad's hunt in 2019
 - a. This may all be a misperception as physically Dad was not able to cover as much country in Grape Creek as I did but we spent a couple good days in there with only 4 ewes found.
 - b. I've heard from landowners in Grape Creek area that they thought had quite a bit of lion activity in Grape as well.
 - c. The difficulty arises in that hunting the group in Royal Gorge they spent the most time in the City Park area and were un-hunttable short of watching and

hoping one would cross back into the east end BLM section. I do know that the archery guys pressured them fairly hard and that is likely why they stayed farther into the City Park area. I do worry that with the addition of the trail that runs from Fremont Peak down to Tunnel drive that the increased hiking and biking traffic could continue to shift them out of the BLM/Trust Land deeper into the City Park.

- d. In regards to concentration and disease susceptibility If this group continues to stay put in the City Park it may be an appropriate management tool to research acquiring limited access from the city for the canyon section South and East of the bridge for the archery and rifle season. The south side is remote, has no biking/hiking trails which would limit conflict with other users, and from what I saw a high concentration of sheep that if pressured may help to disperse the herd.

Thoroughly enjoy our Bighorn Sheep population here and if ever need any field volunteer assistance I would love to help.

Jeremy Ley

Comment 5:

Thank you for sharing this with me. I enjoyed reading it.

The only short term change I would suggest is in the hunter allocation.

I think the numbers are far too conservative. Your science suggests that the DAU would support up to 18 tags. I would recommend trying a moderate number of 10 to 12 tags. I don't see hunter crowding as an issue. Instead I think we should create new seasons to prevent hunter crowding and use methods of take that aren't as successful. I would suggest either adding a new muzzleloader or archery season with the extra tags.

Long term I would like to see the issues of disease, suitable habitat, and invasive species addressed so that we can get more bighorn sheep in the mountains.

Disease: Do we have the best medicine available to treat bighorn sheep when sick? I'm glad to hear we don't have any domestic sheep allotments in the DAU, but what are we doing to educate hobist shepherders or incentivize people not to have domestic sheep in the DAU?

Suitable habitat: What is happening to ensure we protect good habitat? How are we working with the forest service and BLM to protect areas and ensure we don't have new trails going up in sensitive areas. How are we educating the public on impacts of recreation on wildlife? Are we protecting and expanding the important winter range and do we have supplemental feeding setup in case of a harsh winter? Finally, how to we protect key private land so we don't run into the issues they are having in Vail?

Invasive Species: In the long term how do we eradicate these weeds? Do we have treatments already and if so how do we secure funding?

Thank you again for your great work. I like all the issues you raise and mostly I have many questions about how we can start solving them. If you ever want to chat about it I'm local so we can get together and talk.

Tyler

Comment 6:

I'm glad to hear the sheep herd in RBS-9 is holding stable and that it is being managed as a Tier 2 core population. Bighorn Sheep are a valuable component to our natural environment and are enjoyed by nature lovers, recreationist, hunters and most other people.

There are many factors that influence the size and makeup of the herd. Most importantly is its habitat (food, water, shelter, escape routes, forage cover, etc.) Disease, fragmentation, and predation are some of the major impacts to the herd. Other impacts that were mentioned in the Herd Management Plan are recreation impacts i.e., camping, mounting biking, hiking, angling, off-road vehicles, and boaters. Nothing was mentioned about the actual act of hunting and the activity of scouting for the hunt. Hunters are a predator to BHS and sheep seem to be more upset to their presence as compared to a recreationist that is just passing through, i.e. a boater, or bicyclist, vehicle, or jogger. Other activities disturbing BHS in winter range are snowmobiles, helicopters, low flying aircraft, and this includes CPW wildlife counts.

Much was mentioned about domestic sheep and goats impacting BHS but nothing about cattle. Cattle grazing can result in a reduction of forage and competition for space particularly during drought years much like what we have seen over the last 20 years and particularly years like 2002 where much of the range was overgrazed by cattle leaving little forage available for wildlife entering the winter months. Sheep have a diet selection of preferred species and with a lack of forage and preferred plant species the likely result will be a smaller survival rate of lambs.

Balancing recreation with BHS conservation-how is this to be determine with the steady increase in people, increasing desire to get outdoors and recreate, more free time on their hands, and more people moving into the wildland urban interface. In order to maintain the existing herd numbers will there be more and more restriction on recreationist or will the herd numbers be reduced? Adaptive management techniques must be a tool used in future management decisions. If recreationist in general were giving the same voice as hunters, ranchers, farmers, and large private land owners the process and decisions made to determine herd numbers would be more representative of our general population's desires and not just hunters and wildlife viewers.

I believe more work can be done to improve GHS habitat through vegetation management such as prescribe burning, and where sheep and cattle coexist and compete for desirable habitat particularly in drought conditions and low plant growth years.

Sheep can grow accustomed to predictable human activity. Thresholds of tolerance to disturbance can vary among populations and individuals. I have lived in Salida for 30 years and I have seen how the sheep have adapted to recreationist adjacent to roads like Marshall Pass, near Tenderfoot mtn, and across my 60 acres along the Arkansas River downstream of Salida. My sightings have increase as I mountain bike the Arkansas Foothills, and hike and work the trails. They know I'm not going to bother them as they continue to graze and watch me work.

Thank you for the opportunity to comment
Mike Sugaski

Comment 7:

Hello, regarding the Arkansas Valley Bighorn Sheep Herd Plan,

Thanks for working on this, I do not believe the general public realize how fragile the Bighorn Sheep populations are. Especially when it comes to habitat, the loss of and human encroachment into their lands.

I lived in the Cotopaxi area for 10+ years and helped CPW with the Badger Creek sheep counts. Sorry we lost that herd and good to hear it is coming back. I think Mtn Lion kill also takes a good amount of sheep each year. We need to let the uneducated public know that Lions kill our sheep and Mtn Lion hunting needs to continue so the sheep are not so stressed by predators as they have a tough enough time.

As far as the plan goes, good to keep the sheep numbers steady and the hunting opportunity in place.

For what it is worth I support the Herd Management Plan.

Pete Sardaczuk
719 371 6643

Comment 8:

Thank you for allowing me an opportunity to comment on the Arkansas Valley BHS Management Plan. I would like to see Ram harvest age focused on 6 to 8 year olds and not 4 to 6. Also I recommend that harvest of ewes not be used to manage population when above objective. I recommend that ewes be captured and transported to new areas to start new herds or to support herds that are struggling. It looks to me that s3 could use more sheep. Thank you, Matt Langenfeld 720 982 3621.

Comment 9:

I reviewed the draft plan and it looks like most things remain the same. Is that good or bad? I like the work CPW does. I like the idea of leaving the management decisions to

the professional wildlife people. I've been trying to get a sheep tag for 18+ years with no luck, HELP, I'll be too old to walk up the mountain. that's the problem.

Thanks for your effort.

JD Miller

Comment 10:

Please accept and consider the following comments regarding the draft herd management plan for bighorn sheep in Data Analysis Unit (DAU) RBS-9 on behalf of the Quiet Use Coalition.

The Quiet Use Coalition (QUC) is a 24-year-old non-profit organization that works to preserve and create quiet use areas on our public lands and waters while protecting natural soundscapes and wildlife habitat. We work state and nation wide on issues, and many of our supporting members reside within this DAU since we are based in Chaffee County. Our members value bighorn sheep as a key part of the native natural ecosystem in this area, as a big game species, as watchable wildlife, etc. Our members are very familiar with most parts of this DAU, some having explored it extensively for over 50 years.

The significance of bighorn sheep in this area must be better emphasized. Bighorn sheep have been designated as Colorado's official State animal for over 60 years. Bighorn sheep are considered a Tier 2 Species of Greatest Conservation Need in the 2015 Colorado State Wildlife Action Plan (COSWAP). Bighorn sheep are the largest animal on this list and the only big game species currently hunted in CO included as a Species of Greatest Conservation Need. Both the BLM and US Forest Service consider bighorn sheep a Sensitive Species in Colorado. The Arkansas River Canyon that is the setting for this DAU is known as Bighorn Sheep Canyon, and signs along US Highway 50 prominently promote this label. Page 3 of the Draft Plan mentions Bighorn Sheep Canyon, but does not fully elaborate on what Bighorn Sheep Canyon actually is. The limited number of bighorn sheep license tags issued in Colorado, and the high demand for those tags, increases the value of those tags. This is reflected in the large sums of money paid at auctions for the chance to harvest a bighorn sheep in Colorado. Although the draft plan mentions concerns regarding the transmission of pathogens between domestic goats and bighorn sheep on page 9, the plan must consider all aspects of goat use. As an example, we have sometimes noticed a herd of unattended domestic goats on BLM land north of the river across from Salida East (east of the Salida Livestock Sale Barn). We do not know if these goats were brought in and let loose to graze or do weed control by private land owners or people visiting the sale barn and corrals. These goats could easily mix with sheep that we have observed in this area. CPW GIS data identifies nearby sheep winter and summer concentration areas, severe winter range, and lambing habitat. Fences at BLM boundaries are in disrepair and Colorado Law would require the BLM to maintain those fences to keep livestock such as goats off BLM land in this area. The entity responsible for maintaining effective separation between wild sheep and domestic livestock may be difficult to determine. It is recommended that CPW try to contact and educate the people that loan or rent out goat herds for weed control be educated about the problems that may arise if their herds associate with bighorn sheep, and how to prevent contact between sheep and goats and achieve effective separation.

Table 7 page 256 of COSWAP lists altered native vegetation by livestock farming and ranching as a high priority specific threat to bighorn sheep habitat. The draft plan mentions (on page 4 and 7) that habitat limitations such as drought and invasive plant species are reasons for sheep population declines in this area. We recommend that the plan specifically also state that priority sheep habitat can be altered on private land native as a result of human manipulation and that this is a threat to sheep and their habitat. The plan on page 2 states that 50% of the land in the DAU is privately owned, and CPW Species Activity Mapping GIS data indicates that sheep use and occupy priority habitats on private land. For example, just about every one of the sheep severe winter range areas includes parcels of private land within them. Humans could significantly alter the native vegetation on those private land parcels, and there is no guarantee that vegetation on private lands in this DAU will remain suitable for sheep in the future. The DAU must include the threat that altered vegetation on private poses to sheep and their habitat.

Page 4 of the DAU plan refers to the conservative license quotas in this DAU, and page 6 provides information on ram harvest. Page 12 of the plan states that "Ram hunting will continue throughout RBS-9 as long as population performance allows." Yet page 13 of the plan seemingly fails to fully consider population performance with regards to ram hunting, stating that the current harvest regime will be "essentially" maintained. The plan mentions potential increases in the number of ram licenses, but fails to consider the possible need to decrease ram licenses. Bighorn sheep populations can potentially experience rapid declines, such as detailed in the plan for sheep in the Badger Creek area. That population declined from over 100 animals to almost zero in a ten-year period which is also the life of a DAU plan. We believe this DAU plan must consider and include the possibility that the total number of ram licenses might potentially have to be decreased depending upon population performance. We agree with the inclusion and the robust discussion of recreational use as a concern for sheep in this area, and thank CPW for including this as part of this DAU. We would like to see CPW include an objective to better educate hunters about responsible bighorn sheep hunting. Although not in this DAU, in the past 12 years our members have observed three instances where sheep hunters inappropriately and illegally used ATVS off designated as part of their sheep hunt in adjacent hunting units. Obtaining a tag to try to pursue and harvest a bighorn ram understandably comes with a certain amount of pressure to succeed in what may be the only chance to hunt sheep for many. That pressure inexcusably results in some hunters breaking rules to improve their chances of success. We agree with draft plan statements on page 7 that severe winter range is the most limited habitat in this DAU. We agree with statements on page ii that limited winter range is one of the two most significant issues for sheep in RBS-9. We agree with the direction included on page 10 to protect lambing and nursery areas from disturbance. A study in North Dakota documented decreases in a bighorn sheep population due to the creation of a new hiking/biking trail in a sheep production area. 1 The current Pike and San Isabel Forest Plan included direction to minimize disturbance to bighorn sheep production areas from April 15 to June 30. 2 , but that was questionably removed from the plan by Amendment in 2005. Although bighorn sheep generally occupy lower elevation habitats that are typically where BLM land exits, priority sheep habitat is found on USFS land also. A GIS analysis we conducted found 17 different USFS road segments, totaling over 24 miles, within CPW identified bighorn sheep production areas within Chaffee County. We agree with plan direction strategy on page 13 to improve

habitat/habitat improvement projects. One way to improve sheep habitat is to better educate recreationists so that disturbance of wintering sheep and winter habitat, along with sheep production areas, is minimized. Hard legal and voluntary.

1 Wiedmann, Brett P., and Vernon C. Bleich. "Demographic Responses of Bighorn Sheep to Recreational Activities: A Trial of a Trail: Bighorn Sheep Responses to Recreation." *Wildlife Society Bulletin* 38, no. 4 (December 2014):773–82.

https://drive.google.com/open?id=13hGNXsicQX_oiBWW4V7aNMJ2vIrME9CF

2 Pike and San Isabel National Forest Land and Resource Management Plan, 1984. Chapter III pages 28-29. avoidance of significant winter habitats (especially winter concentration areas and severe winter range) should be actively pursued. A goal should be winter range and production area closures and not simply designated route closures within those areas. Area closures are necessary as many activities (hiking, snowmobiling, skiing, snowshoeing, biking) can easily occur off designated roads and trails (especially in winter) and these modes of travel are not always restricted to designated routes.

We believe CPW must be more proactive in recommending land and recreation management proposals that will benefit bighorn sheep. It is not enough to respond to proposals suggested by others. CPW must proactively propose and recommend land and recreation management modifications that will better conserve bighorn sheep populations and the habitats they require.

We believe one way to be proactive is to propose that the BLM and USFS seasonally close designated routes and areas to all human use in bighorn sheep production and winter concentration areas. This is recommended for trails within certain sheep habitats in the 2021 Planning Trails with Wildlife in Mind document. 3 Appendix A of this document recommends seasonal timing restrictions for all trails within CPW mapped bighorn sheep production areas so that those trails are closed to all users from April 15 through June 30. We do not know of any trails within production areas within this DAU that have been seasonally closed for sheep production.

Appendix A of this document also recommends seasonal timing restrictions for all trails within CPW mapped bighorn sheep winter range areas so that those trails are closed to all users from November 1 through April 30. We have conducted a GIS analysis of the area covered by this DAU to recommend significant routes that should be seasonally closed to protect bighorn sheep. We used 2021 CPW GIS data posted online for bighorn sheep production areas and winter concentration areas, compared to designated route data available for the Colorado Trail Explorer. This was cross referenced to GIS data for USFS motor vehicle use maps, and BLM planning data. We considered both designated roads and trails in this analysis. The 2021 Guide to Planning Trails with Wildlife in Mind document only addressed management of trails, but we applied its recommendations to designated roads also. We believe the presence and use of a route as a road generally results in greater adverse impacts to wildlife and habitat than the presence and use of a trail route. Some studies have shown that all type of human presence impacts some species of big game more so than the impacts resulting from different modes of

human use and travel. 4. We used CPW identified bighorn sheep winter concentration areas rather than bighorn sheep winter range as a compromise in this analysis. There is generally consistent overlap between CPW sheep winter concentration areas and severe winter range in this DAU. We took the liberty to primarily consider only trails and dead end roads on USFS and BLM land in this analysis, as these are the types of routes that tend to have fewer multiple use conflicts and will be more likely to actually be considered for seasonal closure by land management agencies. We generally did not consider routes on the outer edge of priority wildlife habitats as they fragment those habitats less than routes in the interior of those habitats. We roughly calculated the acres of habitat impacted by routes by considering each route to create a one-half mile zone of influence on each side.

4 Wisdom, M. J. et al. 2018. "Elk responses to trail-based recreation on public forests". *Forest Ecology and Management*. 411. 223-233

The paragraphs that follow include the higher priority routes that we believe should be appropriately seasonally closed to protect bighorn sheep. Appropriate seasonal closures of areas of land to all human use adjacent to these routes should be considered.

Trail 6172A the Five points trail extends into the McIntyre Hills WSA from the Arkansas Headwaters Recreation Area Five Points site. The northern .65-mile section of this trail is within and fragments a CPW identified bighorn sheep severe winter range and production area. This northern segment of trail is the most frequently used, as it has year round access from Highway 50. The initial 380 yards of this trail is within the CPW managed AHRA lease area. If CPW truly wanted to protect bighorn sheep populations it would follow its own documented recommendations by seasonally closing (with educational signage, barriers and penalties for violators) the northern section of this trail to all users from November 1 through April 30.

A .7-mile-long route referred to as the River View Trail appears in the Colorado Trail Explorer database as being managed by the CPW Arkansas Headwaters Recreation Area. This trail fragments and adversely impacts identified sheep severe winter range and a winter concentration area. Most of this route is within the AHRA Ruby Mtn lease area, but a short segment of this route is on BLM land outside that lease area. Although the trail is visible on the ground and parts of it appear to have been constructed, we do not recall any type of NEPA process that considered and approved that trail (the entire trail is on BLM land, most leased to AHRA). This trail is not signed on the ground, and not mentioned online on the AHRA website as a place to hike near Ruby Mtn. About half of this trail is within Browns Canyon National Monument, but this trail does not appear on public Monument maps. This trail slices up what appears to be quality grassy forage in a bowl just above the Ruby Mtn Campground, and fragments easy access for sheep to the reliable water source that is the Arkansas River on the edge of a large sheep winter concentration and severe winter range area. Year round access via County Roads to the Ruby Mtn area has the potential to increase access and use of this trail.

Given the dubious nature of this route, and potential impacts to wintering bighorn sheep, we recommend that CPW decommission or at least close this route unless approved via a NEPA

process that includes seasonal closure. The route must be removed from the COTREX maps and database.

The Bald Mtn. Gulch and Triad Ridge area, including and northeast of Ruby Mtn Area. includes a 14,500+ acre sheep severe winter range and winter concentration area that is almost 100% impacted by miles of BLM and USFS motorized routes including Roads 300 and 300B and motorized trails 1434, 1434A, 1423 and 1425. In the McIntyre Hills Wilderness Study area, the northern 2.25 miles of BLM Trail 6173A significantly impacts a sheep production and severe winter range area. This segment of trail is the most commonly used part of this route in the winter and spring as it is accessed off of Highway 50.

Over 1.69 miles of BLM Trail 6227A adversely impacts and fragments most of a sheep severe winter range and production area in the lower Grape Creek Wilderness Study area. In and on the edge of Browns Canyon National Monument, two miles of trails 6046, over four miles of trail 1434, and road 185D fragment and adversely impact over 80% of a sheep production area on BLM and USFS land. Although road 185D and a segment of Trail 1434 are seasonally closed from December 1 to April 15, there is no seasonal closure in this area to protect bighorn sheep lambing. Also within Browns Canyon National Monument, over four miles of Road 184 fragments and adversely impacts approximately 3000 acres of sheep production areas. Road 184 is seasonally closed to wheeled motorized vehicles from December 1 to April 15, but there is no seasonal closure in this area to protect the bighorn sheep production areas this road passes through. All or part of sections of roads 6060, 6040, 6041, 6040C, 6055, 6055A, 6056, and trails 6035A, 6027A, 6057A, 6061A, 6062 in the northern part of the BLM Texas Creek area route system are in sheep production area. These 16+ miles of designated motorized routes fragment and adversely impact over 4600 acres of this production area. Northeast of Cotopaxi, 1.1 miles of BLM motorized trail 6051B and road 6022A are within and adversely impacts a sheep production and winter concentration areas. In that same area, a 1.8-mile segment and .95-mile segment of BLM Road 6022 is within a sheep winter concentration area and production area, respectively. Nearby a .4-mile section of BLM Trail 6051C and a .6-mile section of BLM Trail 6051D are within a sheep winter concentration area. We thank you for allowing the public to comment on this draft plan and for accepting and considering these comments.

Sincerely

Tom Sobal, Director

Quiet Use Coalition

POB 1452

Salida, CO 81201

Comment 11:

Bryan, thanks for this information. A bit distressing that the “hobby” domestic sheep and goat folks are a key factor that is negatively impacting bighorn sheep. Ditto for the recreationists. Neither can be easily mitigated. Education, whether through information provided directly to individuals and organizations, through Envision folks, trailhead signs, etc. comes to mind as needed. PR presentations to various groups, another. Certainly, the recreation folks should come to understand the sensitivity of sheep to direct and indirect disturbances of various sorts and also how dogs exacerbate those exponentially. Hobby folks may be difficult to interact with once contacted, but they can be identified and provided education and suggestions for mitigation/avoidance. These measures require a level of funding and cooperation internally and with various other “players” to do the mitigation Measures. Habitat mitigation/improvements can be effective on a small scale, short of fire. As for disease, some treatment can be helpful, but does not address as easily where wild sheep get into domestics. These are some ideas, quickly. We (Chaffee County) do have some good avenues for communications such as through Envision, agencies and the various recreation organizations. The local new paper is an easy mark for articles. The Humanists have Sunday Science—usually well publicized. At any rate, feel free to use this message however might best be used internally and externally. If I think of ways to augment this, I will write to you again. Best wishes, Bruce

Comment 12:



Chaffee County Board of Commissioners

P.O. Box 699/104 Crestone Ave.
Salida, CO 81201
719.539.2218/www.chaffeecounty.org

June 14, 2022

Colorado Parks & Wildlife
Attn: Bryan Lamont,
7405 Highway 50
Salida CO 81201

RE: Support of Arkansas River Bighorn Sheep Herd Management Plan

Dear Mr. Lamont:

The Chaffee County Board of County Commissioners wishes to express their support for the proposed Arkansas River Bighorn Sheep Herd Management Plan for Unit RBS-9. We support Colorado Parks and Wildlife (CPW) Strategic Plan and their effort to manage wildlife for the use, benefit and enjoyment of the people of the state of Colorado and Chaffee County. We understand Colorado's wildlife resources require careful management to accommodate the variety of public demands and growing impacts from people. Therefore, we acknowledge and appreciate the data and research behind this proposal. Thank you for including us in your outreach efforts.

Sincerely,

Greg Felt, Chairman
Chaffee County Board of Commissioners

Comment 13:



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Royal Gorge Field Office
3028 East Main Street
Cañon City, Colorado 81212

In Reply Refer To:
6500 (COF020, DM)

Colorado Parks and Wildlife
ATTN: Bryan Lamont, Terrestrial Biologist
7405 Hwy 50
Salida, CO 81201

Dear Mr. Lamont:

Thank you for the opportunity to comment on the draft Herd Management Plan for the Arkansas River Bighorn Sheep Herd. The Bureau of Land Management Royal Gorge Field Office (RGFO) supports the Colorado Parks and Wildlife (CPW) recommendation to continue existing management objectives which aim to maintain the current population size.

The RGFO is interested in helping to address the identified issue of limited winter range. We will continue our ongoing efforts which include treatments of woody and nonnative vegetation, seeding of native vegetation, and maintenance of water guzzlers. We encourage CPW to contact our staff with ideas and opportunities to further these efforts.

My main points of contact on this action are RGFO Wildlife Biologists Matt Rustand (mrustand@blm.gov) and David McNitt (dmcnitt@blm.gov).

Sincerely,

SHARON SALES Digitally signed by SHARON SALES Date: 2022.06.15 16:23:57 -06'00' *Acting*

Keith E. Berger
Field Manager
Royal Gorge Field Office

Comment 14:

Forest Service
Salida Ranger District

5575 Cleora Road
Salida, CO 81201
719-539-3591
Fax: 719-539-3593

File Code: 2610
Date: June 13, 2022

Bryan Lamont
Colorado Parks and Wildlife
7405 Hwy 50
Salida, CO 81201

Dear Mr. Lamont,

The Pike-San Isabel National Forests & Cimarron and Comanche National Grasslands, Salida and San Carlos Ranger Districts appreciate the opportunity to comment on the Arkansas River Bighorn Sheep Herd Management Plan - Data Analysis Unit RBS-9. We support the management strategy to maintain the population at a stable level and reduce the potential for catastrophic disease outbreaks.

The Rocky Mountain bighorn sheep is a Region 2 Sensitive species per the Regional Forester's Sensitive species list. The management objectives within the plan align with those of the Region 2 of the Forest Service. We will assist with projects and plans across agency lines to meet these objectives through habitat improvement/manipulation, translocations, protection of critical sites such as severe winter range and lambing areas, and properly managing any future domestic sheep grazing in accordance with the guidance from the Western Association of Fish and Wildlife Agencies.

We appreciate our partnership with Colorado Parks and Wildlife and look forward to developing new habitat projects in the future.

Sincerely,

X *J. Perry Edwards*

Signed by: Department of Agriculture
JAMES EDWARDS
District Ranger

CC: Stephen Sanchez



Comment 15:

August 11, 2022

Bryan Lamont
Colorado Parks and Wildlife
7405 Highway 50
Salida, CO 81201

RE: Arkansas River Habitat Partnership Program Comments - DAU RBS-9

Dear Bryan:

One of the initial reasons for creating the Habitat Partnership Program was to provide local landowners and other interests an opportunity for input into big game management in their areas. The diverse makeup of local HPP committees (3 livestock growers, Forest Service, BLM, CPW and sportsmen representatives) provide a good cross section of local interests to review DAU proposals and respond accordingly for CPW consideration.

HPP has two purposes; to resolve big game wildlife (deer, elk, pronghorn, and moose) conflicts with agricultural landowners and to assist CPW to meet game management objectives for those same species. From those perspectives, the Arkansas River HPP committee has discussed your presentation, reviewed the draft alternatives and offer these comments for consideration.

The Arkansas River HPP committee is in agreement with the following comments pertaining to proposals for the population range and sex ratio objectives for the above DAU plan.

The Arkansas River committee supports the draft alternative to keep the current population objective. We believe this alternative responsibly balances local range and habitat conditions with sportsmen desires and landowner concerns. We have not heard of any concerns about the current population or any desires to increase the local herd size and so we believe the current levels are where they should be. Any issues we have are more likely related to distribution of the herds in the area and not the overall population size.

The Arkansas River committee also discussed the proposed sex ratio alternative. We believe the current sex ratio is a good balance and provides ample hunting opportunity while also providing for a reasonable number of mature animals for those hunters who want to take a larger ram.

As stated above, HPP is also directed by statute to assist the Division to meet game management objectives. The Arkansas River committee has worked with both public land managers and private landowners to improve the quality and quantity of the habitat in DAU-RBS-9. Adequate habitat is critical to meeting game management objectives and we remain committed to maintaining and improving habitat in this area.



Our committee is confident about CPW being able to achieve the proposed objectives due to:

- The committee feels there is adequate habitat with adequate protections in place, such as seasonal closures and use restrictions, to achieve the desired objectives. While the committee has confidence in the plan's objectives over the next ten years, beyond that they are concerned residential growth and increased recreation demands could hinder future population objectives.

Thank you for the presentation and the opportunity to provide these comments.

Sincerely,

Jeff Williams, Chair
Arkansas HPP Committee

Comment 16:

P.O. Box 8320 • Denver, CO • 80201-8320

September 30, 2022

Bryan Lamont
Terrestrial Biologist
Colorado Parks and Wildlife
7405 Hwy 50
Salida, CO 81201

Dear Mr. Lamont:

Please accept the following comments on the Draft Arkansas River Bighorn Sheep Herd Management Plan (HMP). The Rocky Mountain Bighorn Society (RMBS) exists to promote the science-based management of the bighorn sheep, educate the public about their life and habitat, and assure the sportsman's rights in proper opportunities. We appreciate the efforts of Colorado Parks and Wildlife (CPW) staff to complete herd management plans for all bighorn sheep herds in Colorado and respect considerable effort put forth in this draft plan.

Ram and Ewe Harvest Objectives

We support the proposed management objective to maintain a 3-year average age of rams harvested of 4-6 years old. We believe this strikes a good balance between hunter opportunity and trophy quality. Historical harvest statistics reveal that older age class rams are harvested in the unit. Likewise, we would consider supporting limited ewe hunting opportunity in the future as long as the estimated herd population is near or above objective.

Population Objective and Historical Population

We support the proposed population target of 375 bighorns (range 350-400) in the DAU. The population has remained relatively stable at this level without CPW management actions that would significantly alter population size, suggesting the herd is maximizing use of suitable habitat available in the DAU.

Winter Range and Recreation Impacts

The HMP notes winter range availability as a limiting factor for this herd, underscoring the need to be vigilant in managing permanent surface occupancy and day use in this important habitat. We are very concerned about the long term impacts of increased recreational use of all important bighorn sheep use areas within the DAU, including lambing areas and the river corridor. We hope that CPW managers will actively engage local land use planning processes to ensure that remaining intact habitats are available to bighorn sheep in the future. Every effort should be made to prevent fragmentation of these intact habitats. The RMBS would welcome being informed of proposed projects that may negatively impact bighorn sheep, so that we may engage in those processes as they proceed.

Disease and Interactions with Domestic Livestock

The HMP identifies potential contact with domestic sheep and goats as a primary concern for RBS-9, as it is with nearly every bighorn sheep herd in Colorado. Although there are no federal domestic sheep grazing allotments in the DAU, the use of pack goats by recreationists is a concern. The Rio Grande National Forest recognized this risk in their new Land Management Plan which was finalized in 2020, and banned the use of pack goats on lands managed by them in the Sangre de Cristo Mountain range. Unfortunately, the east side of the range is managed by the San Isabel National Forest which has no such pack goat ban in place. A worthwhile goal in this HMP would be to work with National Forest and with Bureau of Land Management managers to exclude pack goat use on all federally managed occupied bighorn sheep range in the DAU.

The HMP acknowledges numerous hobby sheep and goat livestock herds on private lands within and adjacent to bighorn overall range in the DAU. Clearly this poses a high risk for the wild sheep herd due to the possibility of stray domestic animals and foraging wild sheep. In our experience, hobby flock owners are often not aware of the risks their domestic animals pose to wild sheep. There would appear to be an opportunity to develop an education campaign to inform these owners of that risk and to provide best management practices for how to reduce that risk, and the RMBS would welcome the opportunity to support and participate in such a program.

As an example, in 2019 a consortium of NGOs and state agencies in the Hells Canyon region of Washington, Oregon, and Idaho launched the Bighorn Sheep Health Program (BSHP). It is administered by the Asotin County Conservation District (ACCD) located in Clarkston, WA. The ACCD is not a regulatory entity but rather a landowners assistance entity. The BSHP is funded by the Wild Sheep Foundation (WSF) chapters for WA, ID, and OR, and the fish and game agencies of each state. The BSHP educates hobby flock owners of the potential risk to wild sheep populations and offers testing of livestock for *Mycoplasma ovipneumoniae* (Movi), paid for by the BSHP. Landowners are encouraged to go Movi-free with their flocks to reduce the risk to wild sheep. You can read more about the BSHP at <https://asotincd.org/bhh/>. An educational brochure has been made for each of the three states. The Washington state brochure is attached as an example.

Thank you for the opportunity to provide feedback on the draft RBS-9 management plan. Please do not hesitate to reach out if you have questions or if we can be of assistance in any way.

Sincerely,



Terry E. Meyers
Executive Director