

**BIGHORN SHEEP UNIT MANAGEMENT PLAN  
LA SAL, POTASH/SOUTH CISCO WMU #13  
August 2019**

**BOUNDARY DESCRIPTION**

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Grand and San Juan counties--Boundary begins at I-70 and Green River; east along I-70 to the Utah-Colorado state line; south along the state line to the Colorado River; southwest along the Colorado River to the confluence with the Green River; north along the Green River to I-70. EXCLUDES ALL NATIONAL PARKS.

**LAND OWNERSHIP**

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Table 1. Land ownership and approximate area of modeled bighorn sheep habitat for the La Sal, Potash/South Cisco bighorn sheep management unit.

<b>Ownership</b>	<b>MODELED BIGHORN HABITAT</b>	
	<b>Area (acres)</b>	<b>%</b>
Bureau of Land Management	163,835	47.9%
Department of Defense	147	0.0%
State Sovereign Land	2,382	0.7%
National Parks	146,780	43.0%
Private	6,572	1.9%
Utah State Institutional Trust Lands	19,051	5.6%
Utah State Parks	2,951	0.9%
<b>Totals</b>	<b>341,718</b>	<b>100%</b>

**HISTORY AND CURRENT STATUS**

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The La Sal, Potash/South Cisco unit is located south of I-70, between the Green and Colorado rivers (Figure 1). Desert bighorn sheep habitat within the unit consists primarily of the rugged, deep canyons along the east side of the Green River corridor and the north side of the Colorado River corridor. There is approximately 100 square miles of excellent bighorn habitat along these river corridors outside the national park boundaries. Numerous side canyons provide high quality bighorn habitat characterized by steep talus slopes and open canyon bottoms. Most of the mesa tops are covered with pinyon-juniper, but there is good bighorn habitat in the Blue Hills north of Moab. Specific goals are to:

- 1) Manage for a healthy population of desert bighorn sheep capable of providing a broad range of recreational opportunities, including hunting and viewing.

- 2) Balance bighorn sheep impacts with other uses such as authorized grazing and local economies.
- 3) Maintain a population that is sustainable within the available habitat in the unit boundary.

## **HISTORY AND CURRENT STATUS**

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Bighorn sheep are native residents to the majority of the area. However, transplanted bighorn sheep have been added to a portion of the unit (Professor Valley), to promote genetic diversity, and to augment and expand the existing population for hunting and viewing opportunities.

Currently, this population is under its population objective and increased monitoring efforts are needed to make appropriate management decisions. Domestic sheep grazing allotments do exist in the northeast segment of the unit, and immigration of native sheep and emigration of domestic sheep from allotments is a concern.

## **ISSUES AND CONCERNS**

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Potential Habitat: We modeled potential bighorn sheep habitat on the La Sal, Potash/South Cisco unit using methodology outlined by O'Brien et al. (2014). Bighorn sheep select habitat based on the proximity of steep-sloped escape terrain, forage availability, ruggedness, and horizontal visibility (Bleich et al. 1997, Valdez and Krausman 1999, Sappington et al. 2007). Bighorn sheep habitat is located throughout the unit in suitable rugged locations (Figure 1).

Livestock Competition: Bighorn sheep annual use of forage classes, when compared to cattle, differ significantly (Dodd and Brady 1988). Likewise, bighorn sheep generally avoid areas where cattle are present (Bissonette and Steinkamp 1996), and also select areas with a much higher degree of slope (Ganskopp and Vavra 1987). For these reasons, competition between cattle and bighorns should not be a significant concern within this unit. Because of the risk of pathogen transmission between bighorns and domestic sheep, the areas where domestic sheep are present are not suitable for bighorn sheep.

Disease: Disease, especially bacterial pneumonia, has been responsible for numerous declines in bighorn populations throughout North America (Cassirer and Sinclair 2007). Pneumonia outbreaks typically affect all age/sex cohorts and are usually followed by several years of annual pneumonia outbreaks in lambs that dramatically reduce population growth (Spraker et al. 1984, Ryder et al. 1992, George et al. 2008). These events are attributed to the transfer of pathogens from domestic sheep (*Ovis aries*) or goats (*Capra aegagrus hircus*) to wild sheep through social contact (Singer et al. 2000, Monello et al. 2001, Cassirer and Sinclair 2007). Disease-induced mortality rates in bighorn sheep vary substantially by population due to multiple processes including contact rates, social substructuring, pathogen virulence, and individual susceptibility (Manlove et al. 2014, 2016). Therefore, spatial separation from domestic sheep and goats is the most important factor in maintaining overall herd health. It is not the intent of this plan or the DWR to force domestic sheep operators off public lands or out of business. Rather, the intent is to look for opportunities that will protect bighorn sheep populations while working with the domestic sheep industry and individual grazers.

Predation: Cougar predation may limit bighorn sheep in locations where predator populations are largely supported by sympatric prey populations (Hayes et al. 2000, Schaefer et al. 2000, Ernest et al. 2002), which, in this case, includes a limited amount of mule deer. It has been hypothesized that declines in sympatric ungulate populations can increase predation on bighorn sheep as cougars switch to bighorns as an alternate prey source (Kamler et al. 2002, Rominger et al. 2004). It is anticipated that cougars will be the main predator of bighorns in the La Sal, Potash/South Cisco unit. If predation becomes a limiting factor, predator control work will be administered within the guidelines of the DWR Predator Management Policy. Predator management is coordinated with USDA Wildlife Services.

## **POPULATION MANAGEMENT**

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### **Population Management Objective:**

- 1) Achieve a population of 300 desert bighorn sheep throughout suitable habitat within the unit boundary. With the abundant bighorn sheep habitat within this unit, a population of this size would be well below the 1.3-1.9 bighorns per square kilometer recommended by Van Dyke (1983). This objective was selected since it is a population level that can be reasonably achieved given the habitat requirements of desert bighorn sheep and what is available within the unit.

### **Population Management Strategies:**

- 1) Monitor the bighorn sheep population using aerial surveys and GPS telemetry to assess population trends and health.
- 2) Initiate predator management as specified in predator and bighorn sheep unit management plans. Wildlife Services or other contracted personnel may be needed in remote or hard to access areas to help reduce cougar numbers.
- 3) Document instances of interaction between wild sheep and domestic sheep and goats to allow conflicts to be evaluated and dealt with in a timely manner. Follow established guidelines (UDWR GLN-33) for dealing with domestic sheep and goats that wander into bighorn sheep units.

### **Population Monitoring Plan:**

Monitor population size and herd composition every 2 to 3 years by helicopter. This unit will require approximately 15 hours conducting a complete trend count. Work with NPS to monitor bighorn sheep in nation parks within the unit. Conduct ground classification, if needed, to obtain annual production estimates. All population data will be collected and submitted on standardized forms, including all GIS data (waypoints, flight paths, etc.).

## Trend Count and Classification Data

Year	Pop Est.	Total Count	Total Ewes	Total Lambs	Total Rams	Rams > 6 yrs old	Lambs/100 Ewes	Rams/100 Ewes
2008	175	105	53	17	35	10	32	66
2010	200	118	72	9	37	10	13	51
2012	115	69	36	7	26	8	19	72
2014	135	81	44	20	17	5	45	39
2017	223	134	69	30	35	6	43	51

### **Transplant Plan:**

This unit should be managed to maintain and protect established bighorn sheep numbers and achieve unit population objectives without any transplant efforts. If this population shows severe declines, transplants may be considered if deemed beneficial. This population will not likely serve as a source herd in the immediate future due to its current population size and disease status.

### **Predator Management:**

The La Sal, Potash/South Cisco bighorn sheep unit is within the La Sal cougar hunt unit. This unit is managed as a Harvest Objective unit. Over the last three years the average number of cougars killed per year is 6.7. The 2019 quota for cougars on the unit is 15.

A predator management plan is currently in place for this unit for bighorn sheep and mule deer. If cougar predation is shown to have adverse impacts on bighorn sheep, cougar management will be accomplished through established UDWR policy and procedures.

### **Research Needs:**

Primary objectives for research on the unit should focus on disease issues and low lamb survival. Secondary objectives should focus on recreational activities and energy/mineral development impacts on bighorn populations. There have been 3 extensive studies conducted on this herd, which were extremely influential in implementing the 'No Surface Occupancy' stipulation identified in the BLM's 2008 Resource Management Plan.

## **DISEASE MANAGEMENT**

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### **Disease Management Objective:**

- Maintain a healthy population of desert bighorn sheep on the La Sal, Potash/South Cisco unit.
- Strive for spatial separation from domestic sheep and goats.

## **Disease Management Strategies:**

Disease Monitoring: The DWR may perform periodic live captures to assess herd health, as well as take advantage of opportunistic sampling of hunter harvested bighorns or bighorns that are found dead. This herd has experienced low lamb production and a population decline in previous years. The specific cause(s) are unknown but is believed that disease has been a factor.

Current exposures to pathogens are likely from wild sheep crossing back and forth along the Colorado River, where domestics reside. Additionally, interactions with other bighorn sheep population that have various pathogens have been documented and could be a source.

Conduct adequate disease sampling of bighorn sheep on the unit as needed to develop a disease profile. This unit is scheduled to be tested during winter 2019-2020.

Spatial Separation: Work with land management agencies and private landowners to implement agency guidelines for management of domestic sheep and goats in bighorn areas. There are 3 BLM domestic sheep grazing allotments that challenge effective separation:

- 1) Cisco: The BLM allotment is located on the northeast stretch of the unit. The Cisco allotment is approximately 7 miles north of occupied bighorn habitat.
- 2) Little Hole: The BLM allotment is located on the northeast stretch of the unit. The Pipeline allotment is approximately 14 miles north of occupied bighorn habitat.
- 3) Pipeline: The BLM allotment is located on the northeast stretch of the unit. The Pipeline allotment is approximately 18 miles north of occupied bighorn habitat.

Outreach efforts should take place with grazing permittees and BLM employees concerning domestic and wild sheep interactions. Active removal of wild sheep within or close to these allotments should be a priority.

## **Risk Management and Response Plan:**

All wandering wild sheep and stray domestic sheep and goat issues will be handled following the UDWR GLN-33. The area of greatest concern for dispersing bighorns occurs along the Colorado River, northeast of Moab. Any wild sheep on the south side of the river should be removed immediately. The need to test wandering bighorn sheep from this unit will be evaluated on a case by case basis.

## **HABITAT MANAGEMENT**

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### **Habitat Management Objectives:**

- 1) Maintain or improve sufficient bighorn sheep habitat to achieve population objectives.
- 2) Continue to identify crucial bighorn sheep habitats and work with land managers and private landowners to protect these areas.
- 3) Assist land management agencies in monitoring bighorn habitat to detect changes in habitat quantity or quality.
- 4) Work with land managers to minimize and mitigate loss of bighorn habitat due to human disturbance and development.

### **Current and Potential Wild Sheep Distribution:**

Bighorn sheep have established throughout this unit, but densities are highest near the major river corridors and side canyons. A map of occupied habitat is included in Figure 1.

### **Potential Threats to Habitat:**

Human disturbance can result in abandonment or degradation of bighorn habitat. Human recreational activities in the area have increased dramatically and may have significant effects on bighorns. If disturbance becomes an issue, UDWR will work with and support federal agencies (BLM, NPS) on travel management plans and other land use plans to minimize impacts from high use recreation in critical bighorn habitat. Furthermore, the public will be made aware through town council and other local meetings in an effort to get local support to reduce human disturbance to bighorn sheep.

### **Vegetation Management Projects:**

- 1) Initiate vegetative treatment projects to improve bighorn habitat lost to natural succession or human impacts.
- 2) Collaborate with the BLM to utilize controlled burns and/or mechanical treatments to remove pinyon-juniper cover on mesa tops, in order to increase and improve bighorn habitat across the unit.
- 3) Identify specific habitat restoration projects to immediately benefit bighorn sheep:
  - Blue Hills
  - Bull Canyon / Day Canyon

### **Water Management Projects:**

- 1) Work with the BLM, and private landowners to locate and improve water sources across bighorn habitat.
- 2) Cooperatively modify or improve existing water developments and guzzlers for bighorns.
- 3) Continue to support DWR and BLM's collaborative effort to fund guzzler installation, repair and maintenance.
- 4) Install new water developments or guzzlers in bighorn habitat where water may be lacking.

## **RECREATION MANAGEMENT**

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### **Recreation Management Objectives:**

- 1) Provide hunting opportunities on the La Sal, Potash/South Cisco unit that are a quality experience.
- 2) Increase public awareness and expand viewing opportunities of bighorn sheep.

## Recreation Management Strategies:

Hunting: Hunting and permit allocation recommendations will be made in accordance with the Utah Bighorn Sheep Statewide Management Plan. Ewe hunts may be utilized as a tool for maintaining population objective.

### Harvest Statistics

Year	Permits	Mean Days Hunted	Harvest	Satisfaction
2009	3	13.7	100%	4.3
2010	3	7.7	100%	4.3
2011	3	7.3	100%	4.7
2012	3	11.3	100%	5.0
2013	3	1.3	100%	5.0
2014	2	14.0	100%	4.0
2015	2	14.0	100%	4.5
2016	2	3.5	100%	4.5
2017	2	10.0	100%	5.0
2018	3	14.7	100%	5.0

Non-Consumptive Uses: The DWR will look for opportunities to increase public awareness and expand viewing opportunities of bighorn sheep through viewing events and public outreach. Significant viewing opportunities are available in the Potash, Blue Hills and Dead Horse Point area of the unit, as well as in the National Parks.

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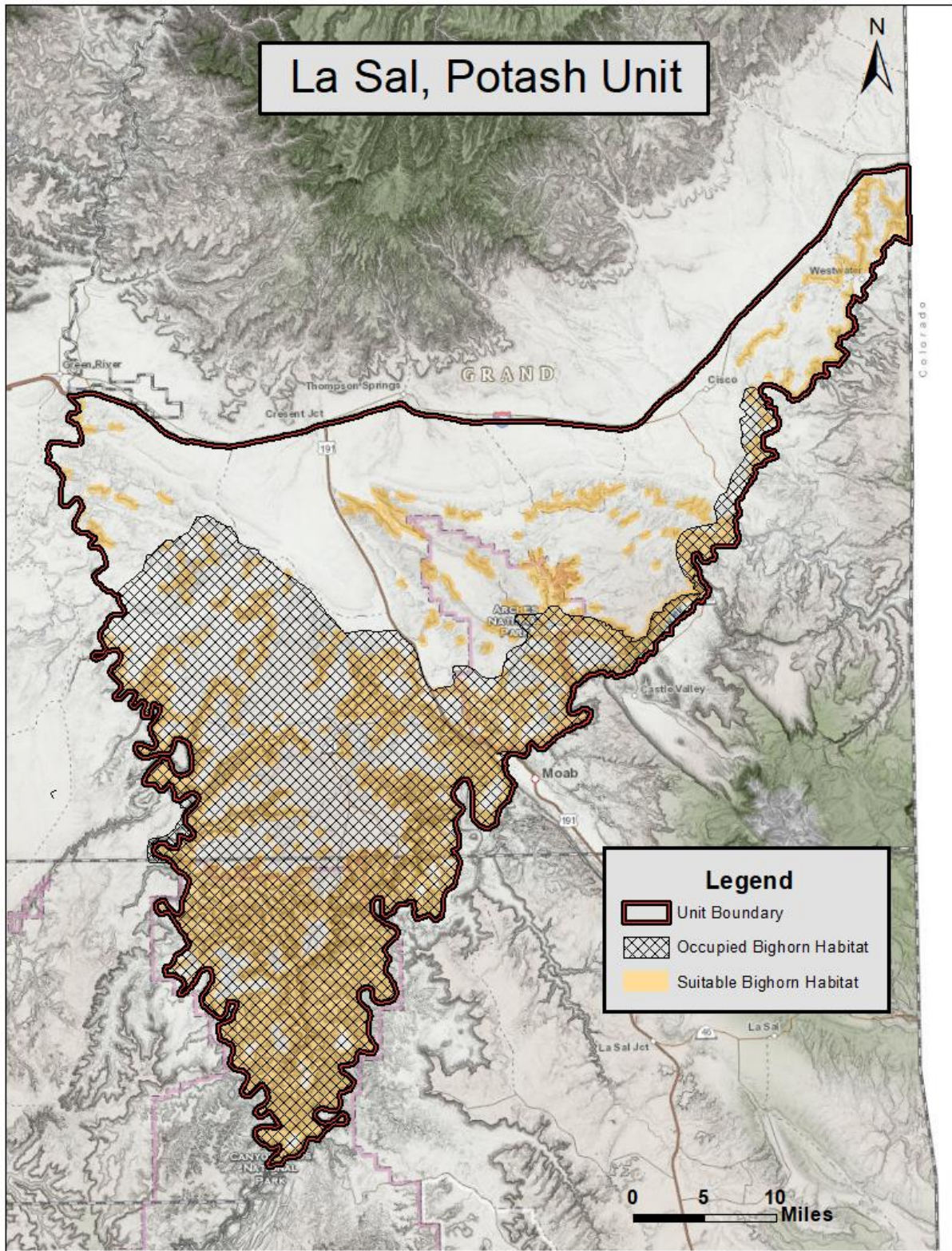


Figure 1. La Sal, Potash/South Cisco unit management boundary, modeled suitable bighorn sheep habitat, and currently occupied bighorn habitat.