BIGHORN SHEEP UNIT MANAGEMENT PLAN
OQUIRRH-STANSBURY, WEST (STANSBURY MTNS)
August 2019

BOUNDARY DESCRIPTION

Tooele County--Boundary begins at I-80 and SR-36; south on SR-36 to Pony Express Road; west on this road to the Skull Valley road; north on this road to I-80 at Rowley Junction; east on I-80 to SR-36. EXCLUDES ALL NATIVE AMERICAN TRUST LANDS WITHIN THIS BOUNDARY. Excludes all CWMUs. USGS 1:100,000 Maps: Provo, Rush Valley, Salt Lake City, Tooele. Boundary questions? Call the Springville office, (801) 491-5678.

LAND OWNERSHIP

Table 1. Land ownership and approximate area of modeled bighorn sheep habitat for the Oquirrh-Stansbury, West bighorn sheep management unit.

Ownership	MODELED BIGHORN HABITAT	
	Area (acres)	%
Bureau of Land Management	48,084	41.7%
National Forest	42,687	37.0%
Private	16,795	14.6%
Utah State Institutional Trust Lands	7,179	6.2%
Tribal	550	0.5%
Department of Defense	5	<0.1%
Totals	**115,300**	**100%**

HISTORY AND CURRENT STATUS

Bighorn sheep are native to the Great Basin of Utah and Nevada. Bighorns were extirpated from the Great Basin region of Utah in the early 1900s. It was proposed to transplant bighorn sheep in in historic ranges in an effort to reestablish bighorns to their native ranges (Buechner 1960, Dalton and Spillet 1971) and to promote wildlife diversity for hunting and viewing, in accordance with Utah Code 23-14-21. In an effort to reestablish bighorns in the Stansbury Mountains in the Great Basin region of Utah, 54 bighorn sheep were transplanted and released in January 2006 and with an additional 19 transplanted in February 2007 from Antelope Island. In the summer 2013 and again in 2014, there appeared to be an outbreak of pneumonia. Several adult rams and ewes were taken in for necropsy. It was undetermined what specific pathogens caused the mortalities. There were no lambs found in surveys conducted in 2013. The population crashed in 2014; at this time, approximately 90% of the collared bighorn sheep in this herd died as a result of respiratory disease. Due to the severity of the loss and the uncertainty of natural recovery, the Utah Division of Wildlife Resources (DWR) depopulated the bighorn herd by

2016. Testing of the euthanized bighorns revealed that a novel pathogen had been introduced into the herd that likely precipitated the respiratory disease event. The source of the pathogen is unknown, but in an effort to re-establish a healthy bighorn sheep herd, the DWR continues to support existing and new agreements with nearby private property owners to reduce the likelihood of bighorn sheep interacting with animals that are known to potentially harbor the pathogen of concern.

In January 2018, 18 bighorns were transplanted from Antelope Island, and in January/February 2018, 41 bighorns from the Newfoundland Mountains were released to reestablish the population. All these bighorns were released in the Muskrat Canyon area. In February 2019, 20 bighorns were transplanted from Washington State and released in the Big Creek Canyon area, west of Deseret Peak. An additional 25 bighorns from Oregon state are planned to be released in December 2019.

Currently there are an estimated 90 bighorn sheep on the Stansbury Mountains.

ISSUES AND CONCERNS

Potential Habitat: We modeled potential bighorn sheep habitat on the Stansbury Mountains 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 mountain range (Figure 1).

Livestock Competition: Interactions of bighorn sheep with domestic cattle are anticipated seasonally. Dietary overlap between cattle and bighorns has not surfaced as a concern with other bighorn populations in the state and is not expected for the Stansbury Mountain herd. Bighorn 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), which also minimizes competition for water. Bighorn sheep have the ability to utilize metabolic water formed by oxidative metabolism, preformed water found in food, and surface water, including dew. The amount of surface water required by bighorns is dependent on many factors, including body size, activity, forage moisture content, temperature, and humidity (Monson and Sumner 1980). In hot, dry periods, bighorns will water daily if possible but have remained independent of surface water for periods of 5-8 days (Blong and Pollard 1968, Turner and Boyd 1970, Turner 1973, Welles and Welles 1961, 1966).

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

domestic 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 or domestic species (i.e. sheep or goats), due to multiple processes including contact rates, social substructuring, pathogen virulence, and individual susceptibility (Besser et al. 2017, Manlove et al. 2014, 2016). Therefore, spatial separation from domestic sheep 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 from their ranges 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.

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 mule deer, domestic cattle, and elk. 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 on the Stansbury Mountains. 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. Predator reduction work already occurs on the Stansbury Mountains in conjunction with livestock losses, and therefore any additional work that may be done would be mutually beneficial to both livestock and other big game species.

POPULATION MANAGEMENT

Population Management Objectives:

1) Achieve and maintain a population objective of 500 total Rocky Mountain bighorn sheep.

Population Management Strategies:

Transplant Plan: Transplant(s) of wild bighorn sheep will be used to establish a sustainable herd. Transplant efforts were initiated in 2018, and again in 2019. Newly transplanted bighorns will be monitored for general movements and annual survival. Interested parties have been notified and given opportunity for discussion. If the population reaches or exceeds the population objective, management practices including transplants and ewe hunts may be incorporated to maintain the population at objective.

Monitoring: Monitoring of bighorn sheep will be conducted every 2-3 years by aerial survey to determine lamb recruitment, population status, ram-to-ewe ratios, range distribution, and ages and quantity of rams. This population will likely require 6 hours to conduct a complete trend count and survey adjacent areas to evaluate bighorn sheep dispersal. Additional ground classification may be conducted as conditions permit. GPS collars with mortality signals will be used to document cause-specific mortality and identify annual survival estimates. Space use will be monitored to assess potential overlap and competition with cattle. GPS collars may be added to the population as the

original collars complete their usable lifespan. If bighorn sheep are found wandering into areas where there is high risk of contact with domestic sheep or goats, the DWR may remove these animals in accordance with the Utah Bighorn Sheep Statewide Management Plan and UDWR GLN-33.

Predator Management: Predator management will be coordinated with USDA Wildlife Services prior to bighorn release. If predation becomes a limiting factor on bighorns, predator control work will be administered within the guidelines of the DWR Predator Management Policy.

DISEASE MANAGEMENT

Disease Management Objectives:

1) Maintain a healthy population of Rocky Mountain bighorn sheep on the Stansbury Mountain range.
2) Maintain spatial separation from domestic sheep and goats.

Disease Management Strategies:

Disease Monitoring: Source herds used for establishing this population will be tested for pneumonia related pathogens prior to release to ensure healthy source stock. 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.

Spatial Separation: Active domestic sheep allotments and hobby farms with domestic sheep may be evaluated for potential overlap with bighorn habitat. The DWR will delineate areas where there is high risk for domestic sheep to come in contact with bighorn sheep or where bighorn sheep may stray and come in contact with domestic sheep. These areas will be considered areas of concern. Lethal or non-lethal removal of bighorns may be warranted in these areas to prevent comingling. The need to test wandering bighorn sheep from this unit will be evaluated on a case by case basis.

HABITAT MANAGEMENT

Habitat Management Objectives:

1) Maintain or improve sufficient bighorn sheep habitat to achieve population objective.
2) Support and encourage regulated livestock grazing and maintain/enhance forage production through range improvement projects on the Stansbury Mountains.
3) Improve habitat and water availability where possible.

Habitat Management Strategies:

Monitoring: The DWR will assist land management agencies in monitoring bighorn sheep habitat to detect changes in habitat quantity and quality.

Habitat Improvement: Vegetative treatment projects to improve bighorn habitat lost to natural succession or human impacts will be sought out and initiated. The DWR will cooperate with the BLM and USFS to utilize seeding, controlled burns, and/or mechanical treatments for conifer removal in order to increase and improve bighorn habitat across the unit. Where Wilderness or Wilderness Study Area designations apply, coordination will take place to ensure that the land management agencies can operate within their policies for these areas. Habitat restoration projects will be planned and executed through the Utah Watershed Restoration Initiative program, allowing for public input to ensure that projects that are beneficial to both bighorn sheep and sympatric cattle are given priority.

Areas identified as priorities for habitat improvement are as follows:

- Muskrat Canyon
- Timpie Springs

Water Improvement: The DWR will work with the BLM, USFS, and private stakeholders to locate and cooperatively modify or improve existing water sources or install new water developments across bighorn habitat.

Areas identified as priorities for water improvement are as follows:

- Muskrat Canyon
- Timpie Springs

RECREATION MANAGEMENT

Recreation Management Objectives:

1) Provide hunting opportunities in accordance with the Utah Bighorn Sheep Statewide Management Plan.
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. The male portion of this population will be hunted aggressively in an attempt to reduce the incentive for males to foray into areas with an elevated risk of pathogen transmission. Ewe hunts may be utilized as a tool for maintaining population objective.

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.

PUBLIC INVOLVEMENT

Public Involvement Objective:

1) Provide opportunities for local stakeholders and cooperating agencies to be involved in the management process and to jointly resolve potential issues involving bighorn sheep.

Public Involvement Strategies:

Plan Revision: If the population objective or other key components of this plan are to be revised in the future, affected cooperating agencies, local stakeholders, and grazing permittees will be invited to take part in the decision-making process.

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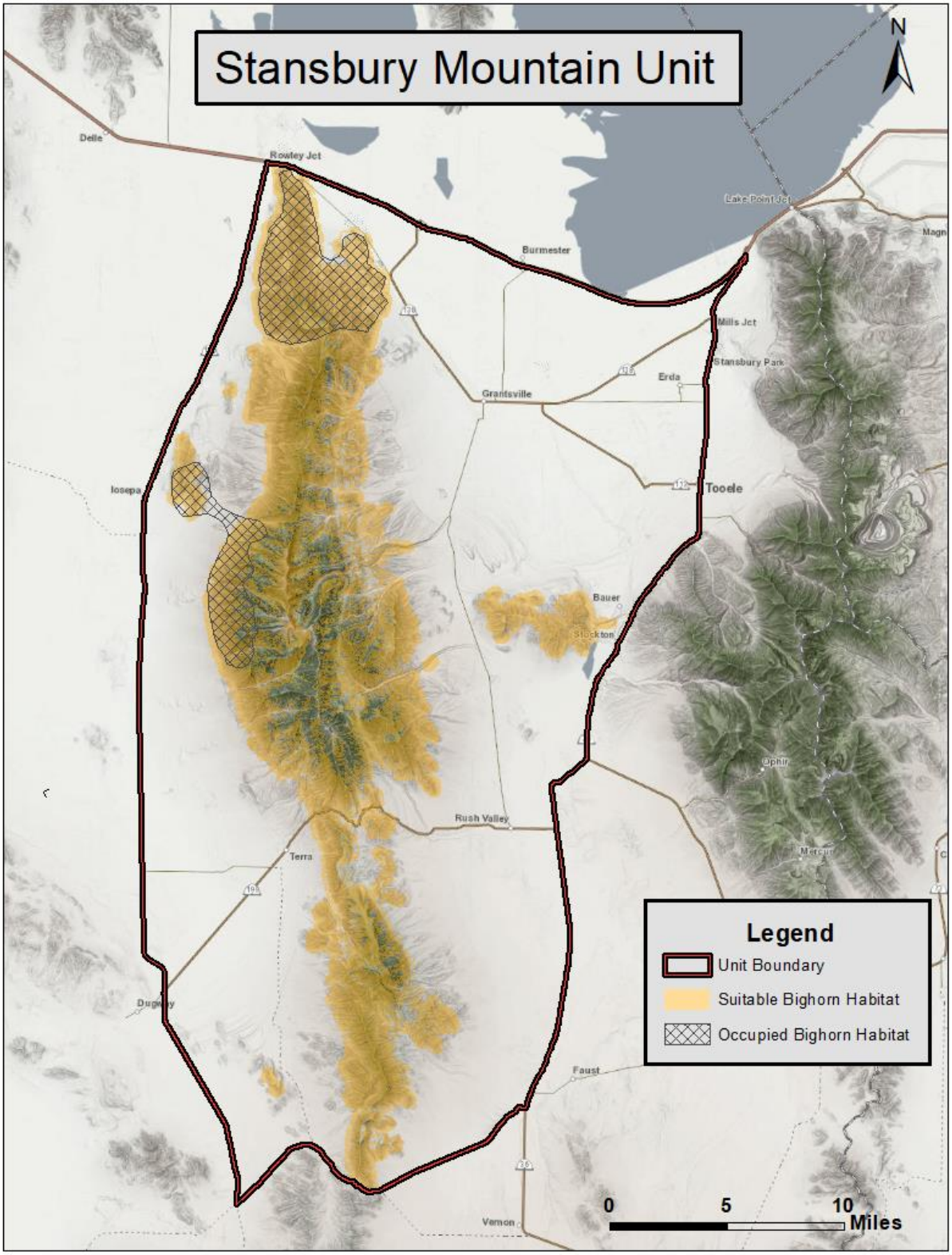

Figure 1. Oquirrh-Stansbury, West unit management boundary, modeled suitable bighorn sheep habitat, and currently occupied bighorn habitat.