

BIGHORN SHEEP UNIT MANAGEMENT PLAN
ANTELOPE ISLAND
August 2019

BOUNDARY DESCRIPTION

Davis County – Antelope Island State Park. Antelope Island State Park is approximately 26,880 acres with elevations ranging from 4,200 feet at the shore level to 6,596 feet at Frary Peak. It is the largest island in the Great Salt Lake ecosystem (Figure 1).

LAND OWNERSHIP

Table 1. Land ownership and approximate area of modeled bighorn sheep habitat for the Antelope Island bighorn sheep management unit.

Ownership	MODELED BIGHORN HABITAT	
	Area (acres)	%
Utah State Parks	9,555	94.1%
State Sovereign Land	492	4.9%
Bureau of Land Management	102	1.0%
Totals	10,149	100%

UNIT MANAGEMENT GOALS

In accordance with Utah Code 23-14-21, this population of bighorn sheep is to promote wildlife diversity on Antelope Island for recreational viewing, creating a source herd for transplants within Utah, and some hunting opportunity. This plan will guide future management decisions consistent with the Utah Statewide Bighorn Sheep Management Plan. Specific goals are to:

- 1) Manage for a healthy population of Rocky Mountain bighorn sheep capable of providing a broad range of recreational opportunities, including recreational viewing and hunting.
- 2) Balance bighorn sheep management with other recreational uses in accordance to management goals of Antelope Island State Park.
- 3) Maintain a population that is sustainable within the available habitat to use as a source population for transplants to areas within the State of Utah.

HISTORY AND CURRENT STATUS

Bighorn sheep occurred historically on Antelope Island but were extirpated by the early 1900's. Bighorns were reintroduced to Antelope Island beginning in 1997 and the herd on the island was

very successful, growing to approximately 200 animals at its largest and providing over 250 animals to begin and augment three populations in Utah from 2001-2018. The bighorn sheep herd on Antelope Island experienced a disease outbreak in November of 2018. Extensive efforts by Utah Division of Wildlife Resources, Utah Wild Sheep Foundation, and Utah Division of Parks and Recreation to remove the infected herd was successful. Currently, monitoring efforts are continuing to document any sheep that may remain on the island. Future management actions to re-introduce bighorn sheep back to the island is scheduled for January 2020 from source populations of Rocky Mountain bighorn sheep located in Montana and New Mexico. As of August 2019, less than 10 sheep are estimated to be remaining on the island.

ISSUES AND CONCERNS

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 harmful pathogens to bighorns from social contact with domestic sheep (*Ovis aries*), domestic goats (*Capra aegagrus hircus*), or wild sheep that are harboring these pathogens (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 animals harboring harmful pathogens is the most important factor in maintaining overall herd health of this population.

In November of 2018, pneumonia was detected in this bighorn sheep population. The source of infection is unknown; however, the low water levels of the Great Salt Lake provided the opportunity for animal movements, social interaction, and pathogen transmission on either the north or south ends of Antelope Island.

Antelope Island State Park is working to install a fence around the south end of the island. This will help prevent future animal movement off of the island and reduce the risk of pathogen transmission. Coordinated efforts with the most proximate private property owners north of Antelope Island have also taken place to reduce the risk of pathogen transmission.

Population management: The goal among management is to regulate population numbers and composition ratios at a healthy level. One hypothesis of why sheep left the island was the high ram ratios. Currently there are two ram permits issued for Antelope Island for harvest. Allowing only two permits per year can be difficult to maintain a lower ratio of rams on the island to prevent wandering. From collar data, it has been observed that when rams are relocated, they tend to go exploring outside the area increasing the risk of exposure and infecting the new herd. Thus making transplants of rams unfeasible as an option for maintaining a healthy herd. Other options may include culling the herd or relocating male lambs as needed.

POPULATION MANAGEMENT

Population Management Objectives:

- 1) Achieve and maintain a population objective of 125 total Rocky Mountain bighorn sheep.
- 2) Strive to maintain a three-year average of under 50 rams per 100 ewes to reduce the risk of wandering rams.

Population Management Strategies:

Transplant Plan: Transplant(s) of wild bighorn sheep will be used to reestablish a sustainable herd on Antelope Island. The goal for the initial transplant will be a minimum of 40 Rocky Mountain bighorns. Bighorns will have a pretesting of diseases before relocation to Utah. If all goes well, scheduled release will be January of 2020 on the island.

Monitoring: Monitoring of bighorn sheep will be conducted every 2-3 years by aerial survey to determine population status, ram-to-ewe ratios, and age plus quantity of rams. This population will likely require 4 hours to conduct and complete trend counts. Additional annual ground classification will be conducted to determine lamb recruitment. Initially, GPS collars will be deployed to monitor the health of the new herd and movements on the island.

Population Management: Per the 2016 Memo of Understanding between Utah Division of Parks & Recreation and Utah Division of Wildlife Resources, there will be an annual meeting every July to, “discuss big game management needs on Antelope Island and determine (if) ...permit numbers and season dates set forth in this Agreement require modification. The Parties will discuss big game population numbers, distribution, population objectives, habitat conditions, hunting success, public safety, wildlife projects to be funded by marketed revenue, and any other matters pertaining to maintaining healthy big game herds and habitat conditions on Antelope Island.”

This is a unique herd that lives in isolation and is managed as a multiple recreational state park throughout the year. Providing multiple recreational opportunities is a primary management goal for the state park thus hunting is currently limited to two permits a year at specific times. Management practices should be taken if the population exceeds objective and/or ram numbers are too high to reduce the risk of disease. Actions will be performed under the direction of UDWR in coordination with Antelope Island State Park management & staff.

Ideally it would be beneficial for population management if sheep permits could be flexible allowing more than 2 ram permits per year depending upon management needs. This would reduce costs of population management actions and increase public opportunity to harvest a once in a lifetime sheep permit.

DISEASE MANAGEMENT

Disease Management Objectives:

- 1) Maintain a healthy population of Rocky Mountain bighorn sheep
- 2) Increase education to park visitors of domestic animal restrictions
- 3) Install fence around south end of the island to help prevent bighorn sheep from contacting domestic livestock

Disease Management Strategies:

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

As a nursery herd for other locations throughout the state, sheep that are captured will be screened for pathogens prior to release.

As part of the population monitoring, visual assessment of sheep will be documented as ground and aerial surveys are performed. If anything appears wrong or in question, actions will move forward to test the population to determine if any disease exists within the herd. The Division of Wildlife Resources may perform periodic live captures to assess herd health.

Education: Work with Antelope Island management to insure information is available to the public about domestic animal restrictions and the risk posed to the bighorn sheep population. This topic will be included in the annual meeting between the two Divisions.

Spatial Separation: Antelope Island State Park will be installing a permanent high fence around the south end of the island to help reduce the risk of contact with domestic livestock. Wild sheep have the propensity to wander when population levels are too high or ram to ewe ratios are unhealthy. The fence will help reduce or eliminate the risk of contact between wild sheep and domestic livestock.

HABITAT MANAGEMENT

Habitat Management Objectives:

- 1) Maintain or improve bighorn sheep habitat to meet population management objectives.

Habitat Management Strategies:

Habitat Management: Antelope Island State Park has a wildlife biologist on staff that monitors and oversees land management practices on the island for wildlife. The DWR will assist park staff in monitoring bighorn habitat to detect changes in habitat quantity and quality. Per the MOU, this will be a topic of discussion on how revenue funds generated by permit sales are used to improve habitat conditions on the island for bighorn sheep.

RECREATION MANAGEMENT

Recreation Management Objectives:

- 1) Provide quality hunting opportunities that help meet the population management objectives.
- 2) Increase public awareness of bighorn sheep and viewing opportunities.

Recreation Management Strategies:

Hunting: Hunting and permit allocation recommendations are made in accordance with the Utah Bighorn Sheep Statewide Management Plan and State Parks rules and regulations. A bighorn hunt will be re-instated when there is a healthy surplus of harvestable rams in accordance to population management objectives.

Non-Consumptive Uses: The DWR will work with park staff to increase public awareness and education of bighorn sheep through public outreach.

LITERATURE CITED

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Figure 1. Modeled suitable bighorn sheep habitat on the Antelope Island bighorn sheep unit.