MOUNTAIN GOAT UNIT MANAGEMENT PLAN
La Sal Mountains
Wildlife Management Unit #13
August 2019

BOUNDARY DESCRIPTION

Grand and San Juan counties: Boundary begins at the junction of I-70 and the Green River; south on the Green River to the Colorado River; north on the Colorado River to Kane Springs Creek; southeast along this creek to Hatch Wash; southeast along this wash to US-191; south on US-191 to the Big Indian Road; east on this road to the Lisbon Valley Road; east on this road to the Island Mesa Road; east on this road to the Colorado State Line; north on this line to I-70; west on I-70 to the Green River.

LAND OWNERSHIP

Land ownership and approximate area of modeled mountain goat habitat ≥8,000 ft elevation for the La Sal Mountains unit.

OWNERSHIP	AREA (Acres)	PERCENT OWNERSHIP
U.S. Forest Service	45,620	78%
Private	7,621	13%
SITLA	5140	8.8%
BLM	6	<1%
Total	58,387	100%

HISTORY AND CURRENT STATUS

A total of thirty-five mountain goats were transplanted onto the La Sal Mountains, twenty animals in 2013 and fifteen animals in 2014. These mountain goats were captured on the Tushar Mountains near Beaver, Utah and released on state land in the Beaver Basin area of the La Sal Mountains. Telemetry collars (thirteen GPS, twenty-one VHF) were deployed on thirty-four of the transplanted mountain goats in order to monitor initial survival and movement.

The mountain goat population on the La Sal Mountains has been increasing steadily since the initial transplants. The most recent aerial survey on the La Sal Mountains was conducted in August 2019. A total of sixty-seven adult mountain goats were observed with seventeen kids, producing a 2019 population estimate of 105 animals, based off of total counted mountain goats and an 80% sightability factor. The majority of mountain

goats on the La Sal Mountains reside on the northern peaks of the range. See Table 1 for a history of population trend count and classification surveys on the La Sal Mountains.

Hunting is the primary population management strategy on the La Sal Mountains. Hunting was initiated on the La Sal Mountains in 2018 with two hunter's choice permits allotted. Harvest success for 2018 was 100%. A total of three hunter's choice permits are allotted for the 2019 hunting season. Mountain goat permits in Utah are offered as a once-in-a-lifetime hunting opportunity.

ISSUES AND CONCERNS

Research Natural Area (RNA): The Mt. Peale RNA is located on the middle group of peaks and includes the highest elevations of the La Sal Mountains. RNAs are areas designated by USFS to protect ecosystem structure and function, and preserve genetic diversity in the alpine/subalpine communities. Mountain goats occur in several RNAs throughout Utah (Bullion Canyon - Tushar Mountains, Pollen Lake and Uinta Shale Creek - Unita Mountains, Mt Peale – La Sal Mountains, and W. F. Mueggler Butler Fork - Mount Olympus).

Sensitive / Endemic Plants: There are sensitive plant species that occur within this unit, most notably the La Sal daisy (*Erigeron mancus*), that occur within modeled mountain goat habitat on the La Sal Mountains. Mountain goats are considered generalist herbivores and will likely consume sensitive plant species if they are available, but will not necessarily target such plants (Laundre 1994). Vegetative monitoring has and will continue to occur and will be coordinated between UDWR and USFS to evaluate effects to sensitive and endemic plant species utilized by mountain goats, and to determine appropriate management actions to address adverse impacts, if documented. While early in the process of establishing this mountain goat population, no significant negative impacts to sensitive plant species have been observed.

Range Conflicts / Interspecific Competition: Dietary overlap between livestock and mountain goats does not appear to be an adverse factor on the La Sal Mountains. Similarly, mule deer and elk using alpine habitat interact with goats; but as with livestock, adverse impacts are not observed due to habitat quality and quantity, as well as the spatial and temporal differences in habitat use. Where seasonal altitudinal migration occurs, the areas frequented by mountain goats are unavailable to livestock, deer, and elk due to the ruggedness of the terrain utilized by mountain goats. Observations of goats currently on the La Sal Mountains are in areas too steep for most other ungulates including livestock to use for long periods of time.

Pikas also inhabit areas within mountain goat habitat on the La Sal Mountains. Pikas and mountain goats share ranges over much of the western US and Canada, and mountain goats are not known to adversely impact pika populations. Pika surveys conducted on the La Sal Mountains in 2017 found that pikas were well distributed and

occupancy rates were at an all-time high. For these reasons, we do not believe that pikas and mountain goats have significant negative effects on each other.

Disease: Mountain goats have been established in Utah since 1967 and have not experienced any known disease related die-offs during that time. No disease events have been observed among the mountain goats on the La Sal Mountains.

Resource Use: There is some concern about what impacts, if any, mountain goats might have on alpine and subalpine habitats that were historically used by bighorn and domestic sheep, but have not been actively grazed since the 1930's - 1950's. Mountain goats were not found on the La Sal Mountains post European settlement; however, bighorn sheep were native to this area. In 1949, Charles Hunt, who worked for the USGS, observed several bighorns near the top of Mount Peale (Buechner 1960). Other sightings of bighorns were reported by Forest Service personnel on this range throughout the 1950's (Buechner 1960). Bighorns are now extirpated from the La Sal Mountains, and the UDWR has no plans to restore native bighorn sheep to their historical range on this unit because of potential disease conflicts with domestic sheep.

Laundre (1994) compiled thirty-four separate studies on the resource use (food habits and habitat needs) of bighorn sheep and mountain goats. He found high dietary overlap in forage classes during summer and winter seasons (98% and 99% respectively). The percentage of grass, forb, and browse consumption throughout the year was similar between mountain goats and bighorn sheep. Furthermore, Laundre (1994) found that both species used steep slopes as escape terrain; although, mountain goats would wander further from escape terrain and occupy steeper slopes. Overall, he classified both species as generalist herbivores and reported high resource overlap between mountain goats and bighorn sheep.

The documented presence of bighorn sheep in alpine habitats on the La Sals demonstrates that native forbs were browsed, and certainly evolved with grazing pressure. How plant communities in these high elevation areas have adjusted to a lack of browsing by a constant, high elevation ungulate is unknown. Vegetative monitoring data in these habitats is not available for the pre-mountain goat release timeframe. However, given the similarities in diet and habitat use between mountain goats and bighorns, mountain goats would likely have a similar impact on the landscape as bighorn sheep and serve as an acceptable species to fill the niche left void by the extirpation of bighorn sheep.

Habitat Monitoring: Since 2013, the UDWR has been involved with monitoring of sensitive plant species in mountain goat habitat on the La Sal Mountains. To this point, mountain goats have not had a significant effect on the abundance of sensitive plant species. In addition to this recent monitoring effort, the Ashley National Forest, has monitored hundreds of sites in alpine habitat on the Uinta Mountain Range, which has had mountain goats since 1989, and is the largest population of mountain goats in Utah. In 2005, Sherel Goodrich, who was an ecologist for the USFS, sent the UDWR a letter stating that they found no apparent trend in habitat associated with mountain goats. In

2013, the UDWR received a letter from the same Forest stating "At this time, monitoring does not show downward trend in ground cover, plant species composition, or shrub canopy cover in areas where mountain goats are present" (Appendix 1). Based on the findings of these two efforts, we are confident that a properly managed mountain goat population will not have a significant negative effect on sensitive plant species on the La Sal Mountains. Habitat monitoring efforts will continue as the mountain goat population continues to expand.

Recreation: Seasonal use of mountain goat habitat by recreational hiking, biking, and skiing activities can be high on the La Sal Mountains. Generally, as with most large ungulates, mountain goats will avoid areas with high levels of human activity and seek out areas of solitude in difficult terrain. There is always the possibility of mountain goat/human interactions, but proactive educational information through various media resources on maintaining safe distances, discouraging goat feeding incidents, etc. can prevent negative interactions from occurring. There have been no known restrictions placed on national forest recreational activities in Utah due to the presence of mountain goats.

There is great public interest in mountain goat viewing opportunities that has been demonstrated on other mountain goat units within Utah. On the Tushar Mountain range an average of approximately 100 people annually attend the UDWR sponsored “goat-viewing day” in August. The increase of tourism for mountain goat viewing on the La Sal Mountains is very likely given the proximity of national and state parks, monuments, and other outdoor activities in the Moab area.

Private Lands Depredation: A small percentage of modeled mountain goat habitat includes private lands on the La Sal Mountains. Mountain goats on other ranges in Utah are typically found in areas too steep and rugged for livestock to access. If these high elevation private lands are of usable attributes for cattle grazing, it appears that mountain goats avoid using these areas while cattle are present on the range.

Predation: Very few predation events have been documented, but cougars are likely the main predator of mountain goats on the La Sal Mountains. Thus far, this mountain goat population does not appear to be adversely affected by cougar or other predator species. If predation is identified as a limiting factor, predator control work may be administered within the guidelines of the UDWR predator management policy.

Poaching: Poaching can have a detrimental effect on recreational viewing and hunting opportunities for mountain goats. UDWR will continue to be vigilant of suspect activities regarding poaching on the La Sal Mountains and act accordingly.

Native Status: The native status of mountain goats is discussed in detail in the current statewide management plan. Appendix A of the plan suggests that historical goat distribution may likely have included much of Utah during dramatic glacial events. The following is an excerpt from this plan: “UDWR’s position is that mountain goat habitat exists in Utah and that mountain goats are a valuable part of our wildlife resource

diversity and are a legitimate part of our modern Utah faunal landscape. As with any other ungulate species in our now pervasively human-altered ecosystem, they require pro-active management."

POPULATION MANAGEMENT

Manage for a population of healthy animals capable of providing a broad range of recreational opportunities, including hunting and viewing. Maintain the population at a sustainable level that is within the long-term capability of the available habitat to support. Balance impacts of the mountain goat herd on other land uses and public interests, including private property rights, recreational activities and local economies.

Population Management Objectives:

1) Target Summer Herd Size: Achieve a target population objective of up to 200 total mountain goats (summer helicopter count) on the unit.

2) Herd Composition: Maintain a diverse age class of billies in the population each year.

Population Management Strategies:

a. Monitoring: A helicopter survey of the entire La Sal Mountains will be flown every 2-3 years to assess recruitment, population status, billy/nanny ratios, and distribution of mountain goats on the unit. A fixed wing and/or ground classification sampling of mountain goats will be conducted annually as resources allow to estimate kid production and billy/nanny ratios. Additionally, GPS collars may be deployed on resident mountain goats in order to measure survival, trend and movements.

b. Harvest: Utilize hunting as the primary method to meet management objectives. Recommend mountain goat permits (including female only permits) to make progress towards population objective of 200 mountain goats. Recommend hunter's choice mountain goat permits to harvest 5%-25% of the counted adult population. Female-only permits may be used to address density or abundance limitations.

c. Population Density: Manage on a long-term basis to not exceed the densities found in wild populations of Southeastern Alaska (6.0 goats/sq. mile). Suitable mountain goat habitat on the La Sal Mountains was modeled using a simplified GIS analysis approach, based on a ten meter Digital Elevation Model (DEM) as described by Gross et al. (2002). Mountain goats are highly associated with escape terrain, which has been defined as slopes from >25° (Varley 1994) to $\geq$ 33° (Gross et al. 2002). Potential mountain goat escape terrain on the La Sal Mountains was modeled at slopes $\geq$ 30°. Gross et al. (2002) found that applying a 258 m (846 ft) buffer to escape terrain correctly classified 87% of active mountain goat habitat. The 258 m buffer was applied to all slopes $\geq$ 30º on the La Sal Mountains and suitable habitat was calculated at the $\geq$ 8,000 ft elevation resulting in 91 mi² (58,387 acres) of available

habitat. This elevation was chosen based on GPS locations of mountain goats using the La Sal Mountains (Figure 1) as well as habitat that we expect them to use as the population approaches the population objective. The mountain goat population objective for the La Sal Mountains is estimated based on a density of 2.2 goats/sq. mile and 91 square miles of habitat above 8,000 feet elevation (Table 2).

HABITAT MANAGEMENT

Habitat Management Objectives:

1) Habitat: Maintain or improve mountain goat habitat to enhance population success and promote the overall sustainability of mountain goats on the La Sal Mountains.

2) Habitat Use/Mountain Goat Distribution: Identify seasonal use areas established by mountain goats and evaluate possible impacts to vegetation.

3) Recreation: Monitor mountain goat activities in high use recreation areas to determine any potential and/or actual conflicts. Increase public awareness of mountain goat presence and behaviors to promote safe viewing opportunities and avoid potential conflicts.

4) Livestock Grazing/Private Lands: Support regulated livestock grazing in mountain goat habitat within approved federal and state grazing allotments. Identify and address any mountain goat/livestock conflicts with appropriate management actions. Work with private landowners to alleviate depredation concerns and/or issues. Investigate and participate in the development and execution of proposed habitat enhancement projects and necessary monitoring efforts with land management agencies and other groups.

Habitat Management Strategies:

a. Monitoring:
Coordinate with land management agencies to monitor habitat used by mountain goats. Use Division range trend data to identify potential vegetative changes and if needed, develop additional range trend transect that may be used to monitor habitat specifically used by goats. Explore more intensive habitat monitoring efforts if needed to better understand the relationship between mountain goats and the habitat they use.

b. Range Management: Should adverse impacts to vegetation resources, sensitive plant species, or special management areas occur, UDWR will coordinate with the appropriate land management agency to determine the necessary management action to alleviate the impact. UDWR will consider existing range uses and design management actions to avoid affecting those uses, when possible. Various

appropriate harvest strategies may be recommended to the RAC and Wildlife Board to reduce specific mountain goat numbers and/or change mountain goat distribution on the mountain range.

Appropriate timber management practices, controlled burns, maintaining or developing remote water sources, and other range enhancement projects that benefit mountain goat habitat are encouraged. Additionally, UDWR will respond to depredation complaints on private land according to state law and policies on big game depredation.

c. Recreation Management: The UDWR will monitor mountain goat movements and dispersal through telemetry and field observations to evaluate recreation/goat interactions. Additionally, UDWR will investigate human/goat issues and seek to resolve conflicts when possible with appropriate management actions. The UDWR and USFS will coordinate management strategies to minimize conflicts, if possible, when considering new or expanded recreational uses and activities.

   Having mountain goats on the La Sal Mountains provides opportunities to expand mountain goat viewing events for the public. Coordination between UDWR and USFS will take place to provide informational signs or kiosks near areas frequented by goats to promote viewing opportunities and educate public land users about mountain goat biology and behavior.

LITERATURE CITED

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Gross, J. E., M. C. Kneeland, D. F. Reed, and R. M. Reich. 2002. GIS-Based habitat models for mountain goats. Journal of Mammalogy 83:218-228.

Laundre, J. W. 1994. Resource overlap between mountain goats and bighorn sheep. Great Basin Naturalist 54(2):114-121.

Varley, N. C. 1994. Summer-fall habitat use and fall diets of mountain goats and bighorn sheep in the Absaroka Range, Montana. Biennial Symposium of the Northern Wild Sheep and Goat Council 9:131-138.

Table 1. Population trend count and classification data of mountain goats on the La Sal Mountains, 2013-2018.

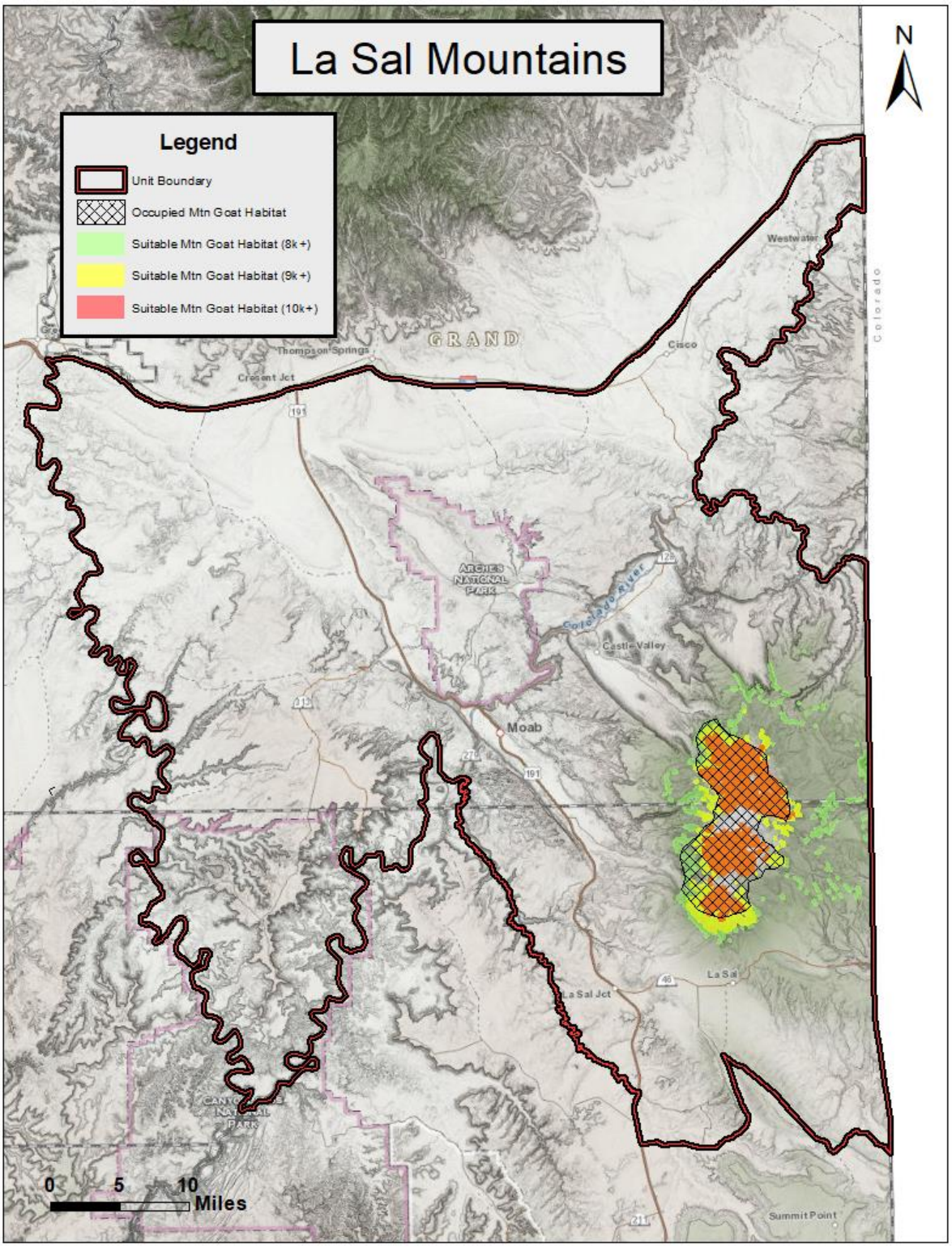
Year	Total Counted	Total Adults	Total Kids	Kid Ratio
2013*	15	14	1	0.07
2014**	33	31	2	0.06
2015	36	25	11	0.44
2016	43	35	8	0.23
2017^	56	46	10	0.22
2018	71	56	15	0.27

*Initial transplant; **Second transplant; ^aerial survey.

Table 2. Summary of mountain goat population densities for each unit in Utah based on modeled habitat ≥8000 ft elevation.

Unit	**Population Objective**	**Square Miles of Mountain Goat Habitat**	**Mountain Goats per Square Mile**
Cache/Ogden/East Canyon	700	150	4.67
Uinta Mountains	1500	990	1.52
Wasatch & Central Mtns	875	412	2.12
Beaver	175	261	0.67
La Sal Mountains	200	91	2.20
Mount Dutton	125	157	0.79

Figure 1. Currently occupied and modeled suitable mountain goat habitat on the La Sal unit.



Appendix 1.

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Randall:

Since 2005, the number of long-term studies has increased in the alpine areas across the Uinta Mountains, adding to the numerous studies that existed prior to that time. These studies are found in every major drainage on the south slope of the Uintas from Marsh Peak to Grandaddy Lake Basin and many if not most are located within existing or potential mountain goat habitat. Repeat photography is the most common sampling method used to determine trend, but other sampling methods used include ocular macroplot, line intercept, and point ground cover. Data from these studies continue to show ground cover meeting or surpassing desired condition with trends typically stable. Low willows in alpine settings continue to show no change or increase in canopy cover, which indicates desired condition. Plant species composition in a variety of vegetation communities remains unchanged. At this time, monitoring does not show downward trend in ground cover, plant species composition, or shrub canopy cover in areas where mountain goats are present.

The Ashley National Forest believes that there are adequate number and distribution of studies in alpine to track future mountain goat impacts, but more monitoring sites are expected to be established in the years to come. Current studies are located in areas where mountain goats are currently not found or rarely frequent, in areas where goats are commonly found and populations continue to show increase, and in areas that are near or adjacent to existing goat populations, but receive limited use. We believe that we are prepared to track future and possible expanding impacts of mountain goats. As stated above there appears to be no apparent trend associated with mountain goats in the Uinta Mountains as of this date.

/S/ Allen Huber

Allen Huber June 2013
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