DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 20
Southwest Desert
2020

BOUNDARY DESCRIPTION

Beaver, Iron, and Millard counties - Boundary begins at US-50&6 and the Utah-Nevada state line; east on US-50&6 to SR-257; south on SR-257 to SR-21; south on SR-21 to SR-130; south on SR-130 to I-15; south on I-15 to SR-56; west on SR-56 to the Lund Highway; northwest on the Lund Highway to the Union Pacific railroad tracks at Lund; southwest on the Union Pacific railroad tracks to the Utah-Nevada state line; north on this state line to US-50&6.

LAND OWNERSHIP

RANGE AREA AND APPROXIMATE OWNERSHIP

	Year-long range		Summer Range		Winter Range	
Ownership	**Area (acres)**	**%**	**Area (acres)**	**%**	**Area (acres)**	**%**
Forest Service	0	0%	0	0%	0	0%
Bureau of Land Management	132752	95%	711554	84%	167425	85%
Utah State Institutional Trust Lands	6650	5%	92989	11%	16492	8%
Native American Trust Lands	0	0%	0	0%	0	0%
Private	645	<1%	36326	4%	9788	5%
Department of Defense	0	0%	0	0%	0	0%
USFWS Refuge	0	0%	0	0%	0	0%
National Parks	0	0%	0	0%	0	0%
Utah State Parks	0	0%	0	0%	0	0%
Utah Division of Wildlife Resources	0	1%	6775	1%	3487	2%
TOTAL	140047	100%	847644	100%	197192	100%

UNIT MANAGEMENT GOALS

- Manage for a population of healthy animals capable of providing a broad range of recreational opportunities, including hunting and viewing.
- Balance deer herd impacts on human needs, such as private property rights, agricultural crops and local economies.
- Maintain the population at a level that is within the long-term capability of the available habitat to support.

POPULATION MANAGEMENT OBJECTIVES

Target Winter Herd Size - Manage for a 5-year target population of 3,500 wintering deer (modeled number) during the five-year planning period unless range conditions become unsuitable, as evaluated by DWR. Range trend data coupled with annual browse monitoring will be used to assess habitat condition. If habitat damage by deer is occurring due to inadequate habitat, measures will be taken to reduce the population to sustainable levels. Change to the population objective is based on this population's performance, improved range

conditions, the amount of available habitat and the lack of range damage from deer. The population objective is being adjusted to a more realistic and obtainable goal for the next five years.

Unit 20

1994-2001 Objective: 4,000
2002-2014 Objective: 3,200
2015-2020 Objective: 4,000
2021-2025 Objective: 3,500
Change from last plan -500

- Herd Composition - This is a General Season unit and will be managed to maintain a three-year average postseason buck to doe ratio of 18-20 according to the statewide plan. This unit typically exceeds the 20 bucks per 100 doe threshold post season. It is a difficult unit to obtain a large enough sample size for this analysis. Caution will be use when adjusting permits and trends will be considered.

- Harvest - General Buck Deer hunt regulations, using archery, rifle, and muzzleloader hunts apply.

POPULATION MANAGEMENT STRATEGIES

Monitoring

- Population Size - Utilizing harvest data, postseason and mortality estimates, a computer model has been developed to estimate winter population size. The 2019 post-season model estimates the population at 3,000 deer. The 10-year average population estimate is 2440.

- Buck Age Structure - Monitor age class structure of the buck population through the use of checking stations, postseason classification, uniform harvest surveys and field bag checks.

- Harvest - The primary means of monitoring harvest will be through the statewide uniform harvest survey and the use of checking stations. Achieve the target population size by use of antlerless harvest using a variety of harvest methods and seasons. Recognize that buck harvest will be above or below what is expected due to climatic and productivity variables. Buck harvest strategies will be developed through the RAC and Wildlife Board process to achieve management objectives for buck:doe ratios

Year	Buck harvest	Post-Season F/100 doe	Post-Season B/100 doe	Post-Season Population	Objective	% of Objective
2017	232	48.5	23.5	2,900	4,000	72.5%
2018	280	32.1	20.6	3,000	4,000	75%
2019	155	50.0	20.4	3,000	4,000	75%
3 Year Avg	222	43.5	21.5			

Limiting Factors (May prevent achieving management objectives)

- Crop Depredation - Take all steps necessary to minimize depredation as prescribed by state law and DWR policy.

- Habitat - Public land winter range availability, landowner acceptance and forage conditions will determine herd size. Excessive habitat utilization will be addressed with hunting. The Southwest Desert is a summer range limited unit. Winter range is abundant.

- Predation - Follow DWR predator management policy:
  - This unit is currently under a Predator Management Plan. Coyotes are being targeted by Wildlife Services. Cougars are being hunted beginning the fall of 2020 under an unlimited harvest strategy.

- Highway Mortality - Cooperate with the Utah Dept. Of Transportation in construction of highway fences,

passage structures and warning signs etc. Highway mortality is not a limiting factor on this unit.

- Illegal Harvest - If illegal harvest is identified as a significant source of mortality, an attempt to develop specific preventive measures within the context of an action plan will be developed in cooperation with the Law Enforcement Section.

HABITAT MANAGEMENT OBJECTIVES

- Maintain or enhance forage production through direct range improvements on winter and summer deer range throughout the unit to achieve population management objectives.

- Maintain critical fawning habitat in good condition. Fawn recruitment is a major concern on this unit and may be the single greatest factor limiting the population.

- Work with federal and state partners in fire rehabilitation and prevention on crucial deer habitat using habitat improvements and reseeding efforts.

HABITAT MANAGEMENT STRATEGIES

Monitoring

- Determine trends in habitat condition through permanent range trend studies, spring range assessments, pellet transects, and field inspections. Land management agencies will similarly conduct range monitoring to determine vegetative trends, utilization and possible forage conflicts.

- Range trend studies will be conducted by DWR to evaluate deer habitat health, trend, and carrying capacity using the deer winter range Desirable Component Index (DCI) and other vegetation data. The DCI was created as an indicator of the general health of deer winter ranges. The index incorporates shrub cover, density and age composition as well as other key vegetation variables. Changes in DCI suggest changes in winter range capacity. The relationship between DCI and the changes in deer carrying capacity is difficult to quantify and is not known.

- Continue existing monitoring studies, and coordinate with BLM on additional riparian monitoring.

Habitat Protection and Maintenance

- Work with public land management agencies to develop specific vegetative objectives to maintain the quality of important deer use areas.

- Continue to coordinate with land management agencies in planning and evaluating resource uses and developments that could impact habitat quality including but not limited to oil and gas development, wind energy, solar energy, and transmission line construction.

- Coordinate with federal and state partners in designing projects that will improve fire resiliency and protect areas of crucial habitat.

- Work toward long-term habitat protection and preservation through the use of agreements with land management agencies and local governments, and through the use of conservation easements, etc. on private lands. Continue working toward blocking up UDWR properties through land exchange.

- Manage vehicle access on Division of Wildlife Resources land to limit human disturbance during times of high stress, such as winter and fawning.

- Manage riparian areas in critical fawning habitat to furnish water, cover and succulent forage from mid- to late summer.

- Work with BLM to support wild horse removals where there are conflicts with Mule Deer.

Habitat Improvement

- Cooperate with federal land management agencies and private landowners in carrying out habitat improvement projects. Protect deer winter ranges from wildfire by reseeding burned areas, creating fuel breaks and vegetated green strips and reseed areas dominated by Cheatgrass with desirable perennial vegetation.

- Reduce expansion of Pinion-Juniper woodlands into sagebrush habitats and improve habitats dominated by Pinion-Juniper woodlands by completing habitat restoration projects like lop & scatter, bullhog, and chaining.

- Seek opportunities to increase browse in burned areas of critical winter range.

- Cooperate with federal land management agencies and local governments in developing and administering access management plans for the purposes of habitat protection and escape or security areas.

- Seek out opportunities to improve the limited summer range across the unit. Consider summer range habitat improvement projects that remove encroaching trees, improves succulent vegetation and wet meadow habitat, increases aspen recruitment, enhances and/or protects riparian areas, use prescribed fire to promote early succession habitats where appropriate.

- Future habitat work should be concentrated on the following areas.

    - Hamlin Valley and the surrounding areas covered by the BLM's 2014 Habitat Improvement Environmental Assessment

    - Retreatment of older treatments (>10years) to protect investment through maintenance.

    - Habitat improvements in the Indian Peak, Wah Wah, and Mountain Home crucial summer habitats.

    - Look for opportunities to implement habitat improvements for deer in the northern half of the unit.

RANGE TREND SUMMARY

Management Unit Description

Geography

The Southwest Desert management unit encompasses the Indian Peaks and Sevier Desert area; significant amounts of this unit serve as big game range. The permanent range trend studies are primarily located on the Indian Peak Range and the Wah Wah Mountains. Many of these sites are located on the summer range as this unit is summer-limited. Towns located within this unit include Modena, Garrison, Beryl, Milford and Minersville as well as parts of Cedar City, Hinckley, and Enoch.

The topographic features of this unit include the Indian Peak, Needle, House, Confusion, and Mountain Home Ranges as well as the Wah Wah Mountains. The highest peak in the unit is Indian Peak at 9,765 feet.

Climate Data

The 30-year (1981-2010) annual precipitation PRISM model shows precipitation ranges on the unit from 6 inches along portions of upper Wah Wah Valley and Upper Pine Valley to 23 inches on the top of Indian Peak and Twin Peaks. All of the Range Trend and WRI monitoring studies on the unit occur between 13-22 inches of precipitation.

Vegetation trends are dependent upon annual and seasonal precipitation patterns. Palmer Drought Severity Index (PDSI) data for the unit was compiled from the National Oceanic and Atmospheric Administration (NOAA) Physical Sciences Division (PSD) as part of the Western and South Central Mountains divisions (Divisions 1 and 4).

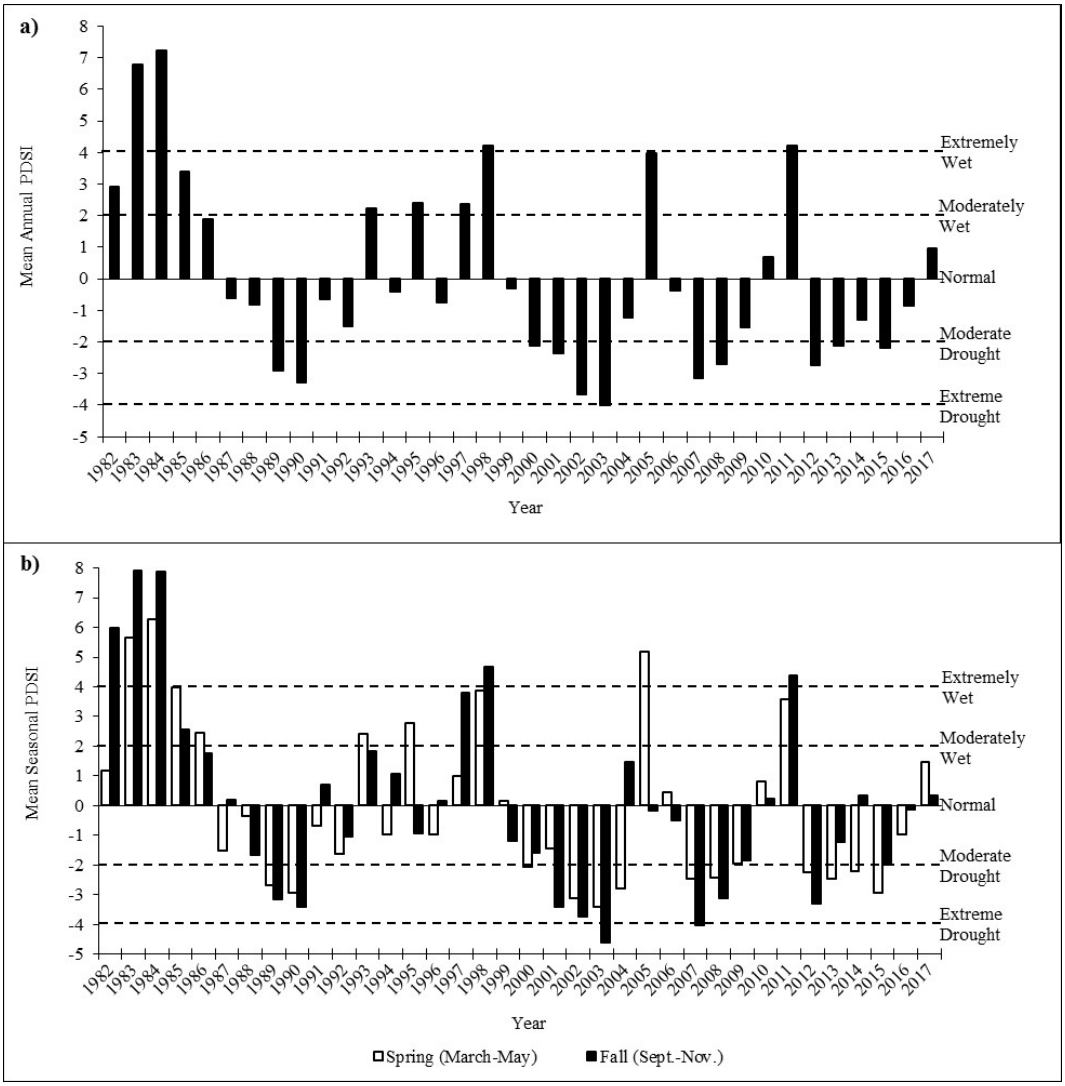


Figure 1.1: The 1982-2017 Palmer Drought Severity Index (PDSI) for the Western division (Division 1). The PDSI is based on climate data gathered from 1895 to 2017. The PDSI uses a scale where 0 indicates normal, positive deviations indicate wet and negative deviations indicate drought. Classification of the scale is ≥4.0 = Extremely Wet, 3.0 to 3.9 = Very Wet, 2.0 to 2.9 = Moderately Wet, 1.0 to 1.9 = Slightly Wet, 0.5 to 0.9 = Incipient Wet Spell, 0.4 to -0.4 = Normal, -0.5 to -.9 = Incipient Dry Spell, -1.0 to -1.9 = Mild Drought, -2.0 to -2.9 = Moderate Drought, -3.0 to -3.9 = Severe Drought and ≤-4.0 = Extreme Drought. a) Mean annual PDSI. b) Mean spring (March-May) and fall (Sept.-Nov.) (Time Series Data, 2018).

Summer Range

Much of the summer range in Indian Peaks is in mixed mountain brush communities and aspen/conifer communities. Some of the rocky upper elevation sites are dominated by curlleaf mountain mahogany. Much of the winter range is composed of sagebrush with the shallow sites often being composed of black sagebrush and the deeper soils mostly being mountain big sagebrush. Much of the winter range in the Southwest Desert unit borders the edge of pinyon-juniper communities. These tree communities which provide thermal cover for animals, but also pose a risk for encroachment. This unit is similar to other desert units in that it is primarily limited by the lack of quality summer range for both deer and elk.

Winter Range

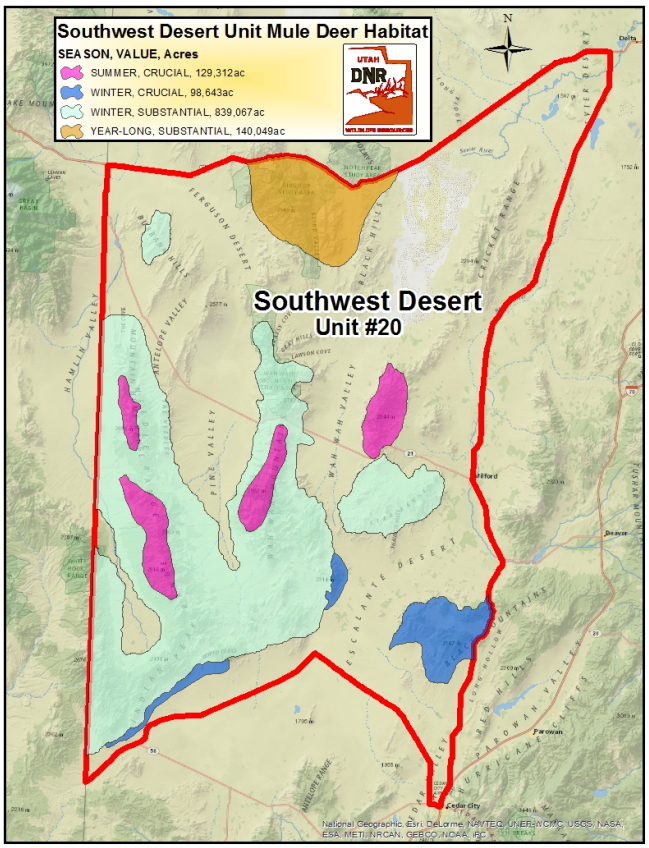
The winter range for deer in this unit consists of the areas around the Indian Peak Range and the Wah Wah Mountains. Elevations for this winter range vary from 5,200 feet to 8,000 feet.

Limiting Factors to Big Game Habitat

Major human activities in the area include grazing, mining, agriculture, and recreation. Habitat degradation and loss, lack of summer habitat, non-game ungulate competition for forage, and winter range conditions limit big game habitat in this unit. Encroachment by pinyon-juniper woodland communities poses a threat to important sagebrush rangelands. According to the current Landfire Existing Vegetation Coverage model, 20.84% of the Southwest Desert unit is comprised of pinyon-juniper woodlands, but in comparison to sagebrush, these woodlands are significant in size. Encroachment and invasion of these woodlands into sagebrush communities has been shown to decrease sagebrush and herbaceous cover, therefore negatively impacting the availability of wildlife forage (Miller, Svejcar, & Rose, 2000). Feral horses are a significant problem across the unit, with many sites showing extremely high occupancy by horses. In large numbers, horses can degrade range conditions by overutilization and trampling.

Other limiting factors to big game include introduced exotic herbaceous species such as cheatgrass (*Bromus tectorum*). The current Landfire Existing Vegetation Coverage model indicates that 3.99% of the unit is comprised of exotic herbaceous species: this is more troublesome on the lower elevation sites. Increased amounts of cheatgrass can exacerbate the risk for catastrophic wildfire (Balch, D'Antonio, & Gómez-Dans, 2013).

SOUTHWEST DESERT MULE DEER HABITAT



Range Trend Studies

Range Trend studies have been sampled within WMU 20 on a regular basis since 1985, with studies being added or suspended as was deemed necessary (**Table 6.7**). Due to changes in sampling methodologies, only data collected following the 1992 sample year is included in this summary. Monitoring studies of WRI projects began in 2004; when possible WRI monitoring studies are established prior to treatment and sampled on a regular basis following treatment. Due to the long-term nature of the studies, many of the Range Trend and WRI studies have had some sort of disturbance or treatment prior to or since study establishment (**Table 6.8**).

Range Trend studies that have not had recent disturbance or treatments are summarized in this report by ecological site or potential. Range Trend and WRI studies that have a disturbance or treatment during the reported sample period are summarized by the disturbance or treatment type. For a comprehensive report for each treatment type associated with the range trend site please refer to the full report. The full report can be viewed at the UDWR's regional office in Cedar City, Utah or at the UDWR Headquarters in Salt Lake City. An online version of the report will become available and currently you can access most of the results online at:

https://wildlife.utah.gov/.../**range-trends**/.../**2017**_Central_Region_Unit_ Summary_Report.pdf

Deer Winter Range Condition Assessment

The condition of deer winter range within the Southwest Desert management unit has continually changed on the sites sampled since 1998. The active Range Trend sites sampled within the unit are considered to be in very poor to fair-good condition as of the 2017 sample year (**Figure 6.19**, **Table 1.10**). South Spring improved to fair-good condition, while Lower Indian Peak and Lamerdorf Canyon are considered to be in fair condition. Mountain Home Seeding is classified as being in poor-fair condition and Mustang Spring is considered to be in very poor condition. The poor condition sites are considered as such generally due to a lack of perennial grasses and either a lack of preferred browse cover or decadence of preferred browse. The treated sites have generally shown improvement in condition as time since treatment has increased (**Figure 6.20**, **Table 1.11**). The exception is Blawn Wash Dixie, which has remained in fair condition. It is possible given more time and continual monitoring that these sites will (continue to) improve.

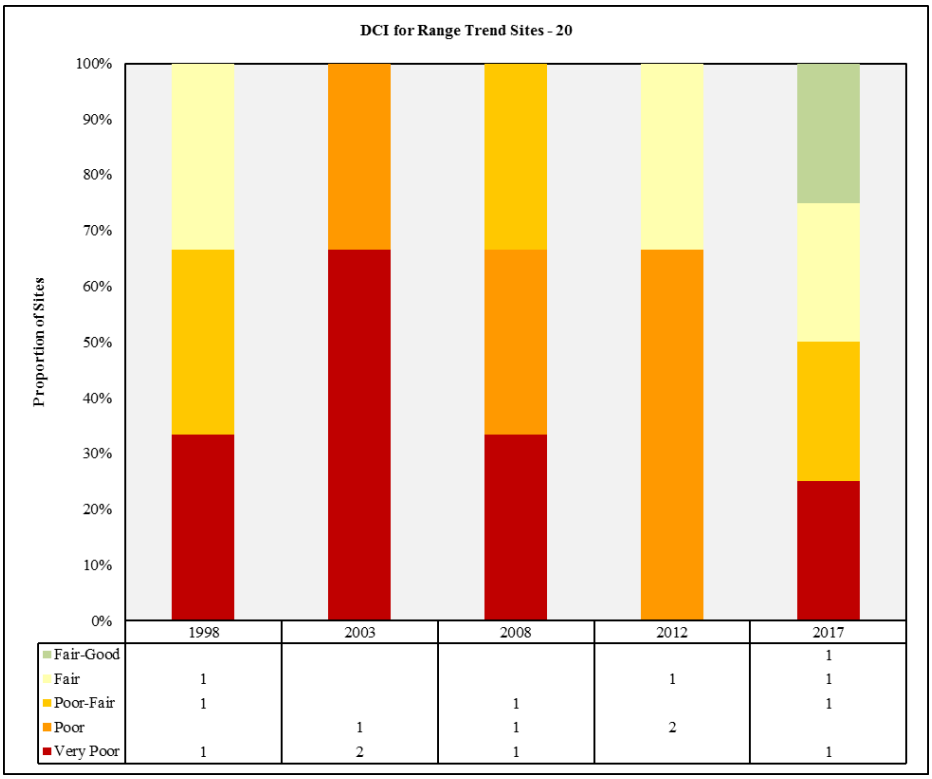
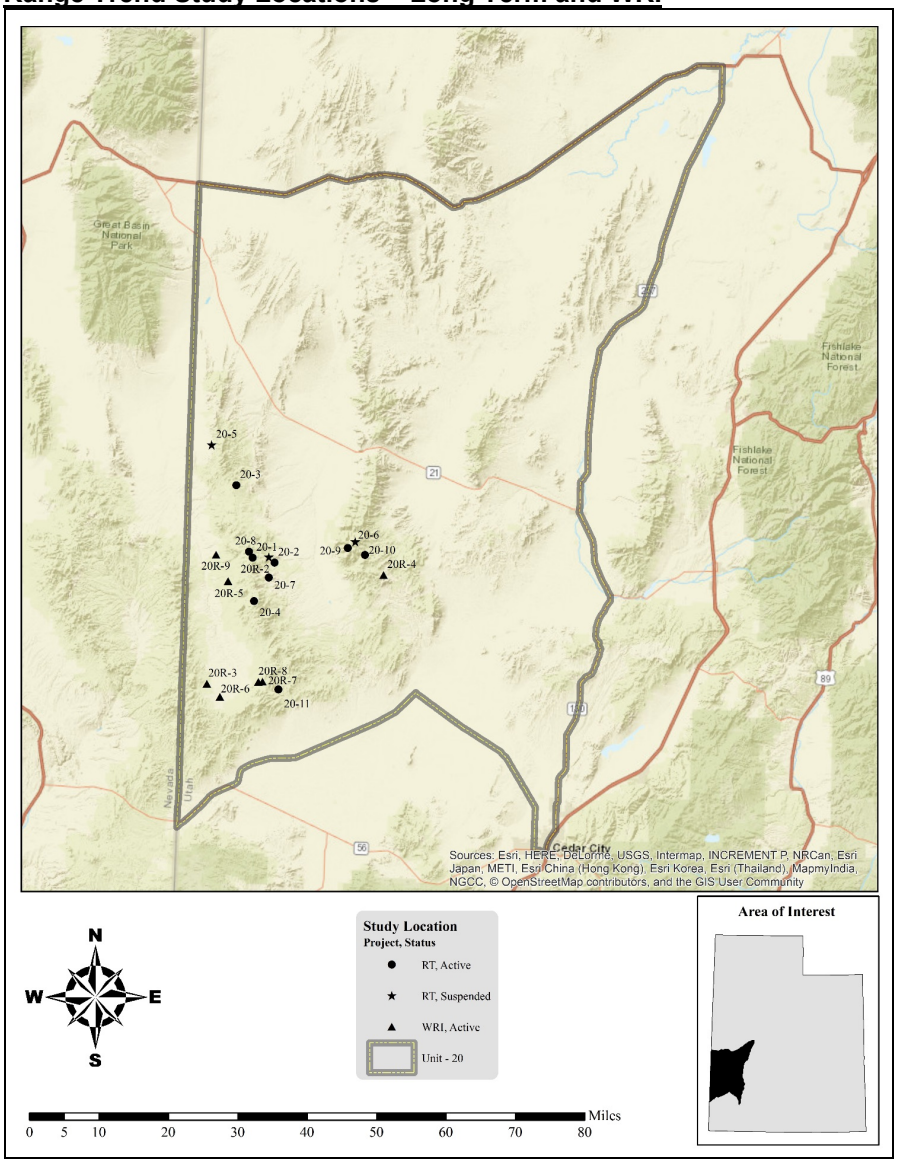


Figure 6.2: Deer winter range Desirable Components Index (DCI) summary by year of Range Trend sites for WMU 20, Southwest Desert.

Range Trend Study Locations – Long Term and WRI



Condition and Recommendations

Mountain (Big Sagebrush)

The studies that are considered to be of the Mountain (Big Sagebrush) ecological type are classified as deer winter range. These studies are considered to be in poor-fair to fair-good condition. These communities are host to shrub populations that can support deer and elk during the winter season. Both of these sites have some annual grass present, with more being present on the South Spring study. These sites were treated with prescribed fire in the 1980's and 90's to remove tree cover. However, pinyon-juniper communities are present at the edges of both of these sites, indicating a risk for future encroachment. Due to heavy grazing pressure, feral horse usage is a management issue on these sites.

It is recommended that areas with high levels of conifer encroachment or infill be treated with a tree-removing disturbance (e.g. bullhog, chaining, lop and scatter, etc.). Areas with high cover of annual grass should be monitored and if these levels are sustained, treatments to remove these species are advisable to reduce these species; changes in grazing management or herbicide treatments are possible management tools. If reseeding is necessary to restore herbaceous communities, care should be taken in seed selection and preference should be given to native species when possible.

Mountain (Browse)

Most of the studies in the Mountain (Browse) ecological type are not considered to be winter range, with Lamerdorf Canyon being the exception. These communities support robust browse and herbaceous species that provide varied feed for summering animals. Pinyon-juniper communities are present on all the sites and are currently considered to be in Phase I encroachment. Feral horse usage is a significant issue on these sites, due to the heavy grazing pressure that these animals display on sites. Annual grasses are present on some of the sites and Merrill's Camp had high cover of cheatgrass in both years that it was sampled. These grasses can increase fuel loads and raise the risk of wildfire.

It would be recommended to treat areas with conifer encroachment or infill (e.g. bullhog, chaining, lop and scatter, etc.). Areas with high cover of annual grass should be monitored and if these levels are sustained, treatments would be advisable to reduce these species. Changes in grazing management or herbicide treatments are management tools that could be used. If reseeding is necessary to restore herbaceous communities, care should be taken in seed selection and preference should be given to native species when possible.

Mountain (Low Sagebrush)

The lone Mountain (Low Sagebrush) ecological site is considered to be summer habitat for deer and year-long habitat for elk. This community supports shrub and herbaceous components that provide a variety of feed for big game. As the Desirable Components Index is based on mule deer winter range, it is not used for this site. The site had good cover of perennial grasses and forbs with no invasive species present. In addition, good cover of preferred browse species has been observed. Feral horse usage associated with heavy grazing is a significant issue on this site.

No specific threats were identified for this study site. However, grazing should be monitored on this site and other areas within this ecological type; overgrazing can cause ecological issues such as erosion, reduced plant vigor, and changes to the plant community as a whole.

Upland (Big Sagebrush)

The study considered to be of the Upland (Big Sagebrush) ecological type is in very poor condition for deer winter range. Lack of preferred browse and low cover of perennial grass are contributing factors to the unsatisfactory condition of this site. Pinyon-juniper communities are present and this site is currently considered to be in Phase I of woodland encroachment. Feral horses are also a concern on this study as they exert heavy grazing pressure. In addition, annual grasses are present and contribute moderate cover: these grasses can increase fuel loads and raise the risk of wildfire.

In areas with conifer encroachment or infill, a tree-removing disturbance is recommended (e.g. bullhog, chaining, lop and scatter, etc.). Areas with high cover of annual grasses should be monitored and if these levels are sustained, treatments are advisable to reduce these species. Changes in grazing management or herbicide treatments are possible treatment tools to manage annual grasses. If reseeding is necessary to restore herbaceous communities, care should be taken in seed selection and preference should be given to native species when possible.

Upland (Black Sagebrush)

Although pinyon and juniper reduction treatments have taken place on this mid-elevation study site, it is likely that encroachment is occurring on other areas within this ecological type. Undesirable annual and perennial grasses have increased within the herbaceous community. These species pose a threat to the resilience of the ecological system as they can shift the dynamics of the plant community, with annual grass monocultures and more frequent wildfires being a concern. Bulbous bluegrass (*Poa bulbosa*) has been sampled on this site: this introduced perennial grass species can create monocultures and outcompete more desirable native species.

It is recommended that treatments for pinyon-juniper (e.g. bullhog, chaining, lop and scatter, etc.) be implemented in areas where it would be beneficial to the habitat. For the herbaceous understory, herbicide treatments and grazing management changes are possible treatments for the undesirable graminoid species. If

reseeding is needed to restore the herbaceous communities on these sites, care should be taken in seed selection and preference should be given to native species when possible.

Treatments/Restoration Work

There has been an active effort to address many of the limitations on this unit through the Watershed Restoration Initiative (WRI). A total of 71,306 acres of land have been treated within the Southwest Desert unit since the WRI was implemented in 2004. An additional 21,981 acres are currently being treated and treatments have been proposed for 12,537 acres. Treatments frequently overlap one another bringing the total treated land area to 100,931 acres for this unit. Other treatments have occurred outside of the WRI through independent agencies and landowners, but the WRI comprises the majority of work done on deer winter ranges throughout the state of Utah.

Anchor chaining to remove pinyon and juniper is the most common management practice in this unit. Seeding plants to augment the herbaceous understory is also very common. Other management practices include (but are not limited to): bullhog, lop and scatter, harrowing, discing, herbicide application, interseeding, and mowing.

Type	Completed Acreage	Current Acreage	Proposed Acreage	Total Acreage
Anchor Chain	**48,089**	**5,909**	**0**	**53,997**
Ely (One-Way)	39,422	0	0	39,422
Ely (Two-Way)	8,666	5,909	0	14,575
Bullhog	**3,219**	**6,274**	**6,193**	**15,686**
Full Size	3,148	6,274	6,193	15,616
Skid Steer	70	0	0	70
Disk	**447**	**0**	0	**447**
Off-Set (Two-Way)	169	0	0	169
Plow (Two-Way)	278	0	0	278
Harrow	**3,400**	**0**	0	**3,400**
≤ 15 ft. (One-Way)	746	0	0	746
≤ 15 ft. (Two-Way)	1,028	0	0	1,028
> 15 ft. (One-Way)	1,066	0	0	1,066
> 15 ft. (Two-Way)	560	0	0	560
Herbicide Application	**1,214**	**0**	0	**1,214**
Aerial (Fixed-Wing)	1,214	0	0	1,214
Interseeding	**0**	**120**	**0**	**120**
Mowing	**0**	**25**	**0**	**25**
Other	0	25	0	25
Seeding (Primary)	**8,561**	**0**	0	**8,561**
Broadcast (Aerial Fixed-Wing)	7,925	0	0	7,925
Drill (Rangeland)	633	0	0	633
Hand Seeding	3	0	0	3
Seeding (Secondary/Shrub)	**786**	**0**	0	**786**
Hand Seeding	786	0	0	786
Vegetation Removal/Hand Crew	**5,591**	**9,654**	**6,344**	**21,589**
Lop and Scatter	5,591	9,654	6,344	21,589
Total Treatment Acres	**71,306**	**21,981**	**12,537**	**105,824**
***Total Land Area Treated**	**67,636**	**20,758**	**12,537**	**100,931**

Table 6.1: WRI treatment action size (acres) for completed, current, and proposed projects for WMU 20, Southwest Desert. Data accessed on 02/09/2018.
*Does not include overlapping treatments.

2015 – 2019 Habitat Project Areas