DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 4
(Morgan-South Rich)
September 2023

BOUNDARY DESCRIPTION

Morgan, Rich, Summit and Weber counties – Boundary begins at I-80 and the Utah-Wyoming state line; west on I-80 to Echo Junction and I-84; west on I-84 to SR-167 at Mountain Green (Trappers Loop Road); north along SR-167 to SR-39; east along SR-39 to Woodruff and SR-16; southeast on SR-16 to the Utah-Wyoming state line; south along the state line to I-80.

LAND OWNERSHIP

Approximate Land Ownership of Mule Deer Habitat

	Year-Long Range		Summer Range		Winter Range		All Ranges
Ownership	**Area** (Acres)	%	**Area** (Acres)	%	**Area** (Acres)	%	**Area** (Acres)
Bureau of Land Management	8,311	19%	4,621	1%	15,673	9%	28,605
Forest Service	0	0%	32,779	9%	2,028	1%	34,807
Private	36,053	81%	331,801	88%	135,707	81%	503,561
State Institutional Trust Lands	32	0%	739	<1%	1,817	1%	2,588
Utah Division of Wildlife Resources	7	<1%	6,036	2%	11,660	7%	17,703
Utah State Parks	0	0%	14	<1%	1,060	1%	1,074
TOTAL	44,403	100%	375,990	100%	167,945	100%	588,338

UNIT MANAGEMENT GOALS

- Manage for a healthy population of 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 target population objective of 16,000 wintering deer based on the best available model, range conditions and as public tolerance permits. This objective can be modified if deer populations, range condition, deer body conditions, or human/wildlife conflict indicate that the current objective needs adjustment. Current research on survival, body condition, production data, and cause specific mortality in combination with range trend data, wildlife tolerance on private property, human/wildlife conflict levels, and past population model estimates are used to set this objective.

Unit 4
1994-2002 Objective: 10,750
2003 Objective: 12,500
2004-2013 Objective: 12,000
2014-2020 Objective: 18,000
2021-2028 Objective: 16,000

Change from last plan: No change

- Herd Composition – Manage for a postseason buck:doe ratio of 18-20:100 in accordance with the statewide plan.

POPULATION MANAGEMENT STRATEGIES

Monitoring

- Population Size - Utilizing harvest data, postseason classifications, and GPS collar mortality estimates, an analytical model will be used to estimate winter population size. Cause specific mortality, body condition and vital rates of collared animals will be used to guide management decisions.

- Buck:Doe Ratios – Postseason classification will be conducted to monitor buck/doe ratios.

- Harvest - The primary technique used to estimate harvest over the unit is the statewide uniform harvest surveys. Buck harvest strategies will be developed through the RAC and Wildlife Board process to achieve management objectives for buck:doe ratios. Antlerless harvest will be achieved, as needed, using a variety of methods and seasons to maintain a wintering population within objective and to address depredation conflicts.

Year	Buck Harvest	Post-Season Fawns:100 Does	Post-Season Buck:100 Does	Post-Season Population Estimate	Population Objective	% of Objective
2017	871	72	23	14,400	18,000	80%
2018	1085	64	36	13,000	18,000	72%
2019	602	44	30	11,600	18,000	64%
2020	573	64	25	10,000	18,000	55%
2021	829	63	27	10,700	16,000	67%

Limiting Factors

A myriad of factors may prevent mule deer populations on Morgan-South Rich from reaching objective. These factors include:

- Crop depredation
    - Damages and losses to agricultural crops may limit landowner tolerance for deer in localized areas on the unit. Depredation issues will be addressed in accordance with state law and DWR Policy. Antlerless hunts on private lands or in smaller portions of the unit may be used

to reduce the number of animals in specific geographic areas where crop damage is exorbitant.

- Habitat
  - Currently, the amount of winter range is a major limiting factor for mule deer on the unit. Strategies to preserve winter range are critical in achieving the population objective. Some strategies include:
    - Keep lands enrolled in the Cooperative Wildlife Management Unit program to prevent habitat from being developed.
    - Implement an array of habitat treatments to eliminate noxious weeds and increase sagebrush and other desirable vegetation for mule deer.
    - Enroll lands in the Walk-in Access program or conservation easement agreements to prevent development and provide funding opportunities for landowners to improve habitat.
    - Make efforts to acquire land that is critical habitat for mule deer.

- Predation
  - Predation from cougars has the potential to suppress deer populations, under certain circumstances. Additionally, predation from coyotes, has the potential to limit recruitment of fawns into the population. GPS collar mortality data, population estimates, body condition, weather conditions, habitat quality, and population growth rates of deer will be used, in accordance with policy W1AG-4 *Managing Predatory Species* to determine when to implement predator control measures. Cougar harvest will be managed according to 2023 Utah House Bill 469.

- Highway mortality
  - Over the last five years, 1,344 deer mortalities were reported from deer-vehicle collisions in the Morgan-South Rich unit. Coordination with Utah Department of Transportation will be ongoing to identify areas where high fencing, crossing structures, and warning signs can be installed to reduce wildlife-vehicle collisions. Portions of Interstate-84 are current candidates for future projects.

- Urban development
  - Winter range in Morgan Valley continues to be lost to urban development and nuisance deer complaints have increased. The Urban Deer Control Rule, R657-65, will be used to help municipalities address urban deer issues. Additionally, efforts to educated residents on how to live with wildlife will be continued.

- Disease
  - The impact that disease has on mule deer populations varies widely and can be challenging to assess. Diseases found on the unit include bluetongue, epizootic hemorrhagic disease (EHD), and pneumonia. Although, chronic wasting disease (CWD) has not been detected on the unit, monitoring through rotational hunter harvest surveillance will be conducted in accordance with the Statewide Management Plan.

- High elk density
  - Elk are currently 2,900 individuals over objective on the Morgan-South Rich unit. Elk and deer do not compete for the same food sources, however, large numbers of elk may displace deer to lower quality habitat and result in lower deer survival rates. It is currently unknown, whether the elk population is high enough to suppress the deer population on the unit. However, there is evidence from neighboring states, that high elk densities can negatively impact deer populations. Increased antlerless harvest on elk will be used to reduce elk densities.

- Illegal Take
  - Illegal take is not currently a significant source of mortality. Should illegal kill become an

identified and significant source of mortality, an Action Plan will be developed in coordination with the Law Enforcement Section to develop specific preventive measures.

HABITAT MANAGEMENT OBJECTIVES

- Minimize the loss of winter range habitat due to urban development, noxious weed invasion, and overgrazing.
- Protect and improve existing habitat on private and public lands that benefit mule deer populations.
- Build partnerships with private landowners, and federal agencies to implement habitat restoration projects on private and public land.
- Through the WRI process and partnerships with state, federal, and private organizations, acquire funding for habitat restoration projects on summer and winter ranges.

HABITAT MANAGEMENT STRATEGIES

- Coordinate with livestock owners to implement grazing strategies that promote good rangeland health on private property.
- Use GPS collar data to determine habitat selection by mule deer and use this data to guide potential habitat improvement projects.
- Construct beaver dam analogs and relocate nuisance beavers into drainages approved in the Utah Beaver Management Plan to improve stream and riparian habitats.
- Continue permanent range trend studies to monitor habitat quality across the unit.
- Utilize antlerless deer harvest to improve or protect forage conditions when vegetative declines are attributed to deer over utilization.
- Protect winter ranges from wildfire by re-seeding burned areas with desirable perennial vegetation and creating fuel breaks.
- Reduce cheat grass using pre-emergence herbicides and restore sagebrush steppe habitats through re-seeding or planting efforts on winter range.
- Create, improve, and maintain various types of water sources such as guzzlers, springs, catch basins, and streams through a variety of methods and in conjunction with partnering agencies and private land owners.
- Protect land from development by enrolling it in the CWMU program, Walk-in Access program, conservation easements, and providing other incentives for property owners to manage land for wildlife or multi use.
- Explore new strategies to reduce noxious weeds, improve water quality and quantity, and establish desirable forage on low elevation ranges, where habitat restoration efforts have not always proved successful.
- Use prescribed burns to reduce conifer encroachment on summer range to allow for aspen regeneration.
- Use hand crews to thin and remove dead or dying vegetation on summer range to reduce the fuel load and decrease the likelihood of a catastrophic high intensity fire.

2021 PERMANENT RANGE TREND SUMMARY

Unit Description

Management unit boundaries were changed in 1993 and the Morgan-South Rich Management Unit was created from parts of the old Units 5, 6, and 7. The new unit incorporates a section of Weber county southeast of Huntsville, the northern halves of Morgan and Summit counties, and the southern portion of Rich county southwest of Woodruff. Municipalities along the unit boundaries include Woodruff, Huntsville,

Mountain Green, Croydon, and Echo.

Interstates 80 and 84, which run through Echo Canyon and along the Weber River, form the unit's southern boundary; there are several towns along the highways. The majority of the Lost Creek bottoms surrounding the town of Croydon have been converted to alfalfa fields. Lost Creek Reservoir, managed by the Division of Parks and Recreation, is primitively developed and the road is not maintained in the winter. However, snowmobilers, winter fishermen, and other recreationists use the facilities during winter months. Two areas of land in the unit are managed by the Division of Wildlife Resources. The Round Valley WMA is north of I-84, just east of Morgan. The Henefer-Echo WMA is located east of Henefer and is managed primarily as big game habitat.

The 30-year (1991-2020) annual precipitation PRISM model shows precipitation ranges on the unit from 10 inches along portions of the Utah-Wyoming border to 43 inches on the mountain tops north of Morgan. All of the Range Trend and WRI monitoring studies on the unit occur within 10-21 inches of precipitation (PRISM Climate Group, Oregon State University, 2021).

Landfire Existing Vegetation Coverage modeling shows that shrublands make up over half (51%) of the Morgan-South Rich unit with sagebrush shrubland and steppe contributing just over 38% percent of the unit's land coverage. Sagebrush shrublands are considered to be key habitat for mule deer.

The Lost Creek, Weber River, and Echo Canyon areas are traditional deer wintering areas. There is considerable migration both from higher elevations in the unit and from other herd units to this area, especially during severe winters. The largest number of deer would likely come from the East Canyon Unit, where deer summer on the east side of the Wasatch Mountains. However, development in Morgan Valley is disrupting this migration route. Deer also come from the Ogden and Chalk Creek Units, which have adequate summer range, but limited winter range.

In severe winters, the area of available winter range is greatly reduced; the upper limit is 6,500 feet elevation on most of the unit. The available acreage of all vegetation types (except agricultural land) is reduced during severe winters. All range trend studies in the unit were established on winter range, and most studies sample crucial and/or heavily-used areas.

Earlier inventory studies described six vegetation types. The sagebrush type is most common and found over the whole area, forming part of a continuum (based on moisture conditions) between the mountain browse/sagebrush and mountain browse types. The lower elevation sagebrush and mountain browse/sagebrush types are productive and utilized heavily by deer, while the mountain browse type mainly provides cover and is unavailable in most winters. The other vegetation types occupy comparatively little land area, but have the potential to increase. A small population of mahogany is located in Cottonwood Canyon and is important to wintering deer. Scattered stands of juniper are also important for providing thermal cover, but are of little forage value.

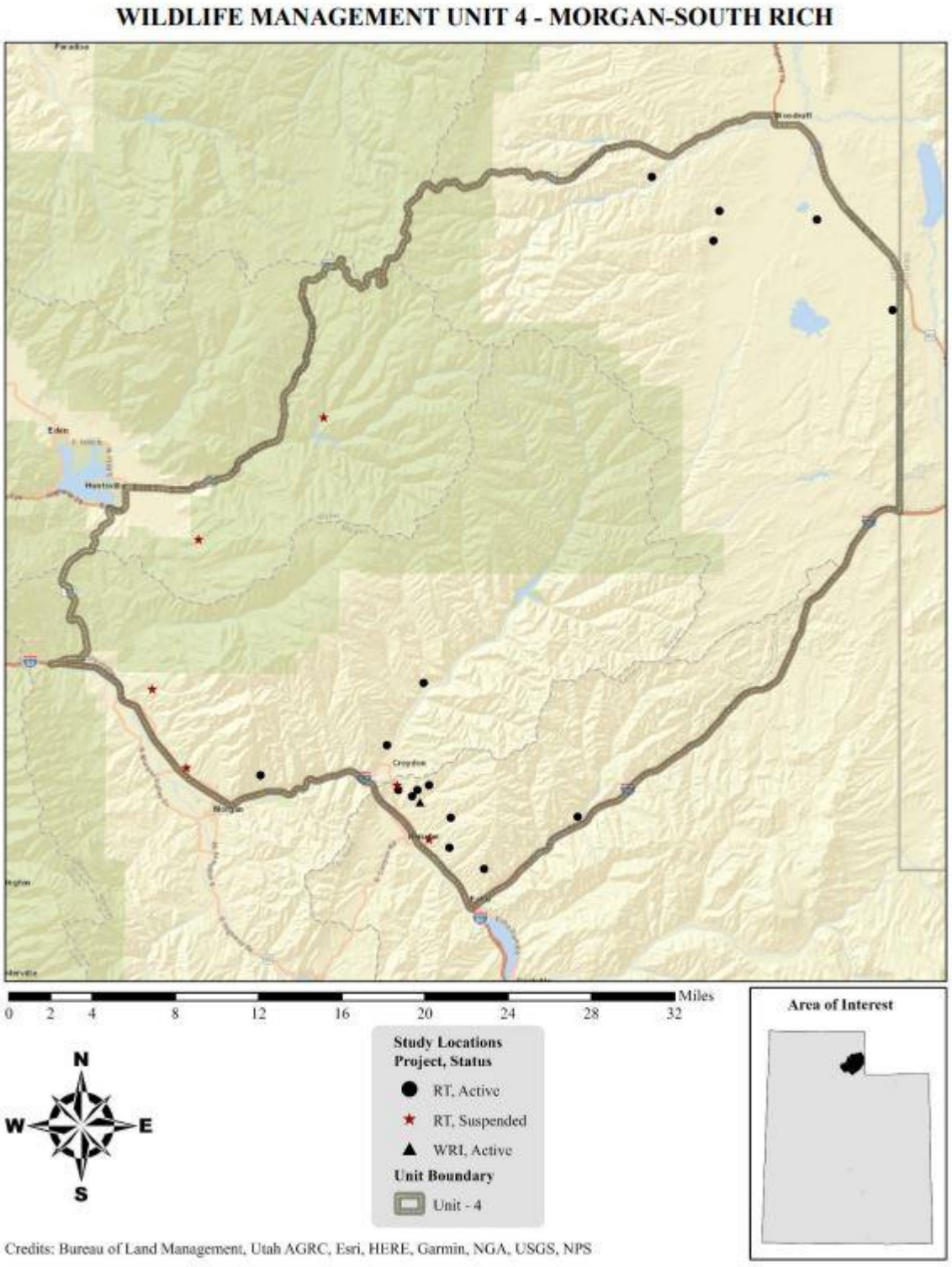


Figure 1. Current (black points) and suspended (red stars) Range Trend Study sites for WMU 4, Morgan S. Rich.

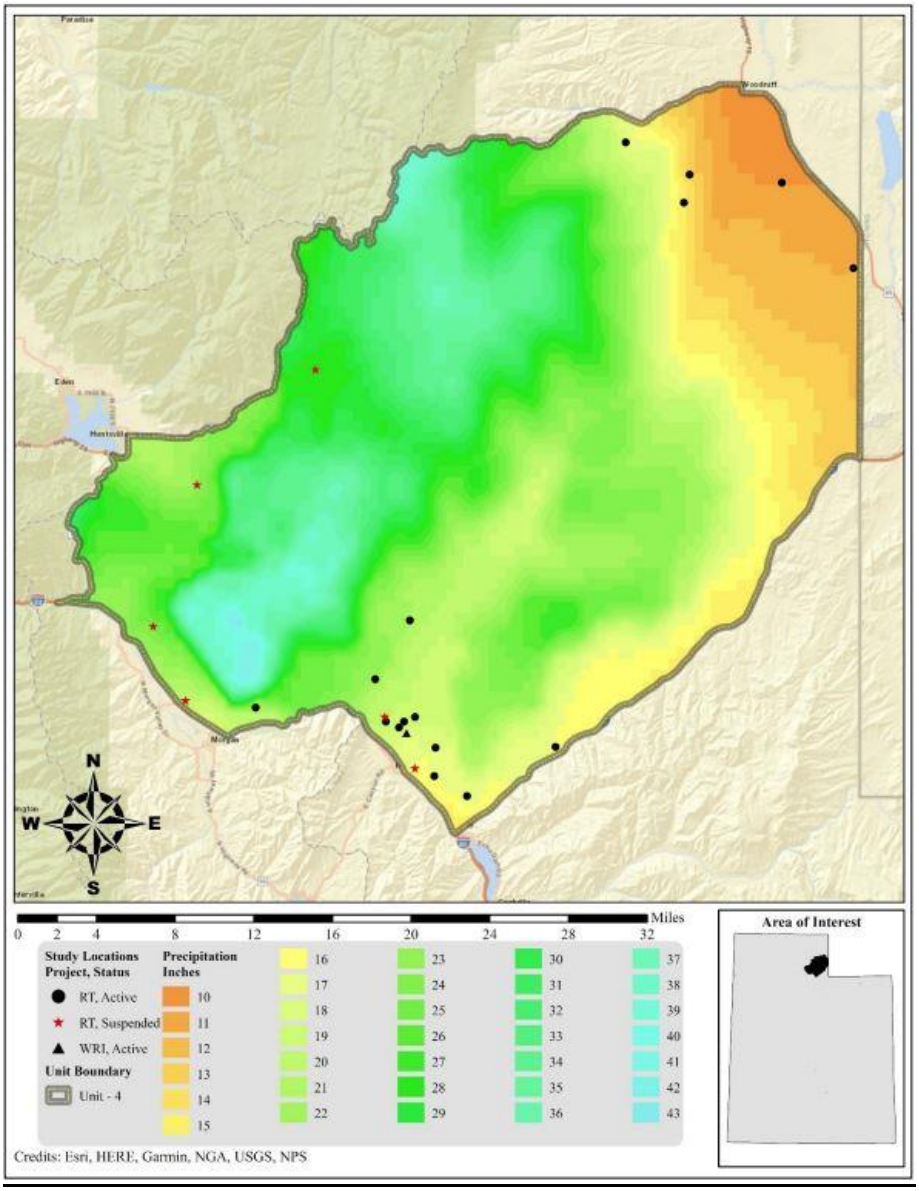


Figure 2. The 1991-2020 PRISM Precipitation Model for WMU 4, Morgan S. Rich (PRISM Climate Group, Oregon State University, 2021).

Past Treatments and 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 6,492 acres of land have been treated within the Morgan-South Rich unit since the WRI was implemented in 2004. An additional 1,336 acres are currently being treated and treatments have been proposed for 636 acres. Treatments frequently overlap one another bringing the net total of completed treatment acres to 6,282 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.

Vegetation removal via hand crew to remove encroaching conifer is the most common management practice in this unit. Seeding to augment species diversity and desirability is also common. Other management practices include harrow, anchor chain, and bullhog to remove two-needle pinyon and Utah juniper. In addition, discing and other vegetation removal techniques are also implemented.

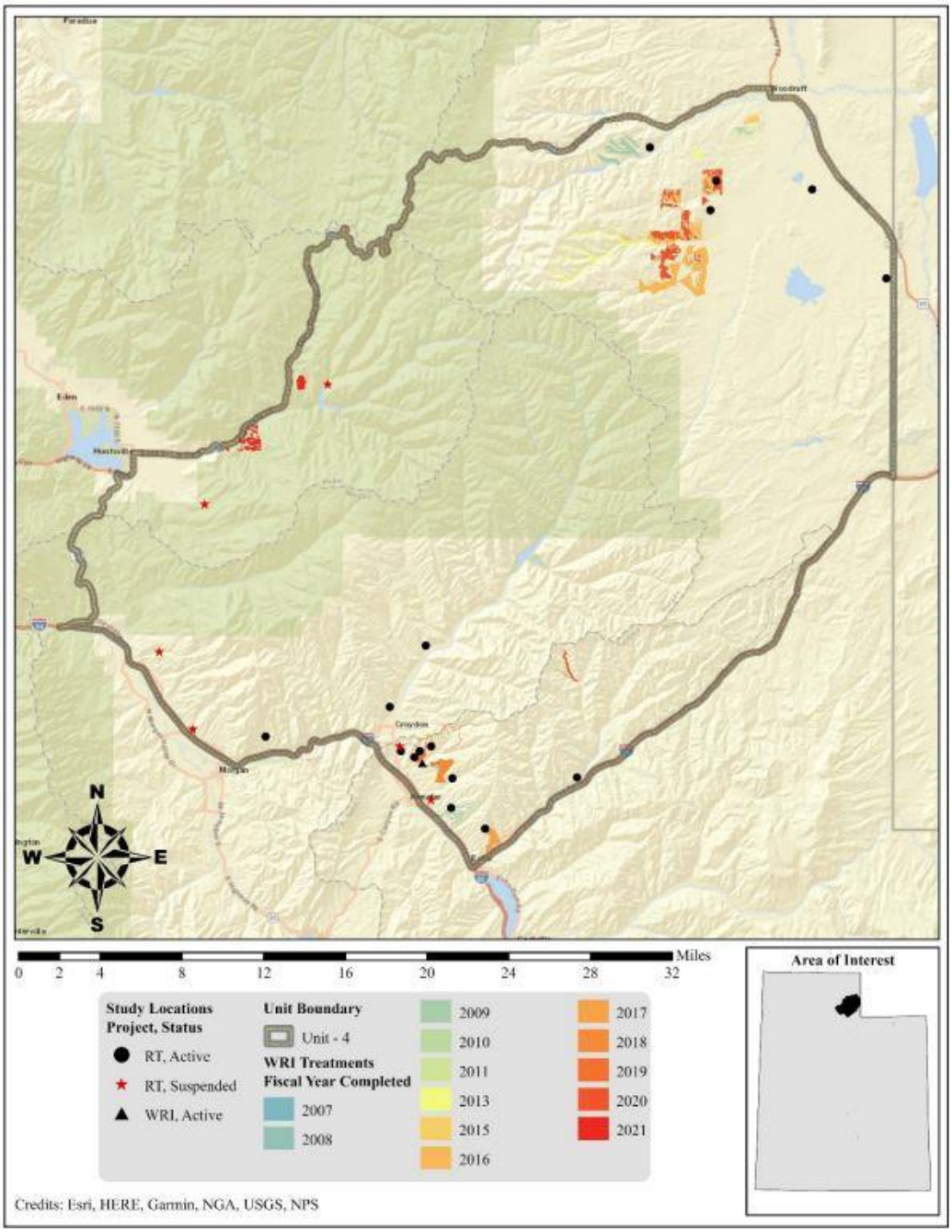
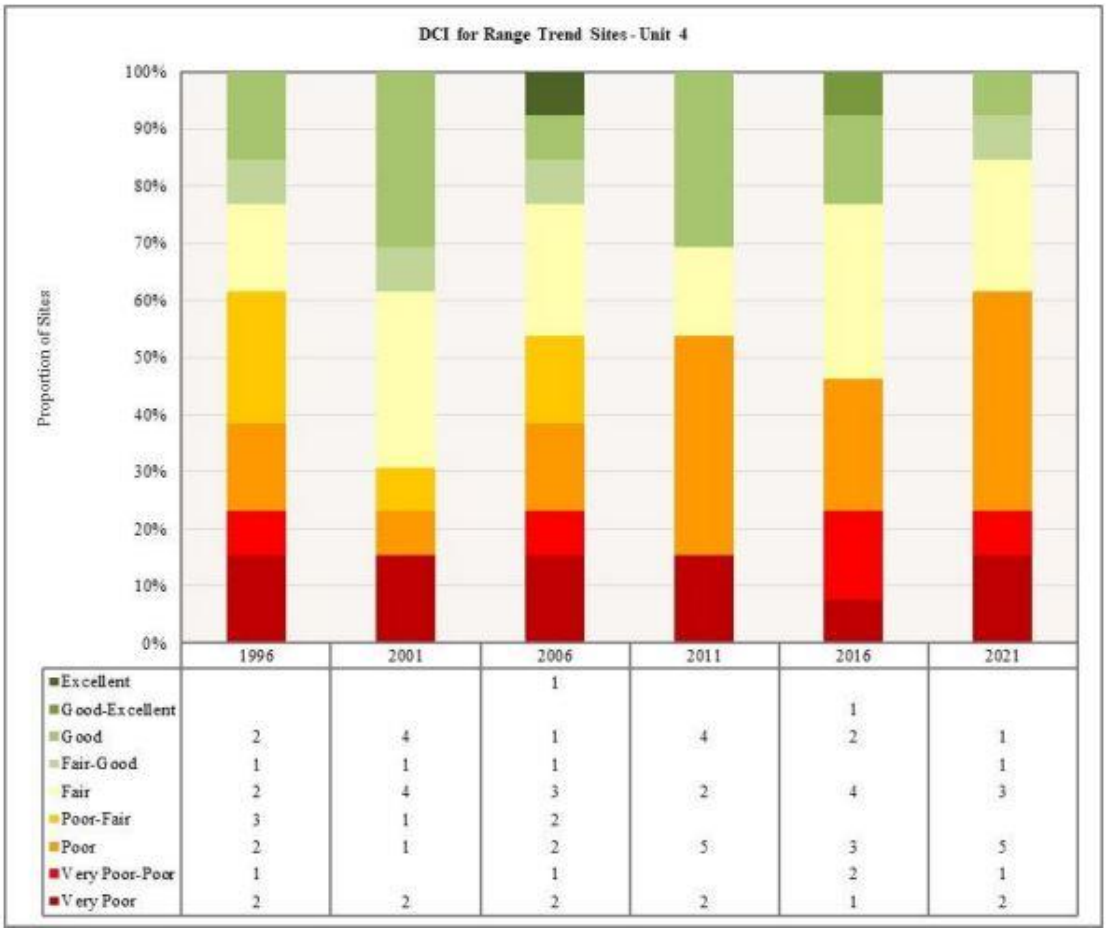


Figure 3. WRI Treatments by fiscal year completed for WMU 4, Morgan S. Rich

Winter Range Condition

The condition of deer winter range within the Morgan-South Rich unit has generally remained stable since the 1996 sampling. Mean wintering conditions on WMU 4 have remained between fair to very poor condition from 1996 to 2021. Chapman Canal, Deseret Main Gate, Heiner's Creek, Scott Rees Ranch, and Wheatgrass Hollow are the main drivers for the unit's stability and average within good deer winter range conditions. Range Trend sites in WMU 4 tend to have low variability in deer winter habitat, meaning that sites experience little change in their respective habitat qualities from year to year. The overall deer winter range assessment in 2021 for WMU 4 was that sites were in fair-poor condition. However, Heiner's

Creek and Claypit North Slope were considered to be in good condition due to an abundance of perennial grasses, forbs, and preferred browse cover. Deseret Burn, Owen's Canyon, and Tank Canyon rated as very poor to poor winter range in 2021.



	1996	2001	2006	2011	2016	2021
Excellent			1			
Good-Excellent					1	
Good	2	4	1	4	2	1
Fair-Good	1	1	1			1
Fair	2	4	3	2	4	3
Poor-Fair	3	1	2			
Poor	2	1	2	5	3	5
Very Poor-Poor	1		1		2	1
Very Poor	2	2	2	2	1	2

Figure 4. Deer winter range Desirable Components Index (DCI) summary by year of Range Trend sites for WMU 4, Morgan S. Rich.

- **<u>Mountain Winter Range (Big Sagebrush)</u>**

  The study that is considered to be a Mountain (Big Sagebrush) ecological site, Heiner's Creek, supports a sagebrush community and is considered to be in good condition for deer winter range in the Morgan-South Rich unit. This community supports a mountain big sagebrush (Artemisia tridentata ssp. vaseyana) community that provides valuable browse for wildlife. Pellet transect data indicates that moderate use by deer is occurring on this study site, posing a medium-level threat. Overuse by deer may lead to a reduced and/or less vigorous browse component. The understory has generally remained in good condition, with perennial forbs and grasses as the main components. However, the introduced annual grass species cheatgrass (Bromus tectorum) has been present in previous sample years, albeit in low amounts. If cheatgrass increases in the future, it will lead to boosted fine fuel loads, heightened risk of wildfire, and possibly reduced herbaceous diversity.

- **<u>Mountain Winter Range (Oak)</u>**

  Scott Rees Ranch, the study that is considered to be of this ecological type supports a Gambel oak (Quercus gambelii) community and is considered to be in good condition for deer winter range. Annual grasses are present in the understory in significant amounts, posing a high-level

threat to the ecological resilience and resistance of the site. High amounts of annual grasses increase fuel loads, exacerbate wildfire risk, and may alter wildfire regimes, and introduced annual grass species may have the potential to outcompete more desirable native species. Utah juniper (Juniperus osteosperma) encroachment is also occurring on this study site, placing it in Phase I of woodland succession. Although the threat posed is currently low, presence of pinyon and juniper can result in reduced understory shrub and herbaceous health as encroachment advances.

- **Upland Winter Range (Big Sagebrush)**

  The study sites that are classified as Upland (Sagebrush) ecological sites range in condition from very poor to fair-good for deer winter range in the Morgan-South Rich unit. Some of the studies have transitioned into a perennial grass state with an abundant herbaceous understory, while others support big sagebrush populations. Introduced perennial grass species are a concern on the Echo Canyon, Tank Canyon, Owen's Canyon, Harris Canyon, and Deseret Burn studies. While they can provide forage for wildlife, introduced perennial grasses can be aggressive and may outcompete desirable native grass and forb species for resources. In turn, this can lead to reduced prevalence and abundance of native herbaceous species. Annual grasses, primarily cheatgrass (Bromus tectorum) and field brome (B. tectorum), pose a threat to the ecological integrity of all study sites. When present in higher amounts, annual grasses exacerbate the risk of catastrophic wildfire by boosting fuel loads and may alter wildfire regimes and introduced annual grass species have the potential to negatively affect herbaceous diversity. In addition, Utah juniper (Juniperus osteosperma) encroachment is occurring on the Woodruff Creek South and Wheatgrass Hollow studies in medium and low amounts, respectively. Although the threats posed may not be immediate, pinyon and juniper presence has the potential to lead to decreased shrub and herbaceous health as encroachment advances.

  The noxious weed and annual forb gypsyflower (Cynoglossum officinale) has been present in the past on the Harris Canyon site, while the noxious weed and perennial forb species common viber's bugloss (Echium vulgare) was present in recent sample years on the Echo Canyon study. The threat posed by noxious weeds is currently low on both sites as of 2021. However, noxious weeds have a similar effect to introduced perennial grasses when present in high amounts, as they are aggressive and can lead to reduced herbaceous diversity. The Echo Canyon study is located next to a cell phone tower with a road that passes directly through the transect, placing the study at high risk of being affected by energy development. Construction of roads and structures associated with energy development can deleteriously affect or entirely remove valuable shrub and herbaceous components and may disturb nearby wildlife. In addition, effects of drought are evident on the Wheatgrass Hollow, Harris Canyon, and Woodruff Creek South studies. Extended periods of drought may result in reduced vigor and abundance of shrub and herbaceous species and reduced resilience and resistance of the ecosystem to disturbance. Finally, pellet transect data indicates that moderate use by deer and/or sheep is occurring on the Above Toon Ranch site, posing a medium-level threat. Overuse by deer and/or sheep can lead to a reduced and/or less vigorous browse component.

- **Semidesert Winter Range (Big Sagebrush)**

  The sites classified as belonging to this lower-elevation semidesert sagebrush ecological type (Chapman Canal and Deseret Main Gate) are considered to be in fair condition for deer year-long range on this management unit. Pellet transect data indicates that high use by cattle is occurring on both study sites, posing a high-level threat. Overuse by livestock can lead to decreased vigor and diversity in the shrub and herbaceous understory. In addition, effects of drought are evident on both study sites. Long periods of drought may result in reduced vigor and abundance of shrub and herbaceous species and reduced resilience and resistance of the ecosystem to disturbance. The herbaceous understory of the Deseret Main Gate study is dominated by the introduced perennial grass species crested wheatgrass (Agropyron cristatum). Introduced perennial grasses have the potential to outcompete native perennial forbs and grasses for resources, which may

lead to reduced herbaceous diversity. Finally, the introduced annual grass species cheatgrass (Bromus tectorum) is present on the Chapman Canal study in low amounts. If annual grasses increase in the future, they could lead to increased fine fuel loads, heightened risk of wildfire, and increased wildfire return interval.

More detailed information regarding Range Trend data, results, trends, methodologies, tables and summaries can be found at the Utah's Big Game Range trend Studies web site at https://wildlife.utah.gov/range-trend.html

DURATION AND AUTHORITY OF PLAN

This unit management plan was approved by the Division Director in Sept. 2023 and will be in effect for five years, or until amended. Unit deer plan goals, objectives and strategies are constrained within the sideboards set in the statewide deer plan, which supersedes unit plans. It is possible that changes to the statewide deer plan may affect unit plans. Additionally, changes to Utah State Code and/or Administrative Rules may also affect deer unit plans.