

**ELK UNIT MANAGEMENT PLAN**  
**Elk Herd Unit #16A**  
**NEBO**  
**2023**

**BOUNDARY DESCRIPTIONS**

**Nebo Unit Boundary**

Juab, Millard, Sanpete, Sevier and Utah counties—Boundary begins at US-6 and I-15 at Spanish Fork; southeast on US-6 to US-89 near Thistle; south on US-89 to US-50 at Salina; northwest on US-50 to I-15 at Scipio; north on I-15 to US-6 at Spanish Fork.

**Nebo/San Pitch Mountains Limited Entry and Spike Unit Boundary**

Juab, Millard, Sanpete, Sevier and Utah counties—Boundary begins at US-6 and I-15 at Spanish Fork; southeast on US-6 to US-89 near Thistle; south on US-89 to Big Hollow Rd; west on Big Hollow Rd to SR-132 in Fountain Green; South on SR-132 to Main St (SR-116) in Moroni; East on SR-116 to US-89 in Mount Pleasant; south on US-89 to SR-28 in Gunnison; north on SR-28 to I-15 in Nephi; north on I-15 to US-6 at Spanish Fork.

**Moroni Hills Any Bull Boundary**

Sanpete County--Boundary begins at SR-132 and Big Hollow Rd in Fountain Green; east and northeast on Big Hollow Rd to US-89; south on US-89 to Main St (SR-116) in Mount Pleasant; west on SR-116 to SR-132 in Moroni; north on SR-132 to Big Hollow Rd in Fountain Green.

**Valley Mountains Any Bull Boundary**

Sanpete, Millard and Juab counties – Boundary begins at I-15 and SR-28 at Nephi; south on SR-28 to US-89 in Gunnison; south on US-89 to Main St (SR-50) in Salina; northwest on SR-50 to 400 N in Scipio; west on 400 N to I-15 at Scipio; north on I-15 to SR-28 at Nephi.

**UNIT MANAGEMENT GOALS**

- Manage for a population of healthy animals capable of providing a broad range of recreational opportunities including hunting and viewing
- Maintain an elk population consistent with available range resources that are in balance with other range uses such as livestock grazing and watershed protection
- Consider impacts of the elk herd on other land uses and public interests including private property rights, agricultural crops and local economies.
- Maintain and enhance existing elk habitat through vegetative manipulation, sound domestic grazing practices, and other management techniques that will meet habitat objectives
- Minimize and mitigate any habitat losses, degradation, or fragmentation from oil and gas development, road construction, urban expansion, increased recreation or other land use impacts

**UNIT MANAGEMENT OBJECTIVES**

**Habitat -**

- Maintain and protect existing critical elk ranges sufficient to support the population objectives.
- Seek cooperative projects to improve the quality of elk habitat.
- Promote enhancement of habitat security and escapement areas for elk.
- Pursue protection of crucial habitats to development through conservation easements.
- Coordinate with federal agencies to protect and enhance aspen communities on summer habitats. Management techniques that assure a diverse age structure of aspen communities will be utilized.
- Cooperate with livestock operators and federal agencies to improve range management practices in such a way to optimize both livestock and elk forage production and thus minimize conflicts.
- Remove pinion-juniper encroachment into winter range sagebrush parks and summer and

transitional range mountain brush communities.

- Minimize and mitigate for habitat loss and displacement of elk as a result of coal, oil and gas development and urban expansion.

#### **Population -**

- Maintain healthy elk populations at biologically and socially sustainable levels.
- Foster support among stakeholders for Utah's elk management program.
- Achieve a proper distribution of elk on private and public lands.

**Target Winter Herd Size Objective** - Maintain a wintering elk population of \*2,200, based on aerial counts; supplemented with available harvest data, pre-season sex and age classifications, and survival estimates. Unless range conditions become unsuitable as evaluated by the Utah Division of Wildlife Resources (DWR). Desired elk population levels are guided by habitat conditions and public tolerance of elk. The elk population objective will be evaluated each time the unit management plan is up for renewal.

Utilize general season spike-only hunting and limited entry any bull hunting to accomplish herd composition objectives. Target population size will be maintained through the use of antlerless harvest using a variety of harvest methods and seasons.

\*Unit elk committee changed the population objective from 1,450 to 2,200 in 2023

**Bull Elk Harvest Objectives** - Maintain an average age of harvested bulls between 5.5-6.0 years old on the Nebo/San Pitch Mountain limited entry unit. The age objective was changed from 6.5-7 to 5.5-6 in 2020. Average age of harvest will be determined by tooth age data from limited entry harvest.

The Moroni Hills and Valley Mountains portions of the Nebo unit will be managed as Any Bull general elk hunting units to reduce conflicts with agriculture and provide additional elk hunting opportunity. The change to the hunting strategy in these areas was made in the statewide elk plan revision in 2022.

### **CURRENT STATUS OF ELK MANAGEMENT**

**Habitat** - There are approximately 20 range trend study locations on the Nebo unit that occur primarily on deer winter ranges but in many cases show trends in elk winter range productivity. The Nebo was last read in 2022. Most range trend sites across the unit show declining trends in browse density and cover on low elevation deer ranges inhabited primarily by deer. Range Trend Study locations at mid elevations where elk typically winter show a better trend. The majority of range trend sites monitored on predominantly elk ranges were in fair to good condition with stable browse and herbaceous understory components. The average of all of the DCI scores on elk winter ranges suggest the winter elk habitat is in Fair to Good condition.

Elk Habitat occurs on 322,339 acres of the unit comprised of 55% spring/summer/fall range and 45% winter range. Of positive note within this unit are the study sites located in the canyons along the base of Mt. Nebo: Willow Creek Gardner Canyon, and Birch Creek. These study sites are host to valuable preferred browse populations that include varying amounts of species such as Utah serviceberry, alderleaf mountain mahogany, and Stansbury cliffrose, among others. Cover and density data indicate that the preferred browse components on these study sites have remained fairly stable between 2017 and 2022.

In summer ranges, introduced perennial grasses are present and may become invasive and outcompete native species. Invasion of annual grasses are posing a threat on the lower elevation summer ranges. Conifer encroachment is also occurring across many sites and should be targeted for removal. Some mountain browse sites are experiencing heavy use by elk which can lead to decreased shrub and herbaceous vigor. Increasing the availability of these habitats may decrease pressure in localized areas. In winter ranges, introduced perennial grass species may be providing competition against annual grasses but also may be leading to reduced abundance of more desirable grass and forb species.

Pinyon-juniper encroachment is also occurring into shrub sites. The threat of noxious weeds from development, disturbance, and grazing is high on winter ranges.

In the last decade several major wildfires have burned much of the unit. The Pole Creek and Bald Mountain fires burned over 120,000 acres in 2018. Most of the burn took place in summer range habitat. These fires have promoted early successional species that have benefited elk. Elk distribution and migration patterns have changed due to these fires.

Summer ranges are also impacted by fairly high recreation use during the summer months. This tends to displace elk from portions of important summer range. High levels of development and recreation pose risks to habitat from direct loss to introduction of noxious weeds.

### Range Area and Approximate Ownership

Ownership	Spring/Summer/ Fall Range		Winter Range	
	Area (acres)	%	Area (acres)	%
Forest Service	149,478	85	36,958	25
Bureau of Land Management	790	<1	10,356	7
Utah State Institutional Trust Lands	88	<1	3,490	2
Private	13,995	8	74,517	51
Utah Division of Wildlife Resources	11,881	7	20,787	14
<b>TOTAL</b>	176,231	100	189,092	100

### Habitat Projects Completed and Proposed 2019-2025

<u>Completed Habitat Treatment Area</u>	<u>Acres</u>
Nebo Creek Mitchell Drill Seed	31.39
Fountain Green WMA Cheatgrass Control	138.96
Levan WMA Shrub Planting Project FY-22	5.90
Santaquin and Mona Benches WMA Shrub Restoration	30.12
Thistle Creek Watershed Restoration Phase 2	809.11
Williams Fire Rehabilitation Project	699.86
Hollow Fire Aerial Seeding Project	219.52
Thistle Creek Watershed Restoration and Fire Rehab Project	3,510.26
Central Region Shrub Restoration Project FY 2021	35.03
Pole Creek/Bald Mountain Fire Rehabilitation	31,481.73
<b>TOTAL ACRES</b>	<b>36,961.88</b>

**Population** - The Nebo unit has shown an increasing trend from 1,300 elk in 2018 to 2,400 elk in 2022.

Calf production based on summer pre-season classification counts has averaged 64 calves per 100 cows over the past 3 years. Limited entry bull harvest on the unit has steadily increased during this period. Despite these increases, the average age of harvested bull has increased as well. The three year average is currently 7.1 years. Spike harvest has remained stable.

### **Trends in Elk Harvest Central Mountains, Nebo/San Pitch**

<u>Proposed Habitat Treatment Area</u>	<u>Acres</u>
Indianola Harrow Project – FY24	330.22
Crab Creek Discretionary Seed Project FY- 24	11.72
Sanpitch Mountains Collaborative Phase I	17,588.67
Levan WMA Shrub Planting Project FY-23	38.95
Nebo Unit 16A Big Game Winter Habitat Improvement FY 23	1,461.08
Levan WMA Shrub Restoration Project - FY24	6.14
Central Mountains (Nebo) Big Game Winter Habitat Restoration FY24	1,776.09
<b>TOTAL ACRES</b>	<b>21,212.87</b>

YEA R	# of Elk on Unit	LE BULL HARVEST (public and CWMU)	GEN.SEASON SPIKE HARVEST.	AVE. AGE OF HARVESTED BULLS	ANTLERLES S HARVEST
2018	1300	36	126	5.8	467
2019	1900	36	105	5.7	224
2020	1850	48	130	6.7	210
2021	1700	49	116	7.2	199
2022	2400	59	110	7.5	206

### **BARRIERS TO ACHIEVING UNIT MANAGEMENT OBJECTIVES**

#### **Habitat -**

- Further development near Woodland Hills/Mount Loafer will increase disturbance, disrupt movements of elk, increase vehicle collisions, and damage habitat. Most of these elk summer at higher elevations on Mount Loafer and winter near Woodland Hills. Similar concerns exist if land near Fountain Green (Big Hollow/Moroni Hills and Water Hollow) is further developed.
- Loss of winter ranges and summer shrub habitats to pinion-juniper encroachment and shrub decadence.
- Competition for forage with domestic livestock on both summer and winter ranges.
- Weather Extremes - Periodic climatic extremes, especially severe winters or long term drought conditions, can cause great fluctuations in overall population size, sex ratios, and age structure.

#### **Population -**

- Public resistance to increasing numbers of bull hunting permits to reduce mean age of harvest.
- Damage to agricultural crops and rangelands may decrease public support for elk on this unit.
- Depredation near Fountain Green, Levan, Mount Pleasant, and Woodland Hills are a concern.
- Elk may be maintained at levels below the stated objective if excessive levels of crop depredation or forage consumption on private lands occur.

- Other Mortality Causes – disease outbreaks, highway mortalities, poaching, etc.

## **STRATEGIES FOR REMOVING BARRIERS AND REACHING UNIT MANAGEMENT OBJECTIVES**

### **Habitat -**

- Cooperate with federal agencies to establish natural fire policies that will allow wild fires to burn in beneficial and non-threatening areas to recover lost elk habitat.
- Continue to improve forage production on winter and other shrub lands by aggressive pinyon-juniper removal.
- Cooperate with federal agencies to assure a diverse age structure of aspen communities on summer habitats.
- Pursue conservation easements on critical parcels of private property to protect important elk habitat from development.
- Cooperate with federal agencies to develop access management plans to enhance elk habitat value. This may include seasonal road closures or vehicle restrictions.
- Involve livestock operators in spring range rides and assessments in an effort to keep good relationships and address any potential concerns about competition between livestock and elk.

### **Population -**

- Target depredation hunts to address elk herds that habitually move into agricultural areas.
- Utilize Private–Lands-Only permits to reduce elk numbers on private lands.
- Cooperate with private landowners to fence haystacks and provide compensation when necessary in high winter depredation areas.
- Utilize antlerless hunts to address range concerns in specific areas.
- Utilize depredation bull hunts and extended archery season options if needed to address depredation and public safety issues by bulls according to DWR depredation policy.
- Cooperate with UDOT to pursue funding to reduce highway mortalities.

## **RESEARCH**

### **Mt Nebo Mule Deer and Elk Study**

In 2023 a large-scale study began to gain a more in depth understanding of adult and neonate ungulate survival on the Central Mountains Nebo/San Pitch management unit. This study focuses on both elk and mule deer. The study will run through 2026. Below is a description of the study.

Because of landscape juxtaposition (e.g., relatively productive habitat) and timing (e.g., relative to the current Wasatch Front cougar study, recent Pole Creek fire, and recent increases in understanding derived from the Statewide, Book Cliffs, Cache, South Manti studies and monitoring) the Central Mountains Nebo Unit provides a unique and rare opportunity to better understand factors that drive population dynamics of ungulates. The objective of this project is to determine the relative influence of top-down (predation) vs bottom-up (habitat quality) characteristics on the population dynamics of elk and mule deer in a system that appears to have relatively high-quality summer and winter range. More specifically, we propose to examine the health of adult ungulates, rates of pregnancy, production of offspring, and the survival and cause-specific mortality of neonate, juvenile, and adult mule deer and elk. In addition, we will examine resource selection and associated measures of health by deer and elk relative to space use by predators (e.g., cougars) and stochastic events that potentially influence habitat quality (e.g., fire and weather) at time scales ranging from hours to years. Results from this study will be compared to results from previous studies (e.g., the Book Cliffs comprised of relatively marginal habitat that limits herd health, the South Manti study that illustrated the factor likely limiting mule deer was predation, etc.) to better understand the population ecology of mule deer and elk throughout the entire region. The results from this study will lead to more informed decision making and better management/conservation of our big game resources across the entire state of Utah.

**Duration of This Management Plan** - This Unit Management Plan was revised in 2023 following the revision of the Statewide Elk Management Plan. This Unit Management Plan will be revised after the next Statewide Elk Management Plan revision to ensure all current management tools are being used. CWMU operators and landowners requested a mid-plan review and revisions may take place when improved data or management tools become available, or to address future issues. Unit elk plan goals, objectives, and strategies are constrained within the sideboards set in the Statewide Elk Plan, which supersedes unit plans. It is possible that changes to the Statewide Elk Plan may affect unit plans. Additionally, changes to Utah State Code and/or Administrative Rule may also affect elk unit plans.