Updated Carrying Capacity Analysis

Elk & Red Deer Review

YO Ranchlands Property

±10,400 Acres

Kerr County

Sarah Kahlich

Senior Biologist

Plateau Land & Wildlife Management

Site Visit Date: 7/24/2024

Plateau
Land & Wildlife
Management

OVERVIEW

This report is intended to convey recommendations that account for the recent acknowledgement of red deer and elk that have migrated into the YO Ranchlands throughout the years.

The exact number of both species is unknown, but for purpose of this consultation, 10 of each species is being assumed. The property owners are interested in the potential effects of keeping these two new species in the neighborhood. Will increasing red deer and elk numbers to a huntable population affect their carrying capacity? What effects might they have on other native and exotic species, and what Chronic Wasting Disease (CWD) requirements will have to be met with red deer and elk on the property.

Red Deer - General Information

- Male red deer weigh between 230-750 pounds; females weigh between 163-225 pounds
- Food habits:
    - Substantial amount of browse complemented with grazing. Preferred grazing sites are short grass areas with a mixture of forbs. They can live on grass with some shrub and forb consumption.
- Habitat - red deer prefer open forests with well-vegetated understory. They are capable of living in open country if there are large rocks and unrestricted vistas to substitute for the shelter and security of tree cover. They will typically avoid rugged terrain and high altitudes.
- Water and Climate - During rut, they will wallow and lounge in water. Heat tolerable if whole herd can lounge in water.
- Temperament and Compatibility - Males in rut are very aggressive and gregarious. They generally are compatible except may fight with or breed with closely related spp. (elk and sika).
- Special considerations:
    - Need ample water for whole population to lounge in if summers are hot. May strip bark, specially if food is short in late winter for sugar rich sap.

- Breed- October; birthing season-late May-June.

Elk - General Information

- Male elk weigh between 700-1,100 pounds; females weight between 500-600 pounds
- Can breed with sika
- Habitat:
  - Can live in forest, meadows, and mountains
  - Diet includes grasses, tree leave, twigs, and shrubs
  - Eat an average of 3 pounds of food per day for every 100 pounds of body weight
- Calves born in late May through early July and a cow usually gives birth to a single calf

PRODUCING A HUNTABLE POPULATION

If the goal is to harvest more than 1-2 males per year and have mature bulls, the population would need to be around 60-70 animals, or 1-2% of the total animal population. Currently, there is an assumed number of 10 red deer and 10 elk (number for sex of each species is unknown) on the property. During the 2024 spotlight survey neither species was observed. Assuming there are currently 10 of each species on the property, this increases the Animal Units (AUs) on-site by 10-14, which adds about 5% to the total AUs on the property. We created a rough population model that estimates a population of 13 bulls, 17 cows and 9 calves after 5 years if no harvest occurs. A small harvest of 1-2 bulls beginning in Year 6 would result in a stable to growing population. This assumes a current population of 5 bulls, 10 cows and 5 calves, which is unknown. We recommend a target sex ratio of 1:2-3 for the Ranchlands.

Table 1. Projected Population Numbers for Elk and Red Deer.

Year	Bulls	Cows	Calves	Total
1	5	10	5	20
2	7	12	6	24
3	9	13	7	28
4	11	15	8	33
5	13	17	9	39
6	14	20	10	44
7	15	23	12	50
8	17	27	13	56
9	19	31	15	64
10	21	35	18	74
Assumptions				
Bull Survival	Cow Survival	Bull Harvest	Recruitment	
85%	90%	15%	50%	

The 2023 spotlight survey population estimated there were about 1,225 native and non-native ungulates on the property, which resulted in 202 AUs (animal units) and 8.4 acres available per animal. The 2023 survey estimated the population provides about 51 acres for each animal unit, which varies depending on the species, for example, 7 white-tailed deer = 1AU. The 2023 spotlight survey was used to determine what changes occur when red deer and elk were added to the population. This increased the estimated population to about 1,245 native and non-native ungulates and resulted in 217 AUs and 8.3 acres available per animal, with 48 acres for each animal unit.

Table 2. 2023 Spotlight Survey Estimated Population with Elk and Red Deer Added.

Kind, Class, Sex of stock/wildlife	AU Equivalent	Number of Animals	Animal Units
Whitetail buck	0.13	122	16
Whitetail doe	0.12	365	44
Axis Buck	0.25	111	28
Axis Doe	0.2	333	67
Blackbuck buck	0.15	49	7
Blackbuck doe	0.14	99	14
Red Deer bull	0.5	10	5
Red Deer cow	0.34	0	0
Elk bull	0.92	10	9
Elk cow	0.55	0	0
Fallow buck	0.24	36	9
Fallow doe	0.17	72	12
Sika buck	0.21	6	1
Sika doe	0.16	32	5
Total Animals and Animal Units		**1245**	**217**
Ranch Acreage:	10300		
Acres Per Animal Unit	**47.5**		
Acres per Animal	**8.3**		

RESULTS

The 2020 carrying capacity was modified to include elk and red deer on the property and beginning to grow to a huntable population. The AUs and potential stocking rates are based on available vegetation on the Ranchlands, and numbers do not reflect any type of supplemental feeding regime by the landowners. Operations should not rely heavily on supplemental feeding to increase their ungulate populations and should only be used to improve the nutritional plane of the ungulates and reduce grazing and browsing pressure the vegetation on the Ranchlands.

The tables below show what the population might look like while using the 2023 estimated population and percentage compositions while increasing the overall herd population to 330 AUs or 440 AUs. The available acreage per animal increased since the 2020 carrying capacity report because 2023 spotlight survey did not have as many animals observed.

Table 3. Future Population with 330 AUs and 440 AUs Assuming 2023 Species Composition.

Kind, Class, Sex of stock/wildlife	AU Equivalent	Number of Animals	Animal Units
Red deer	0.5	33	17
Elk	0.92	33	31
White-tailed Deer	0.13	468	58
Axis	0.23	585	132
Blackbuck	0.15	301	44
Fallow	0.21	134	27
Sika	0.19	117	22
Total Animals and Animal Units		**1670**	**330**
Ranch Acreage:	10300		
Acres Per Animal Unit	**31**		
Acres Per Animal	6.2		

Kind, Class, Sex of stock/wildlife	AU Equivalent	Number of Animals	Animal Units
Red Deer	0.5	34	17
Elk	0.92	34	32
White-tailed Deer	0.13	639	80
Axis	0.23	822	185
Blackbuck	0.15	411	60
Fallow	0.21	183	37
Sika	0.19	160	30
Total Animals and Animal Units		**2283**	**440**
Ranch Acreage:	10300		
Acres Per Animal Unit	**23**		
Acres Per Animal	4.5		

The axis population will likely need to be reduced to allow for the addition of two larger bodied ungulates on the Ranchlands with similar dietary habits. The Ranchlands is not the ideal climax community and the climax species that should be present are either in low abundance or non-existent. As brush density increases, particularly juniper, the amount of available forage for some

species will be reduced. Taking this into consideration the amount of productive acreage was reduced in the 2020 carrying capacity analysis (by 25%) to provide a conservative estimate. Areas with dense canopy cover will reduce available browse species, grasses and forbs for native and non-native wildlife.

CHRONIC WASTING DISEASE REQUIREMENTS

The addition of two non-native species that are susceptible to chronic wasting disease (CWD) on a high fence property requires reporting to the Texas Animal Health Commission (TAHC). The TAHC has surveillance and movement requirements for owners of captive exotics. Movement includes but is not limited to private treaty sale, public auctions, slaughter, or movement of an animal between separate premises under the same ownership. **Even if no movement onto or off the property is planned, mortality records for all CWD susceptible exotic species must be submitted by April 1 each year.**

Movement requirements:

1) To move exotic CWD susceptible species to or from a premise, the owner must first obtain a Premise Identification Number (PIN)
2) All exotic CWD susceptible species moved or transported within the state must have an official identification device.
3) An owner of a premise where CWD susceptible species are located within a high fence must keep an estimated annual inventory and mortality records for all exotic susceptible species.
4) A complete movement record must be kept for all exotic CWD susceptible species that are moved onto or from a premise. The movement record must be submitted to the TAHC.

Per the TAHC, 'eligible mortalities' include a death from any cause on a CWD susceptible species that is 12 months of age or older. This includes hunter harvester mortalities or herd culling, natural mortalities, or animals moved directly to slaughter. For more information about TAHC's CWD requirements, visit https://www.tahc.texas.gov/animal_health/elk-deer/.

DISCUSSION

As the Ranchlands determine if they want to keep elk and red deer on the property and allow them to reach a huntable population, it is important to remember these stocking rates and AUs are based on no supplemental feeding, only vegetation that should be occurring based soil types from the 2020 carrying capacity report. Increasing a mixed species population has many variables

to consider before implementing, the most important being how long will the land be able to support a given level of grazing and browsing pressure?

We continue to recommend stocking, for any type of wildlife or livestock operation, based on an unfavorable year. This will help avoid overstocking, help protect the land, help reduce the stress of overgrazing on the vegetation, and allow recovery time for vegetation. Stocking at a temporarily higher rates is easier for tradition livestock operations since animals can quickly be removed, though with an exotic operation, quickly removing animals is not as easily accomplished, especially with CWD susceptible species. The Ranchlands conduct supplemental feeding, which helps support additional AUs. We do not recommend relying heavily on or solely on supplemental feeding, but instead managing the herd (harvesting) and land (selective brush management) to promote the landscape of healthy native vegetation.

Other variables to consider include how the addition of red deer and elk to the property will affect other species. There is a possibility red deer and elk may breed with sika on the Ranchlands. Both species consume large amounts of vegetation putting them in direct competition with all other wildlife species, landowners may notice a reduction in native vegetation, as well as an increase in the amount money and pounds of supplemental food needed to keep their feeders operational year-round.

Aoudad populations have not been included in the spotlight survey results or previous carrying capacity analysis because they are not always observed on the spotlight surveys, therefore their estimated population remains relatively unknown. However, this should be kept in mind when increasing the AUs on the Ranchlands. The AUs, acres per animal unit, and acres per animal will be lower than what is reported in the above animal unit tables.