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2023 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2023 - 5/31/2024

HERD: PR201 - COPPER MOUNTAIN

HUNT AREAS: 76, 79, 114-116

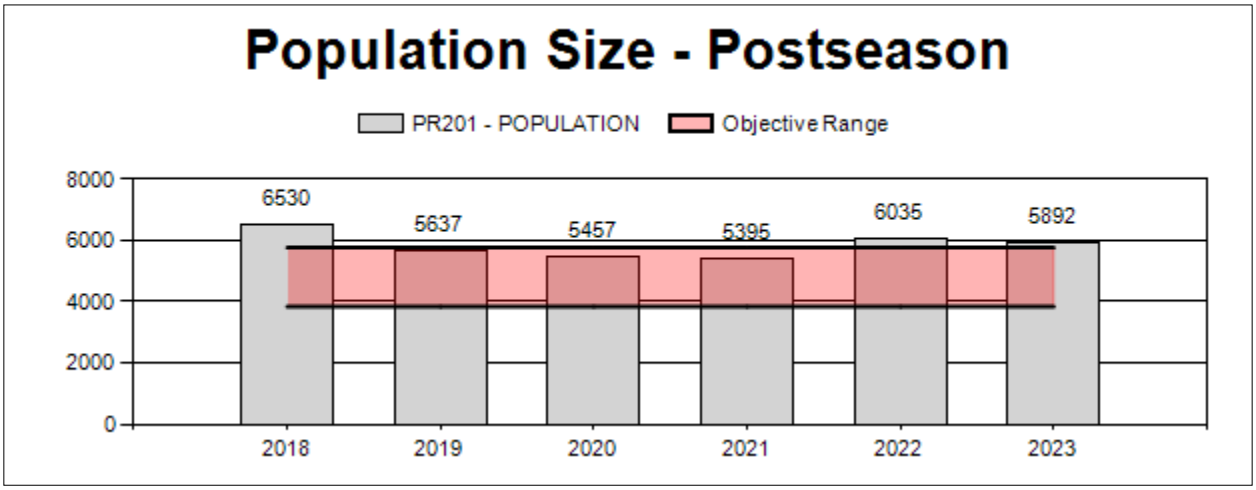
PREPARED BY: AUSTIN WIESELER

	2018 - 2022 Average	2023	2024 Proposed
Population:	5,811	5,892	6,200
Harvest:	744	342	330
Hunters:	822	415	410
Hunter Success:	91%	82%	80%
Active Licenses:	931	451	440
Active License Success:	80%	76%	75%
Recreation Days:	3,321	1,618	1,600
Days Per Animal:	4.5	4.7	4.8
Males per 100 Females	52	30	
Juveniles per 100 Females	54	60	

Population Objective (± 20%) :	4800 (3840 - 5760)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	23%
Number of years population has been + or - objective in recent trend:	2
Model Date:	02/27/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	4%	3%
Males ≥ 1 year old:	18%	19%
Proposed change in post-season population:	-2%	+5%



2024 Hunting Seasons
Copper Mountain Pronghorn (PR201)

Hunt Area	Type	Special Archery Dates Opens	Special Archery Dates Closes	Regular Season Dates Opens	Regular Season Dates Closes	Quota	Limitations
76	1	Aug. 15	Sep. 30	Oct. 1	Oct. 31	100	Any antelope
79	1			Oct. 1	Oct. 15	25	Any antelope valid on or within one-half (1/2) mile of irrigated land
79	6			Sep. 1	Nov. 30	75	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
79	9			Aug. 15	Sep. 30	50	Any antelope, archery only
114	1	Aug. 15	Sep. 30	Oct. 1	Oct. 31	50	Any antelope
114	6	Aug. 15	Aug. 31	Sep. 1	Nov. 30	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
115	1	Aug. 15	Sep. 30	Oct. 1	Oct. 31	150	Any antelope
115	6	Aug. 15	Aug. 31	Sep. 1	Nov. 30	50	Doe or fawn valid east of the Nowood River or south of the Nowater Stock Trail (B.L.M. Road 1404)

2023 Hunter Satisfaction: 84% Satisfied, 10% Neutral, 6% Dissatisfied

2024 Management Summary

1.) Hunting Season Evaluation: The 2024 season structure will be conservative due to low numbers of pronghorn across the herd unit. A significant late winter die-off in 2018-2019, along with recent years of drought and poor fawn production have contributed to these declines. The fawn ratios between 2019 and 2021 averaged 44:100 does, which are three of the lowest fawn ratios on record. However, current winter conditions have improved in comparison to previous years, and the fawn ratio in 2023 was 60:100. The number of pronghorn classified is down as much as 50% in the herd unit over the last five years and based on field personnel perceptions, along with landowner and hunter comments during the 2020-2023 hunting seasons, it is believed a 50% loss in this pronghorn population has occurred since 2018. Hunter success was 75% in 2023, down from 103% in 2018, while hunter days per harvest have increased by one day. Because of the observed population declines and limited damage issues from pronghorn over the past several years, no quota changes for the herd unit will be implemented for the Type 1, Type 6, and Type 9 licenses, with the exception of the elimination of the Hunt Area 114 Type 7 licenses. A season date extension will be applied for the Hunt Area 114 Type 6 licenses to align with other Type 6 license season dates within the herd unit. Until this pronghorn herd shows continued improvements or until further damage issues need addressing, a conservative hunting season structure will continue. The 3-year average percent harvest of preseason males (≥1 year old) is currently 19%. However, based on the new PopR integrated population model (IPM) having no recent abundance estimates to help model performance, it is felt current population estimates may be unreliable at this time.

Damage issues have and will continue to be management concerns for this pronghorn herd, especially in those agricultural areas near the Worland. Supporting some doe/fawn licenses should be considered annually to allow for crop damage prevention even when herd numbers are suppressed.

Overall habitat conditions continue to decline in this herd due to increases in cheatgrass prevalence and expansion. Because of this, pronghorn herd growth will continue to struggle, and more erratic declines in numbers may occur more often when higher than normal weather events occur. Epizootic Hemorrhagic Disease (EHD) was confirmed in 2023 south and east of Worland, but no significant die-offs were documented.

2.) Management Objective Review: The Copper Mountain Pronghorn herd unit objective was reviewed in 2022. No changes were made at that time.

5.) Population Modeling: In 2021, WGFD managers began using PopR IPMs to estimate population indices for pronghorn and mule deer. The 2023 postseason population estimate for this herd unit from the PopR IPM was approximately 5,900 (CL = 5,300-6,600) pronghorn. The current model estimate may seem high given significant declines in harvest
and the number of pronghorn classified in recent years, but a line-transect abundance survey is planned in the summer of 2024 for this herd unit to help refine the new PopR model estimate, along with formulating a new population objective if needed.

2023 - JCR Evaluation Form

SPECIES: Pronghorn | PERIOD: 6/1/2023 - 5/31/2024

HERD: PR204 - FIFTEENMILE

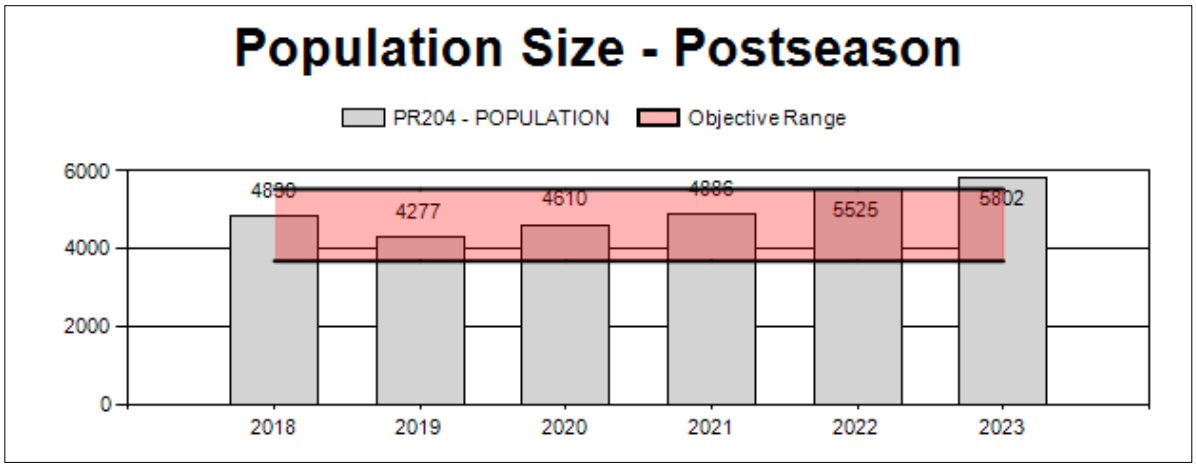
HUNT AREAS: 77, 83, 110 | PREPARED BY: AUSTIN WIESELER

	2018 - 2022 Average	2023	2024 Proposed
Population:	4,826	5,802	6,100
Harvest:	703	457	475
Hunters:	732	420	425
Hunter Success:	96%	109%	112%
Active Licenses:	829	489	500
Active License Success:	85%	93%	95%
Recreation Days:	2,307	1,462	1,500
Days Per Animal:	3.3	3.2	3.2
Males per 100 Females	43	46	
Juveniles per 100 Females	59	59	

Population Objective (± 20%) :	4600 (3680 - 5520)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	26%
Number of years population has been + or - objective in recent trend:	2
Model Date:	02/27/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	4%	7%
Males ≥ 1 year old:	23%	21%
Proposed change in post-season population:	+5%	+5%



2024 Hunting Seasons
Fifteen Mile Pronghorn (PR204)

Area	Type	Special Archery Dates		Regular Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
77	1	Aug. 15	Sep. 19	Sep. 20	Oct. 14	125	Any antelope
77	6	Aug. 15	Aug. 31	Sep. 1	Nov. 30	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
83	1	Aug. 15	Sep. 19	Sep. 20	Nov. 7	200	Any antelope
83	6	Aug. 15	Aug. 31	Sep. 1	Nov. 30	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
110	1	Aug. 15	Sep. 19	Sep. 20	Oct. 14	150	Any antelope
110	6	Aug. 15	Sep. 19	Sep. 20	Oct. 14	75	Doe or fawn

2023 Hunter Satisfaction: 93% Satisfied, 4% Neutral, 4% Dissatisfied

2024 Management Summary

1.) Hunting Season Evaluation: The 2024 season structure for this herd unit is again mostly conservative due to fewer pronghorn in recent years. A 2018-2019 winter loss, along with two consecutive years of drought, have caused this population to decline, but the 2023-2024 year has had improved summer/spring moisture and a milder winter to date when compared to previous years. Still, field personnel and landowner perceptions are that pronghorn numbers have declined by over 50% in recent years. Hunter success had declined from a record high of 110% in 2018 to a record low of 84% in 2021, but has since improved to 109% in 2023. A little over 1,100 pronghorn were classified in 2023, down nearly 45% since 2018, when 2,100 were classified. Fawn ratios the past three years have been favorable at an average of 64:100 does. Buck ratios continued to remain low, at about 43:100 on average, the past three years. For the 2024 season, the Hunt Area 77 Type 6 license will see a season extension in response to the elimination of the Hunt Area 77 Type 7 license. The elimination of the Hunt Area 77 Type 7 license was in response to the limited damage issues in recent years where this license was valid and initially created for. In Hunt Area 83, the Type 6 license will see a season date reduction to align with the season dates for the Hunt Area 77 Type 6 license. Additionally, for Hunt Area 83, a quota increase of 50 licenses will occur for the Type 1 license since harvest success has improved and it appears to still support good numbers of pronghorn. The remaining doe/fawn licenses will be maintained to address potential damage concerns in each hunt area. The 3-year average percent harvest of the preseason males (≥1 year old) is currently 24%, but is unreliable due to questionable model estimates.

Issues of crop damage have and will continue to be management concerns for this pronghorn herd, especially in those agricultural areas near the Bighorn River, Greybull River, and along Owl Creek in Hunt Areas 77 and 83. Supporting some doe/fawn licenses should be considered annually to allow for crop damage prevention even when herd numbers are suppressed, or below herd objectives.

Overall habitat conditions continue to decline in this herd due to increases in cheatgrass prevalence and expansion. Because of this, pronghorn herd growth will likely continue to struggle, and more erratic declines in the population may occur more often.

2.) Management Objective Review: The Fifteen Mile Pronghorn herd unit objective was reviewed in 2022. No changes were proposed.

3.) Population Modeling: In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2023 postseason population estimate for this herd unit from the PopR IPM was approximately 5,932 (CL = 5,187-6,747) pronghorn. A line-transect (LT) abundance survey was conducted at the end of biological year 2022 for this herd unit and calculated an approximate postseason herd abundance estimate of 9,941 (CL = 5,831-14,051) pronghorn (Appendix A), but managers speculate that this estimate is likely an overestimate of the current herd. This recent LT estimate has and will continue to provide weight in refining and grounding the PopR IPM estimates, which is already apparent with the simulated population increase for 2023 despite the observed declines in harvest and the amount of pronghorn classified in recent years. Although differences between PopR IPM and LT estimates, the 2023 PopR IPM postseason estimate does fall within the confidence levels estimated from the recent line-transect abundance, and regardless of the interpretation of population estimates, it is apparent that this herd unit has experienced recent declines and is considered to be at a low point currently.

Appendix A. 2023 PR 204 – Fifteen Mile Pronghorn Line Transect Summary

Survey Dates:	6/7 –6/8/2023
Total Survey Hours:	17.3
Survey Cost:	$5,840.60
Flight Service:	Flightline LFS, Inc.
Aircraft:	NH 37
Observers:	Kroger, B.
Weather Conditions	
Temperature (Degrees Fahrenheit):	65
Cloud Cover:	10
Wind Speed (mph):	6
Survey Design and Flight Data	
Number of Transects:	87
Total Transect Length Surveyed (mi^2):	964.6
Mean Flight Height (ft):	310.9
Number of Transects w/ Pronghorn:	46
Number of Individuals Detected:	430
Mean Group Size:	2.2
Model Output	
Occupied Habitat (mi^2):	1,850
Density Estimate (animals/mi^2 95% CI):	5.37 (3.79 –8.93)
Population Estimate (95% CI):	9,941 (6,101 –14,916)
Detection Probability (95% CI):	0.64 (0.55 –0.76)

CI = 95% Confidence Interval

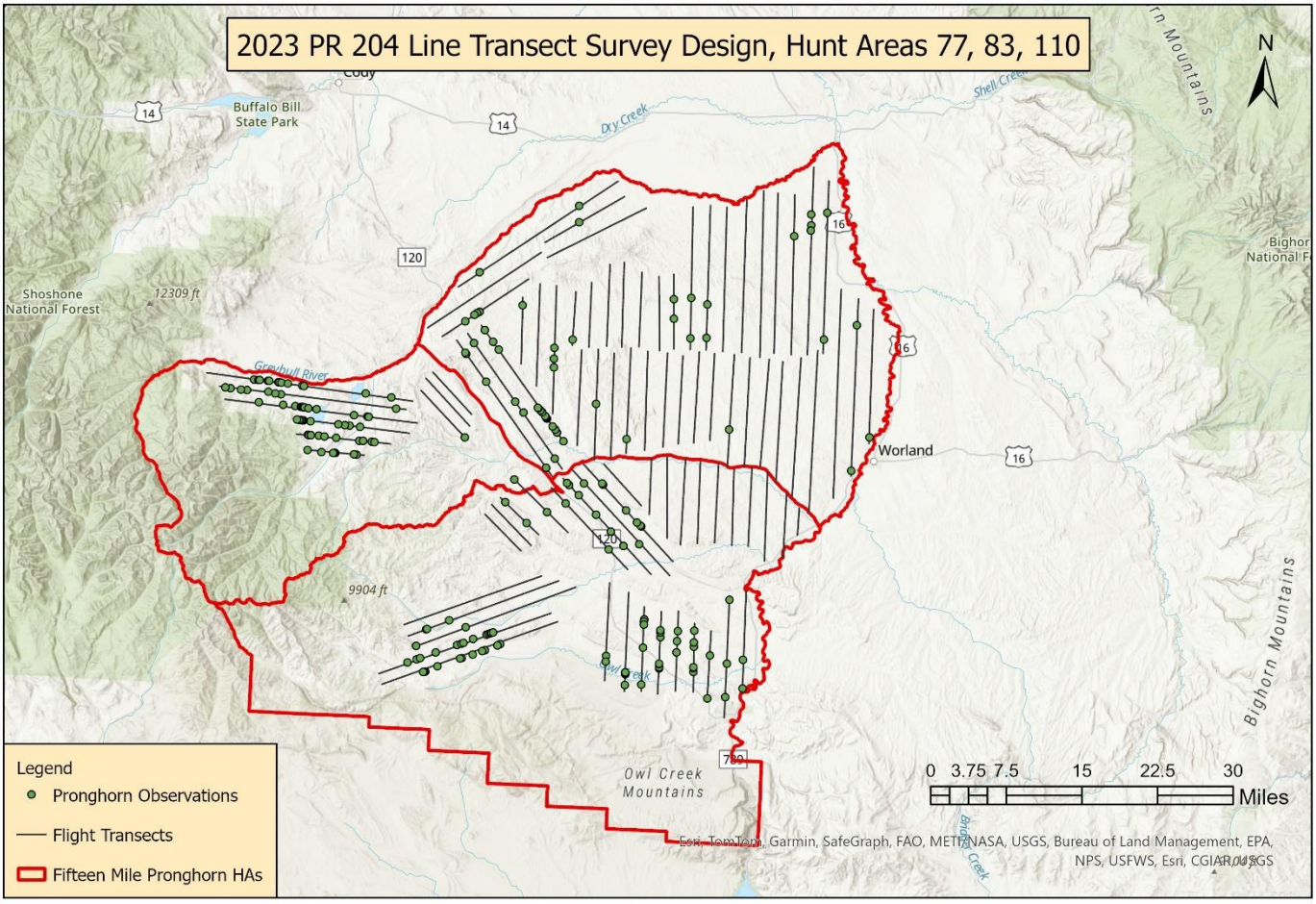


Figure 1: Map of study design and pronghorn observations for line transect abundance survey conducted June 2023 in the Fifteen Mile Pronghorn Herd (PR204); Hunt Areas 77, 83, and 110.

Abundance Estimate (95% CI): 9,941 (6,101 –14,916)
Probability of Detection (95% CI): 0.64 (0.55 –0.76)
AICc: 1,938.33

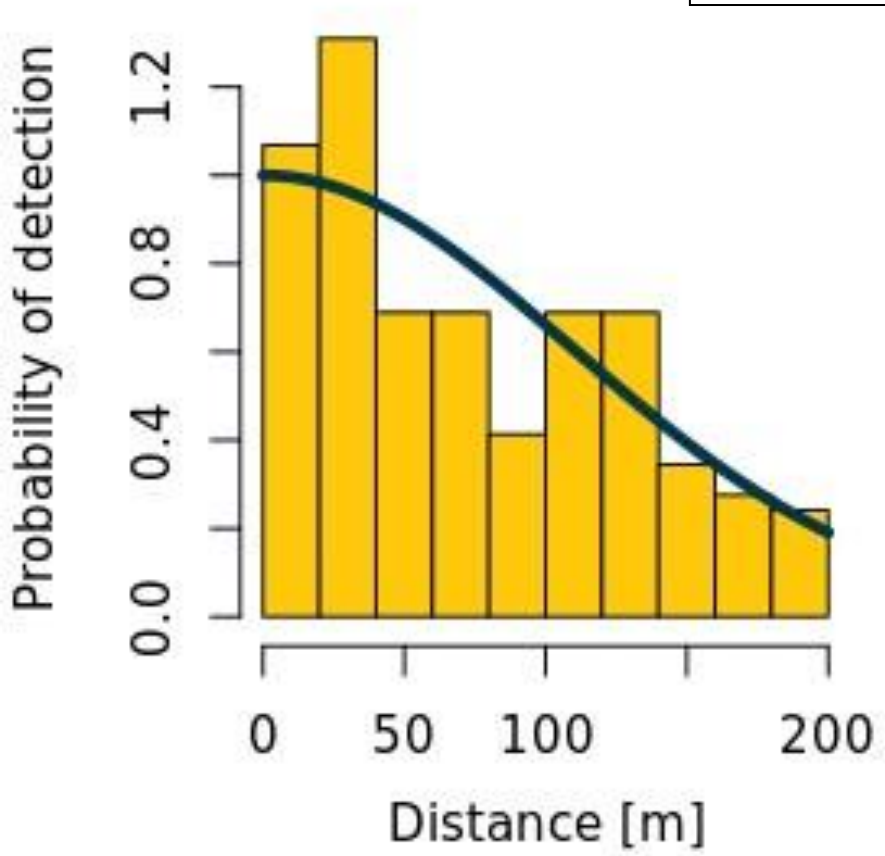


Figure 2: Modeled detection probability and half-normal bell curve from pronghorn line-transect abundance data collected June 2023 in the Fifteen Mile Pronghorn Herd (PR204); Hunt Areas 77, 83, and 110.

2023 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2023 - 5/31/2024

HERD: PR205 - CARTER MOUNTAIN

HUNT AREAS: 78, 81-82
PREPARED BY: SAM STEPHENS

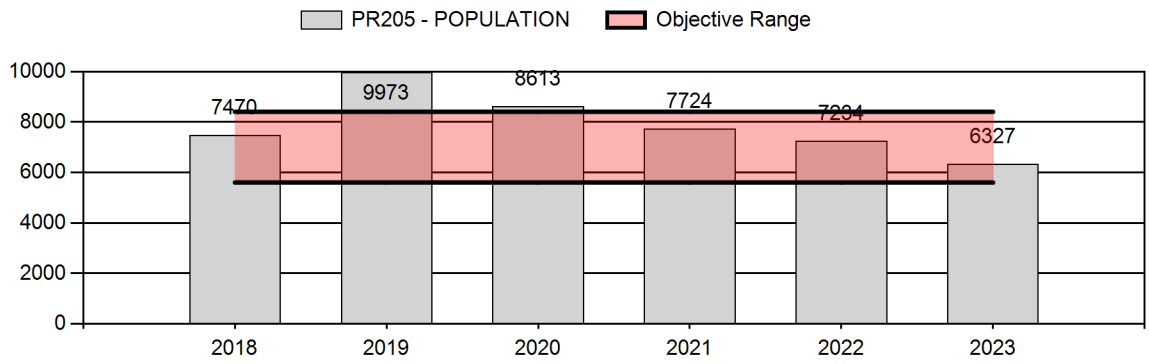
	2018 - 2022 Average	2023	2024 Proposed
Population:	8,203	6,327	6,800
Harvest:	911	881	700
Hunters:	946	839	750
Hunter Success:	96%	105%	93 %
Active Licenses:	1,072	1,043	850
Active License Success:	85%	84%	82 %
Recreation Days:	3,360	3,374	3,000
Days Per Animal:	3.7	3.8	4.3
Males per 100 Females	53	38	
Juveniles per 100 Females	53	44	

Population Objective (± 20%) :	7000 (5600 - 8400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-9.6%
Number of years population has been + or - objective in recent trend:	1
Model Date:	02/09/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	9%	9%
Males ≥ 1 year old:	23%	23%
Proposed change in post-season population:	88%	96%

Population Size - Postseason



2024 HUNTING SEASONS
CARTER MOUNTAIN PRONGHORN HERD (PR205)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
78	1	Aug. 15	Sep. 19	Sep. 20	Oct. 31	100	Any antelope
78	6			Aug. 15	Nov. 30	100	Doe or fawn valid on irrigated land
81	1	Aug. 15	Sep. 19	Sep. 20	Nov. 15	175	Any antelope
81	6	Aug. 15	Sep. 19	Sep. 20	Nov. 15	150	Doe or fawn
82	1	Aug. 15	Sep. 19	Sep. 20	Oct. 14	175	Any antelope
82	2	Aug. 15	Sep. 19	Oct. 15	Nov. 15	100	Any antelope valid east of Wyoming Highway 120
82	6	Aug. 15	Sep. 19	Sep. 20	Oct. 14	175	Doe or fawn
82	8	Aug. 15	Sep. 19	Oct. 15	Nov. 30	50	Doe or fawn valid in Big Horn County

2023 Hunter Satisfaction: 86% Satisfied, 9% Neutral, 5% Dissatisfied

2023 Management Summary

1.) Hunting Season Evaluation:

Harvest decreased slightly in 2023 following quota reductions in Hunt Areas 81 and 78. Similar reductions were made in 2024 due to a decreasing population and lack of recruitment from the 2023 biological year. The post-season population estimate (6,327) fell below the objective (7000) for the first time in eight years but is still within the objective range. Increased harvest from 2021-2022 paired with significant winter mortality were likely responsible for bringing the herd under objective. Similarly, buck ratios have steadily decreased for the second year, indicating poor recruitment. Low fawn ratios in 2023 (44:100) forecast future population decline. With pronghorn abundance decreasing over the past 4 season setting cycles, season changes for 2024 will attempt to decrease harvest through significant cuts to doe/fawn quotas and marginally reducing Type 1 quotas. Changes in 2023 were made to address decreasing buck ratios by reducing Type 1 licenses in all three Hunt Areas. In 2023, hunters harvested 23% of the preseason bucks. Decreases to curb buck harvest will cumulatively account for a decrease of 50 Type 1 licenses. Decreases to doe harvest are more substantial but are predominantly focused on Hunt Area 78, where fawn recruitment was significantly lower (32:100) in 2023 than what was observed in Hunt Areas 81 and 82. Reductions to the Hunt Area 78 Type 6 license is likely to impact resident pronghorn while the removal of the Type 7 license is intended to reduce harvest on the overall herd since the later season often fosters a combination of both migratory and resident animals which will likely contribute to increased population growth in 2023.

2.) Population Modeling:
The 2023 postseason population estimate for this herd unit from the PopR IPM is 6,327 (CL=5,159 – 7,823) pronghorn. This was selected as the most accurate model where convergence was likely due to a lower rhat value (1.08). Additionally it tracks well with an apparent decrease in abundance since the population peaked in 2019 when the last Line-Transect Density Survey was conducted and rendered an estimate of approximately 8600 pronghorn.

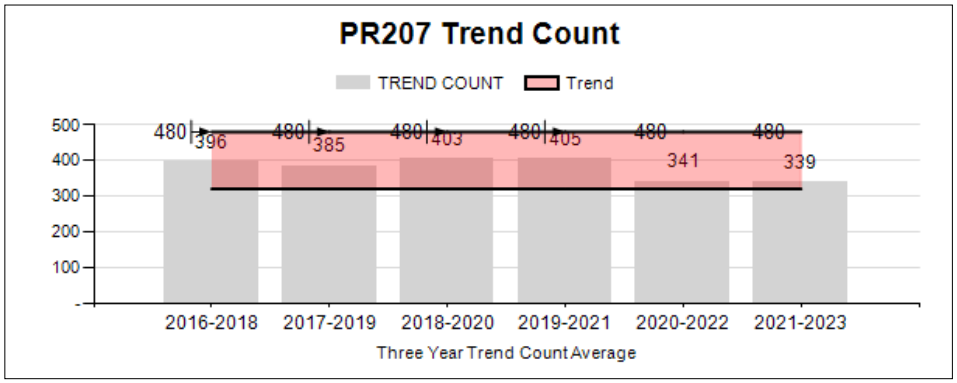
2023 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2023 - 5/31/2024
HERD: PR207 - BADGER BASIN
HUNT AREAS: 80
PREPARED BY: TONY MONG

	2018 - 2022 Average	2023	2024 Proposed
Trend Count:	355	454	500
Harvest:	104	152	175
Hunters:	115	163	180
Hunter Success:	90%	93%	97 %
Active Licenses:	127	193	200
Active License Success	82%	79%	88 %
Recreation Days:	480	555	600
Days Per Animal:	4.6	3.7	3.4
Males per 100 Females:	38	33	
Juveniles per 100 Females	33	30	
Trend Based Objective (± 20%)			400 (320 - 480)
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			14%
Number of years population has been + or - objective in recent trend:			0

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	n/a%	n/a%
Males ≥ 1 year old:	n/a%	n/a%
Juveniles (< 1 year old):	n/a%	n/a%
Total:	n/a%	n/a%
Proposed change in post-season population:	n/a%	n/a%



2024 Hunting Seasons
Badger Basin (PR207)

Hunt Area	Type	Archery Dates Opens	Archery Dates Closes	Season Dates Opens	Season Dates Closes	Quota	Limitations
80	1	Aug. 15	Sep. 19	Sep. 20	Oct. 31	100	Any antelope
80	2	Aug. 15	Sep. 19	Sep. 20	Oct. 31	25	Any antelope valid on private land east of Wyoming Highway 120
80	6	Aug. 15	Sep. 19	Sep. 20	Nov. 15	75	Doe or fawn valid on private land
80	7	Aug. 15	Sep. 19	Sep. 20	Nov. 15	75	Doe or fawn valid on private land east of Wyoming Highway 120

2023 Hunter Satisfaction: 82% Satisfied, 13% Neutral, 5% Dissatisfied

2023 Management Summary

1.) Hunting Season Evaluation: We are continuing to see an increase in the number of pronghorn on irrigated meadows in the Heart Mountain and Clark areas. We are going to maintain the overall number of doe licenses and increase buck licenses in order to address the damage concerns on these areas. Because of the specific damage areas within in the Herd Unit, we are creating a Type 2 and Type 7 license that should direct harvest to the areas where we are having issues. An effort is being made to make hunting on private land in the Heart Mountain area safer and more effective by creating "shooting areas" on willing private landowner properties. This should also help to increase harvest and decrease damage.

2023 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2023 - 5/31/2024

HERD: MD207 - PAINTROCK

HUNT AREAS: 41, 46-47
PREPARED BY: SAM STEPHENS

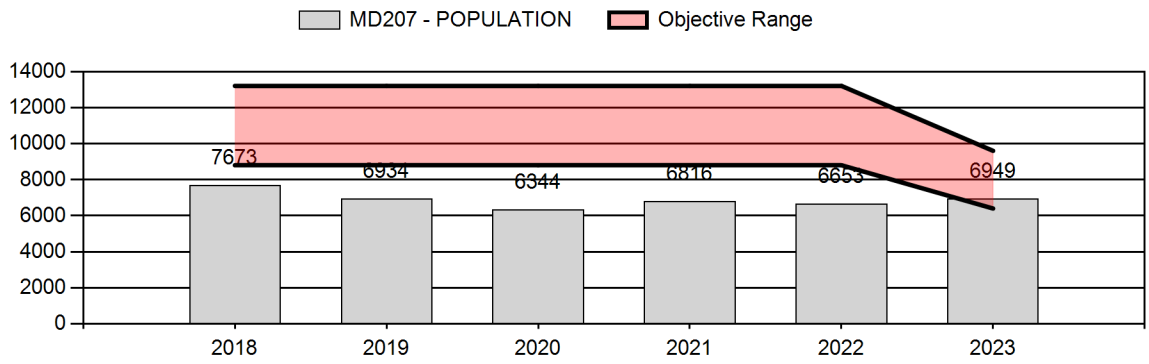
	2018 - 2022 Average	2023	2024 Proposed
Population:	6,884	6,949	6,856
Harvest:	640	649	634
Hunters:	1,313	1,300	1,200
Hunter Success:	49%	50%	53 %
Active Licenses:	1,395	1,358	1,158
Active License Success:	46%	48%	55 %
Recreation Days:	5,710	5,969	5,800
Days Per Animal:	8.9	9.2	9.1
Males per 100 Females	24	35	
Juveniles per 100 Females	61	72	

Population Objective (± 20%) :	8000 (6400 - 9600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-13.1%
Number of years population has been + or - objective in recent trend:	0
Model Date:	02/09/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	3%	3%
Males ≥ 1 year old:	34%	34%
Proposed change in post-season population:	108%	99%

Population Size - Postseason



2024 HUNTING SEASONS
PAINTROCK MULE DEER HERD (MD207)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
41	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Any deer
41	Gen			Oct. 25	Oct. 31		Any deer valid on or within one-half (1/2) mile of irrigated land
41	6	Sep.1	Sep. 30	Oct. 15	Nov. 15	100	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
46	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
47	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Any deer
47	Gen			Oct. 25	Oct. 31		Any deer valid on or within one-half (1/2) mile of irrigated land
47	6	Sep. 1	Sep. 30	Oct. 15	Nov. 15	100	Doe or fawn valid on or within one-half (1/2) mile of irrigated land

2024 Region R nonresident quota: 500 licenses

2023 Hunter Satisfaction: 48% Satisfied, 26% Neutral, 26% Dissatisfied

2023 Management Summary

1) Hunting Season Evaluation:

Mule deer buck harvest showed a slight increase in 2023. Warmer weather and a lack of snowfall typically responsible for decreasing harvest was offset by an abundance of younger bucks in the yearling to 3 y.o range. Buck harvest increased from 407 (2022) to 523 in 2023. Sequential years of good fawn recruitment has contributed to an increase in the overall buck ratio. The 2023 yearling ratio is a measure of survival from the 2022 fawn cohort and rose to 19:100. This increase when paired with adult bucks, totaled a buck ratio of 35:100. Additionally, the Paintrock Herd exhibited another good year of fawn recruitment at 72 fawns per 100 does. Adult survival has remained steady in the herd unit with 0.86 of collared does (n=58) surviving in 2023. These conditions indicate moderate population growth from 2022 to 2023. 2023 was the second year that management strategies formulated to manage Chronic Wasting Disease were in place. This included November 1-15 “late” season hunts with the allocation of 50 Type 1 licenses split evenly between Hunt Areas 41 and 47. In 2023, CWD testing of any deer harvested with these license types was mandatory. WGFD staff and Type 1

license holders accommodated one another to ensure that CWD testing and tooth aging were conducted on the majority (0.82) of the mule deer bucks harvested (39) during this season. This was an improvement from 0.51 in 2022 when testing was optional. CWD testing of these "late season" deer rendered lower prevalence than those seen from the general season harvest. Prevalence ranged from 9% (n=32) in the late season subsample to 17% in the cumulative sample of adult bucks (n=373; 2021-23). The average age of bucks harvested with these seasons was 6.0 and 5.6 in 2022 and 2023 respectively. The goal of increasing samples on older aged bucks was attained with the Type 1 season, however given the lower CWD prevalence, managers feel it's unnecessary to continue as a management tool in 2024. Hunter satisfaction decreased in 2023 to 48%, down from 55% in 2022 and 61% in 2021. This steady decline substantiates comments and concerns about hunter crowding on public lands. This phenomenon appears most pronounced in Hunt Area 46 which has seen a 35% increase in active licenses from 2018-19 estimates. Game and fish personnel infer that this is likely due to the decline of resident deer that historically drew hunters to agricultural areas. When compared to the 2017-18 average, classification surveys conducted in 2021 and 22 indicate a reduction of 49% and 22% of mule deer counted in these portions of Hunt Areas 41 and 47 respectively. It's suspected that due to the non-migratory nature of these deer, CWD is likely the primary cause of decline. This has led to a concentration of hunters at higher elevations where the migratory segment of the Herd is fairing better. The non-resident Region R quota was last reduced in 2018 and set at 600. A reduction of 200 Region R licenses is intended to improve hunter satisfaction and apparent crowding on public lands.

2) Herd Unit Objective Review:

In 2023 managers reviewed the postseason population objective for the Paintrock Mule Deer Herd. The previous objective (11,000 deer) was set in 2013. At the time managers estimated approximately 9,500 deer using a Constant Adult/Constant Juvenile model. Model based population estimates since then have ranged 9500-6344 deer (2013-2021). These models have produced unsatisfactory results due to a lack of any robust abundance estimate. In 2023 managers conducted a sightability survey in the Paintrock Herd where managers surveyed approximately 0.7 and 0.15 of the High and Low Density areas within the Herd Unit respectively. Using this methodology and Speedgoat Integrated Population Models we estimated 6,653 deer for the 2022 biological year. Using this most recent abundance estimate as a baseline we can then look back to how other standardized metrics have shifted in recent history. Buck harvest and hunter satisfaction are two tightly correlated variables that indicate mule deer abundance. The last significant season change was made in 2018 which decreased Nonresident Region R licenses from 750 to the current 600. Between 2018 and 2022 seasons remained relatively the same. In this period buck harvest ranged 407-508. Concurrently hunter satisfaction rates ranged from 55-67% and shows a direct relationship to buck harvest. Aiming to harvest approximately 500 bucks would likely maintain hunter satisfaction. Given the current harvest rates (0.36; 2020-22 avg) and the approximate proportion of bucks to the preseason population (0.16; 2022 est): harvesting 500 bucks would equate to an abundance estimate of 8,700 deer in the preseason. This would amount to around 8,000 deer as a post-season estimate. Population growth in this herd is restricted by lacking winter range and marginal summer range.

Conifer encroachment and invasive grasses incrementally shrink habitat every year. Without significant landscape scale disturbance or habitat enhancement projects that increase mule deer forage, it's unlikely that this population will grow substantially in the near future. In 2023 the population objective was decreased to 8,000 deer to better match a realistic goal that won't exceed the carrying capacity of habitat on the landscape. This objective places our current estimate on the lower end of the objective range which affords managers room to grow the herd.

3) Chronic Wasting Disease:

This is a Tier 2 surveillance herd where targeted sampling was initiated in the 2021 and 2022 seasons. Signs, business cards, direct mailing, and increased days of check station operation were employed to increase samples returned. Proportion of total and targeted samples returned/harvested in 2021 and 2022 was 27% (n=197/725) and 28% (n=140/508), respectively; greatest proportions of target samples/deer harvested returned from HA 46, 47, and 41, respectively. Since at least 2015-17, prevalence of CWD in adult male mule deer has increased (Table 1).

Table 1. CWD prevalence of mule deer within Paintrock herd unit, 2015-2023.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2015-17	**10% (4-13%, n=162)**	4% (23)	25% (8)
2019-21	**19% (11-24%, n=212)**	4% (23)	12% (60)
2020-22	**18% (11-23%, n=294)**	3% (36)	8% (87)
2021-23	**17% (11-21%. n=373)**	6% (53)	12% (103)

In 2021, education and scoping efforts were targeted at pre- and post-season public meetings, trainings, and focused conversations in the field for HA 41, 46, and 47. From surveys conducted at these events, non-hunting and hunting respondents supported targeting hot-spots of CWD positive animals, increasing harvest of male mule deer relative to females or overall population reduction, and increasing adult male deer harvest with later hunting seasons (Table 2). To address CWD through mule deer harvest, we will maintain Oct 25-31st general season extensions for deer within 1/2 mile of irrigated lands, maintain liberal white-tailed deer quotas, and continue harvesting doe mule deer through "any deer" general seasons.

4) Population Modeling:

In 2021, WGFD biologists began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2023 postseason population estimate for the Paintrock Herd is 6,949 (CL=5,652-8,295). Convergence was not achieved due to an Rhat value slightly outside the range of convergence (1.19) indicating that modeled and observed values were marginally out of agreement. However this abundance estimate appears to be accurate, given that a sightability was conducted in February, 2023 which estimated

approximately 6,000 deer. Additionally, increased adult survival (0.86) and fawn recruitment in 2023 indicate a growing population from 2022 (est. 6,653).

5) GPS Collaring:

In December of 2022, 100 GPS collars were deployed on doe mule deer throughout the Paintrock and Southwest Bighorn Herd Units. The objective of this project is to collect baseline movement and survival data with the goal of improving our understanding of seasonal use, movement, and herd unit interchange to better monitor and manage for CWD. Determining cause-specific mortality is also an important function of collaring animals. Mortality signals are sent remotely and a prompt response is necessary to determine what the cause of death was for each animal. Compiling this data over a two year period will help managers establish whether or not CWD is a significant cause of decline at the population level. This data also helps managers better define herd-unit boundaries and determine what level of interchange between neighboring herd units could be contributing to CWD transmission. Additionally: maintaining a robust sample of marked individuals will help inform managers what the harvest rates of adult females is for each herd unit and whether or not it's significant to broader population declines. The total sample of collared mule deer in the Paintrock Herd includes 60 collared does, 21 fawns, and 6 bucks. Annual survival and cause specific mortality has been estimated since collars were initially deployed in 2021 during a research project focusing on the neighboring North Bighorn Herd.

Table 3. Proportion of marked does that survived from January 1st-December 31st in the Paintrock Herd 2020-23.

Year	Female Survival	Juvenile Survival (*Est*)
2021	0.83 (n=12)	0.61
2022	0.88 (n=24)	0.72
2023	0.86 (n=58)	0.62

Table 4. Cause specific mortality of collared mule deer (does, bucks, and fawns) in the Paintrock Herd from November 2020- December 2023.

Mountain Lion Predation	Coyote Predation	Malnutrition	Hunter Harvest	Fence Crossing	CWD	Unknown
3	5	3	3	1	3	3

2023 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2023 - 5/31/2024

HERD: MD208 - SOUTHWEST BIGHORNS

HUNT AREAS: 35-37, 39-40, 164

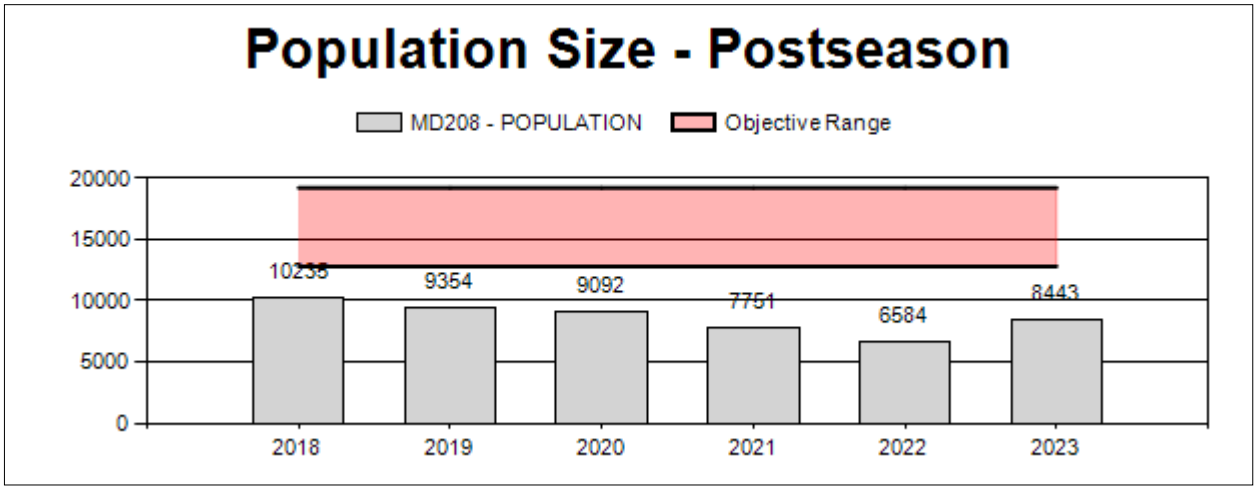
PREPARED BY: AUSTIN WIESELER

	2018 - 2022 Average	2023	2024 Proposed
Population:	8,603	8,443	8,900
Harvest:	869	491	480
Hunters:	1,672	899	900
Hunter Success:	52%	55%	53%
Active Licenses:	1,757	904	875
Active License Success:	49%	54%	55%
Recreation Days:	7,155	4,106	4,100
Days Per Animal:	8.2	8.4	8.5
Males per 100 Females	33	33	
Juveniles per 100 Females	56	72	

Population Objective (± 20%) :	16000 (12800 - 19200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-47.2%
Number of years population has been + or - objective in recent trend:	21
Model Date:	03/05/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	1%	2%
Males ≥ 1 year old:	21%	24%
Proposed change in post-season population:	+28%	+2%



2024 Hunting Seasons
Southwest Bighorns Mule Deer (MD208)

Hunt Area	Type	Special Archery Dates		Regular Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
35	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
36	1	Sep. 1	Sep. 30	Oct. 15	Oct. 31	75	Antlered mule deer or any white-tailed deer
36	8	Sep. 1	Sep. 30	Oct. 15	Oct. 31	25	Doe or fawn white-tailed deer
37	1	Sep. 1	Sep. 30	Oct. 15	Oct. 31	50	Antlered mule deer or any white-tailed deer
37, 39	3	Sep. 1	Sep. 30	Nov. 1	Dec. 15	50	Any white-tailed deer
37	6	Sep. 1	Sep. 14	Sep. 15	Nov. 30	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land within the Buffalo Creek Drainage
37, 39	8	Sep. 1	Sep. 30	Oct. 15	Dec. 15	100	Doe or fawn white-tailed deer
39	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
40	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
40	3	Sep. 1	Sep. 30	Oct. 15	Nov. 30	50	Any white-tailed deer; also valid in Area 35
40	6	Sep. 1	Sep. 30	Oct. 15	Oct. 31	50	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
40	8	Sep. 1	Sep. 30	Oct. 15	Nov. 30	300	Doe or fawn white-tailed deer; also valid in Area 35
164	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered mule deer or any white-tailed deer
164	3	Sep. 1	Sep. 30	Oct. 1	Dec. 15	100	Any white-tailed deer; also valid in Area 125
164	6	Sep. 1	Sep. 30	Oct. 1	Nov. 15	75	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
164	8			Sep. 1	Dec. 31	200	Doe or fawn white-tailed deer; also valid in Area 125

2024 Region M nonresident quota: 400 licenses

2023 Hunter Satisfaction: 58% Satisfied, 19% Neutral, 23% Dissatisfied

2024 Management Summary

1.) Hunting Season Evaluation: This mule deer herd has experienced a significant population decline since about 2016. Contributing to this decline includes a winter die-off in 2018-2019, two consecutive years of drought, five years of unfavorable fawn production, CWD/EHD, and reduced habitat conditions. These variables have likely led to the fewest deer and poorest hunting conditions in this herd unit on record. The 2024 hunting season structure will again be conservative. Overall, hunter satisfaction has declined over recent years from 72% in 2018 to 58% in 2023. However, hunter success increased from 41% in 2022 to 54% in 2023 and days/harvest was 8.4 in 2023, down from 10.2 in 2022. Fawn ratios the previous five years have averaged 61:100 does. Total number of deer classified in 2023 was 1,232, with a fawn ratio of 72:100 and a buck ratio of 33:100. The 2023 fawn ratio of 72:100 was the highest recorded since 2015 (78:100). The new abundance survey technique was used in 2021 to classify the herd unit, which had an abundance estimate of 7, 400 mule deer.

For 2024, the Region M quota will remain at 400 and general licenses in Hunt Area 35 and Hunt Area 164 will have new limitations of "Antlered mule deer or any white-tailed deer". Additionally, a Type 6 license will be added in Hunt Area 37 and Hunt Area 40 with quotas of 25 and 50, respectively. The limitations for the Hunt Area 37 Type 6 license will be "Doe or fawn valid on or within ½ mile of irrigated land within the Buffalo Creek Drainage". The limitations for the Hunt Area 40 Type 6 license will be "Doe or fawn valid on or within ½ mile of irrigated land". The Type 6 license in Hunt Area 164 will have a quota increase to 75. At the herd unit level, all of the implemented 2024 changes and justifications were in response to balancing a conservative harvest strategy with a population that has experienced significant declines recently and maintaining harvest pressure and focus on areas/hotspots for addressing CWD and/or possible damage issues. In addition, herd unit wide limitations have been incorporated to improve opportunity and continued harvest pressure on white-tailed deer. Hunt Area 164 will continue to be a focal CWD management area, where management will focus on keeping mule deer densities at lower levels, along with white-tailed deer densities.

Overall habitat conditions continue to decline in this herd due to increases in cheatgrass prevalence and expansion. Because of this, mule deer herd growth will likely continue to struggle,and more erratic declines may occur more often due to the loss of desirable forage species. The continuing increase of cheatgrass expansion has and will negatively impact this deer herd.

2.) Management Objective Review: The herd objective and management strategy was last evaluated and approved in 2019, and at that time no changes were made. For the 2024 (5-year) objective review, we will maintain the current objective and recreational management strategy for this deer herd. Based on internal discussions and conversations with landowners and hunters, along with the most recent change to the objective in 2014, we feel there is no need to change this objective. Based on our 2017 sightability survey estimate (~11,400 deer) and a 2021 abundance/composition survey estimate (~7,700), we feel comfortable staying at the current objective while still allowing the population to grow.

2.) Chronic Wasting Disease Monitoring and Management: This herd unit was a Tier 1 herd for CWD sampling from 2019-2021 that provided sufficient sample sizes for estimating prevalence in adult males. In comparison to recent estimates from 2021-2023, prevalence appears to be trending up, especially in adults, but sample sizes are limited. Overall sample dispersion occurs throughout the unit, with concentration around Worland and along major tributaries of the Bighorn River, particularly in Hunt Area 164. Management actions taken to address CWD have mainly focused on keeping deer

densities low, especially white-tailed deer. Sixty radio collars were deployed in December 2022 on adult doe mule deer in hunt area 164. This data will be used to assess CWD management in other segments of the herd unit based on the movements of these deer.

Table 1. CWD prevalence of hunter-harvested mule deer in the Southwest Bighorns herd unit.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2019-2021	**18% (11-25%, n=187)**	11% (18)	15% (40)
2021-2023	**26% (13-36%, n=85)**	0% (13)	19% (26)

5.) Population Modeling: In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2023 postseason population estimate for this herd unit from the PopR IPM is approximately 8,661 (CL=7,494-10,102) mule deer. The current estimate appears reliable given a sightability survey estimate in 2017 of 11,400 deer, and an abundance/composition survey estimate of 7,700 deer in 2021.

2023 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2023 - 5/31/2024

HERD: MD209 - BASIN

HUNT AREAS: 125, 127

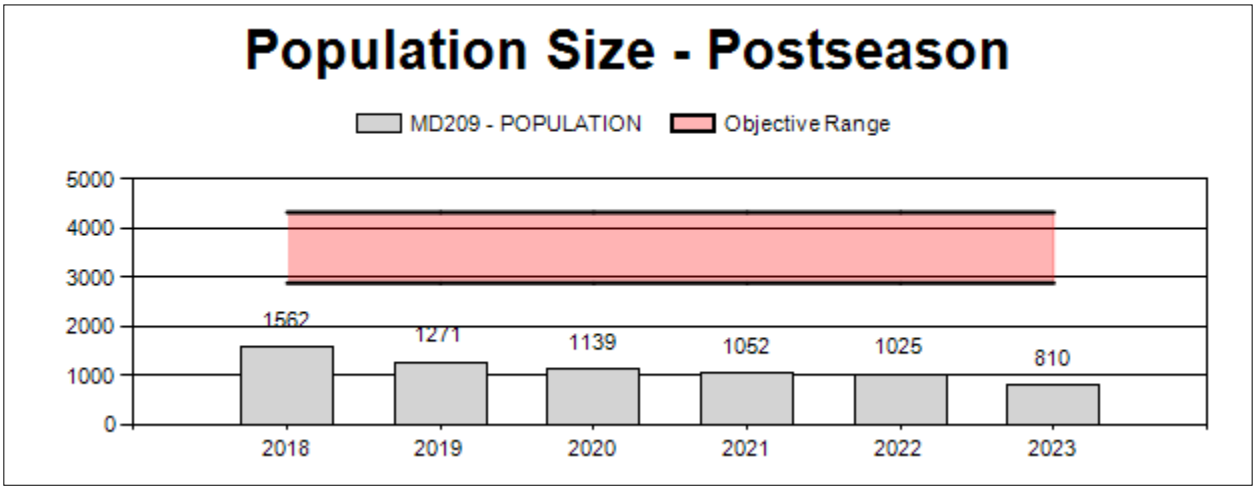
PREPARED BY: AUSTIN WIESELER

	2018 - 2022 Average	2023	2024 Proposed
Population:	1,210	810	800
Harvest:	85	53	50
Hunters:	227	193	200
Hunter Success:	37%	27%	25 %
Active Licenses:	228	193	175
Active License Success:	37%	27%	29 %
Recreation Days:	908	660	650
Days Per Animal:	10.7	12.5	13
Males per 100 Females	33	29	
Juveniles per 100 Females	55	67	

Population Objective (± 20%) :	3600 (2880 - 4320)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-77.5%
Number of years population has been + or - objective in recent trend:	16
Model Date:	03/05/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	31%	31%
Proposed change in post-season population:	-26%	-1%



2024 Hunting Season
Basin Mule Deer (MD209)

Hunt Area	Type	Special Archery Dates Opens	Special Archery Dates Closes	Regular Season Dates Opens	Regular Season Dates Closes	Quota	Limitations
125	1	Sep. 1	Sep. 30	Nov. 1	Nov. 15	75	Antlered mule deer or any white-tailed deer
125	1			Nov. 16	Dec. 15		Any white-tailed deer
127	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
127	3	Sep. 1	Sep. 30	Nov. 1	Dec. 15	50	Any white-tailed deer; also valid in Area 125
127	8	Sep. 1	Sep. 30	Oct. 15	Dec. 15	100	Doe or fawn white-tailed deer

2024 Region X nonresident quota: 100 licenses

2023 Hunter Satisfaction: 41% Satisfied, 32% Neutral, 27% Dissatisfied

2024 Management Summary

1.) Hunting Season Evaluation: The Basin mule deer herd unit has supported very conservative hunting seasons in recent years because of very low deer numbers. Even under these conservative seasons, growth of this herd has been nonexistent, and is actually showing continuing long-term declines. A late winter die-off in 2018-2019, along with severe drought conditions in 2020 and 2021, has further suppressed this population. The number of deer observed during classification surveys has declined by nearly 60% in recent years. Poor fawn ratios occurred in 2018 and 2019 (53:100 and 44:100), however 2020-2023 fawn ratio averaged 63:100. Buck ratios have been below 33:100 the last few years. Hunter success the previous four years has been the lowest on record, while hunter effort has been the highest on record. A total of 53 bucks were harvested in 2023, which is the lowest in 10 years. Hunter satisfaction is at 41% satisfied for 2023, which is down from the previous 3-yr average of 47% satisfied. For 2024, the Region X quota will be reduced to 100 licenses in response to public input and comments on declining deer numbers, poor hunter satisfaction, and low harvest success in recent years. Hunt Area 125 Type 1 will have a season extension from November 16th to December 15th with the limitations of "Any white-tailed deer" during this latter part of the season. Additionally, there are new limitations for the Hunt Area 125 Type 1 licenses and Hunt Area 127 general licenses to improve opportunity and continued harvest pressure on white-tailed deer.

Overall habitat conditions continue to decline in this herd due to increases in cheatgrass prevalence and expansion. Because of this, mule deer herd growth will likely continue to struggle, and more erratic declines may occur more often due to the loss of desirable forage species.

2.) Management Objective Review: The population objective and management strategy for this herd unit was last evaluated and approved in 2019, and at that time no changes were made. For the 2024 (5-year) objective review, we will continue to maintain the current objective and recreational management strategy for this deer herd. Based on internal discussions and conversations with

landowners and hunters, along with this herd consistently remaining below objective, we feel there is no need to change the objective. Most hunters and landowners want to see this deer herd increase, and by staying at the current objective we will have room for increases to occur if they happen.

3.) Chronic Wasting Disease Monitoring & Management: Chronic wasting disease (CWD) is a concern in this mule deer herd. CWD is likely contributing to some long-term declines of deer. To date, there has been limited CWD sampling and prevalence data available within this herd unit (Table 1). The only CWD management action has been to reduce white-tailed deer densities through increased harvest. This herd has not been prioritized for CWD surveillance because of low deer numbers and insufficient licenses offered to realistically achieve 200 target samples in a 3 year timeframe.

Table 1. CWD prevalence of hunter-harvested mule deer in the Basin herd unit, 2021-2023.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2021-2023	**28% (9-49%, n=25)**	0% (0)	33% (3)

4.) Population Modeling: In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2023 postseason population estimate for this herd unit from the PopR IPM is approximately 778 (CL= 475-1,294) mule deer. Although model performance is questionable it does reflect a downward trend in deer numbers in recent years, which also mirrors the 60% decline in the number of deer classified since 2016. A comp/abundance survey was flown in 2021 with a population estimate of 2,100 deer.

2023 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2023 - 5/31/2024

HERD: MD210 - GREYBULL RIVER

HUNT AREAS: 124, 165
PREPARED BY: SAM STEPHENS

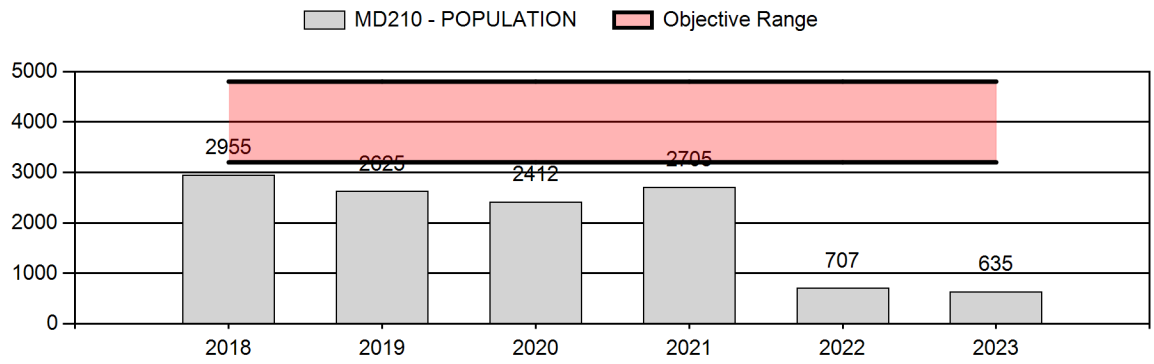
	2018 - 2022 Average	2023	2024 Proposed
Population:	2,281	635	700
Harvest:	308	89	100
Hunters:	673	302	302
Hunter Success:	46%	29%	33 %
Active Licenses:	745	308	308
Active License Success:	41%	29%	32 %
Recreation Days:	2,488	868	868
Days Per Animal:	8.1	9.8	8.7
Males per 100 Females	29	37	
Juveniles per 100 Females	53	70	

Population Objective (± 20%) :	4000 (3200 - 4800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-84.1%
Number of years population has been + or - objective in recent trend:	9
Model Date:	02/09/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	55%	55%
Proposed change in post-season population:	-10%	-10%

Population Size - Postseason



2024 HUNTING SEASONS

GREYBULL RIVER MULE DEER HERD (MD210)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
124	Gen	Sep. 1	Sep. 30	Nov. 1	Nov. 10		Antlered mule deer or any white-tailed deer
124	6	Sep. 1	Sep. 30	Nov. 1	Nov. 30	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
165	1	Sep. 1	Sep. 30	Oct. 15	Oct. 31	50	Antlered mule deer or any white-tailed deer

2024 Region X nonresident quota: 100 licenses

2023 Hunter Satisfaction: 42% Satisfied, 25% Neutral, 33% Dissatisfied

2023 Management Summary

1) Hunting Season Evaluation:

Mule deer abundance and subsequent harvest have continued to decline in the Greybull River Herd. General season hunter success decreased to 25% in 2023 and subsequent effort increased to 10.6 days/harvest. Standardized efforts to classify mule deer in the post-season period resulted in another low count in Hunt Areas 124 and 165. Depressed fawn recruitment rates have impacted population growth since 2017. Habitat degradation from invasive species (cheatgrass) is likely the primary driver behind long-term population decline for mule deer herds living in low elevation arid environments, however high rates of Chronic Wasting Disease (CWD) appear to be having a more recent population level impact. In 2023 hunters experienced another significant decline in mule deer harvest (-71%) from the 2018-22 average (Figure 2). This could partially be due to changes which restricted hunters to only harvest mule deer bucks in Hunt Area 124. Similarly, the raw number of deer counted during annual classification surveys was 32% below the previous five year average. Post-season classification data elucidates a similar trend with mature buck recruitment. From 2015 to 2019, class 2 and 3 bucks ($\geq$20") accounted for approximately 29% (range: 22-43%) of the total bucks counted during post-season surveys. In 2020 this proportion decreased to 12% and showed a slight increase to 18% in 2021 (Figure. 1). In 2022 this proportion decreased to 7% and increased slightly to 14% in 2023. This is likely being driven by CWD impacting buck recruitment. Changes made in 2024 include limitations to restrict doe mule deer harvest in Hunt Area 165.

2) Chronic Wasting Disease

This is a Tier 2 surveillance herd where sampling was targeted in the 2020, 2021, and 2022 seasons. Signs, business cards, direct mailing, and increased days of check station operation

likely helped increase samples returned, with sampling dispersion and positives concentrated primarily along the Greybull river corridor. Proportion of total and targeted samples returned/harvested in 2020, 2021, and 2022 was 31% (n=71/232), 27% (n=36/134), and 11% (n=15/134) respectively. However, we did not achieve 200 target samples resulting from extremely low deer numbers. Prevalence of CWD is relatively high in adult and yearling male mule deer (Table 1). Prevalence in adult males exceeds prevalence seen in a similar environment (i.e., Shoshone River) with over 200 samples collected in the same time frame (35%, n=224). To date, no mule deer harvest strategies have occurred to specifically address CWD, however increases to white-tailed deer Type 3 and 8 licenses have aimed to address CWD in the sympatric population.

Table 1. CWD prevalence of mule deer within Greybull River herd unit, 2020-2023.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2020-22	**45% (24-54%, n=116)**	30% (30)	13% (62)
2021-23	**49% (23-61%, n=68)**	38% (16)	7% (30)

3.) Population Modeling:

The 2023 postseason population estimate for this herd unit from the PopR IPM is 635 (CL=491 – 816) mule deer. The model achieved convergence with an Rhat value of 1.08 indicating agreement between modeled and observed input values. Despite an abrupt decrease from the 2021 population estimate, the 2022 and 2023 estimates matches a steep decline in the population as evident by a rapid decrease in harvest since 2018 (Figure 2).

Figure 1.

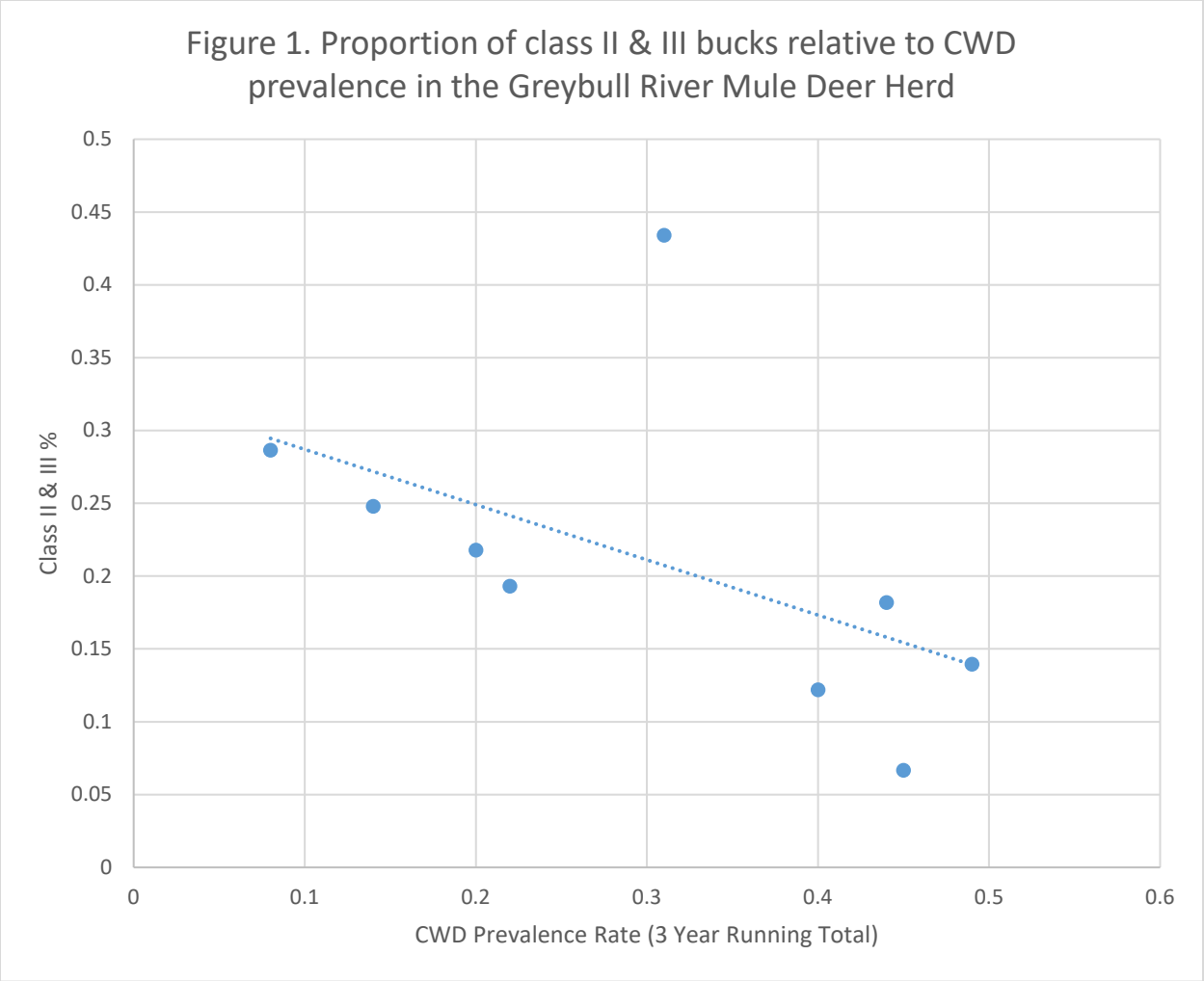
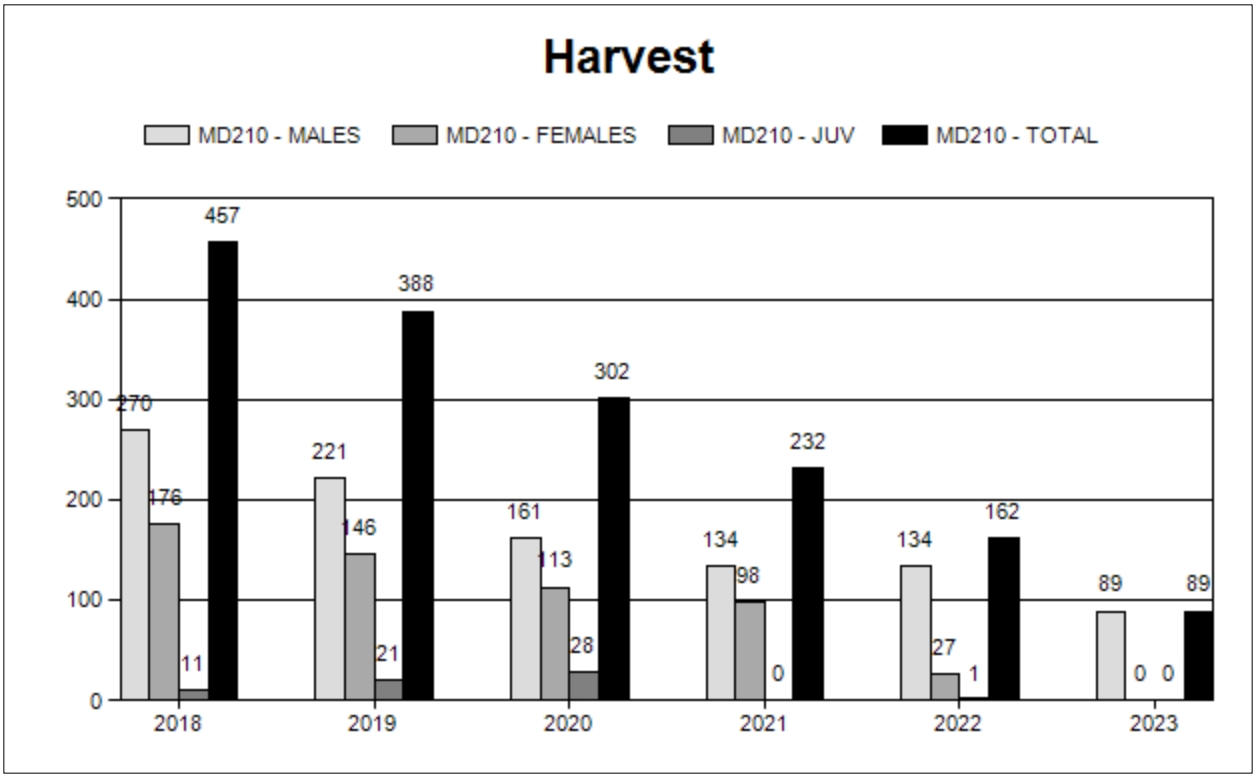


Figure 1. Proportion of class II & III bucks relative to CWD prevalence in the Greybull River Mule Deer Herd
Class II & III %
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
0.1
0.2
0.3
0.4
0.5
0.6
CWD Prevalence Rate (3 Year Running Total)

Figure 2.


Harvest
MD210 - MALES
MD210 - FEMALES
MD210 - JUV
MD210 - TOTAL
500
400
300
200
100
0
270
176
11
457
221
146
21
388
161
113
28
302
134
98
0
232
134
27
1
162
89
0
0
89
2018
2019
2020
2021
2022
2023

2023 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2023 - 5/31/2024

HERD: MD211 - SHOSHONE RIVER

HUNT AREAS: 121-123
PREPARED BY: SAM STEPHENS

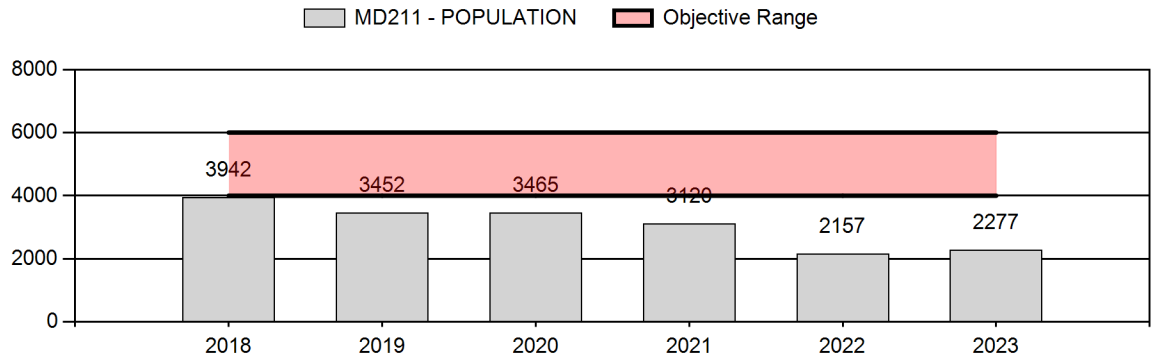
	2018 - 2022 Average	2023	2024 Proposed
Population:	3,227	2,277	2,300
Harvest:	520	311	350
Hunters:	1,311	981	990
Hunter Success:	40%	32%	35 %
Active Licenses:	1,392	1,057	1,057
Active License Success:	37%	29%	33 %
Recreation Days:	4,812	3,064	3,070
Days Per Animal:	9.3	9.9	8.8
Males per 100 Females	30	34	
Juveniles per 100 Females	65	62	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-54.5%
Number of years population has been + or - objective in recent trend:	8
Model Date:	02/09/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	6%	6%
Males ≥ 1 year old:	39%	39%
Proposed change in post-season population:	106%	90%

Population Size - Postseason



2024 HUNTING SEASONS

SHOSHONE RIVER MULE DEER HERD (MD211)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
121	Gen	Sep. 1	Sep. 30	Nov. 1	Nov. 10		Any deer on private land; antlered mule deer or any white-tailed deer off private land
121	6			Aug. 15	Nov. 30	100	Doe or fawn valid on private land
122	Gen	Sep. 1	Sep. 30	Nov. 1	Nov. 10		Any deer on private land; antlered mule deer or any white-tailed deer off private land
122	6	Sep. 1	Sep. 30	Oct. 15	Nov. 30	100	Doe or fawn valid on private land
123	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered mule deer or any white-tailed deer
123	6	Sep. 1	Sep. 30	Oct. 15	Nov. 30	25	Doe or fawn valid on private land

2024 Region X nonresident quota: 100 licenses

2023 Hunter Satisfaction: 41% Satisfied, 28% Neutral, 31% Dissatisfied

2023 Management Summary

1.) Hunting Season Evaluation:

Similar to other low elevation populations in the Bighorn Basin, abundance and subsequent harvest continue to decline in the Shoshone River Herd. General season hunter success decreased to 25% in 2023 while effort slightly decreased to 11 days/harvest. Standardized efforts to classify mule deer in the 2023 post-season period resulted in an increased count of 359 (2018-22 avg; 252). Depressed fawn recruitment rates have impacted population growth since 2020. High prevalence of Chronic Wasting Disease (CWD) appear to be having a more lasting population level impact on adult deer. In 2023 hunters experienced another significant decline in harvest (-40%) from the 2018-23 average. Similarly hunter satisfaction also decreased from 2022 to 2023 (46% to 41%). While reductions in license quotas have aimed to alleviate hunter-crowding the reality of a declining deer population and fewer mature bucks is likely driving the increases in hunter dissatisfaction. Management of mule deer in the Shoshone River Herd Unit was historically driven by crop damage concerns on private land. In recent years damage

concerns have subsided and can be addressed with Type 6 doe/fawn licenses. In response to isolated damage concerns in Hunt Area 121, Type 6 licenses will open on August 15th.

2.) Chronic Wasting Disease Monitoring & Management:

This is a Tier 2 surveillance herd where sampling was targeted in the 2019 and 2020 seasons. Samples are concentrated primarily throughout agricultural lands of the unit, with positives concentrated near Cody, Lovell, and Deaver. Combined with the most recent 2023 data, the most recent three year average prevalence increased beyond an already relatively high rate in adult male mule deer (Table 1).

Table 1. CWD prevalence of mule deer within Shoshone River herd unit, 2019-2023.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2019-21	**35% (21-42%, n=224)**	14% (29)	13% (90)
2020-22	**45% (24-53%, n=146)**	5% (20)	16% (62)
2021-23	**54% (26-65%, n=83)**	11% (9)	32% (25)

3.) Population Modeling:

The 2023 postseason population estimate for this herd unit from the PopR IPM is 2,277 (CL=1,799-2,819) mule deer. The model achieved convergence with an rhat value of 1.02 indicating agreement between modeled and observed input values. Despite an abrupt decrease from the 2021 population estimate, the 2023 estimate matches a lower mule deer harvest in the herd unit.

2023 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2023 - 5/31/2024

HERD: MD212 - OWL CREEK/MEETEETSE

HUNT AREAS: 116-120

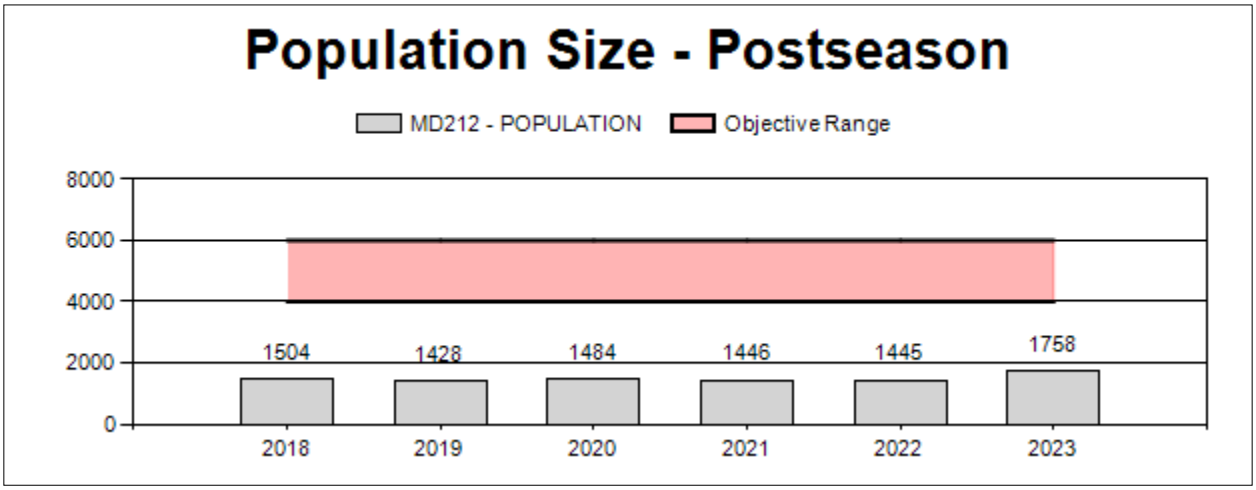
PREPARED BY: AUSTIN WIESELER

	2018 - 2022 Average	2023	2024 Proposed
Population:	1,461	1,758	1,775
Harvest:	223	195	195
Hunters:	315	275	275
Hunter Success:	71%	71%	71%
Active Licenses:	332	275	275
Active License Success:	67%	71%	71 %
Recreation Days:	1,379	1,098	1,100
Days Per Animal:	6.2	5.6	5.6
Males per 100 Females	36	45	
Juveniles per 100 Females	65	70	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-64.8%
Number of years population has been + or - objective in recent trend:	16
Model Date:	03/05/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	36%	36%
Proposed change in post-season population:	+22%	+1%



2024 Hunting Seasons
Owl Creek/Meeteetse Mule Deer (MD212)

Hunt Area	Type	Special Archery Dates		Regular Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
116	1	Sep. 1	Sep. 30	Oct. 15	Oct. 31	75	Antlered mule deer or any white-tailed deer
116, 117	3	Sep. 1	Sep. 30	Nov. 1	Nov. 30	100	Any white-tailed deer
116	7			Sep. 1	Oct. 14	100	Doe or fawn white-tailed deer valid on private land in the Wood River drainage
116, 117, 118	8	Sep. 1	Sep. 30	Oct. 15	Nov. 30	200	Doe or fawn white-tailed deer
117	1	Sep. 1	Sep. 14	Sep. 15	Oct. 15	50	Antlered mule deer or any white-tailed deer
118	1	Sep. 1	Sep. 30	Oct. 15	Oct. 31	25	Antlered mule deer or any white-tailed deer
118	1			Nov. 1	Nov. 30		Any white-tailed deer
119	1	Sep. 1	Sep. 30	Nov. 1	Nov. 15	50	Antlered mule deer or any white-tailed deer
119	2	Sep. 1	Sep. 30	Oct. 1	Oct. 15	50	Antlered mule deer or any white-tailed deer
119, 120	3	Sep. 1	Sep. 30	Oct. 1	Nov. 30	100	Any white-tailed deer
120	1	Sep. 1	Sep. 30	Nov. 1	Nov. 15	75	Antlered mule deer or any white-tailed deer
120	8			Sep. 1	Dec. 15	200	Doe or fawn white-tailed deer

2023 Hunter Satisfaction: 76% Satisfied, 19% Neutral, 5% Dissatisfied

2024 Management Summary

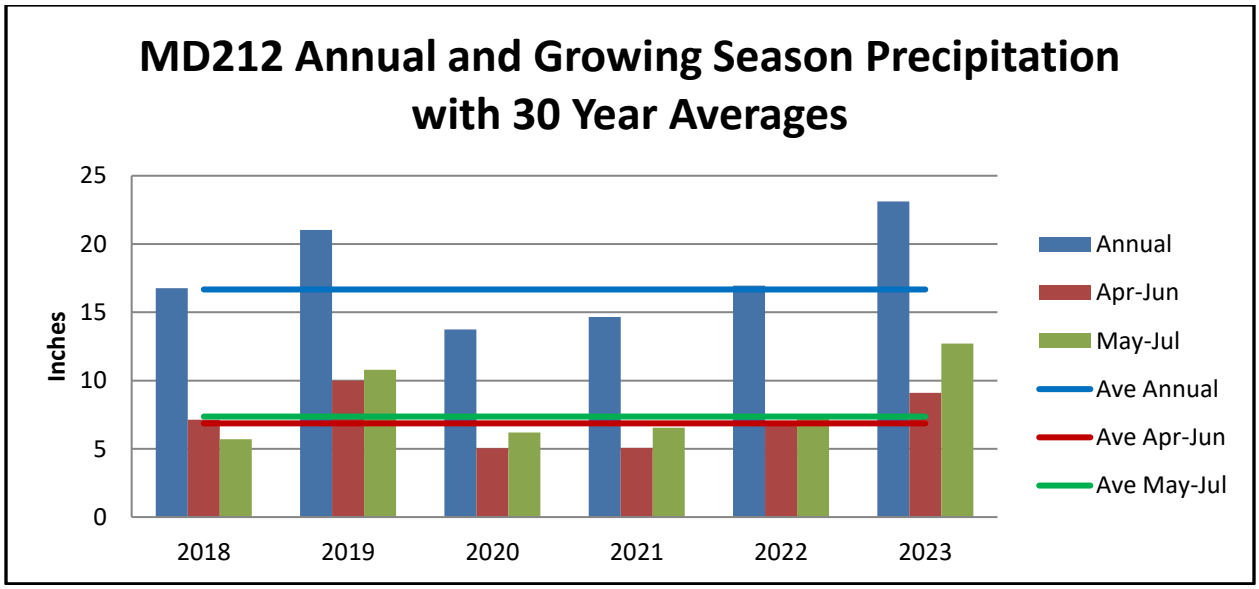
1.) Hunting Season Evaluation: The 2024 hunting season structure will be fairly conservative in order to promote herd growth. No mule deer female harvest in this herd has been the norm in recent years, while Type 1 license quotas appear to be adequate for maintaining higher buck ratios. The population is currently well below objective levels even with conservative hunting seasons the past 10 years. However, hunter satisfaction has increased to a high of 76% in 2023 compared to 61% in 2022. Hunter harvest and success also improved (71%) in 2023, up from 2022 (60%). Additionally, hunter effort decreased (5.6 days) in 2023 by almost 2 days from 2022 (7.5). The 2023 fawn ratio was 70:100, compared to the previous 5-year average of 64:100. Buck ratios have increased in recent years with the 2023 ratio at 45:100. The number of deer classified increased to 883 for 2023 compared to the previous 3-yr average of 684. Since this mule deer herd has remained below objective levels, mostly conservative seasons will again be proposed. For 2024, herd unit wide

limitations will be incorporated to improve opportunity and continued harvest pressure on white-tailed deer. License types that previously had limitations of "Antlered deer only" are now proposed as "Antlered mule deer or any white-tailed deer".

2.) Management Objective Review: The herd objective and management strategy was last evaluated and approved in 2019, and at that time no changes were made. For the 2024 (5-yr) objective review, we will maintain the current objective and special management strategy for this deer herd. Based on internal discussions and conversations with landowners and hunters, along with the most recent change to the objective in 2014, we feel there is no need to change this objective. Current herd unit issues are and will likely keep this deer population below objective levels, even with minimal female harvest. This herd objective will again be evaluated in 2029.

3.) Mule Deer Initiative Habitat Information:

Weather



Precipitation

Annual precipitation within the herd unit from October 2022 thru September 2023 was 138% of the 30-year average. Growing season precipitation (April thru June 2023) within winter ranges was 132% of average. Growing season precipitation (May - July 2023) within spring/summer/fall ranges was 172% of average.

Winter Severity

The 2022-2023 winter was mild. Data from the Thermopolis climate station showed the average December-March temperature was 3.66 degrees lower than the long term average, and total inches of snowfall in December-March was 222% of the long term average.

Habitat

In 2022, 386 acres of aspen were treated on Shoshone National Forest, BLM and private lands on mule deer summer range. The Department translocated 40 beavers into three streams within the herd unit between 2019 and 2023 for the purpose of enhancing riparian habitat. Over 70 dams

associated with five beaver colonies were constructed. In October, 2022, 48 beaver dam analogs were installed in Enos Creek as preparation for beaver translocations in 2023.

4.) Chronic Wasting Disease Monitoring & Management: This is a Tier 3 surveillance herd for chronic wasting disease (CWD). To date, there has been limited CWD sampling and prevalence data available within this herd unit (Table 1). The only CWD management actions have been to increase white-tailed deer harvest to reduce densities within the herd unit. This herd has not been prioritized for CWD surveillance because of low harvest. However, CWD still remains a concern, and its long-term effect on this mule deer herd needs to be considered.

Table 1. CWD prevalence of hunter-harvested mule deer in the Owl Creek/Meeteetse herd unit, 2021-2023.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2021-2023	**18% (7-29%, n=61)**	0% (2)	8% (13)

5.) Population Modeling: In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2023 postseason population estimate for this herd unit from the PopR IPM was approximately 1,714 (CL=1,334-2,262) mule deer. A mostly stable model trend of the population is questionable but lightly supported given the 2023 hunter/harvest statistics, hunter satisfaction, and number of deer classified.

6.) Chapter 56 Permit Reporting- Mule Deer Hunt Area 116 and 165:

- Park County – Town of Meeteetse
- Permit Dates: November 1, 2023 – December 31, 2023
- Authorization for removal of up to 10 deer
- Total harvest = 5 deer

2023 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2023 - 5/31/2024

HERD: MD215 - UPPER SHOSHONE

HUNT AREAS: 110-115 | PREPARED BY: TONY MONG

	2018 - 2022 Average	2023	2024 Proposed
Population:	7,300	6,850	6,500
Harvest:	444	686	700
Hunters:	1,218	1,409	1,500
Hunter Success:	36%	49%	47%
Active Licenses:	1,241	1,427	1,650
Active License Success:	36%	48%	42%
Recreation Days:	6,339	6,407	6,500
Days Per Animal:	14.3	9.3	9.3
Males per 100 Females	26	25	
Juveniles per 100 Females	62	60	

Population Objective (± 20%) : 12000 (9600 - 14400)

Management Strategy: Recreational

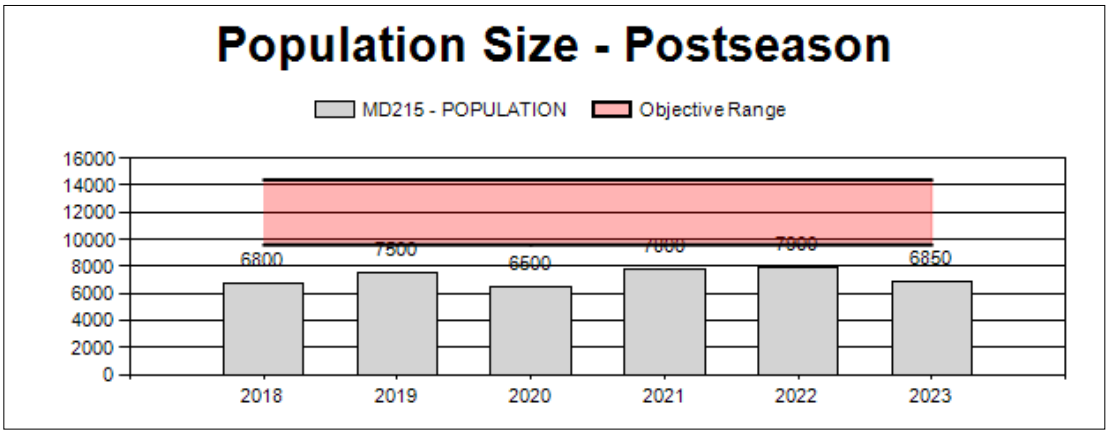
Percent population is above (+) or below (-) objective: -42.9%

Number of years population has been + or - objective in recent trend: 0

Model Date: 02/27/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0.1%	1%
Males ≥ 1 year old:	43%	38%
Proposed change in post-season population:	5%	0.95%



2024 Hunting Seasons
Upper Shoshone Mule Deer (MD215)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
110	Gen	Sep. 1	Sep. 30	Oct. 15	Nov. 6		Antlered mule deer or any white-tailed deer
110, 111	1	Sep. 1	Sep. 30	Nov. 1	Nov. 20	25	Antlered mule deer or any white-tailed deer
110, 111	8	Sep. 1	Sep. 30	Oct. 1	Dec. 31	100	Doe or fawn white-tailed deer
111	Gen	Sep. 1	Sep. 30	Oct. 15	Nov. 6		Antlered mule deer or any white-tailed deer
112	Gen	Sep. 1	Sep. 30	Oct. 15	Nov. 6		Antlered mule deer or any white-tailed deer
112, 113, 114	1	Sep. 1	Sep. 30	Nov. 1	Nov. 20	25	Antlered mule deer or any white-tailed deer
112, 113	3	Sep. 1	Sep. 30	Oct. 1	Nov. 30	75	Any white-tailed deer
112, 113	8	Sep. 1	Sep. 30	Oct. 1	Dec. 31	300	Doe or fawn white-tailed deer valid on private land
113	Gen	Sep. 1	Sep. 30	Oct. 15	Nov. 6		Antlered mule deer or any white-tailed deer
113	7	Sep. 1	Sep. 14	Sep. 15	Nov. 30	100	Doe or fawn valid on private land north and east of Carter Creek
114	Gen	Sep. 1	Sep. 30	Oct. 15	Nov. 6		Antlered mule deer or any white-tailed deer
115	Gen	Sep. 1	Sep. 9	Sep. 10	Oct. 22		Antlered mule deer or any white-tailed deer

2024 Region F nonresident quota: 550 licenses
2023 Hunter Satisfaction: 62% Satisfied, 22% Neutral, 16% Dissatisfied

2023 Management Summary
1.) Hunting Season Evaluation: There will be a decrease in reduced price licenses on the South Fork to better match the demand for these licenses. We anticipate continued increases to mule deer buck harvest in 2024 due to increasing numbers of bucks in the population. Tooth age data shows that average age of harvested age of bucks in 2023 was 4.5. Decreases in the Hunt Area 113 Type 7 and the 112/113 Type 8 license are in response to demand. Neither of these licenses have sold out in the past several years, therefore an adjustment in the number of licenses should allow for a

higher percentage to sell out and reflect demand better.

2.) Management Objective Review: This herd is managed by a post-season population estimate. Currently the herd is below the objective of 12,000. In 2024, managers reviewed the current objective structure and are not proposing any changes at this time. Because we do not have confidence in the number of deer actually on the landscape or the impact of CWD on the herd we will be assessing the Management Objective over the next few years. We are working on designing a viable sightability data collection flight plan for this herd in the next year.

3.) Chronic Wasting Disease Monitoring & Management: This is a Tier 2 surveillance herd where sampling was targeted in the 2020 and 2021 seasons. Given the location of the South Fork check station and 10-day annual operation, sampling in this herd consistently exceeds 200 target samples from 3-year blocks. Samples are concentrated along the North Fork and South Fork of the Shoshone River (few from HA 114 and 115), with positives concentrated primarily on private land in the South Fork Drainage. We have had CWD management type seasons for many years with late General seasons (Late October to early November), General any white-tail seasons and recently have implemented management actions (Table 2) to try and slow the increase of CWD in the herd in the South Fork portion of the herd. In 2020 we also conducted extensive meetings and a survey to gauge knowledge of CWD as well as preferred management actions to deal with increasing CWD prevalence. See the Job Completion Report from 2020 those details. Unfortunately despite these efforts we have seen CWD prevalence on the South Fork continue to increase. This is most likely due to the difficult access to private land where many of the resident deer (white-tails and mule deer) reside. Without more access to these areas, we may not be able to implement any type of management that will curb the increasing CWD prevalence.

Table 1. CWD prevalence of mule deer within Upper Shoshone herd unit, 2021-2023.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2021-23	20% (14-26%, n=408)	0% (23)	4% (0.1-19%, n= 27)

Table 2. CWD management actions in the South Fork portion of the Herd Unit, 2019 to 2023.

Year	Management Action	Change	Intended Result
2019	Earlier season General hunting	Hunt Areas 112, 113 allowing hunting off National Forest Oct. 15 vs. Nov. 1 (17 days earlier)	Increase harvest on resident bucks
2019	Late Buck Season	50 late season buck only licenses (Nov. 1 to Nov. 15)	Older age class buck harvest closer to rut
2019	Focused doe deer harvest	Hunt Area 113 Type 7 license created for a specific portion of Hunt Area 113 that was seeing increased CWD rates	Decrease populations of mule and white-tailed deer in the "hotspot" of Irma Flats
2019	Increase WT licenses	Increased both buck and doe licenses	Decrease WT population numbers and buck ratios
2020	Multiple Public Meetings in several places on the South Fork and an extensive public survey		Increased knowledge of the issue and an understanding of the publics preferred management actions
2021	Additional focused doe deer harvest	Tripled the Hunt Area 113 Type 7 licenses	Continued decreased population numbers
2022	Increased days on the General buck season	Changed ending date to Nov. 6	Increase buck harvest
2022	Increase WT licenses	Increased both buck and doe licenses to 75 buck licenses and 400 doe licenses	Aggressively decrease WT population numbers and buck ratios
2022	Additional focused doe deer harvest	Doubled the Hunt Area 113 Type 7 licenses	Aggressively decrease population numbers

4.) Population Modeling:

In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2023 postseason population estimate for this herd unit was 6,800 (CL = 5,700 – 8,000) mule deer. We choose license numbers as our effort variable because the resulting population estimate trend matches what we feel is occurring on the ground. This herd is difficult to model due to the way we have to hunt the mule deer in this herd, a lack of any type of population estimation "anchor" and limited collar survival data. We are therefore assessing estimates based on our perception of where deer numbers are in relation to an "objective level" rather than relying on the actual estimate. This year we were able to use survival data from the Focal Herd study that should have given us a better estimate compared to previous years.

2023 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2023 - 5/31/2024

HERD: MD216 - CLARKS FORK

HUNT AREAS: 105-106, 109 | PREPARED BY: TONY MONG

	2018 - 2022 Average	2023	2024 Proposed
Population:	2,840	3,800	3,900
Harvest:	183	189	200
Hunters:	580	525	600
Hunter Success:	32%	36%	33%
Active Licenses:	583	528	600
Active License Success:	31%	36%	33%
Recreation Days:	3,341	2,910	2,500
Days Per Animal:	18.3	15.4	12.5
Males per 100 Females	28	33	
Juveniles per 100 Females	57	62	

Population Objective (± 20%) : 5000 (4000 - 6000)

Management Strategy: Recreational

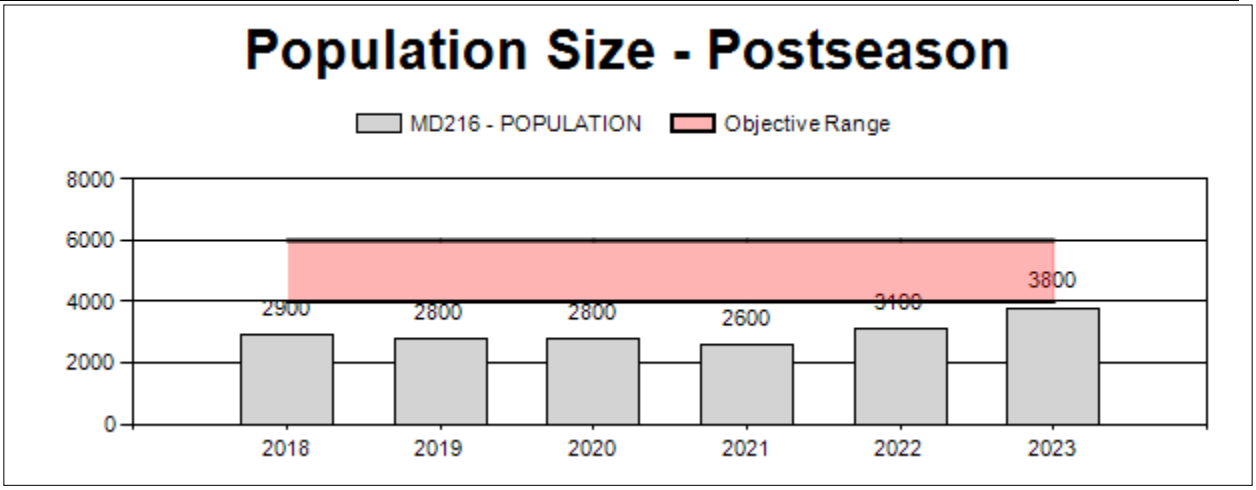
Percent population is above (+) or below (-) objective: -24%

Number of years population has been + or - objective in recent trend: 0

Model Date: 02/15/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	2%	2%
Males ≥ 1 year old:	24%	24%
Proposed change in post-season population:	1%	1%



2024 Hunting Seasons
Clark's Fork Mule Deer (MD216)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
105	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 27		Antlered mule deer valid on national forest; any mule deer valid on irrigated land; any white-tailed deer valid in the entire area
105	Gen			Nov. 1	Nov. 5		Antlered mule deer valid off national forest; any white-tailed deer valid in the entire area
105	Gen			Nov. 6	Nov. 17		Antlerless deer valid on private land
105, 106, 109	1	Sep. 1	Sep. 30	Oct. 1	Nov. 20	25	Any deer
105	8			Sep. 1	Dec. 15	50	Doe or fawn white-tailed deer
106	Gen			Oct. 1	Oct. 14		Antlered mule deer within the North Absaroka Wilderness; any white-tailed deer valid in the entire area
106	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 27		Antlered mule deer or any white-tailed deer
106	8	Sep. 1	Sep. 30	Oct. 1	Dec. 15	50	Doe or fawn white-tailed deer
109	3	Sep. 1	Sep. 30	Nov. 1	Dec. 15	25	Any white-tailed deer
109	8	Sep. 1	Sep. 30	Nov. 1	Dec. 15	100	Doe or fawn white-tailed deer

2024 Region F nonresident quota: 550 licenses
2023 Hunter Satisfaction: 55% Satisfied, 19% Neutral, 24% Dissatisfied

2023 Management Summary

1.) Hunting Season Evaluation: We are going to increase opportunity for mule deer bucks by increasing the number of days on the general season in Hunt Areas 105 and 106, increase opportunity for overall harvest of resident mule deer in Hunt Area 105 and increase opportunity for white-tailed bucks. We are decreasing opportunity on resident or short distant migrant deer in Hunt Area 106 while allowing for continued opportunity in the USFS Wilderness portion of the area. Over the last 7 years we have heard concern about the amount of pressure on the resident and short distant migrant deer living in Hunt Area 106, which occur mainly in the lower elevation areas of the Hunt Area outside of the USFS Wilderness boundary. Based on collar data and personal experience, during the early portion of October we believe there is good opportunity for hunters to harvest mule deer in the USFS Wilderness boundary areas. The change to the general season will continue to allow opportunity for harvesting mule deer bucks in the wilderness portion of the area but decrease pressure on what may be a younger cohort of bucks in more accessible areas. Although the overall population has not returned to objective levels we have seen an increase in population and buck ratios over the last 4 years. Harvest has increased to levels seen prior to the large die-off in 2016/17 and 2017/18 however, because of the migratory nature of a majority of the population adding days onto the end of the season should increase buck harvest and decrease overall buck ratios. The only positive CWD mule deer in the herd unit have come from the irrigated areas in Hunt Area 105. In order to maintain low prevalence we are reducing deer densities on irrigated land through opening irrigated lands up to any mule deer harvest for the Oct. 1-27 portion of the season. White-tailed deer numbers continue to be high, especially within Hunt Area 109. A recent trail camera abundance study in the Paint Creek portion of the area revealed that there is 29.66 +/- 6.23 white-tails/km^2 in the area with a buck ratio of ~46/100 doe deer. The Hunt Area 109 Type 3 license along with the available doe/fawn licenses will help to decrease overall numbers of white-tailed deer in the area.

2.) Management Objective Review: This herd is managed by a post-season population estimate. Currently the herd is below the objective of 5,000. In 2024, managers reviewed the current objective structure and are not proposing any changes at this time. Because we only recently have collected independent population estimates which has given us more confidence in the modelling estimates we have we are wanting to revisit objective levels in a few years.

3.) Chronic Wasting Disease Management: This is a Tier 2 surveillance herd where sampling was targeted in the 2019 and 2020 seasons. We did not target this herd in 2021 or 2022 given the low number of samples returned for effort exerted in target years (~8 hr personnel time/sample), and low odds of achieving 200 target samples. Samples are concentrated primarily in Sunlight Basin (HA106) with positives concentrated along the Clark's Fork river corridor near Clark (HA105). Prevalence was highest in adult males (Table 1). To date, no mule deer harvest strategies have occurred to specifically address CWD only a focus on increasing white-tailed deer harvest.

Table 1. CWD prevalence of mule deer within Clark's Fork herd unit, 2020-2022.

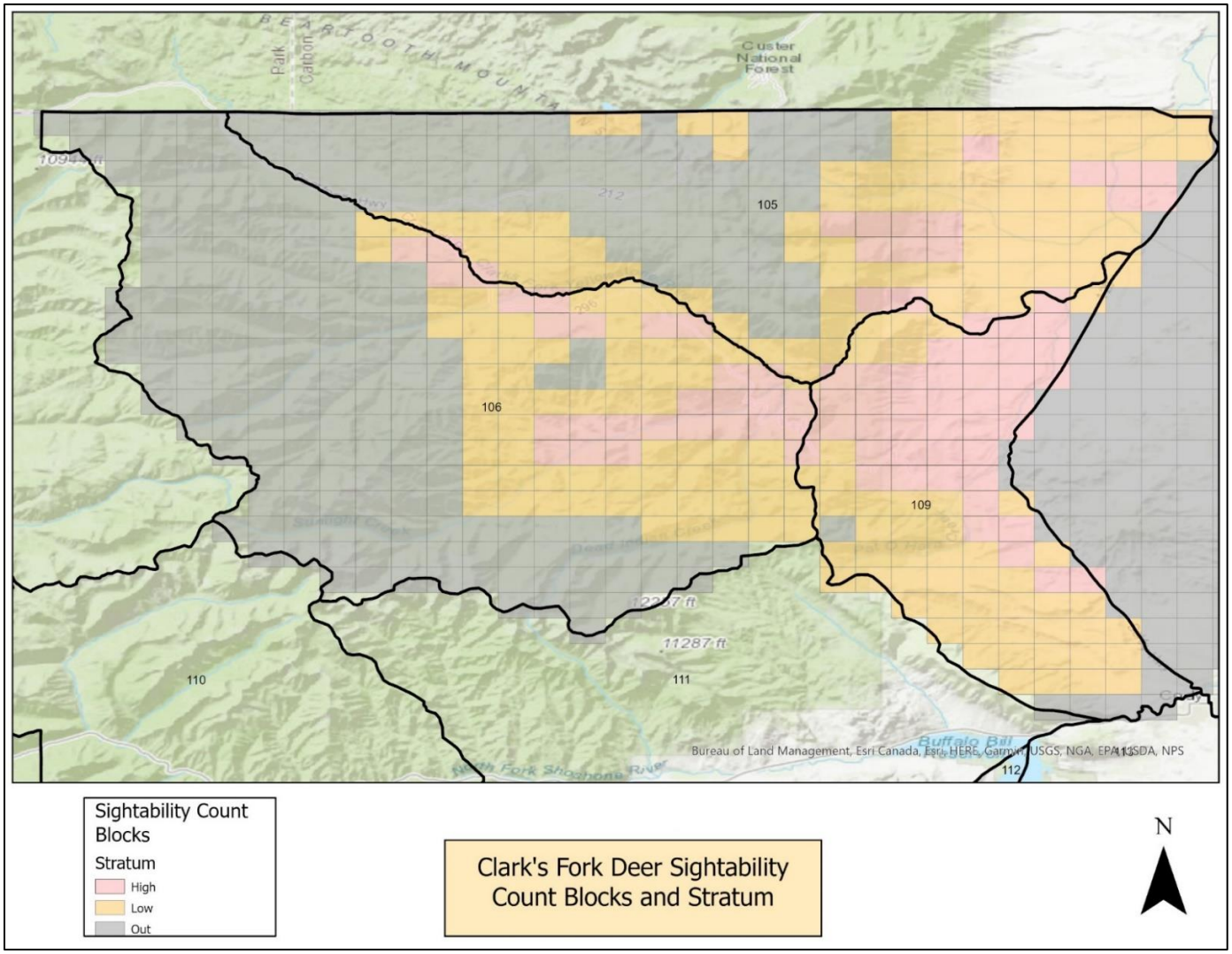
Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2021-23	11% (2.8-26.1%, n=36)	0% (4)	0% (7)

4.) Population Modeling:

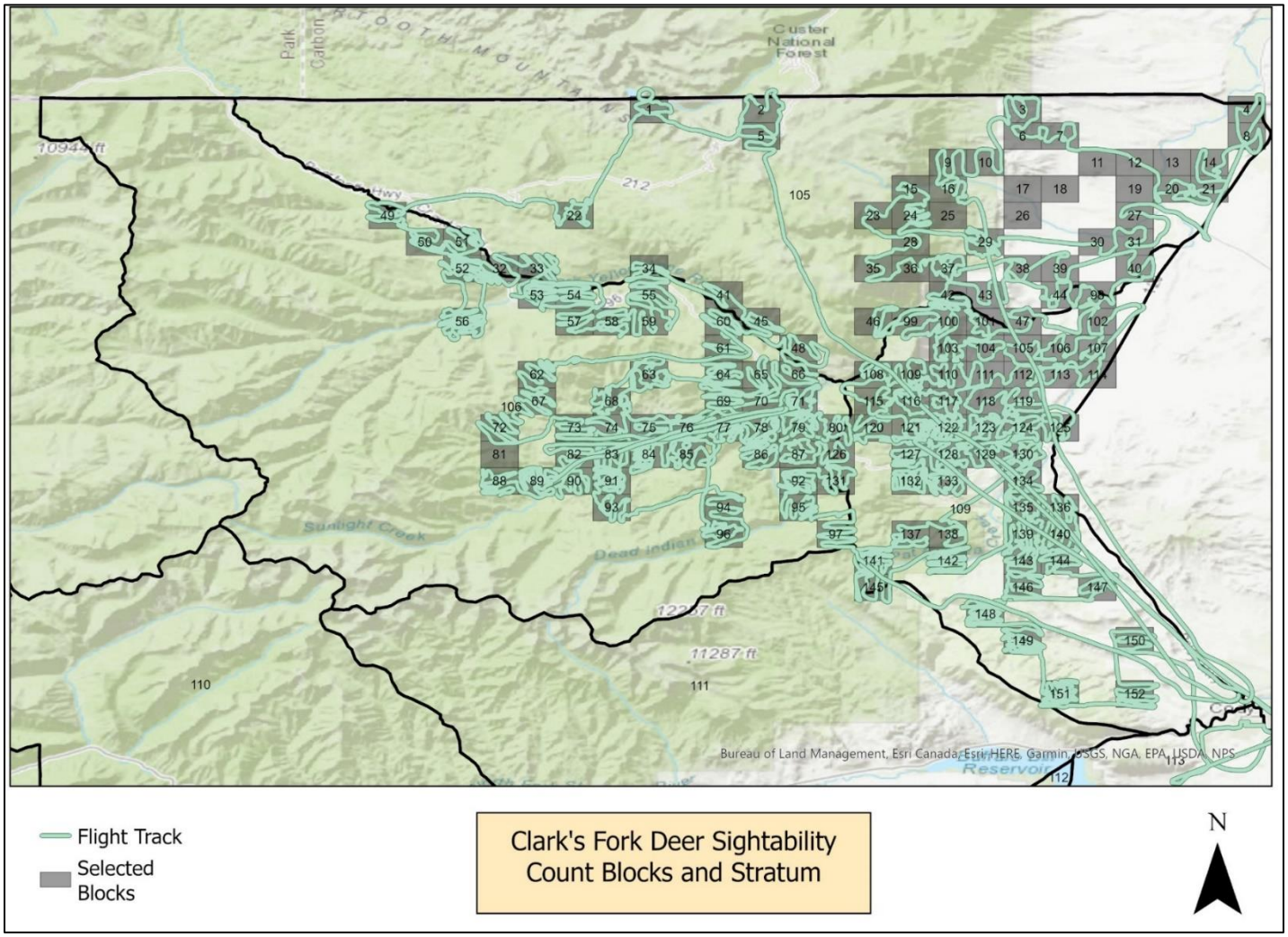
In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The bio-year 2024 postseason population estimate for this herd unit was 3,900 (CL = 3,100 – 4,700) mule deer. We choose license numbers as our effort variable because the resulting population estimate trend matches what we feel is occurring on the ground and matches 2 independent abundance estimates. In 2021/22 we conducted a winter range trail camera occupancy study which resulted in an estimate of 3,693 mule deer (SE = 239, LCI = 3,253, UCI = 4,193) and in 2023 we conducted a sightability survey which resulted in an estimate of 3,787 mule deer (Appendix A, SE = 347, LCI = 3,107, UCI = 4,466). With the addition of estimates we have high confidence in the current IPM.

Appendix A. Clark's Fork Deer Sightability Information. 1) Distribution of count blocks, 2) Flight path and coverage, 3) Distribution of mule deer groups, 4) Analysis table.

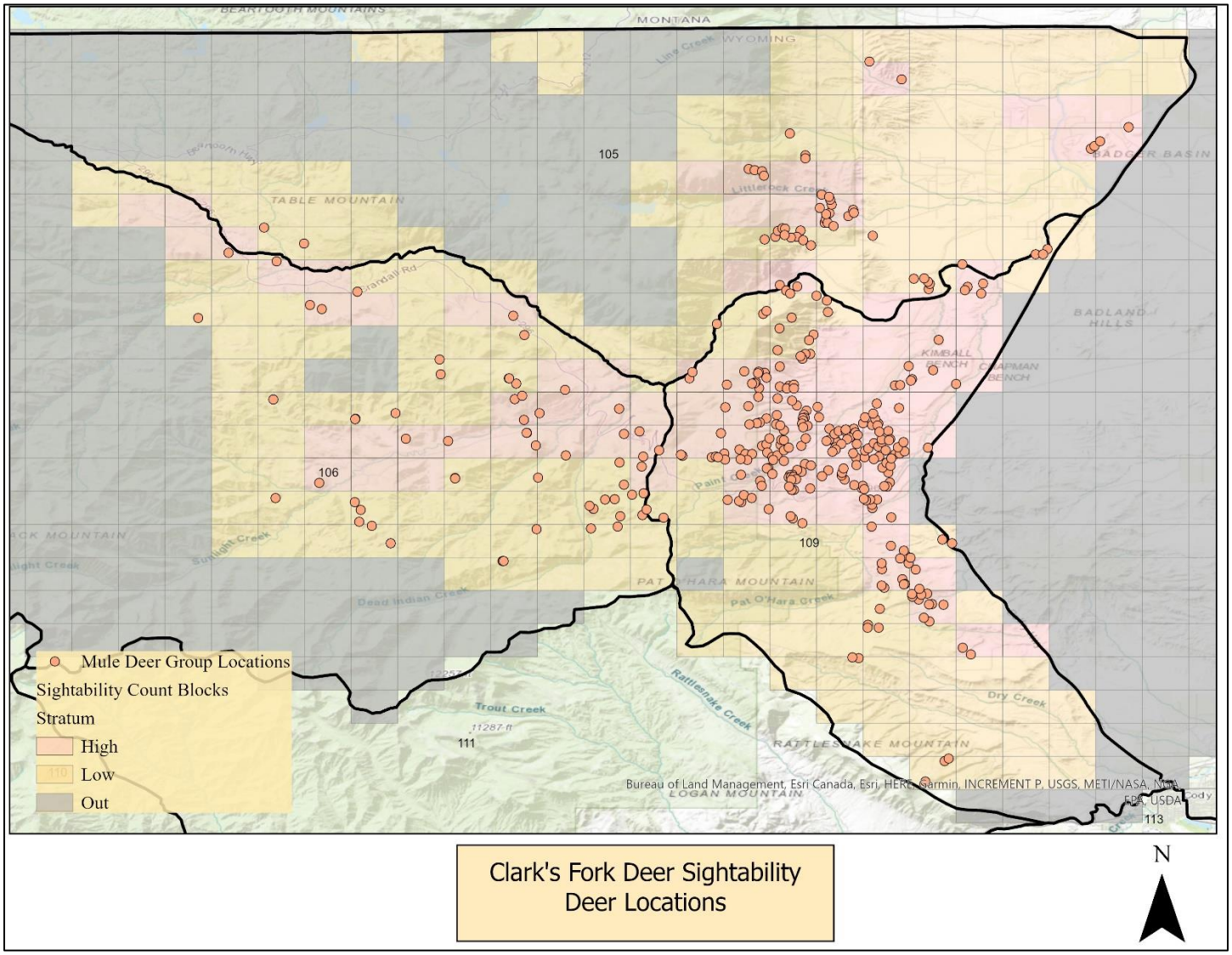
1) Distribution of sightability count blocks and stratum



2) Flight path and count block coverage. We flew 34 hours and covered 86% of the “high stratum blocks” and 37% of the “low stratum blocks”.



3) Distribution of mule deer groups across the herd unit. A total of 2,149 total deer in 417 observation groups. 73% of the locations were in Hunt Area 109.



4) Analysis table for the survey.

DAU	BioYear	RawCount	Estimate	LCL	UCL	SightInflation	SampInflation	SampVar	SightVar	ModVar	TotalVar
Clark's Fork 216	2023 - 2024	2149	3786.733332	3107.362352	4466.104313	1.164890043	1.511963577	101838.743	8043.981162	10261.20784	120143.932

2023 - JCR Evaluation Form

SPECIES: White tailed Deer | PERIOD: 6/1/2023 - 5/31/2024

HERD: WD201 - BIGHORN BASIN

HUNT AREAS: 35, 37, 39-41, 46-47, 50-53, 105-106, 109-125, 127, 164-165 | PREPARED BY: SAM STEPHENS

	2018 - 2022 Average	2023	2024 Proposed
Population:	0	N/A	N/A
Harvest:	2,625	2,696	2,750
Hunters:	4,623	4,610	4,660
Hunter Success:	57%	58%	59 %
Active Licenses:	5,912	6,039	6,090
Active License Success:	44%	45%	45 %
Recreation Days:	22,797	26,165	26,300
Days Per Animal:	8.7	9.7	9.6
Males per 100 Females	31	18	
Juveniles per 100 Females	64	55	

Population Objective (± 20%) :	0 (0 - 0)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Proposed change in post-season population:	0%	0%

2024 HUNTING SEASONS

BIGHORN BASIN WHITE-TAILED DEER HERD (WD201)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
36	8	Sep. 1	Sep. 30	Oct. 15	Oct. 31	25	Doe or fawn white-tailed deer
37,39	3	Sep. 1	Sep. 30	Nov. 1	Dec. 15	50	Any white-tailed deer
37,39	8	Sep. 1	Sep. 30	Oct. 15	Dec. 15	100	Doe or fawn white-tailed deer
40	3	Sep. 1	Sep. 30	Oct. 15	Nov. 30	50	Any white-tailed deer; also valid in Hunt Area 35
40	8	Sep. 1	Sep. 30	Oct. 15	Nov. 30	300	Doe or fawn white-tailed deer; also valid in Hunt Area 35
41	3	Sep. 1	Sep. 30	Oct. 15	Nov. 30	150	Any white-tailed deer
41	8	-	-	Sep. 1	Dec. 31	250	Doe or fawn white-tailed deer, also valid in Hunt Area 46
47,51,52	3	Sep.1	Sep. 30	Oct. 15	Nov. 30	100	Any white-tailed deer
47	8	-	-	Sep. 1	Dec. 31	150	Doe or fawn white-tailed deer, also valid in Hunt Area 46
51	8	-	-	Sep. 1	Dec. 31	200	Doe or fawn white-tailed deer
105	8			Sep. 1	Dec. 15	50	Doe or fawn white-tailed deer
106	8	Sep. 1	Sep. 30	Oct. 1	Dec. 15	50	Doe or fawn white-tailed deer
109	3	Sep. 1	Sep.30	Nov. 1	Dec. 15	25	Any white-tailed deer
109	8	Sep. 1	Sep. 30	Nov. 1	Dec. 15	100	Doe or fawn white-tailed deer
110, 111	8	Sep. 1	Sep. 30	Oct. 1	Dec. 31	100	Doe or fawn white-tailed deer
112, 113	3	Sep. 1	Sep. 30	Oct. 1	Nov. 30	75	Any white-tailed deer
112, 113	8	Sep. 1	Sep. 30	Oct. 1	Dec. 31	300	Doe or fawn white-tailed deer valid on private land
116, 117	3	Sep. 1	Sep. 30	Nov. 1	Nov. 30	100	Any white-tailed deer
116,	8	Sep. 1	Sep. 30	Oct. 15	Nov. 30	200	Doe or fawn white-

117, 118							tailed deer
119, 120	3	Sep. 1	Sep. 30	Oct. 1	Nov. 30	100	Any white-tailed deer
120	8			Sep. 1	Dec. 15	200	Doe or fawn white-tailed deer
121	3	Sep. 1	Sep. 30	Nov. 1	Dec. 15	75	Any white-tailed deer
121	8	Sep. 1	Sep. 30	Nov. 1	Dec. 15	100	Doe or fawn white-tailed deer
122	3	Sep. 1	Sep. 30	Nov. 1	Dec. 15	75	Any white-tailed deer
122	8	Sep. 1	Sep. 30	Nov. 1	Dec. 15	200	Doe or fawn white-tailed deer
124	3	Sep. 1	Sep. 30	Nov. 1	Nov. 30	100	Any white-tailed deer
124	8	Sep. 1	Sep. 30	Nov. 1	Nov. 30	250	Doe or fawn white-tailed deer
127	3	Sep. 1	Sep. 30	Nov. 1	Dec. 15	50	Any white-tailed deer; also valid in Hunt Area 125
127	8	Sep. 1	Sep. 30	Oct. 15	Dec. 15	100	Doe or fawn white-tailed deer
164	3	Sep. 1	Sep. 30	Oct. 1	Dec. 15	100	Any white-tailed deer, also valid in Hunt Area 125
164	8	-	-	Sep. 1	Dec. 31	200	Doe or fawn white-tailed deer, also valid in Hunt Area 125
165	3	Sep. 1	Sep. 30	Oct. 15	Dec. 15	100	Any white-tailed deer
165	8	Sep. 1	Sep. 30	Oct. 15	Dec. 31	300	Doe or fawn white-tailed deer

2023 Hunter Satisfaction: 55% Satisfied, 23% Neutral, 22% Dissatisfied

Management Summary

1.) Hunting Season Evaluation:

White-tailed deer in the Bighorn Basin are managed as one herd unit consisting of 33 hunt areas under recreational management. Hunting seasons for white-tailed deer are typically set in conjunction with mule deer hunting seasons by hunt area. Hunting opportunity exists for licenses exclusive for white-tailed bucks such as Type 3 licenses and white-tailed does or fawns with Type 8 licenses. Significant epizootic hemorrhagic disease (EHD) outbreaks in 2001, 2007, 2011, 2012, and 2020 reduced white-tailed deer abundance in parts of the Basin. Estimating the percent of the white-tailed deer population affected by disease mortality was never attempted, because no population estimate exists. Following sporadic outbreaks of EHD in certain hunt areas in 2020, the population appears to be on the rise and white-tailed deer are still expanding their range throughout the Bighorn Basin. White-tailed deer hunting seasons are set to address

landowner concerns and provide a late season opportunity to pursue bucks during the rut. White-tailed deer specific licenses (Types 3 & 8) are needed to obtain adequate harvest. 2024 season changes include some modest adjustments to Type 3 and 8 licenses.

2.) Herd Unit Objective Review

The Bighorn Basin white-tailed deer herd is not managed to an objective. White-tailed deer hunting opportunity has historically been offered both through the liberal allocation of Type 3 and 8 licenses as well as general season opportunity. No license type or season exists within the Herd Unit which restricts hunters to only harvest mule deer. Given the deficient state of sympatric mule deer populations and increasing prevalence of Chronic Wasting Disease, a population objective is unnecessary to adjust the current management strategies with regard to white-tailed deer in the Bighorn Basin.

3.) Chronic Wasting Disease:

The Bighorn Basin white-tailed deer herd overlaps several Tier 1, 2, and 3 mule deer herds where sampling for CWD in white-tailed deer occurs opportunistically. Sampling from 2020-2022 hunting seasons suggests prevalence of CWD in adult male white-tailed deer ranging from 24% to 48% (Table 1), decreasing from east to west. Proportion of white-tailed deer sampled/harvested in 2021 was 13% (n=325/2471). Prevalence in 2021 for adult male white-tailed deer in the Bighorn Basin was 32% (n=165) compared to 22% (n=417) in adult male mule deer. Density of all samples and positive samples in white-tailed deer remain concentrated along agricultural lands of rivers and major tributaries, with numerous hot-spots throughout the Bighorn Basin.

Table 1. CWD prevalence of white-tailed deer within associated mule deer herds, 2021-2023.

Mule Deer Herd	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males	Yearling Males	Adult Females
Paintrock	28% (51)	0% (7)	17% (46)
North Bighorn [a]	36% (47)	0% (2)	30% (23)
Southwest Bighorn	30% (86)	13% (8)	27% (56)
Shoshone River	43% (107)	17% (6)	31% (45)
Greybull River	41% (88)	17% (6)	28% (64)
Clark's Fork	46% (11)	0% (1)	23% (31)
Upper Shoshone	23% (80)	33% (3)	13% (46)

[a] Data exclusive to Bighorn Basin, excludes Sheridan Region

Outreach and education efforts included pre- and post-season scoping meetings in person and on-line (9) and sampling trainings (5). Surveys conducted at these events and focused conversations

in the field helped gauge public support for various management options in mule deer HAs 41, 46, 47 (Paintrock); 164 (Southwest Bighorn); 105, 106, 109 (Clark's Fork); and 110-115 (Upper Shoshone). Survey questions were standardized within Paintrock and Southwest Bighorn herd scoping efforts (East Basin), and within Clark's Fork and Upper Shoshone herd scoping efforts (West Basin).

One hundred-forty five surveys were completed by resident and non-resident respondents, including non-hunters. Respondents from East Basin efforts (n = 74, 82% hunters) supported 1) targeting hot-spots of CWD positive animals, 2) increasing harvest of adult male white-tailed deer (and mule deer) with later hunting seasons, and 3) increasing harvest of white-tailed deer adult males, adult females, and overall population/density reduction more than similar options targeting mule deer (Table 2). Respondents from West Basin efforts (n = 71, 17% non-residents) supported for both male and female white-tailed deer 1) later general seasons, and 2) increased limited quota licenses (Table 3).

Table 2. Proportion of responses supporting various harvest strategies aimed at reducing CWD in the Paintrock (PR) and Southwest Bighorns (SB) mule deer herd units, 2021 (n = 74 surveys).

	Proportion of Responses in Support of Each Harvest Strategy within Category of Respondent								
		Mule Deer			White-Tailed Deer				
Respondents	Address Hotspots	Increase Male Harvest	Increase Female Harvest	Population Reduction	Increase Male Harvest	Increase Female Harvest	Population Reduction	Male Late Season	Do Nothing
All [a]	78	54	39	19	62	50	30	69	8
PR Hunters	70	44	35	9	52	44	17	83	9
SB Hunters	71	50	33	17	63	50	33	58	13

[a] Includes responses of hunters and non-hunters

Table 3. Proportion of responses supporting various white-tailed deer harvest strategies aimed at reducing CWD in the Upper Shoshone and Clark's Fork mule deer herd units, 2021 (n = 71 surveys).

	Proportion of Responses in Support of Each White-Tailed Deer Harvest Strategy within Sex within Herd Unit							
	Males				Females			
Mule Deer Herd Unit	Earlier Season [a]	Later General Season	Later Ltd Quota Season	Increased Ltd Quota Licenses	Earlier Season [a]	Later General Season	Later Ltd Quota Season	Increased Ltd Quota Licenses
Upper Shoshone	11	33	17	39	19	22	20	39
Clark's Fork	14	50	14	21	13	53	20	13

[a] Combined responses regarding earlier general and limited quota seasons

To address CWD, particularly in white-tailed deer, increased Type 3 and 8 licenses were initiated in 2019 for HA 164.

2023 - JCR Evaluation Form

SPECIES: Elk
HERD: EL211 - MEDICINE LODGE
HUNT AREAS: 41, 45

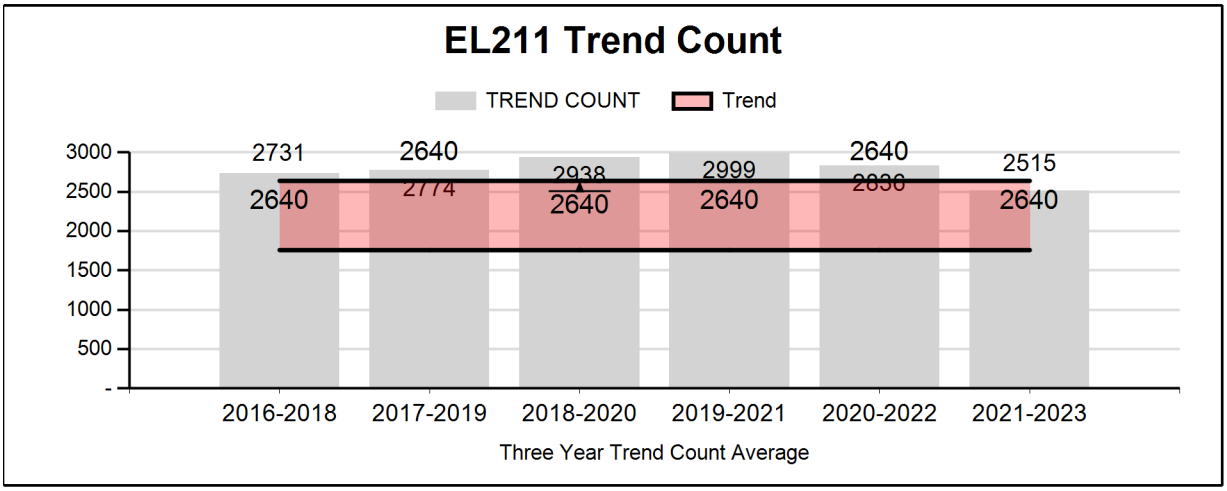
PERIOD: 6/1/2023 - 5/31/2024
PREPARED BY: SAM STEPHENS

	2018 - 2022 Average	2023	2024 Proposed
Trend Count:	2,822	2,247	2,000
Harvest:	795	755	1,000
Hunters:	2,025	2,130	1,965
Hunter Success:	39%	35%	51 %
Active Licenses:	2,103	2,415	2,250
Active License Success	38%	31%	44 %
Recreation Days:	14,576	17,630	15,000
Days Per Animal:	18.3	23.4	15
Males per 100 Females:	30	24	
Juveniles per 100 Females	35	20	

Trend Based Objective (± 20%)	2,200 (1760 - 2640)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	2%
Number of years population has been + or - objective in recent trend:	1

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	26%	30%
Males ≥ 1 year old:	33%	35%
Juveniles (< 1 year old):	11%	11%



2024 HUNTING SEASONS

MEDICINE LODGE ELK HERD (EL211)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
41	1			Oct. 15	Nov. 4	275	Any elk
41	2			Nov. 5	Nov. 20	100	Any elk
41	3			Sep. 1	Oct. 14	35	Any elk valid off national forest north of Trapper Creek
41	4			Oct. 15	Nov. 30	350	Antlerless elk
41	6			Jan. 1	Jan. 21	350	Cow or calf
41	7			Sep. 1	Nov. 4	150	Cow or calf valid off national forest north of Trapper Creek
41	9			Sep. 1	Sep. 30	125	Any elk, archery only
45	1			Oct. 15	Nov. 4	350	Any elk
45	4			Oct. 15	Nov. 30	250	Antlerless elk
45	5			Oct. 1	Oct. 10	200	Antlerless elk
45	5			Oct. 25	Nov. 30		Antlerless elk
45	6			Sep. 1	Nov. 30	150	Cow or calf valid off national forest
45	7	Sep. 1	Sep. 30	Dec. 1	Dec. 21	100	Cow or calf
45	9			Sep. 1	Sep. 30	175	Any elk, archery only

2023 Hunter Satisfaction: 51% Satisfied, 23% Neutral, 26% Dissatisfied

2023 Management Summary

1) Hunting Season Evaluation:
Elk harvest and hunter satisfaction declined relative to recent years in the Medicine Lodge Herd. Mild weather and fewer elk on public lands resulted in increased effort and decreased harvest. Hunter satisfaction fell to 51% in 2023 (2022:63%) which was largely driven by the declining satisfaction in Hunt Area 41 which fell from 64% to 45% between 2022 and 2023. A growing sentiment amongst hunters concerning a lack of elk on public lands is partially due to a declining herd. Managers have had success in reducing elk abundance where they exist on public land. This is evident by decreased trend counts both in Hunt Area 45 and on the Medicine Lodge WHMA. However the majority of elk within the Herd Unit still persist in the northern portion of Hunt Area 41 where access and subsequent harvest is limited by private land and steep topography. Changes for 2024 include seasons designed to focus harvest on this portion of the

herd while alleviating pressure on elk which reside further to the south. Early October antlerless seasons were standardized for both Hunt Areas in 2020. The Hunt Area 41 Type 4 and Hunt Area 45 Type 5 opens October 1st and closes October 10th, creating a five day break to facilitate elk movement prior to the Type 1 opening date. Since 2020 this season structure has worked well in Hunt Area 45 while producing marginal results in Hunt Area 41 where success rates for the Type 4 license peaked to 34% in 2020 and has since then ranged between 14 and 21%. Removing the early season for the Hunt Area 41 Type 4 license is intended to decrease hunting pressure on the public lands within the Hunt Area to facilitate an increase of elk prior to October 15th. This modification is in concert with a similar change made to the Hunt Area 40 Type 5 season which is intended to facilitate elk movement into Shell Canyon. In exchange for the removal of these ten days, an extension of ten days was added for the Type 4 to remain open until November 30th. Similar issues of decreased public land opportunity have proliferated during the late cow/calf season and were more pronounced in December, 2023 due to a lack of snowfall. Managers responded by implementing an auxiliary management hunt in January for all unused Hunt Area 41 Type 4 and 6 licenses. Though the outcome was not significant, an estimated 40 elk were harvested during this period. Changes to the Hunt Area 41 Type 6 season seek to create a month long break in the season to allow elk to settle into more accessible areas prior to the new January 1st opening date. This season should focus harvest on elk in the northern portion while alleviating pressure on elk wintering within the Medicine Lodge WHMA due to vehicle restrictions after December 31st. This change in addition to a reduction of Hunt Area 45 Type 7 licenses should modulate harvest in Hunt Area 45 where winter trend counts have declined below the Hunt Area sub-objective (900) for the third year. Finally, the addition of Hunt Area 41 Type 3 licenses has been successful in targeting resident elk within a matrix of public and private lands on Shell Rim. With a disparate success rate of 70%, hunters are growing concerned over a lack of bulls due to increased harvest. While the sex ratios in elk are often higher than what's observed, the decreasing ratio corroborates hunters' perceptions and success rates. The 2023 adult bull ratio in Hunt Area 41 was 8:100, down from the 2020-22 average of 20:100. It's important to note that in Hunt Area 41, the Type 3 and Type 9 license quota increases of 75 and 25 (respectively) were added in 2022 when trend counts (2019-21 average: 1,996) exceeded recent counts (2022-23 average: 1,660) by 300 elk. Reductions of both the Type 3 and Type 9 quotas are intended to increase the availability of mature bulls without sacrificing the Type 3 license.

2) Chronic Wasting Disease:

This is a Tier 2 CWD surveillance herd, targeted for sampling in 2021 and 2022. CWD was first detected in the herd unit in 2020 (HA45), and was detected again in 2021 (HA41). Combined 2020-2022 data suggest low prevalence (Table 1). Sample distribution is nearly even between HA 41 and 45. New harvest strategies implemented in 2022 to address concentrated, overabundance of elk and help manage CWD included the addition of Type 3 and 7 licenses in HA 41, addition of Type 7 licenses in HA 45, and overall increased numbers of licenses and extension of seasons in both HA 41 and 45. Maintaining these license types and the respective seasons is proposed again in 2024.

Table 1. CWD prevalence for hunter-harvested elk in the Medicine Lodge Elk Herd, 2020-23.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2020-22	**1% (0-6%, n=188)**
2021-23	**0.6% (0-3%, n=181)**

2023 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2023 - 5/31/2024

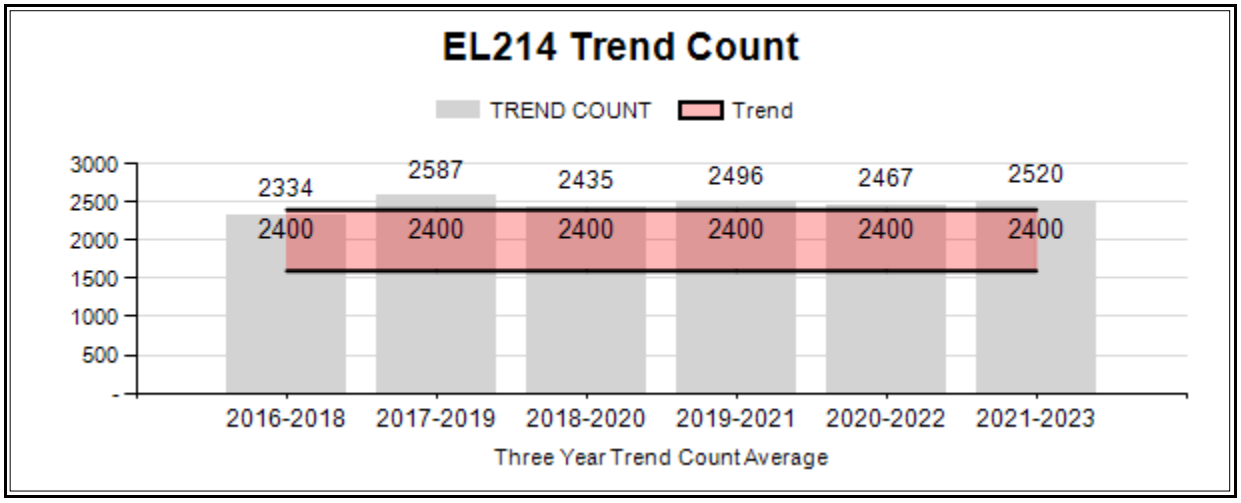
HERD: EL214 - GOOSEBERRY

HUNT AREAS: 62-64

PREPARED BY: AUSTIN WIESELER

	2018 - 2022 Average	2023	2024 Proposed
Trend Count:	2,513	2,300	2,100
Harvest:	616	729	700
Hunters:	1,142	1,142	1,200
Hunter Success:	54%	64%	58%
Active Licenses:	1,185	1,260	1,310
Active License Success	52%	58%	53%
Recreation Days:	7,245	7,260	7,400
Days Per Animal:	11.8	10.0	10.6
Males per 100 Females:	28	18	
Juveniles per 100 Females	17	21	

Trend Based Objective (± 20%)	2,000 (1600 - 2400)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	15%
Number of years population has been + or - objective in recent trend:	5



2024 Hunting Seasons
Gooseberry Elk (EL214)

Hunt Area	Type	Special Archery Dates		Regular Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
62	1	Sep. 1	Sep. 30	Oct. 1	Oct. 21	125	Any elk
62	4	Sep. 1	Sep. 30	Oct. 1	Oct. 21	75	Antlerless elk
62, 63	5	Sep. 1	Sep. 30	Oct. 22	Dec. 21	175	Antlerless elk
63, 64	1	Sep. 1	Sep. 30	Oct. 1	Oct. 21	200	Any elk
63, 64	2	Sep. 1	Sep. 30	Oct. 1	Oct. 21	35	Any elk valid within the Washakie Wilderness
63, 64	3	Sep. 1	Sep. 30	Nov. 1	Nov. 15	75	Any elk
63	4	Sep. 1	Sep. 30	Oct. 1	Dec. 21	100	Antlerless elk
63	6			Aug. 15	Oct. 31	200	Cow or calf valid off national forest north of Gooseberry Creek
63	6	Sep. 1	Sep. 30	Nov. 1	Dec. 21		Cow or calf valid in the entire area
64	6			Sep. 1	Nov. 14	250	Cow or calf valid in that portion of the Cottonwood Creek Drainage downstream of and including the 21-Creek Drainage, also valid within the Grass Creek Drainage downstream of the Grass Creek/Little Grass Creek confluence
64	6	Sep. 1	Sep. 30	Nov. 15	Dec. 21		Cow or calf valid in the entire area
64	7	Sep. 1	Sep. 30	Oct. 15	Dec. 21	300	Cow or calf valid south of and including the Cottonwood Creek Drainage

2023 Hunter Satisfaction: 73% Satisfied, 17% Neutral, 10% Dissatisfied

2024 Management Summary

1.) Hunting Season Evaluation: The 2024 hunting season structure is again fairly liberal, with numerous Type 4, 6, and 7 licenses along with long seasons to continue reducing elk numbers. Type 1 and 3 quotas (any elk licenses) will remain consistent in order to continue providing for a quality hunting experience while maintaining good bull numbers and hunter success. Based on hunter comments, most hunters still demand bull quality and quantity, therefore, this remains a management priority for this herd. The Gooseberry elk herd continues to have one of the highest

hunter satisfaction ratings in the State. The 2023 herd unit hunter success was 64%, and hunter effort was 10.3 days/harvest, which is the highest success and lowest hunter effort in the last 10 years. A total of 729 elk were harvested in 2023, which is the highest recorded since 2015. Calf ratios were 21:100 in 2023 and have remained below 25:100 cows over the previous 5 years. The total number of elk counted on the winter trend flight for 2023 was 2,300 elk for the herd unit. The 3-year average count is 2,520, which is 26% above the objective of 2,000 elk. Hunting season changes for 2024 include changing the Hunt Area 62 Type 5 license to also be valid in Hunt Area 63. This would then be a Hunt Area 62/63 Type 5 antlerless license valid in both hunt areas. This change is to provide more opportunity and distribute hunting pressure across hunt areas. Additionally, for the 2024 season, there are increases to the quota for the Hunt Area 63/64 Type 2 license by 10 licenses to provide more opportunity while maintaining quality bull hunting within the herd unit and to the quota for the Hunt Area 64 Type 6 license by 50 licenses given the high harvest success, low days/harvest, and the above objective trend count seen in the herd unit for 2023.

2.) Management Objective Review: The Gooseberry elk herd unit objective was last reviewed in 2021, and no changes to the current objective were made.

3.) Chronic Wasting Disease and Brucellosis Monitoring and Management: This is a Tier 3 CWD surveillance herd. To date, limited surveillance data has been collected, and no specific elk management actions have addressed CWD (Table 1). Brucellosis is present in this herd, and measures to reduce elk/cattle interaction have and will continue to be a priority. Brucellosis monitoring is done annually through hunter harvest to estimate prevalence (Table 2).

Table 1. CWD surveillance sampling and prevalence estimates in the Gooseberry Elk Herd, 2021-2023.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2021-2023	**0% (0-6%, n=62)**

Table 2. Brucellosis sampling and seropositive prevalence estimates by hunt area in the Gooseberry Elk Herd, 5 year and 10 year prevalence estimates.

		5 Year (2019-2023)			10 Year (2014-2023)		
Elk HA		Tested	POS	Prevalence	Tested	POS	Prevalence
62	All Yearling/Adults	78	16	20.51%	196	45	22.96%
62	Female Yearling/Adults	46	10	21.74%	130	33	25.38%
63	All Yearling/Adults	97	21	21.65%	198	44	22.22%
63	Female Yearling/Adults	59	12	20.34%	118	28	23.73%
64	All Yearling/Adults	199	45	22.61%	337	64	18.99%
64	Female Yearling/Adults	155	34	21.94%	241	46	19.09%

4.) Hunt Area with Greater than 60% Success:

a) Hunt Area 62 Type 1 (65%): No increase. Although area 62 had >60% hunter success on the Type 1 licenses in 2023, it was 57% in 2022. Over the course of 20+ years, Hunt Area 62 Type 1 licenses have decreased from 175 to 125 because of hunters demanding

fewer licenses to provide for a more quality hunt. Since 2011, when the quota was reduced to 125 licenses, hunters now appear pleased with the current season structure, and very few hunter complaints are heard. Hunter satisfaction did decrease slightly in 2023 (73%) compared to 2022 (75%).

2023 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2023 - 5/31/2024

HERD: EL216 - CODY

HUNT AREAS: 55-56, 58-61, 66

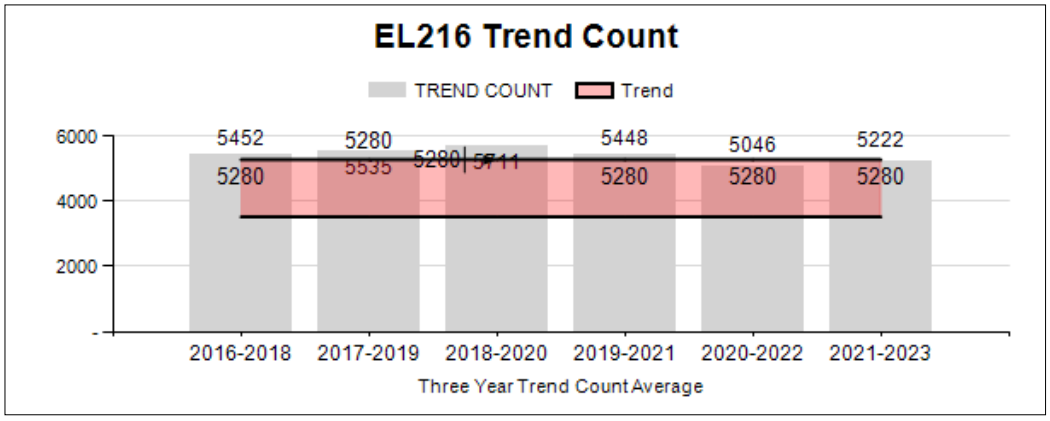
PREPARED BY: TONY MONG

	2018 - 2022 Average	2023	2024 Proposed
Trend Count:	5,232	6,641	5,200
Harvest:	1,150	1,472	1,600
Hunters:	2,690	2,344	2,400
Hunter Success:	43%	63%	67 %
Active Licenses:	2,833	2,662	2,500
Active License Success	41%	55%	64 %
Recreation Days:	18,021	14,343	14,500
Days Per Animal:	15.7	9.7	9.1
Males per 100 Females:	35	23	
Juveniles per 100 Females	18	21	

Trend Based Objective (± 20%)	4,400 (3520 - 5280)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	51%
Number of years population has been + or - objective in recent trend:	0

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	n/a%	n/a%
Males ≥ 1 year old:	n/a%	n/a%
Juveniles (< 1 year old):	n/a%	n/a%
Total:	n/a%	n/a%
Proposed change in post-season population:	n/a%	n/a%



2024 Hunting Seasons
Cody Elk (EL216)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
55	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	60	Any elk
55	9			Sep. 1	Sep. 30	25	Any elk, archery only
56	Gen	Sep. 1	Sep. 30				Any elk
56	Gen			Oct. 1	Oct. 21		Antlered elk
56	1	Sep. 1	Sep. 30	Nov. 5	Nov. 30	10	Any elk; also valid in Area 55
56	6	Sep. 1	Sep. 30	Oct. 1	Dec. 21	150	Cow or calf
56	7	Sep. 1	Sep. 30				Cow or calf
56	7			Sep. 1	Sep. 30	150	Cow or calf valid on or within one-half (1/2) mile of irrigated land within the North Fork Shoshone River Drainage
56	7			Oct. 1	Dec. 21		Cow or calf valid off national forest
56	9			Sep. 1	Sep. 30	30	Any elk, archery only
58	1	Sep. 1	Sep. 30	Oct. 1	Nov. 30	35	Any elk
58	6	Sep. 1	Sep. 30	Oct. 1	Dec. 21	200	Cow or calf
59	Gen	Sep. 1	Sep. 30				Any elk
59	Gen			Oct. 1	Oct. 21		Antlered elk
59	1	Sep. 1	Sep. 30	Nov. 1	Nov. 30	10	Any elk
59	6	Sep. 1	Sep. 30	Oct. 1	Dec. 21	175	Cow or calf
59	7	Sep. 1	Sep. 30				Cow or calf valid in the entire area
59	7			Oct. 1	Nov. 15	50	Cow or calf valid within the Washakie Wilderness
59	9			Sep. 1	Sep. 30	25	Any elk, archery only
60	Gen	Sep. 1	Sep. 19				Any elk
60	Gen			Sep. 20	Oct. 22		Antlered elk
60	9			Sep. 1	Sep. 30	20	Any elk, archery only
61	1	Sep. 1	Sep. 30				Any elk valid in the entire area, also valid in that portion of Area 62 within the Washakie Wilderness south of Avalanche Creek

61	1			Oct. 1	Oct. 31	150	Any elk valid within the Washakie Wilderness, also valid in that portion of Area 62 within the Washakie Wilderness south of Avalanche Creek
61	2	Sep. 1	Sep. 30	Oct. 7	Nov. 15	50	Any elk
61	4	Sep. 1	Sep. 30	Oct. 15	Dec. 21	200	Antlerless elk
61	6	Sep. 1	Sep. 30	Nov. 7	Dec. 21	400	Cow or calf
61	7			Sep. 1	Dec. 21	500	Cow or calf valid on or within one-half (1/2) mile of irrigated land or north of and including the Rawhide Creek Drainage
61	7			Jan. 1	Jan. 15		Cow or calf valid on or within one-half (1/2) mile of irrigated land or north of and including the Rawhide Creek Drainage
66	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 21		Any elk
66	6			Aug. 15	Jan. 15	150	Cow or calf

2023 Region West Nonresident Quota: 2,775
2023 Hunter Satisfaction: 74% Satisfied, 16% Neutral, 10% Dissatisfied

2023 Management Summary
1.) Hunting Season Evaluation: We made minor changes to seasons this year to increase cow harvest across the Herd Unit, increase bull harvest and allow for more area to hunt for Hunt Area 56 Type 1 hunters. Three year average trend count numbers have increased in Hunt Areas 55-56 (2023 3-year trend count, 1344) and Hunt Areas 58-59 (2023 3-year trend count, 1287) and decreased in Hunt Area 61 count block (2023 3-year trend count, 2,483). We continue to see variability in the number of elk counted on the winter range in Hunt Area 61, after 2 years of lower than average counts we counted close to 4,000 elk on this winter range. It is becoming more apparent that there are large movements of elk across the Greater Yellowstone Ecosystem. The number of cow licenses in Hunt Area 61 have saturated the available hunting areas with hunters and we do not feel we can add additional cow licenses at this time. However, we do believe we can add cow licenses across the rest of the herd unit to manage higher populations in other areas (250 additional cow/calf licenses). In addition to these increases, there will be an early cow season on the North Fork portion of Hunt Area 56 to manage a growing number of resident elk living mostly on irrigated land causing damage to hay crops. There will also be an increase the opportunity for archery hunters through the Type 7 reduced price cow licenses. Bull numbers have been increasing over the last several years and there will be more licenses in Hunt Area 55 to allow for more opportunity. In relation to late season bull harvest, we have seen a

wider distribution of bull elk during the Hunt Area 56 Type 1 season. In order to allow for a wider distribution of harvest we are allowing Hunt Area 56 Type 1 hunters to hunt in Hunt Area 55. These hunters will also see a later start date of November 5, this later start will allow for a slight break in pressure in Hunt Area 55 between the end of the 55 Type 1 season and the start of the Hunt Area 56 Type 1 season. We are also changing the end date in Hunt Area 56 and increasing the end date in Hunt Area 59 in order to match those late season bull hunts across most of the Absaroka front (see EL217, Hunt Area 54 Type 3). This change will create a matching late season license that should help to spread out demand for the different late season opportunities across the Hunt Areas.

2.) Management Objective Review: Current management is by 3-year average trend counts, evaluated at the Hunt Area block level. Hunt Areas 55/56 objective is 1200, Hunt Areas 58/59 objective is 950, Hunt Area 61 objective is 2,250 and Hunt Area 66 objective is 0.

3.) Chronic Wasting Disease Management: This is a Tier 2 CWD surveillance herd, targeted for hunter harvest sampling in 2023 (115 samples collected). CWD was first detected in this herd in 2018, and has since been detected in hunter harvest in 2020, 2021 and 2023. Combined 2021-2023 data suggest low prevalence (Table 1). To date, no management actions have occurred in this herd to specifically address CWD.

Table 1. CWD prevalence for hunter-harvested elk in the Medicine Lodge Elk Herd, 2021-23.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2021-23	**2.3% (0.6-5.7%, n=176)**

4.) Hunt Area with Greater than 60% Success:

a) 58 Type 1 (3-year average, 77%): No increase. This license is dependent on access to private land that is limited and weather to move elk into the area. Most elk available for this license have been through general hunts in Hunt Areas 60 and 59 and limited quota Hunt Area 61 before arriving in Hunt Area 58. If weather moves elk through the general areas during the general season we could see high harvest on bull elk and could see extremely high harvest on the bulls using the area. This area has low recruitment into the population due to very low calf ratios, which can make recovery of the loss of large numbers of bulls slow and difficult. In addition, many of the elk that are harvested from the area are from outfitted hunts which may artificially be driving up harvest success rates.

b) 59 Type 1 (3-year average, 67.0%): No increase. Most elk available for this license have been through general hunts in Hunt Areas 60 and 59. If weather moves elk through the general areas during the general season we could see high harvest on bull elk using the area. This area has low recruitment into the population due to very low calf ratios, which can make recovery of the loss of large numbers of bulls slow and difficult. In addition, many of the elk that are harvested from the area are from outfitted hunts which may artificially be driving up harvest success rates.

c) 61 Type 1 (3-year average, 78.3%): The hunter success varies depending on late September snow storms prior to the October 1 opener, which typically drive elk into and out of the wilderness. Over the last 6 years, Type 1 hunter success has seen a low of 54%

in 2019 and a high of 92% in 2020. The Type 1 license is unique in that hunters have to commit a tremendous amount of time, effort and money into this "backcountry" hunt, as do many of the Type 1 and General hunters in the Cody elk herd. Plus, all non-residents must commit to a guide or outfitter because of the wilderness limitation on the Type 1 license. Therefore, hunters have come accustom to demanding high hunter success, good opportunity for quality bulls, seeing lots of bulls, and having a quality hunting experience in this hunt area. Even slight changes, or perceived changes, in reduced quality (hunter crowding, bull quality, bull numbers, etc.) of the hunt brings demand from the hunters to make it better. This was the case in 2009 when the Type 1 license quota in hunt area 61 was raised from 150 to 175, and remained at 175 through 2011. Because of this slight increase of 25 licenses, numerous hunter complaints were heard regarding overcrowding at the Jack Creek trailhead, safety issues with trucks and horse trailers having to park on the county/FS road due to limited trailhead space and hunters not being able to find adequate horse camps in the backcountry with adequate feed. These complaints were in addition to the traditional complaints of too many hunters and bull quality going down. Because of these hunters concerns the Type 1 quota was reduced back to 150 licenses.
e) 61 Type 2 (3-year average, 77.3%): The area 61 Type 2 license is popular due to having a good chance at harvesting a very respectable bull. We have always kept the license quota low, along with later season dates, to allow for the harvest of bulls migrating out of the wilderness. However, in 2012 we increased the quota from 25 to 50, which many hunters did not –agree with it. To help support this license increase, we added 15 days to the season length to help distribute hunters and keep it somewhat of a quality hunt. Many of these hunters hunt on the Pitchfork HMA or Forest Service within the Pickett Creek drainage, which is limited in size. Because of this, some hunters have voiced comments that we should cut the license quota back to 25, along with not have the Type 4 (antlerless) season overlap with the Type 2 season dates.

2023 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2023 - 5/31/2024

HERD: EL217 - CLARKS FORK

HUNT AREAS: 51, 53-54

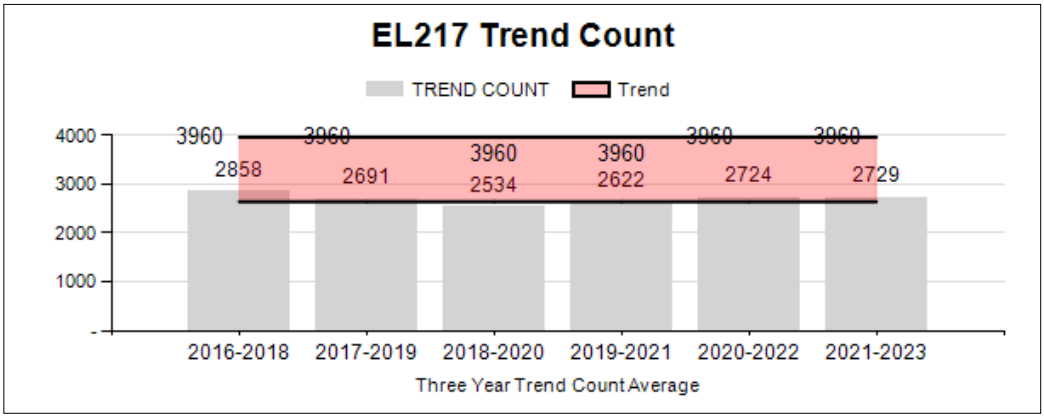
PREPARED BY: TONY MONG

	2018 - 2022 Average	2023	2024 Proposed
Trend Count:	2,723	2,178	2,600
Harvest:	371	440	550
Hunters:	903	805	750
Hunter Success:	41%	55%	73 %
Active Licenses:	944	913	1,000
Active License Success	39%	48%	55 %
Recreation Days:	7,122	6,656	7,000
Days Per Animal:	19.2	15.1	12.7
Males per 100 Females:	16	32	
Juveniles per 100 Females	18	20	

Trend Based Objective (± 20%)	3,300 (2640 - 3960)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-34%
Number of years population has been + or - objective in recent trend:	0

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	n/a%	n/a%
Males ≥ 1 year old:	n/a%	n/a%
Juveniles (< 1 year old):	n/a%	n/a%
Total:	n/a%	n/a%
Proposed change in post-season population:	n/a%	n/a%



2024 Hunting Seasons
Clark's Fork Elk (EL217)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
51	1			Oct. 1	Oct. 31	120	Any elk south and west of the Clarks Fork River
51	2			Oct. 1	Oct. 31	40	Any elk north and east of the Clarks Fork River
51	4			Nov. 16	Dec. 15	50	Antlerless elk
51	9			Sep. 1	Sep. 30	80	Any elk, archery only
54	1			Oct. 1	Oct. 31	65	Any elk valid south of the Clarks Fork River; also valid in Area 65
54	2			Oct. 1	Oct. 31	25	Any elk valid north of the Clarks Fork River
54	3			Nov. 1	Nov. 30	10	Any elk
54	6	-	-	Oct. 1	Oct. 31	100	Cow or calf
54	7	-	-	Aug. 15	Dec. 21	100	Cow or calf
54	9			Sep. 1	Sep. 30	40	Any elk, archery only; also valid in Area 65
65	GEN			Jan. 1	Jan. 15		Antlerless elk
65	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	25	Any elk
65	4			Aug. 15	Dec. 21	100	Antlerless elk
65	6			Aug. 15	Oct. 31	150	Cow or calf
65	7			Oct. 1	Nov. 15	250	Cow or calf

2023 Region West Nonresident Quota: 2,775
2023 Hunter Satisfaction: 66% Satisfied, 17% Neutral, 17% Dissatisfied

2023 Management Summary
1.) Hunting Season Evaluation: There are several major changes to Hunt Area boundaries and season structures in the Clark's Fork Elk herd for 2023-24. See attached map (Appendix A). In

short, we are removing Hunt Area 53 and adding the southern portion of the old Hunt Area 53 to Hunt Area 54 and the Northern portion of the old Hunt Area 53 to Hunt Area 51. In addition we are removing the portion of Hunt Area 54 east of Wyoming Highway 120 from Hunt Area 54 and creating a new Hunt Area 65. These changes should allow for increased success for bull hunters in Hunt Areas 51 and 54, allow for increased cow harvest in the new Hunt Area 65 and allow for continued high quality of bulls and increased numbers for our migratory portion of the Clark's Fork elk herd. Overall we are increasing bull limited quota licenses by 30 and increasing cow licenses by 25 but focusing a majority of those reduced price licenses (500) into Hunt Area 65 where we are having a majority of damage issues with cow elk. Below is a breakdown of each of the seasons by new Hunt Area:

Hunt Area 51

Increase in Type 1 and 9 licenses because of the increase in areas available to hunt and to offset loss from Hunt Area 53 Type 9.

Hunt Area 54

Increase in Type 1 licenses because of the increase in area available to hunt. There is a change in hunting dates for this license to decrease pressure on migratory bulls that have received hunting pressure in Hunt Area 51 and to decrease overall hunter crowding in the month of November in the Pat O'hara area. We are also increasing the Type 9 license to absorb the other 5 licenses lost from the Hunt Area 53 Type 9. Because of the potential for some bulls to move into Hunt Area 65 and because of those who own land in both Hunt Area 54 and 65 we allowing the Type 1 and 9 license to be valid in both Hunt Area 54 and 65. In coordination with the change to the dates of the Type 1 season we are creating a Type 3 license which would allow hunters to hunt the entire area. In order to deal with some damage issues on private land and high population numbers in portions of the new Hunt Area 54 we are going to have a private land only Type 7 and entire area Type 6 reduced price cow/calf license.

Hunt Area 65

All licenses and seasons for this Hunt Area are to drastically reduce elk numbers in the area and decrease damage to private land. We have four different cow license opportunities to maintain constant pressure and harvest throughout the late summer and into the winter. A Type 4 full price and reduced price Type 6 licenses will allow harvest to begin when we begin to have damage and when we typically spend a large amount of time hazing elk from private land. The full price license will run for the duration of all reduced price licenses and allow holders of the license to have the longest duration of hunting in the area. The multiple reduced price cow/calf licenses and differing seasons will allow for a reduced amount of time for each license type, and may decrease "long season" fatigue for each of the hunters increasing the likelihood they will actually hunt on the license. Splitting season up into multiple seasons may increase the likelihood of harvest by hunters holding the licenses because of the shorter time frame for each of the hunts. In coordination with these licenses, much work has been done to increase access to areas where the elk frequent, which should work to help get higher harvest on cows in Hunt Area 65. Finally, there will be a January General Antlerless only season which will again give many hunters opportunity to have another chance to harvest elk and decrease overall numbers of elk in the Hunt Area.

In this area there are limited opportunities for bull harvest due to lack of bulls as well as difficult access for bull hunting. There will be a limited quota Type 1 license to allow for some bull hunting

opportunity in the area.

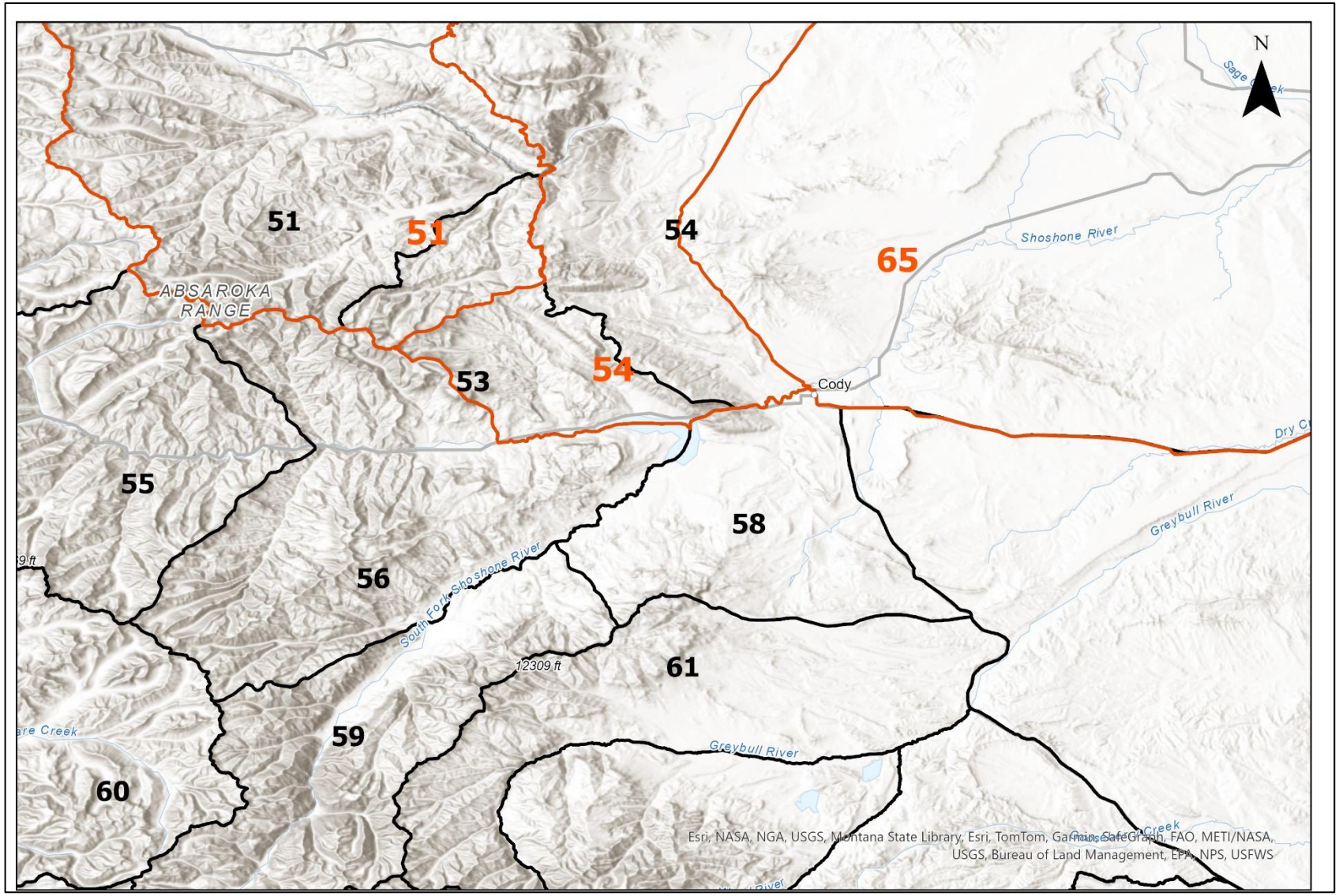
2.) Management Objective Review: This herd is currently managed by a 3-year average mid-winter trend count by Hunt Area blocks (HA51, HA53 and HA54). Because of the changes to the Hunt Areas in the Herd Unit we will be making recommendations to adjust the mid-winter trend count Hunt Area block objectives in the Summer of 2024.

3.) Chronic Wasting Disease Management: This is a Tier 3 surveillance herd. To date, no meaningful surveillance data have been collected, and no specific elk management actions have addressed CWD.

4.) Chapter 56 Permit

- 1 Participating Landowner
- Season Dates: October 15, 2023 – February 15, 2024
- Authorization for removal of up to 30 antlerless elk within 3 miles of private land
- Total harvest = 12 cows

Figure 1. EL217 Hunt Area boundary changes. Orange lines and numbers indicate new Hunt Area Boundaries, black lines and numbers are the previous Hunt Area numbers and boundaries.



2023 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2023 - 5/31/2024

HERD: MO201 - ABSAROKA

HUNT AREAS: 8-9, 11

PREPARED BY: AUSTIN WIESELER

	2018 - 2022 Average	2023	2024 Proposed
Population:	n/a	n/a	n/a
Harvest:	8	8	8
Hunters:	8	8	8
Hunter Success:	98%	100%	100 %
Active Licenses:	8	8	8
Active License Success:	98%	100%	100 %
Recreation Days:	69	208	70
Days Per Animal:	8.3	26.0	8.0

Limited Opportunity Objective:

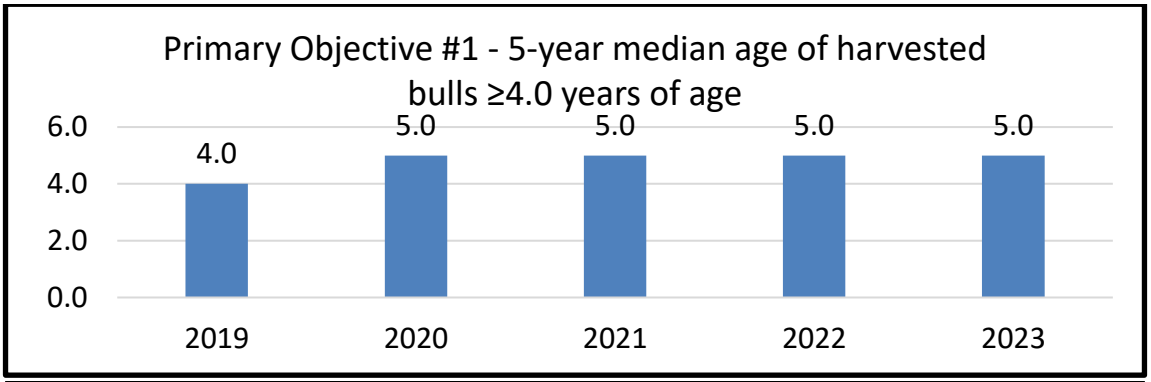
5-year median age of ≥ 4.0 years for harvested moose

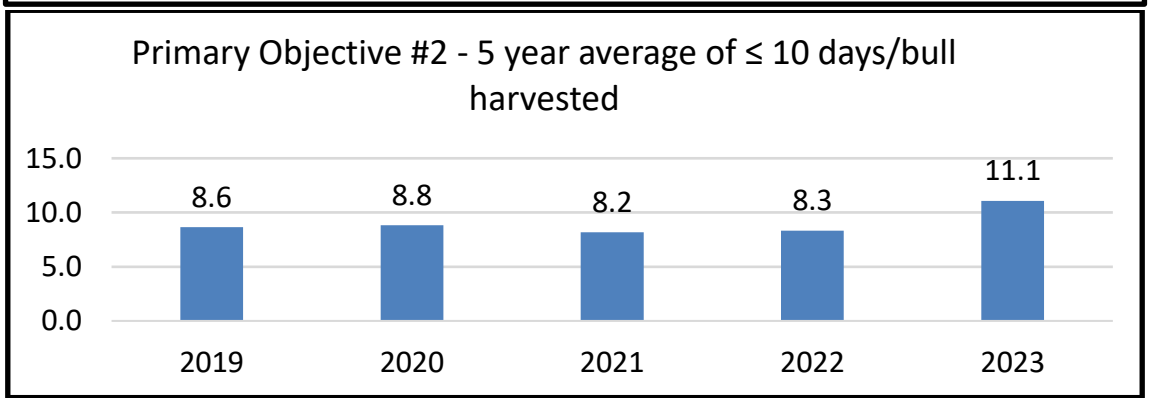
5-year average of ≤ 10 days/animal to harvest

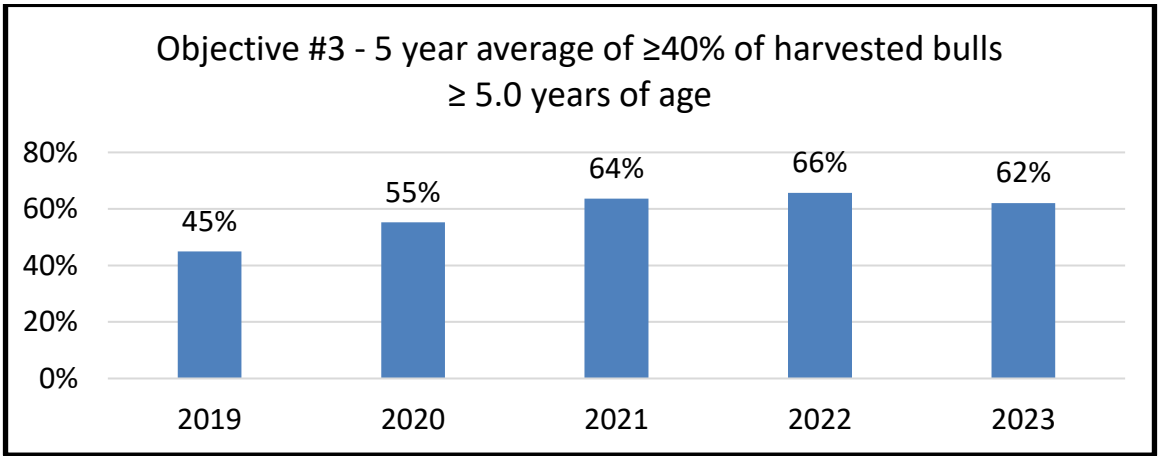
Secondary Objective:

5-year average of ≥40% of harvested moose are ≥ 5 years of age

Management Strategy: Special






Objective #3 - 5 year average of ≥40% of harvested bulls
≥ 5.0 years of age
80%
60%
40%
20%
0%
45%
55%
64%
66%
62%
2019
2020
2021
2022
2023

2024 Hunting Seasons
Absaroka Moose (MO201)

Hunt Area	Type	Special Archery Dates		Regular Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
8							Closed
9	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	3	Antlered moose (3 residents)
11	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	5	Antlered moose (4 residents, 1 nonresident)

2024 Management Summary

1.) Hunting Season Evaluation: The 2024 hunting season for the Absaroka moose herd will be unchanged from 2023. Moose numbers in this herd unit are considered at low densities, but it appears to have been slightly increasing in recent years. Enough moose do exist to support limited bull harvest. Number of moose observed during the 2024 winter aerial trend survey was 29 moose in Hunt Area 9 and 13 in Hunt Area 11. Trail camera pictures taken during 2023 documented at least 13 different bull moose in Hunt Area 9. Eight (8) bull moose were harvested in 2023, including 3 from Hunt Area 9 and 5 from Hunt Area 11, for a hunter success of 100%. The 2023 5-year median age of harvested bulls is 5.0 years, and 62% of the bulls harvested the past 5 years are ≥5 years of age. The 5-yr average hunter effort is 11.1 days/harvest. Currently all management objectives for this moose herd are being met except the 5-yr average hunter effort objective which has exceeded the 10 days/harvest threshold. This was due to an abnormally high days/harvest occurring in Hunt Area 11 during the 2023 season with an average of 35.0 days/harvest driving the 5-yr average hunter effort objective slightly above the set objective. Field personnel confirmed that highly selective hunters in pursuit of mature bulls were present for a long duration of the season in Hunt Area 11, which likely drove inflation of days/harvest for the 2023 season.

2.) Field Data: Both trail camera and trend count surveys need to continue annually to document the presence of bull moose, as well as monitoring population trends and composition of the herd. Additional effort needs to be placed on contacting hunters to remind them to submit tooth samples from harvested bulls.

3.) Herd Research: In March 2020, the Meeteetse Moose Project was initiated with five key project goals: 1) identify population limiting factors, 2) measure adult and calf survival rates, 3) assess quality of thermal refuge and identify habitats moose use for summer heat, 4) compare male and female habitat uses, and 5) study male moose rutting behavior and responses to warm temperatures. This project is in the final phases with much of the project finished as of May 2023. See Appendix A for a detailed management report on the project.

Appendix A. Meeteetse Moose Management Report- Fall 2023

Meeteetse Moose Project: Management Reports

Led by Rebecca Levine
Monteith Shop
University of Wyoming

Table of Contents

I. Project Summary

Only within the last 150 years have moose expanded into the southern regions of their distribution, including many areas of Wyoming. Since their colonization, moose have become highly visible and iconic in Wyoming due to their unique appearance and socio-economic value as a hunted species. Yet, over the last 20 years, nearly half of the moose populations in their southern range have declined. Many factors can influence population performance, including predation, disease, climate, and foraging resources. The influence of these factors on populations can vary by region. Despite widespread interest in moose conservation across their range, the complexities of how moose are influenced by their environment present challenges when assessing the efforts needed to bolster moose populations.

The Wood River and the surrounding region provide an appropriate system for addressing the complex questions surrounding moose ecology, thanks to its diverse wildlife and relatively intact habitats. The Meeteetse Moose Project explored how habitat conditions, the thermal landscape, predators, and human activity influence population performance. From 2020 to 2023, we captured male and female moose, equipped them with GPS collars, and collected data on their size, nutritional condition (i.e., body fat), pregnancy status, and age. Over those three years, we monitored their behavior, reproduction, and survival.

II. Adult Survival

During the three years of monitoring, there were only four mortalities not associated with legal harvest. Of these four mortalities, three were related to malnutrition and one was caused by a vehicle collision near Willow Creek. The male that died of malnutrition was 12 years old and had reached the expected lifespan for a wild moose. Predator sign was present at many mortality investigations, but predation was not the ultimate cause of mortality of any adult moose in the study. Legal harvest occurred in two main drainages. In 2021, one GPS collared bull was harvested on the Wood River. In 2022, three GPS collared bulls were harvested; one on the Wood River and two on Pickett Creek. All harvest locations were within ¼ mile of a publicly accessible road.

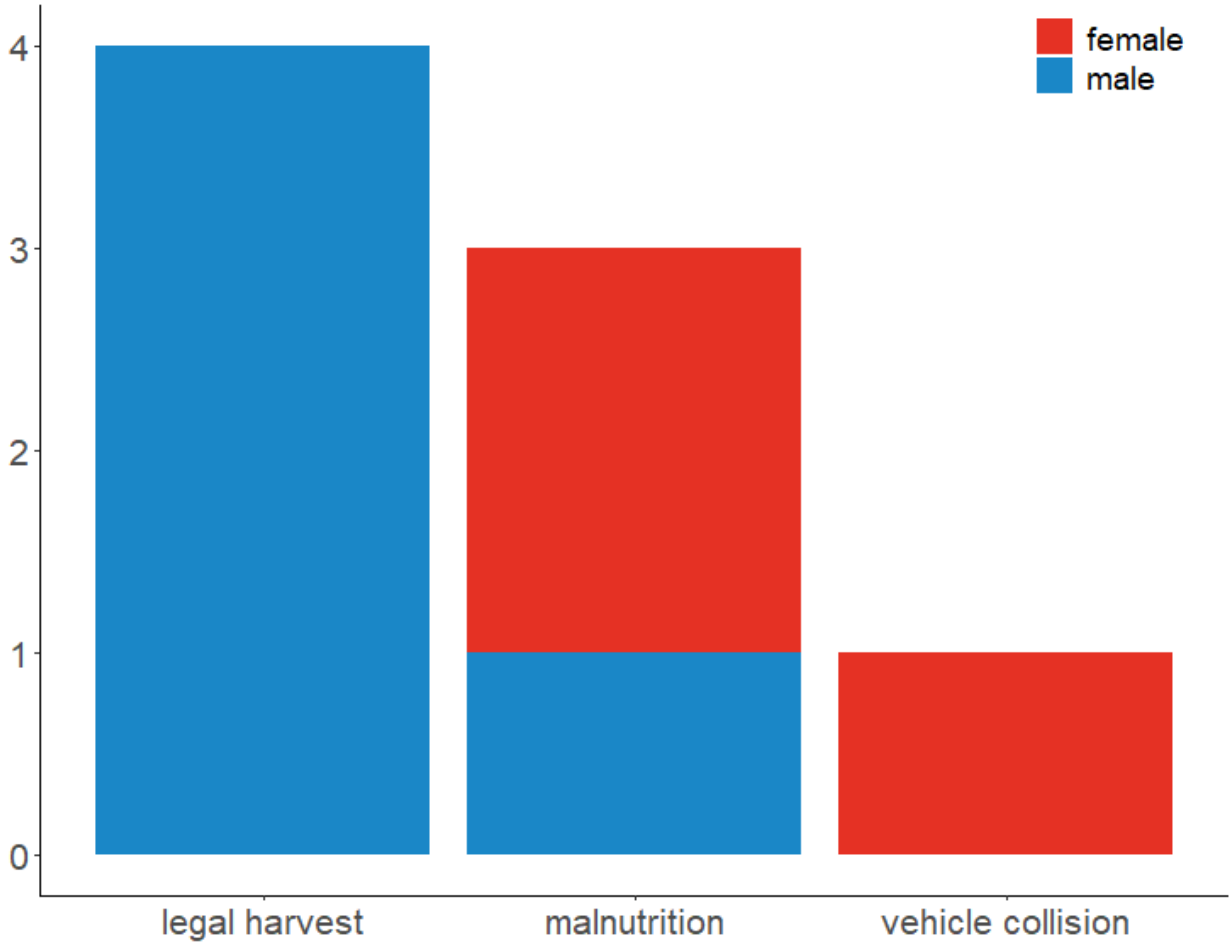


Figure 1. Adult Mortality of Moose in the Meeteetse Area*. Sources of mortality for the GPS collared moose of the Meeteetse Moose Project for the duration of the study (March 2020–March 2023). Female mortalities shown in red and male mortalities down in blue.*

III. Calf Survival

For the duration of the Meeteetse Moose Project (2020–2023), calf survival was high, but pregnancy rates fell on the low end of normal for North American moose. Pregnancy rates remained around 70% throughout the study. Moderate pregnancy rates, like those detected in Meeteetse, can be a sign of nutritional limitations for moose. Depending on the year, between 57% and 66% of pregnant females recruited their calf into the population. Compared to other areas with similar predator assemblages, calf survival in Meeteetse is high.

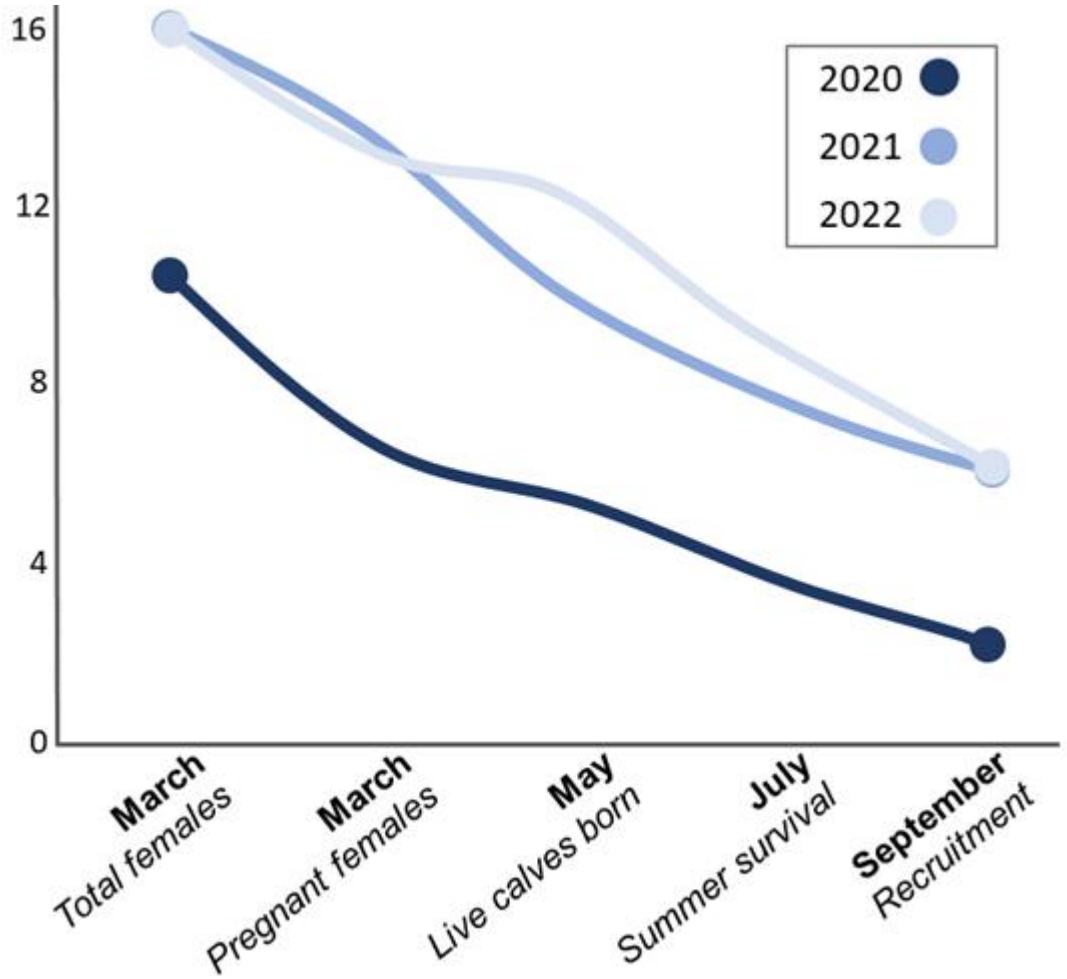


Figure 2. Reproductive Rates of Moose in Meeteetse Area. *Reproductive rates of female moose of the Meeteetse Moose Project for each year of the study (2020 to 2023). Pregnancy and calf survival rates remained consistent across years.*

IV. Crucial Winter Range

To map the crucial winter range for moose in the Meeteetse area, we generated Kernel Density Estimates at 30%, 50%, and 90% utilization contours. The maps were generated using GPS data collected from moose equipped with collars (N = 101 animal years). The 50%, 70%, and 90% contours represent zones of varying significance. The 50% contour identifies core winter habitat where moose activity is most concentrated, while the 70% contour encompasses moderately used area. The 90% contour outlines the overall extent of the crucial winter range.

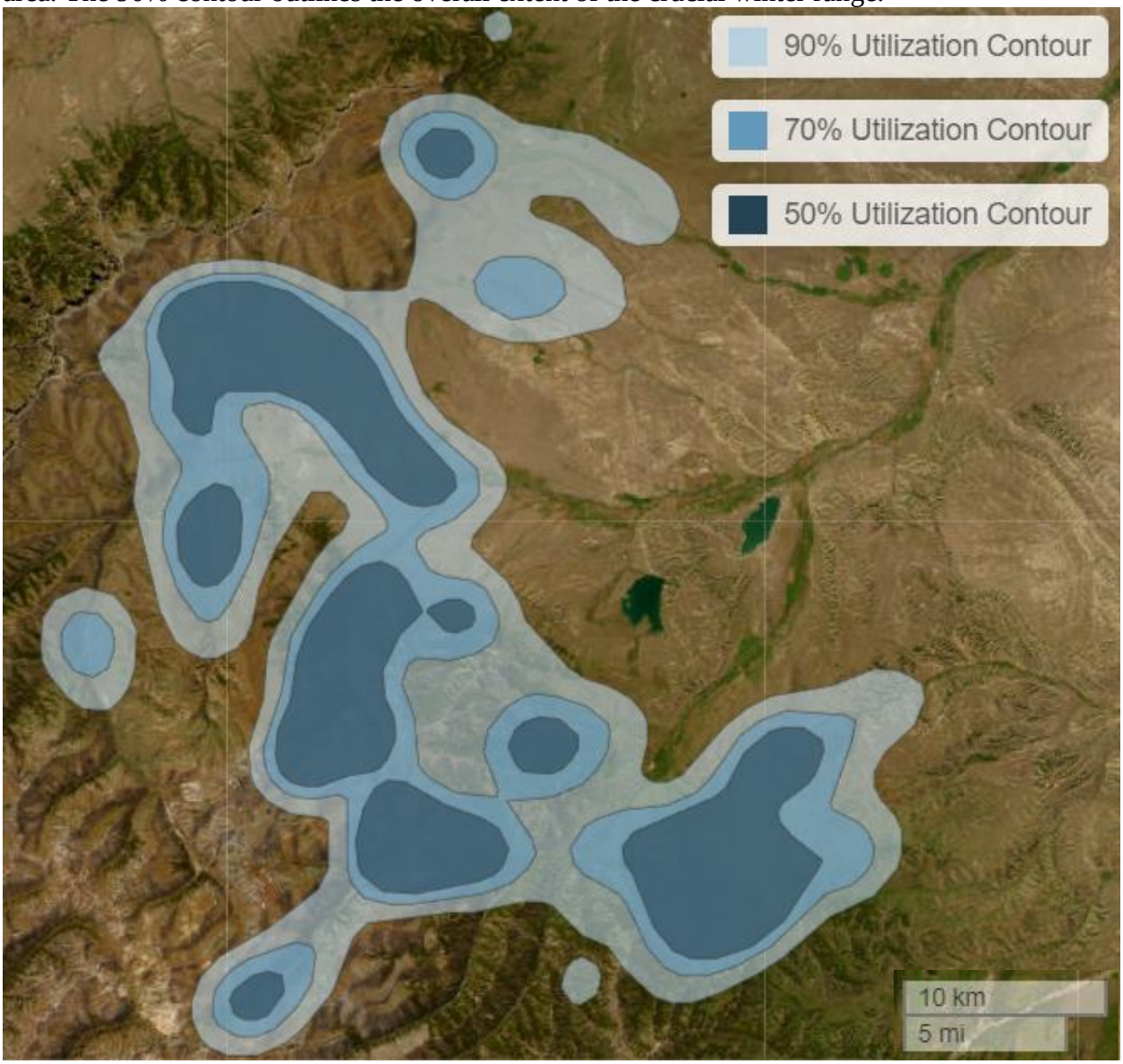


Figure 3: Crucial Winter Range of Moose in the Meeteetse Area. *The crucial winter range of moose in the Meeteetse area, generated using Kernel Density Estimates with 30%, 50%, and 90% contours. The data used for mapping is derived from 101 animal years of GPS data collected from adult male and female moose fitted between 2020 and 2023.*

V. Crucial Parturition Range

To designate parturition range (15 May–30 June), a critical area for moose raising calves, we used Kernel Density Estimates at three contour levels: 50%, 70%, and 90%. Maps were created using GPS data collected from pregnant moose fitted with collars (N = 31 animal years). Contour levels identify regions of substantial moose activity during the crucial period when females are raising vulnerable young. The 50% contour delineates the core parturition range where moose activity is most concentrated during the calving season. The 70% contour extends further, encompassing a moderately used area that moose frequent for raising their calves. The 90% contour outlines the overall extent of the parturition range.

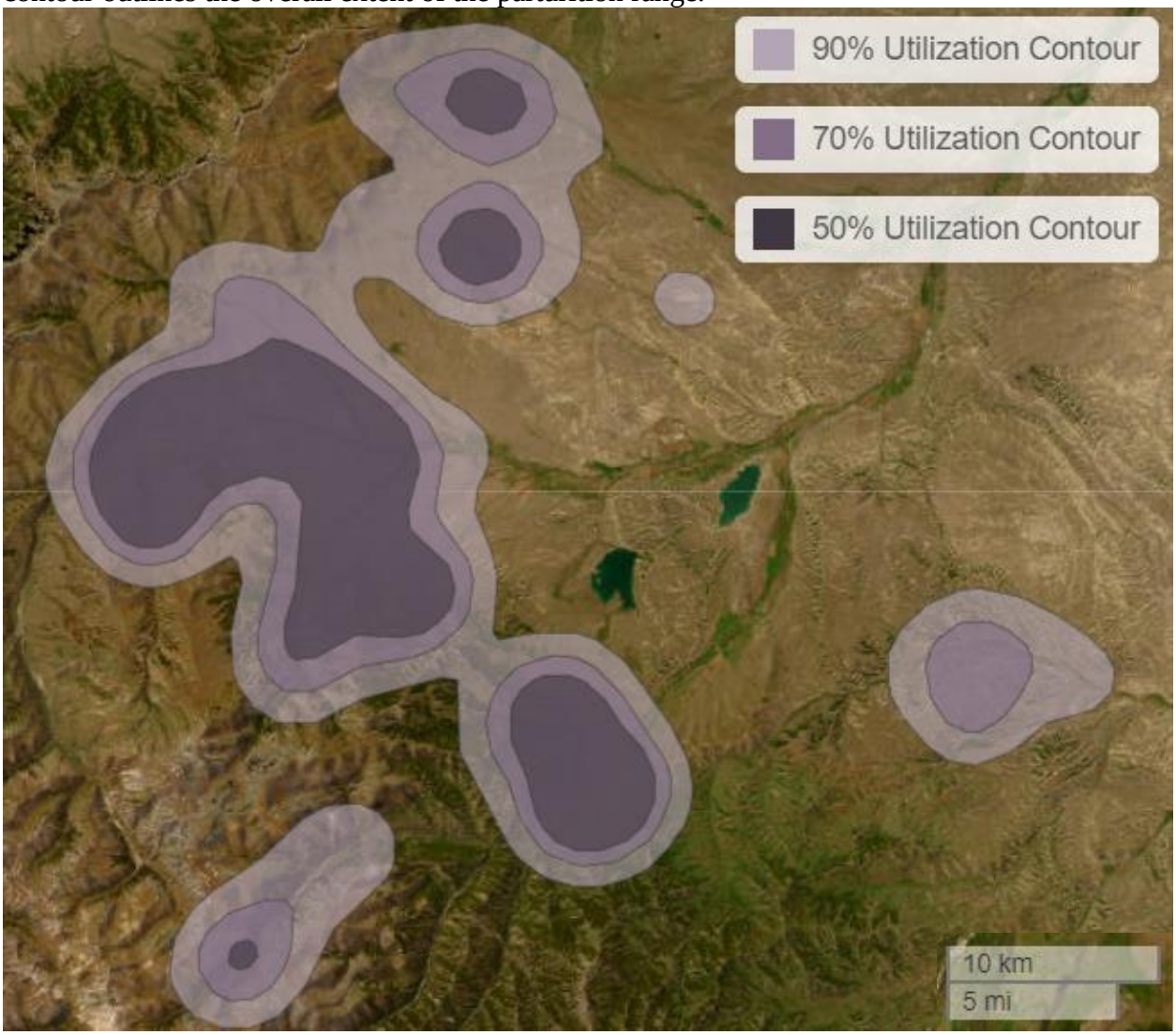


Figure 4. Crucial Parturition Range of Moose in the Meeteetse Area. *The parturition range of moose in the Meeteetse area, a crucial area for female moose when calves are most vulnerable, May 15 to June 30. Maps with 50%, 70%, and 90% utilization contours represent different levels of moose activity. The data used for mapping was derived from 31 animal years of GPS data collected from pregnant moose between 2020 and 2022.*

VI. Hunting Impacts

In much of Wyoming, tags allocated for moose hunting are limited and hunters focus their efforts close to areas with good road access. For the Meeteetse population (Hunt Area 9), this means that the Wood River receives comparatively high hunting pressure. The concern is that moose hunters may concentrate on this specific area and disproportionately affect the Wood River sub-population. However, the hunting season for moose (September–October) overlaps with the rut, a time of year when male moose increase their movement in search of mates. It is possible this rutting movement could buffer the drainage-specific effects of hunting because males move to areas that they do not typically occupy during the rest of the year.

We explored this question using GPS data from collared male moose in the Meeteetse area. Using Kernel Density Estimation, we created home range maps (95% contour) for the summer (July–August) and hunting seasons (September–October). We examined overlap between these times of year to understand whether a male harvested in a given area was likely to call that area 'home' outside of the rut. Consistent with the general ecology of moose, males in the Meeteetse region had much larger home ranges during the rut (hunt season) than they did during the summer (Figure 5, Figure 6). Summer home typically fell within hunt season home ranges, but for most males in the study over 50% of hunt season home range fell outside of summer range. Therefore, at any given time during the hunting season, a male moose if more likely to be outside of his typical summer range than within that range.

We also took a more qualitative approach to this question and classified home ranges as part of the major drainages in the study area (Pickett Creek, Francs Fork, Gooseberry Creek, Wood River, etc.). We listed all the major drainages that fell within each male's summer and hunting season home ranges. For example, in 2021, M11 spent the summer in the Wood River and the hunting season in both the Wood River and Gooseberry. In the 35 animal years collected, nearly all males (89%) spent the summer (July–August) in a single major drainage. During the hunting season, most males (60%) expanded their range to occupy multiple drainages. Even though many males ventured into different drainages, all males still occupied the drainage of their summer range during the hunting season.

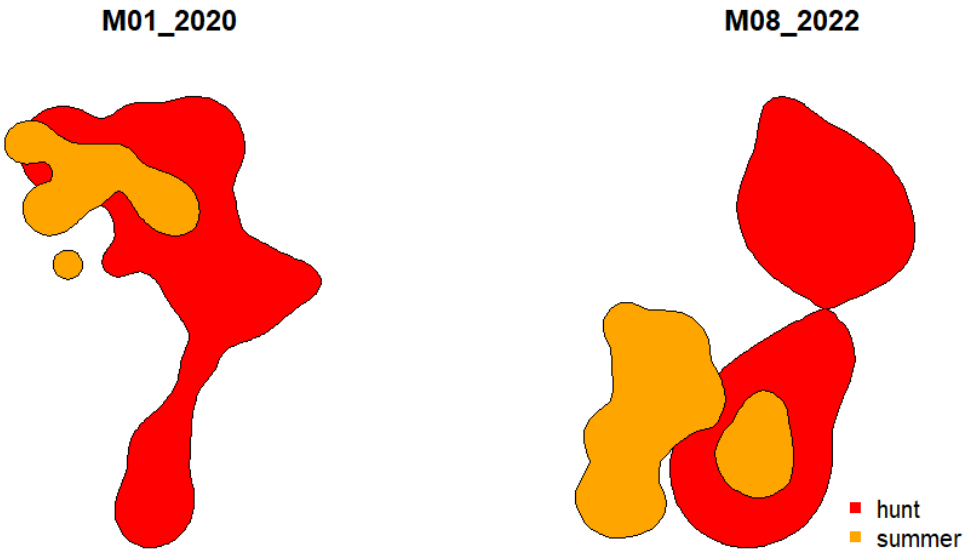


Figure 5. Examples of Hunt Season and Summer Home Ranges for Male Moose. *Example home ranges for two male moose during summer (July–August) and hunt (September–October) seasons in the Meeteetse population. Hunt season home ranges (red) were larger than summer home ranges (yellow). Hunt season home ranges typically encompassed most of summer range but also extended far beyond summer range. Home range area was derived from 95% contour of Kernel Density Estimation.*

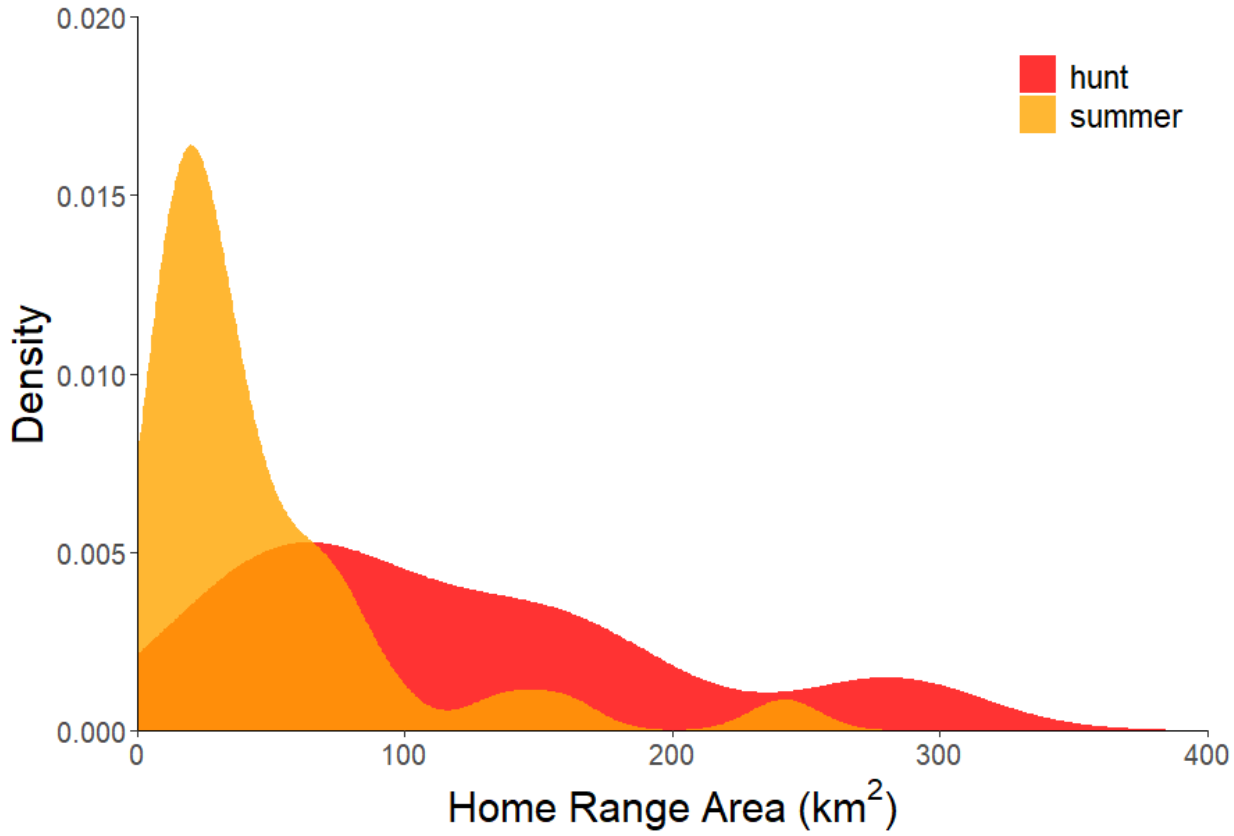


Figure 6. Home Range Size of Male Moose during Hunt Season and Summer. *Home range area (km^2) for male moose during the summer (July–August) and hunt (September–October) in the Meeteetse population. Hunt home ranges (red) tended to be larger than summer home ranges (yellow). Home range area was derived from 95% contour of Kernel Density Estimation.*

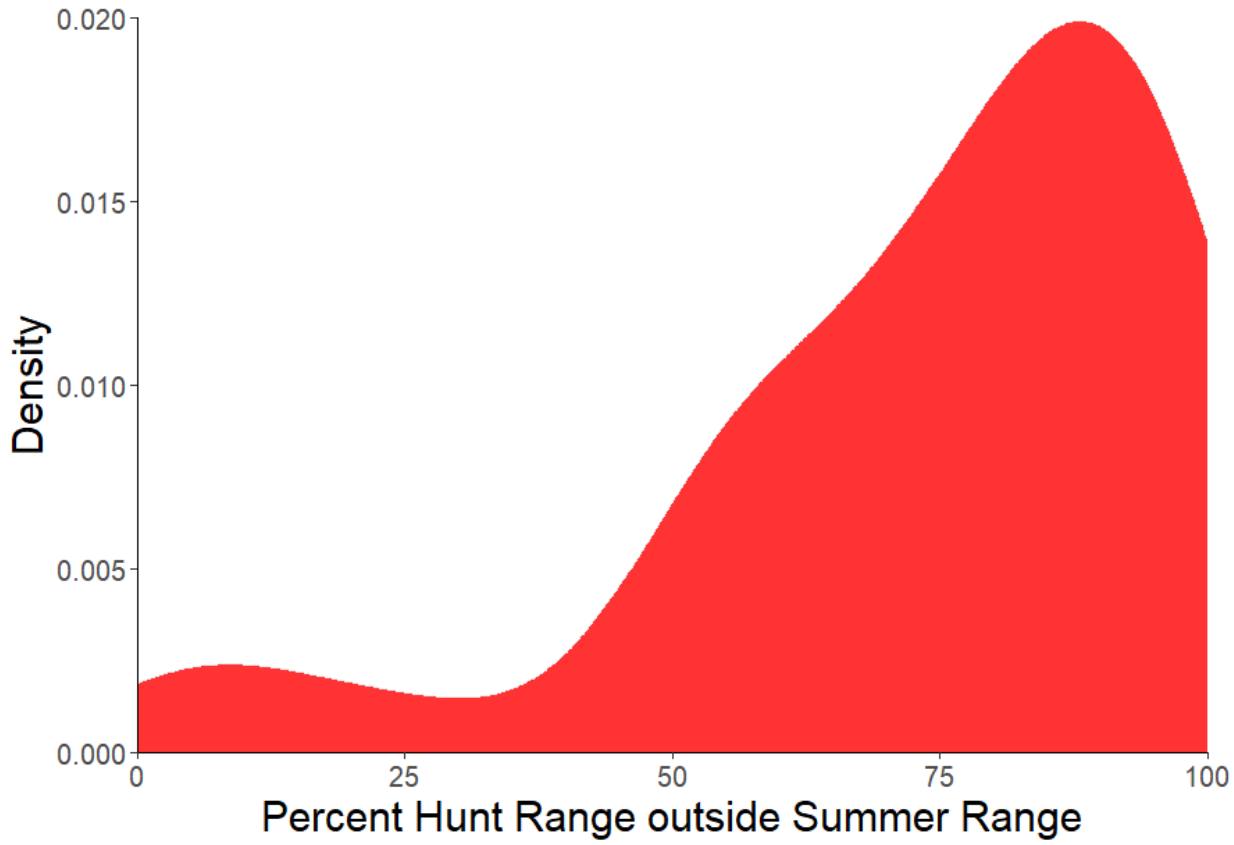


Figure 7. Hunt Season Range not overlapping Summer Range for Male Moose. *Percent of hunt season home range (September–October) that that does not overlap with summer season home range (July–August) for male moose in the Meeteetse population. For the majority of male moose in this population, over 50% of hunt season home range fell outside of summer range. Home range area and overlap was derived from 95% contour of Kernel Density Estimation.*

2023 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2023 - 5/31/2024

HERD: BS200 - ABSAROKA

HUNT AREAS: 1-5, 22, 999
PREPARED BY: TONY MONG

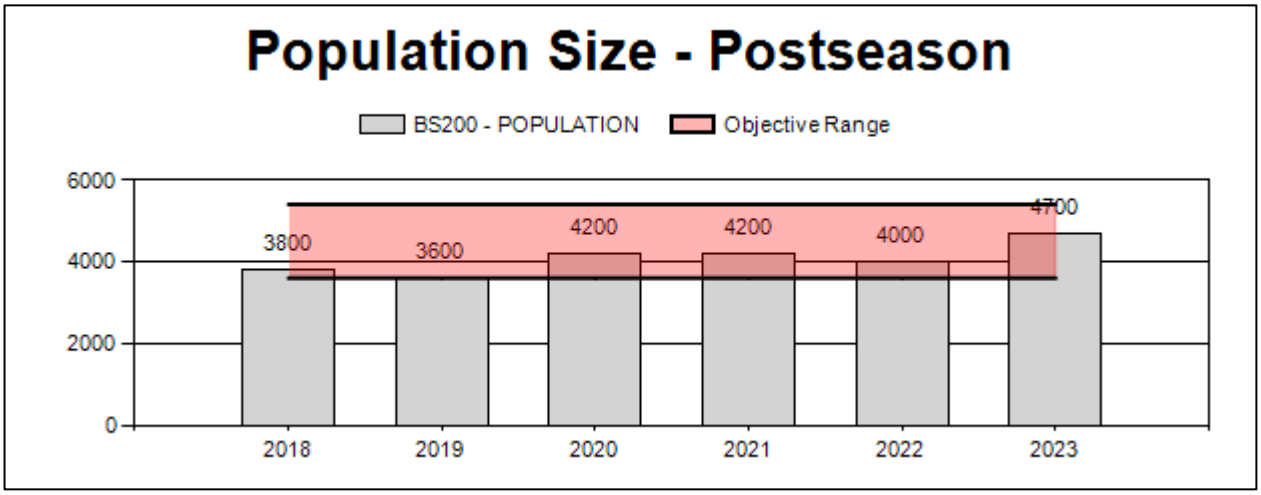
	2018 - 2022 Average	2023	2024 Proposed
Population:	3,960	4,700	4,800
Harvest:	103	104	107
Hunters:	131	130	135
Hunter Success:	79%	80%	79%
Active Licenses:	131	130	135
Active License Success:	79%	80%	79%
Recreation Days:	1,135	1,180	1,200
Days Per Animal:	11.0	11.3	11.2
Males per 100 Females	35	34	
Juveniles per 100 Females	36	33	

Population Objective (± 20%) : 4500 (3600 - 5400)

Management Strategy: Special
Percent population is above (+) or below (-) objective: 4%
Number of years population has been + or - objective in recent trend: 0
Model Date: 02/28/2024

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	n/a%	0%
Males ≥ 1 year old:	n/a%	10%
Proposed change in post-season population:	0%	1.02%



2024 Hunting Seasons
Absaroka Bighorn Sheep (BS200)

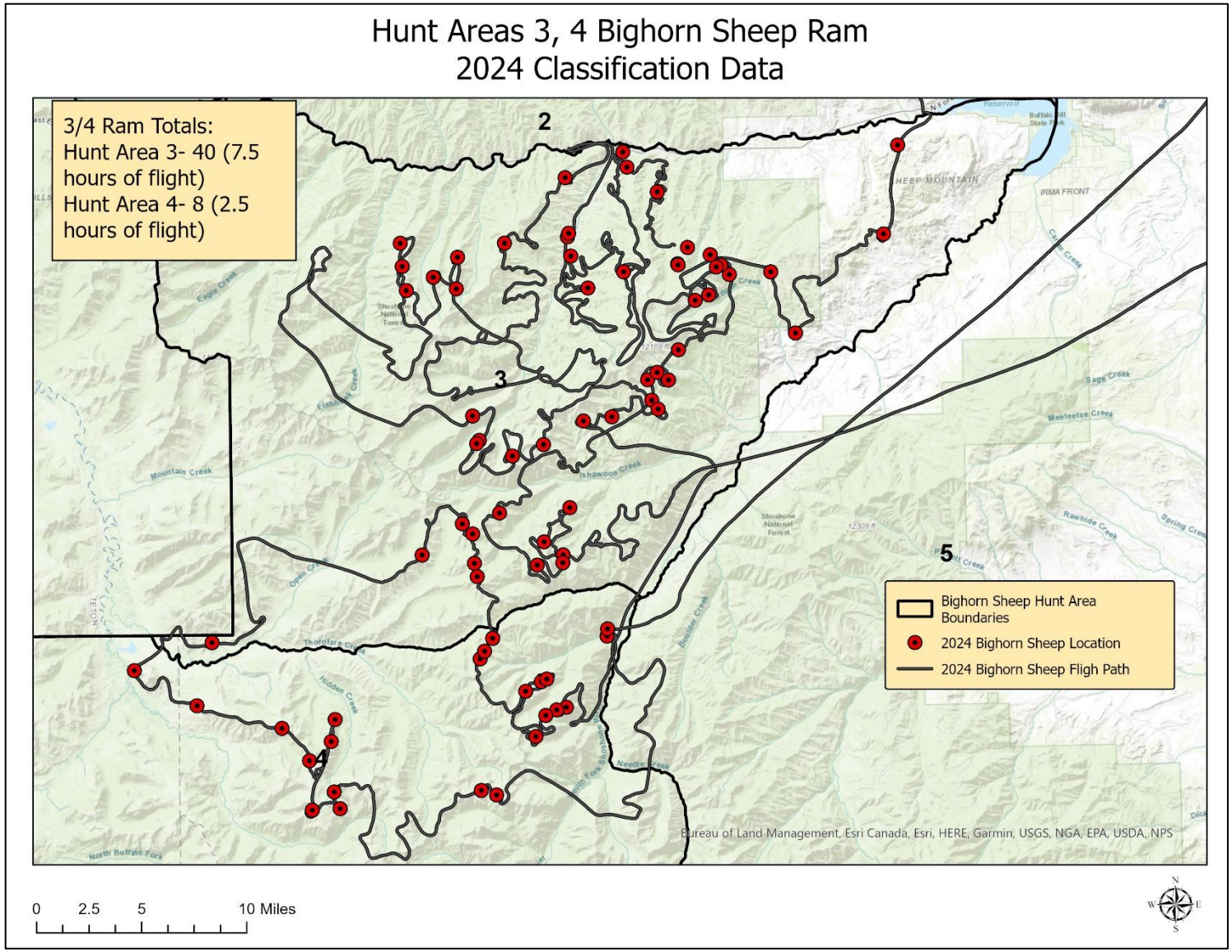
Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
1	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	15	Any ram (3 res., 2 nonres.)
2	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	25	Any ram (23 res., 2 nonres.)
3	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	20	Any ram (18 res., 2 nonres.)
4	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	20	Any ram (18 res., 2 nonres.)
5	1			Aug. 1	Aug. 31	35	Any sheep valid within the Owl Creek drainage (32 res., 3 nonres)
5	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31		Any ram
22	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	5	Any ram, also valid in Area 5 (4 res., 1 nonres.)

2022 Management Summary

1.) Hunting Season Evaluation: We are increasing licenses in Hunt Area 5 and decreasing licenses by 5 in both Hunt Area 3 and 4. This will decrease licenses by 5 in the herd unit. We are concerned about sheep numbers in Hunt Areas 3 and 4, harvest statistics (low success and increasing days to harvest), hunter comments and intensive flights from March 2024 from those areas continue to show low numbers of available rams and most likely overall population numbers for the areas. Hunt Areas 1 and 2 have shown great harvest success and ram quality over the last 2 years, which should allow for more license opportunity in both areas in the future. Adjustments to each area have been made to meet the 90/10 resident/nonresident requirement.

2.) Intensive Flight in Hunt Areas 3 and 4 (Appendix A): Due to our uncertainty about the numbers of sheep in Hunt Areas 3 and 4 we spent nearly 12 hours between the two Hunt Areas flying and counting sheep. Unfortunately, our concerns seem to be confirmed in both Hunt Areas with low numbers of sheep overall and low numbers of mature rams counted. In Hunt Area 3 we flew 7.5 hours and only counted 41 total >3/4 curl or better rams and a total of 398 sheep. In Hunt Area 4 we along with the Lander region flew ~4 hours and only counted 19 total mature rams and a total of 208 sheep.

Appendix A. Flight Path and bighorn sheep locations from the March Intensive flights in Hunt Areas 3 and 4.



2023 - JCR Evaluation Form

SPECIES: Bighorn Sheep
HERD: BS212 - DEVIL'S CANYON
HUNT AREAS: 12

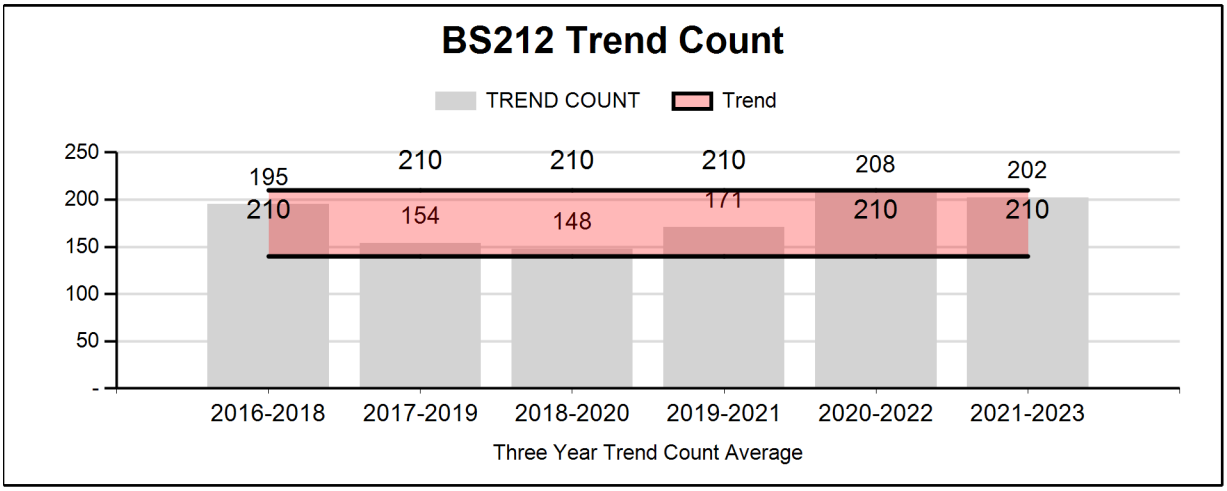
PERIOD: 6/1/2023 - 5/31/2024
PREPARED BY: SAM STEPHENS

	2018 - 2022 Average	2023	2024 Proposed
Trend Count:	182	142	70
Harvest:	7	2	8
Hunters:	7	2	8
Hunter Success:	100%	100%	100%
Active Licenses:	7	2	8
Active License Success	100%	100%	100%
Recreation Days:	38	7	32
Days Per Animal:	5.4	3.5	4
Males per 100 Females:	59	41	
Juveniles per 100 Females	45	39	

Trend Based Objective (± 20%)	175 (140 - 210)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-18.9%
Number of years population has been + or - objective in recent trend:	1

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	6%	27%
Juveniles (< 1 year old):	0%	0%



2024 HUNTING SEASONS
DEVILS CANYON BIGHORN SHEEP HERD (BS212)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
12	1	Aug. 1	Aug. 14	Aug. 15	Oct. 15	3	Any ram (3 residents)
12	2	Aug. 1	Aug. 14	Sep. 15	Oct. 31	5	Any ram less than three-quarter (3/4) curl (5 residents)

2023 Management Summary

1.) **Hunting Season Evaluation:**
In 2022, increased sheep harvest was applied to address an overabundance of bighorns in Devil's Canyon. This included a modest increase to Type 1 licenses as well as the issuance of a new Type 6 ewe license. Female harvest was intentionally low in 2022 as this was the first time ewe tags were employed as a management tool. Therefore only 4 licenses were issued. Immediately following the end of the 2022 hunting season a significant mortality event impacted the Devils Canyon Herd. Wildlife Health Laboratory staff concluded that this event was triggered by a novel strain of the pathogen *Mannheimia haemolytica* which caused pneumonia. Disease related mortality continued through the fall and into the winter. By December 31, 2022: approximately 44% of the collared sheep (n=6 ewes: 6 rams) were lost to the pneumonia outbreak. Standardized aerial trend counts were conducted in July and 142 sheep were observed. Two weeks after the flight a second pneumonia outbreak impacted the herd. Mortality notifications lasting through August prompted the recovery and investigation of dead collared ewes. Field necropsies and samples submitted to the Wyoming State Veterinary Lab confirmed a second outbreak of *Mannheimia haemolytica*. Unlike the initial outbreak, the second episode seemed to primarily impact ewes. During the month long die-off, no lamb or ram carcasses were detected despite many orphaned lambs being found in close proximity to ewe carcasses that were later confirmed positive for the pathogen. Marked individuals were drastically reduced during this period from 13 to 2 collared ewes. The reason why lambs showed resistance to *Mannheimia haemolytica*, could be due to a passive immunity developed through nursing. Lamb mortality could have resumed later in the year but was never detected. In the late summer, rams are typically sexually segregated in Devils Canyon. Rams often congregate in bands at higher elevations away from ewe/lamb groups. This behavior likely protected them from the die-off. Based on recent observations, rams seemed to be unaffected from last year's outbreak. This phenomenon, when combined with a loss of many sexually mature ewes has rendered a higher ram ratio that could compromise the future recovery of the herd. Options to reduce the ram ratio in order to discourage future dispersal include increasing ram harvest. To accomplish this managers increased Type 1 licenses and introduced a Type 2 license, valid for any ram less than ¾ curl. This license type will target younger aged rams (<4 y.o) which is an age cohort more prone to wander outside of the herd unit.

2.) **Devils Canyon Bighorn Sheep Movement Analysis:**

With disease sampling funding secured through the Wyoming chapter of the Wild Sheep Foundation, additional funding was opportunistically granted by the organization ($12,450) and the Wyoming Governors Big Game License Coalition ($15,000) in 2019 to purchase GPS collars (n=30) to monitor habitat use, seasonal movement, and annual recruitment rates of Devils Canyon bighorn sheep. Amongst four capture efforts (November 2019, March 2020, December 2020, and January 2022) we maintained a sample size of 10 adult males (1-7 y.o) and 20 adult females fitted with GPS collars. GPS collars proved to be a critical tool in detecting and monitoring disease related mortalities following the initial *Mannheimia haemolytica* die-off throughout the 2022-23 winter and 2023 summer. A total of 13 mortalities were detected from a starting total of 15 GPS collared sheep in 2023. Each event was investigated and cause was attributed to each mortality (Figure 1).

Figure 1. Cause-Specific Mortality of GPS Collared Bighorn Sheep (n=30)

SEX	Time of Mortality	Cause of Death
Ewe	February 2022	Capture Myopathy
Ram	August 2022	Poached
Ram	September 2022	Mountain Lion Predation
Ewe	October 2022	Disease
Ewe	October 2022	Disease
Ewe	October 2022	Disease
Ewe	October 2022	Disease
Ewe	November 2022	Disease
Ram	November 2022	Disease
Ram	November 2022	Disease
Ram	November 2022	Disease
Ram	December 2022	Disease
Ram	December 2022	Disease
Ewe	December 2022	Disease
Ram	December 2022	Disease
Ram	April 2023	Disease
Ram	April 2023	Mountain Lion Predation
Ewe	July 2023	Disease
Ewe	July 2023	Disease
Ewe	July 2023	Disease
Ewe	July 2023	Disease
Ewe	July 2023	Disease
Ewe	August 2023	Disease
Ewe	August 2023	Disease
Ewe	August 2023	Disease
Ewe	August 2023	Disease
Ewe	August 2023	Disease
Ewe	August 2023	Disease

2023 - JCR Evaluation Form

SPECIES: Mountain Goat
PERIOD: 6/1/2023 - 5/31/2024

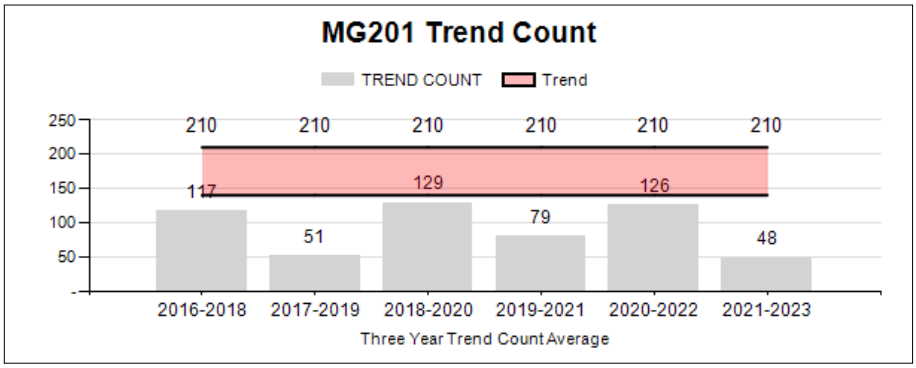
HERD: MG201 - BEARTOOTH

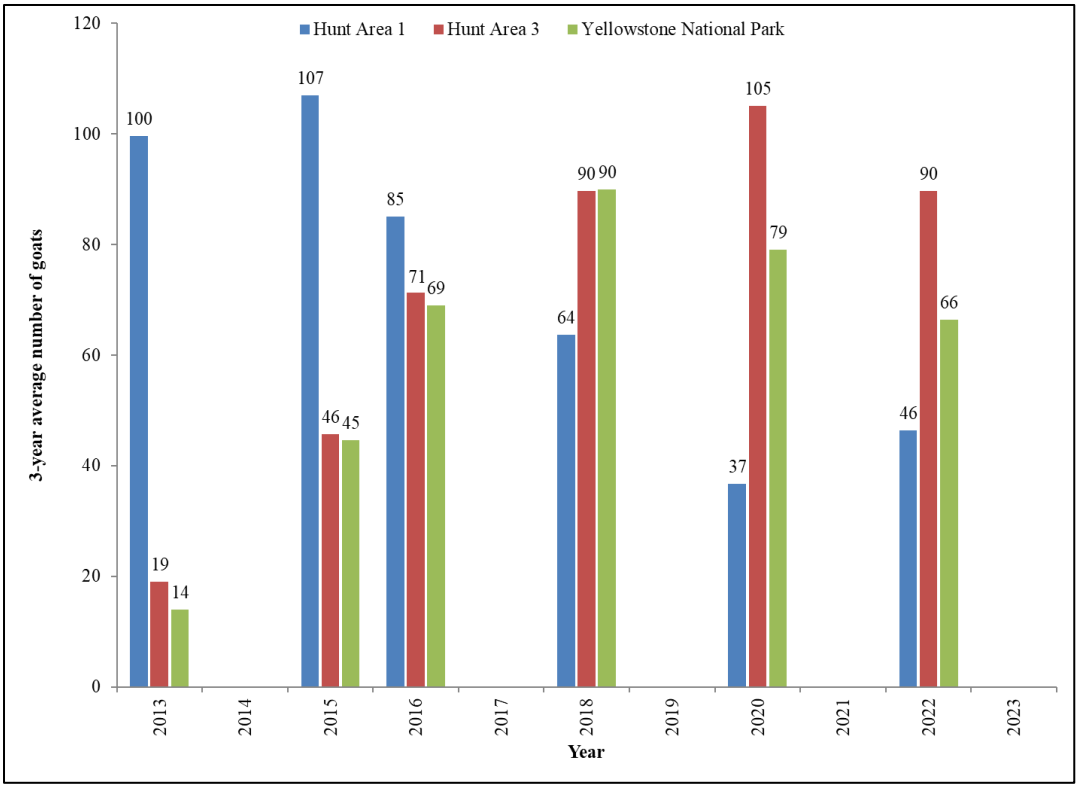
HUNT AREAS: 1, 3, 5, 514, 999
PREPARED BY: TONY MONG

	2018 - 2022 Average	2023	2024 Proposed
Trend Count:	177	0	175
Harvest:	33	33	28
Hunters:	45	43	35
Hunter Success:	73%	77%	80%
Active Licenses:	45	43	35
Active License Success	73%	77%	80%
Recreation Days:	285	390	280
Days Per Animal:	8.6	11.8	10
Males per 100 Females:	0	0	
Juveniles per 100 Females	34	0	
Trend Based Objective (± 20%)			175 (140 - 210)
Management Strategy:			Special
Percent population is above (+) or (-) objective:			N/A%
Number of years population has been + or - objective in recent trend:			0

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	n/a%	n/a%
Males ≥ 1 year old:	n/a%	n/a%
Juveniles (< 1 year old):	n/a%	n/a%
Total:	n/a%	n/a%
Proposed change in post-season population:	n/a%	n/a%





***Typically trend counts occur every other year**

2024 Hunting Seasons
Beartooth Herd (MG201)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
1	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	10	Any mountain goat (9 residents, 1 nonresident)
3	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	15	Any mountain goat (14 residents, 1 nonresident)
3	2	Aug. 15	Aug. 31	Sep. 1	Oct. 31	10	Any mountain goat valid in the North Fork Shoshone River Drainage; also valid in Area 5 (9 residents, 1 nonresident)

2023 Management Summary

1.) Hunting Season Evaluation: There will be a slight decrease in the Hunt Area 3 Type 1 licenses. We counted the lowest number of mountain goats in Hunt Area 3 in 2022 and saw low success (71%) with the Hunt Area 3 Type 1 license in 2023. Nanny harvest has been relatively low at an average of 31% over the last 3 seasons. Our goal in this herd has been to reduce mountain goat numbers over the entire area and it seems we have been successful in that management action. We are going to maintain current license numbers in Hunt Area 3 Type 2 as harvest success has

been high (~100%) and we want to try and keep goats from moving south into Hunt Area 5A. Dropping the number of Hunt Area 3 Type 1 licenses will likely increase success but still harvest enough mountain goats to keep numbers at the current level. Hunt Area 5A was created to keep goats from expanding into this area. Although we have had very few reports of goats in this area, we would like the opportunity to have a hunter in this area if a goat is found therefore the Hunt Area 3 Type 2 licenses will be valid within Hunt Area 5A.