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2022 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2022 - 5/31/2023

HERD: PR201 - Copper Mountain

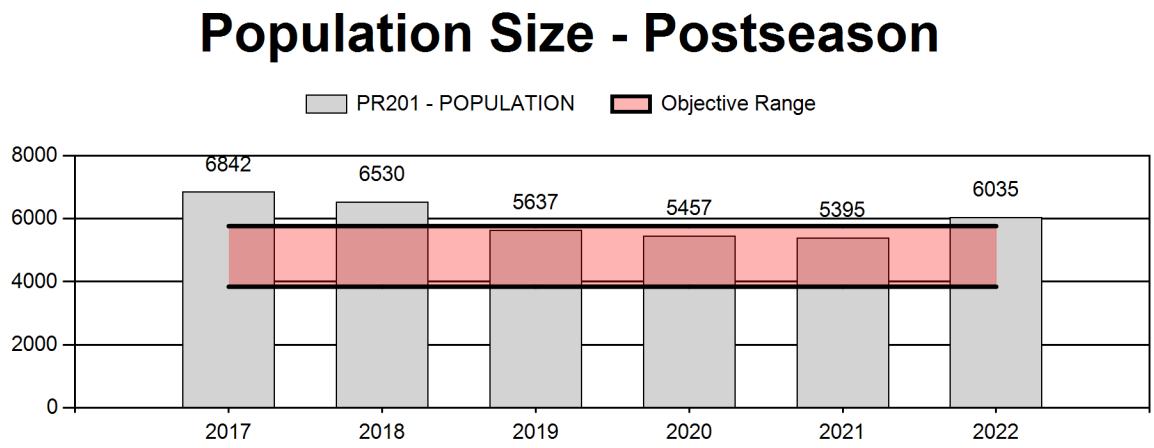
HUNT AREAS: 76, 79, 114-116
PREPARED BY: Bart Kroger

	2017 - 2021 Average	2022	2023 Proposed
Population:	5,972	6,035	6,554
Harvest:	859	446	300
Hunters:	913	563	400
Hunter Success:	94%	79%	75 %
Active Licenses:	1,042	630	450
Active License Success:	82%	71%	67 %
Recreation Days:	3,551	2,609	1,800
Days Per Animal:	4.1	5.8	6
Males per 100 Females	56	41	
Juveniles per 100 Females	55	70	

Population Objective (± 20%) :	4800 (3840 - 5760)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	26%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/26/2023

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

	JCR Year	Proposed
Females ≥ 1 year old:	2%	?%
Males ≥ 1 year old:	19%	?%
Proposed change in post-season population:	?%	?%



2023 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	Oct. 31	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
114	7	Aug. 15	Aug. 31	Nov. 1	Dec. 15	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)

2022 Hunter Satisfaction: 71% Satisfied, 14% Neutral, 15% Dissatisfied

2023 Management Summary

1.) Hunting Season Evaluation: The 2023 season structure is again very conservative due to declining numbers of pronghorn in the herd. A significant late winter die-off in 2018/19, along with recent years of drought and poor fawn production have contributed to these declines. Current winter conditions at this time are extreme for all of this herd unit, including deep crusted snow and frigid temperatures. Fawn ratios between 2019 and 2021 averaged 44:100 does, which are three of the lowest fawn ratios on record. However, the fawn ratio in 2022 was 70:100. The number of pronghorn classified in the herd unit has declined by over 50% since 2015. Based on field personnel perceptions, along with landowner and hunter comments during the 2020-2022 hunting season, it is believed a 50% loss in this pronghorn population has occurred since 2018. Hunter satisfaction has declined from 92% satisfied in 2018 to 71% satisfied in 2022. Hunter success was 71% in 2022, down from 103% in 2018, while hunter effort has increased by more than a day. Because of significant declines in pronghorn over the past several years, slight reductions for Type 1 and Type 6 licenses will occur for the herd unit, except in HA79 which has no changes. Until this pronghorn population shows improvements, very conservative hunting seasons will continue. The 3-year average percent harvest of preseason males (≥1 year old) is currently 21%. However, based on the

new PopR (IMP) model 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 2022 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.

3.) Population Modeling: In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2022 postseason population estimate for this herd unit from the PopR IPM was approximately 6,000 (CL = 5,300-6,800) pronghorn. The current model estimate may seem high given significant declines in harvest and the number of pronghorn classified in recent years. A line-transect abundance survey is planned for spring 2024 for this herd unit to help refine the new PopR model estimate, along with formulating a new population objective if needed.

2022 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2022 - 5/31/2023

HERD: PR204 - FIFTEENMILE

HUNT AREAS: 77, 83, 110
PREPARED BY: BART KROGER

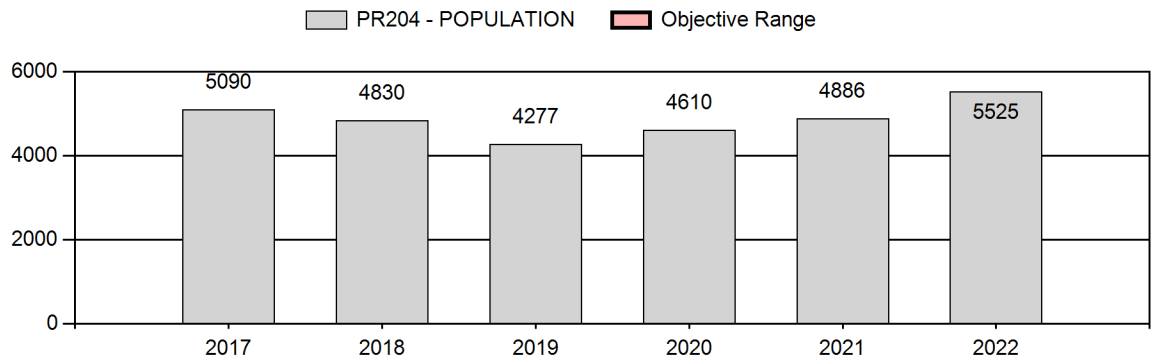
	2017 - 2021 Average	2022	2023 Proposed
Population:	4,739	5,525	5,900
Harvest:	852	376	350
Hunters:	870	409	400
Hunter Success:	98%	92%	88 %
Active Licenses:	985	459	425
Active License Success:	86%	82%	82 %
Recreation Days:	2,738	1,273	1,200
Days Per Animal:	3.2	3.4	3.4
Males per 100 Females	44	41	
Juveniles per 100 Females	55	70	

Population Objective (± 20%) :	4600 (3680 - 5520)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	20%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/26/2023

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:	23%	23%
Proposed change in post-season population:	+5%	+5%

Population Size - Postseason



2023 Hunting Seasons
Fifteen Mile Pronghorn (PR204)

Hunt 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	Oct. 31	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
77	7	Aug. 15	Aug. 31	Nov. 1	Dec. 15	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	150	Any antelope
83	6	Aug. 15	Aug. 31	Sep. 1	Dec. 15	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land within the Gooseberry or Little Gooseberry Creek Drainages
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

2022 Hunter Satisfaction: 85% Satisfied, 8% Neutral, 7% Dissatisfied

2023 Management Summary

1.) Hunting Season Evaluation: The 2023 season structure for this herd unit is again mostly conservative due to fewer pronghorn in recent years. A 2018/19 winter loss, along with two consecutive years of drought have caused this population to decline. In addition, current winter conditions at this time are extreme for all of this herd unit, including deep crusted snow and frigid temperatures. Field personnel and landowner perceptions are that pronghorn numbers have declined by over 50% in recent years. Hunter success has declined sharply in recent years, from a record high of 110% in 2018, to record lows of 84% in 2021 and 92% in 2022. A little over 1,300 pronghorn were classified in 2022, down nearly 40% since 2018 when 2,100 were classified. Fawn ratios the past three years have been favorable at about 65:100 does. Buck ratios continue to remain low at about 41:100 on average the past three years. Season changes for 2023 include the elimination or slight reductions of license quotas for hunt areas 77 and 83, along with several season date changes. An increase of 25 licenses will occur for both the Type 1 and 6 quota in area 110 since it appears to still support good numbers of pronghorn. Doe/fawn licenses will remain to address potential damage concerns in each hunt area. The 3-year average percent harvest of the preseason males (≥1 year old) is currently 23%, but is questionable 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.

Pronghorn collared during the fall 2019 in the Carter Mountain Herd have shown significant movements into Hunt Area 110 of the Fifteen Mile herd during 2020 and 2021. Because of this, area 110 will be incorporated into the Carter Mountain herd unit during the next herd unit review process in 2024.

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 2022 postseason population estimate for this herd unit from the PopR IPM was approximately 5,500 (CL = 5,100-6,000) pronghorn. The current IPM population trend in recent years is questionable given harvest statistics and field observations indicate a much more severe decline. A line-transect abundance survey is planned for spring 2023 for this herd unit to hopefully help refine the new PopR model estimate, and future population objective.

2022 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2022 - 5/31/2023

HERD: PR205 - CARTER MOUNTAIN

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

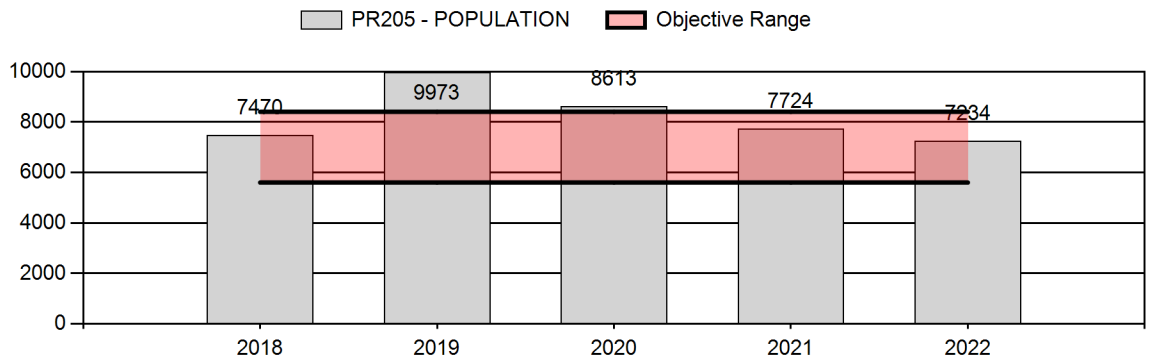
	2017 - 2021 Average	2022	2023 Proposed
Population:	8,167	7,234	6,825
Harvest:	872	1,006	800
Hunters:	895	1,080	900
Hunter Success:	97%	93%	89 %
Active Licenses:	1,015	1,221	1,000
Active License Success:	86%	82%	80 %
Recreation Days:	3,049	4,046	3,000
Days Per Animal:	3.5	4.0	3.8
Males per 100 Females	54	44	
Juveniles per 100 Females	52	62	

Population Objective (± 20%) :	7000 (5600 - 8400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	3%
Number of years population has been + or - objective in recent trend:	4
Model Date:	02/26/2023

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

	JCR Year	Proposed
Females ≥ 1 year old:	10%	10%
Males ≥ 1 year old:	26%	26%
Proposed change in post-season population:	-18%	-17%

Population Size - Postseason



2023 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	125	Any antelope
78	6			Aug. 15	Nov. 30	150	Doe or fawn valid on irrigated land
78	7			Oct. 15	Nov. 30	100	Doe or fawn valid on irrigated land in Big Horn County
81	1	Aug. 15	Sep. 19	Sep. 20	Nov. 15	200	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

2022 Hunter Satisfaction: 84% Satisfied, 7% Neutral, 9% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation:
Increased hunter opportunity allowed managers to sustain high pronghorn harvest in 2022. With pronghorn abundance decreasing over the past 4 season setting cycles, season proposals in 2023 will attempt to moderate harvest as we see the current population estimate (7234) approaching the our management objective (7000). Changes in 2023 were made to address decreasing buck ratios by reducing Type 1 licenses in all three Hunt Areas. From 2019 to 2021 the adult buck harvest rate averaged 23%. In 2022 the harvest rate increased to 26%. Decreases to curb buck harvest will cumulatively account for a decrease of 125 Type 1 licenses. Decreases to doe harvest are less substantial since managers detected a higher recruitment rate (62:100) in 2022 which will likely contribute to increased population growth in 2023. Additionally sagebrush utilization from our Dry Creek Basin transect showed 26% utilization in 2022. This was down from 40% in 2021. Increased precipitation and decreased pronghorn abundance likely helped to alleviate over browsing of sagebrush plants on winter range in 2022.

2.) Population Modeling:
The 2022 postseason population estimate for this herd unit from the PopR IPM is 7,234 (CL=5,959 – 8,618) pronghorn. Despite the lack of model convergence this estimate is the most

accurate IPM estimate, given the lowest rhat value (1.12). 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.

2022 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2022 - 5/31/2023

HERD: PR207 - BADGER BASIN

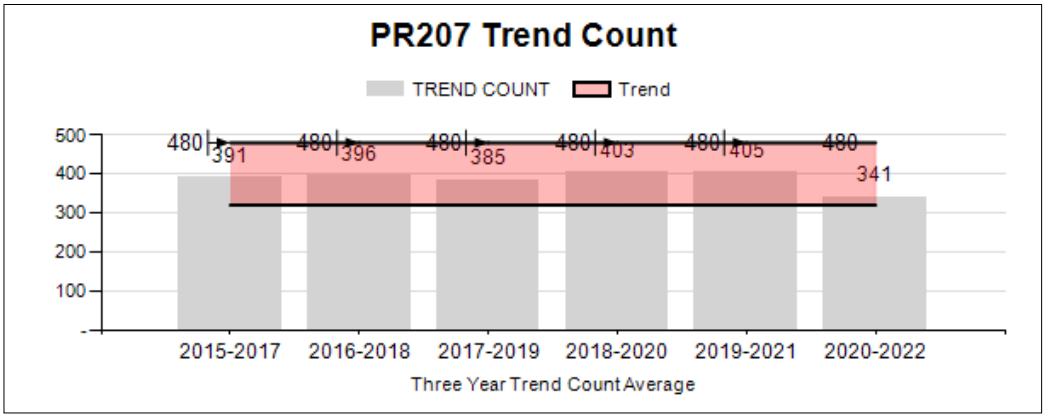
HUNT AREAS: 80

PREPARED BY: TONY MONG

	2017 - 2021 Average	2022	2023 Proposed
Trend Count:	388	237	400
Harvest:	89	174	175
Hunters:	99	178	180
Hunter Success:	90%	98%	97 %
Active Licenses:	108	201	200
Active License Success	82%	87%	88 %
Recreation Days:	410	689	700
Days Per Animal:	4.6	4.0	4
Males per 100 Females:	38	26	
Juveniles per 100 Females	32	38	
Trend Based Objective (± 20%)			400 (320 - 480)
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			-40.8%
Number of years population has been + or - objective in recent trend:			2

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%



2023 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	6	Aug. 15	Sep. 19	Sep. 20	Oct. 31	150	Doe or fawn valid on irrigated land

2022 Hunter Satisfaction: 71% Satisfied, 21% Neutral, 8% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: Despite a lower than normal total count of pronghorn in the herd unit, we are still seeing an increase in the number of pronghorn on irrigated meadows in the Heart Mountain and Clark areas. We are going to maintain the level of licenses in order to address the damage concerns on these areas. Success on the Type 1 licenses was 90% indicating that hunters are able to find pronghorn during the main portion of the season. 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.

2022 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2022 - 5/31/2023

HERD: MD207 - PAINTROCK

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

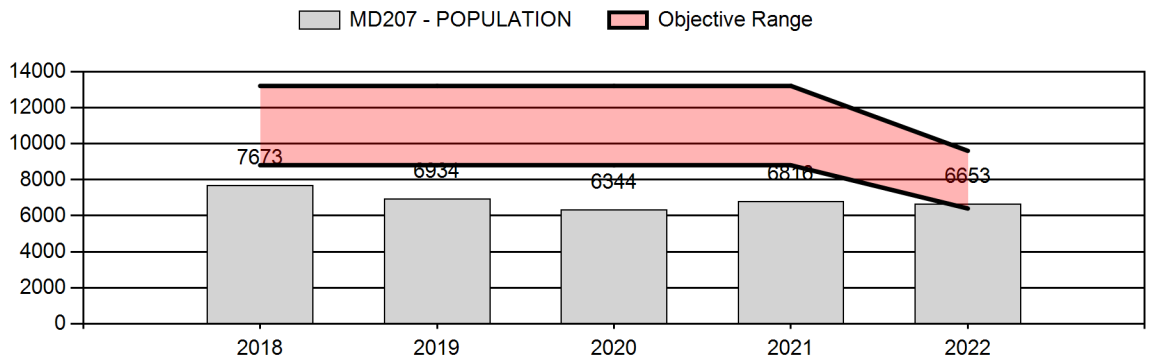
	2017 - 2021 Average	2022	2023 Proposed
Population:	7,214	6,653	6,866
Harvest:	686	570	570
Hunters:	1,346	1,286	1,286
Hunter Success:	51%	44%	44%
Active Licenses:	1,421	1,393	1,393
Active License Success:	48%	41%	41%
Recreation Days:	5,734	6,158	6,158
Days Per Animal:	8.4	10.8	10.8
Males per 100 Females	25	20	
Juveniles per 100 Females	61	75	

Population Objective (± 20%) :	8000 (6400 - 9600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-16.8%
Number of years population has been + or - objective in recent trend:	1
Model Date:	02/26/2023

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

	JCR Year	Proposed
Females ≥ 1 year old:	4%	4%
Males ≥ 1 year old:	36%	36%
Proposed change in post-season population:	-14%	-14%

Population Size - Postseason



2023 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	1			Nov. 1	Nov. 15	25	Any deer
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	1			Nov. 1	Nov. 15	25	Any deer
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

2023 Region R nonresident quota: 600 licenses

2022 Hunter Satisfaction: 55% Satisfied, 21% Neutral, 24% Dissatisfied

2022 Management Summary

1) Hunting Season Evaluation:

Mild weather contributed to poor hunting conditions in the Paintrock Herd in October 2022. Warmer temperatures and lacking snowfall allowed migratory deer to remain at higher elevations both within and outside the herd unit. GPS collaring of deer in this herd began in 2020 and has allowed managers to monitor deer movements and survival rates. On October 15th 2022, only a handful of the migratory segment of collared deer (0.2) had moved into herd unit. This likely contributed to a significant decrease in buck harvest (407). Additionally a cohort of 2-3 y.o bucks traditionally account for a majority of males harvested. In 2022 we checked more 4-5 y.o deer than usual and fewer of the younger bucks. Years where fawn recruitment decreased (2019-20) facilitates this kind of phenomena. Classification surveys conducted in the post-season period rendered a significant and promising increase to recruitment rates. Juvenile ratios

increased to 75 fawns per 100 does and yearling recruitment hit a ten year high of 15 yearling bucks per 100 does. We anticipate significant improvements to buck availability in future hunting seasons however for now this improvement won't be seen in 2023. Buck ratios bottomed out in 2023 at 20 bucks per 100 does. The aforementioned increase of yearling bucks accounts for the majority of this total. Decreased buck ratios were mostly impacted by previous years of poor juvenile recruitment, however novel Type 1 licenses and general season extensions implemented in 2022 to address Chronic Wasting Disease (CWD) may have been impactful. November 1-15 "late" seasons were created with the allocation of 50 Type 1 licenses split evenly between Hunt Areas 41 and 47. WGFD staff and Type 1 license holders accommodated one another to ensure that CWD testing and tooth aging were conducted on the majority (0.51) of the total deer harvested (39) in this season. CWD testing of these "late season" deer rendered lower prevalence than those seen from the general season harvest. Prevalence ranged from 5% (n=20) in the late season subsample to 18% in the cumulative sample of adult bucks (n=294; 2020-22). This result could be driven by a low sample size or that most bucks were harvested outside of known CWD hot-spots. Similarly extending the general seasons for an additional week concentrated hunting pressure near irrigated lands. This addition was intended to concentrate deer harvest within CWD hot-spots which mostly occur on or around agricultural areas. In an effort to test the efficacy of "late seasons" as a disease management tool we propose maintaining 50 licenses as we aim to facilitate mandatory testing for all successful Type 1 hunters to increase CWD sample size. A slight reduction to Hunt Area 41 Type 6 licenses was made for 2023, as the license was created when mule deer damage was a major issue and has since subsided.

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. We recommend the population objective be 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 would place our current estimate on the lower end of the objective range which would afford managers some room to grow the herd.

3) Chronic Wasting Disease:

This is a Tier 2 surveillance herd where targeted sampling was initiated in the 2021 season. 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 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, 2015-2022.

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)

In 2021-22, 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 in HA 41 and 47, and the introduction of 25, Type 1 licenses in both Hunt Areas 41 and 47 from November 1-15.

Table 2. Proportion of survey responses supporting various harvest strategies aimed at reducing CWD in the Paintrock herd unit, 2021.

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

[a] Includes responses of hunters and non-hunters

4) Population Modeling:

In 2021, WGFD biologists began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2022 postseason population estimate for the Paintrock Herd is 6,653 (CL=5,750-7,666). Convergence was achieved with an Rhat value of 1.04 indicating that modeled and observed values were in agreement. This appears to be an accurate estimate given that a sightability was conducted in February, 2023 which estimated approximately 6,000 deer. Additionally compostition/abundance surveys were conducted in 2021 and 2022 which estimated approximately 7,400 and 9,200 deer respectively.

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 71 collared does, 13 fawns, and 7 bucks. Some of these collars have been on air since 2020 and were a part of the North Bighorn Mule Deer Project. Annual survival and cause specific mortality has been estimated since these initial collars were deployed.

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

Winter Period	Female Survival	Juvenile Survival (*Est*)
2020-21	0.92 (n=24)	0.61
2021-22	1.00 (n=27)	0.72
2022-23	0.95 (n=58)	0.62

Table 4. Cause specific mortality of collared mule deer in the Paintrock Herd from November 2020- May 2023.

Sample Size	Mountain Lion Predation	Coyote Predation	Malnutrition	Hunter Harvest	Fence Crossing	Unknown
n=91	3	5	2	1	1	2

2022 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2022 - 5/31/2023

HERD: MD208 - SOUTHWEST BIGHORNS

HUNT AREAS: 35-37, 39-40, 164
PREPARED BY: BART KROGER

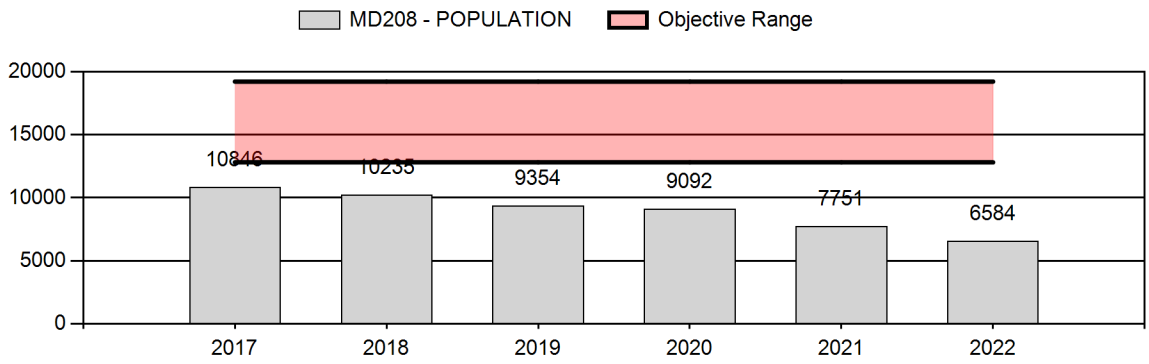
	2017 - 2021 Average	2022	2023 Proposed
Population:	9,456	6,584	6,500
Harvest:	1,090	429	400
Hunters:	1,900	1,008	1,000
Hunter Success:	57%	43%	40 %
Active Licenses:	2,010	1,035	1,025
Active License Success:	54%	41%	39 %
Recreation Days:	8,085	4,395	4,000
Days Per Animal:	7.4	10.2	10
Males per 100 Females	35	30	
Juveniles per 100 Females	58	61	

Population Objective (± 20%) :	16000 (12800 - 19200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-58.8%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/26/2023

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

	JCR Year	Proposed
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	27%	28%
Proposed change in post-season population:	0%	0%

Population Size - Postseason



2023 Hunting Seasons
Southwest Bighorns Mule Deer (MD208)

Hunt Area	Type	Special Archery Dates Opens	Special Archery Dates Closes	Regular Season Dates Opens	Regular Season Dates Closes	Quota	Limitations
35	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Any 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 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
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 deer valid on national forest; any deer off national forest
40	3	Sep. 1	Sep. 30	Oct. 15	Nov. 30	50	Any white-tailed deer; also valid in Area 35
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		Any 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	50	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

2023 Region M nonresident quota: 400 licenses

2022 Hunter Satisfaction: 49% Satisfied, 23% Neutral, 28% Dissatisfied

2023 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 2018/19, two consecutive year droughts, five years of unfavorable fawn production, CWD/EHD and reduced habitat conditions. These variables have likely lead to the fewest deer and poorest hunting conditions in this herd unit on record. The 2023 hunting season structure will again be conservative. Overall, hunter satisfaction has declined from 72% in 2018 to 49% in 2022. Hunter success in 2022 was 43%, down from 71% in 2017. Days/harvest was 10.2 in 2022, up from 5.9 in 2017. Fawn ratios the previous five years have averaged 57:100 does. Total number of deer classified in 2022 was 490, with a fawn ratio of 61:100 and a buck

ratio of 30:100. 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 2023, the Region M quota will remain at 400, and the Type 1 license quotas in areas 36 and 37 will decline slightly. No change to the number of doe/fawn licenses in area 164 will occur. Season date changes, license quotas and limitations have been manipulated to improve harvest on white-tailed deer within the herd unit. Hunt area 164 has been selected as a focal CWD management area, where management will focus on keeping mule deer densities at low 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.) Chronic Wasting Disease Monitoring and Management: This herd unit was a Tier 1 herd for CWD sampling from 2019-2021 (Table 1). Prevalence for adult male mule deer for this 3-year period averaged 18%. Sample dispersion occurs throughout the unit, with concentration around Worland and along major tributaries of the Bighorn River, particularly in HA164. 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. These 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)

5.) Population Modeling: In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2022 postseason population estimate for this herd unit from the PopR IPM is approximately 6,600 (CL=5,800 – 7,400) 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.

2022 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2022 - 5/31/2023

HERD: MD209 - BASIN

HUNT AREAS: 125, 127
PREPARED BY: BART KROGER

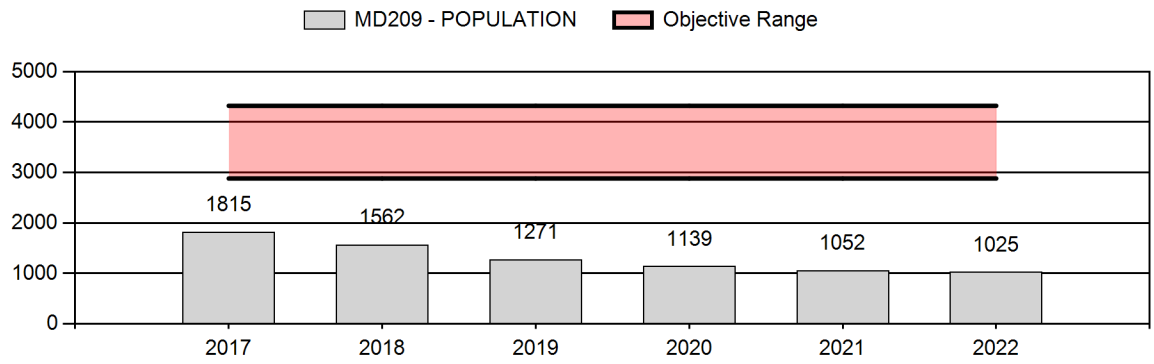
	2017 - 2021 Average	2022	2023 Proposed
Population:	1,368	1,025	1,000
Harvest:	105	64	65
Hunters:	251	179	180
Hunter Success:	42%	36%	36 %
Active Licenses:	255	179	180
Active License Success:	41%	36%	36 %
Recreation Days:	986	689	700
Days Per Animal:	9.4	10.8	10.8
Males per 100 Females	33	33	
Juveniles per 100 Females	56	60	

Population Objective (± 20%) :	3600 (2880 - 4320)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-71.5%
Number of years population has been + or - objective in recent trend:	15
Model Date:	2/26/2023

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:	24%	24%
Proposed change in post-season population:	0%	0%

Population Size - Postseason



2023 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 deer
127	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered 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

2023 Region X nonresident quota: 200 licenses

2022 Hunter Satisfaction: 47% Satisfied, 23% Neutral, 30% Dissatisfied

2023 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 2018/19, 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 2020-2022 fawn ratio averaged 62:100. Buck ratios have remained in the low 30's:100 the last few years. Hunter success the previous four years have been the lowest on record, while hunter effort has been the highest on record. A total of 64 bucks were harvested in 2022, which was similar to the 2021 harvest. Hunter satisfaction has dropped from 64% satisfied in 2018 to 47% satisfied in 2022. No changes to the mule deer hunting season dates or quotas will occur for the 2023 season. However, season lengths and quotas were increased to allow for some additional doe/fawn white-tailed deer harvest.

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 Basin Mule Deer herd unit objective was last reviewed in 2019, and no objective changes were warranted.

4.) 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, no meaningful CWD prevalence data is available within this herd unit and 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.

5.) Population Modeling: In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2022 postseason

population estimate for this herd unit from the PopR IPM is approximately 1,000 (CL= 500 – 1,500) 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.

2022 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2022 - 5/31/2023

HERD: MD210 - GREYBULL RIVER

HUNT AREAS: 124, 165
PREPARED BY: SAM STEPHENS

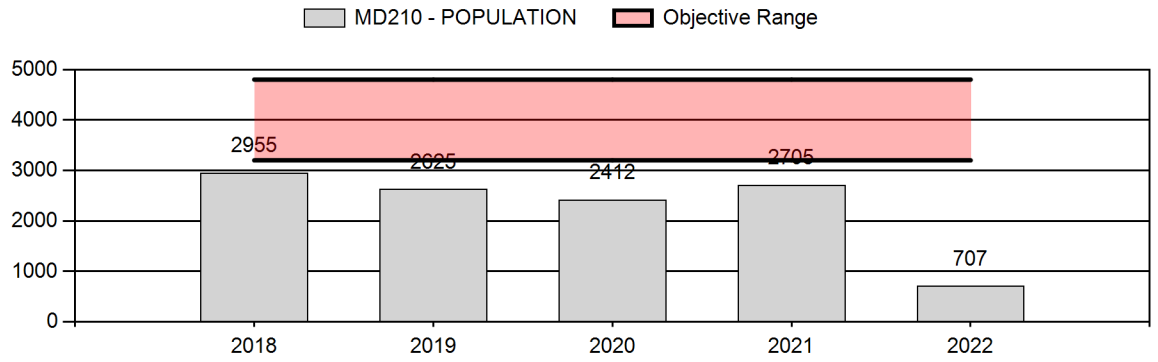
	2017 - 2021 Average	2022	2023 Proposed
Population:	2,751	707	800
Harvest:	380	162	120
Hunters:	783	384	350
Hunter Success:	49%	42%	34%
Active Licenses:	881	397	397
Active License Success:	43%	41%	30%
Recreation Days:	2,856	1,335	1,300
Days Per Animal:	7.5	8.2	10.8
Males per 100 Females	29	27	
Juveniles per 100 Females	55	57	

Population Objective (± 20%) :	4000 (3200 - 4800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-82.3%
Number of years population has been + or - objective in recent trend:	8
Model Date:	02/26/2023

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

	JCR Year	Proposed
Females ≥ 1 year old:	16%	1%
Males ≥ 1 year old:	44%	44%
Proposed change in post-season population:	-10%	-10%

Population Size - Postseason



2023 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	Any deer

2023 Region X nonresident quota: 200 licenses

2022 Hunter Satisfaction: 45% Satisfied, 20% Neutral, 35% Dissatisfied

2022 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 increased slightly to 42% in 2022 and subsequent effort increased to 8 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 2022 hunters experienced another significant decline in annual mule deer harvest (-57%) from the 2017-21 average. Similarly, the raw number of deer counted during annual classification surveys was 32% below the previous five year average. Mature buck harvest decreased again in 2022 and bucks with antler widths greater than 20 inches accounted for 22% of those checked in the field, this is below the 2016-20 range of 25-37%. Post-season classification data elucidates a similar trend. 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 again to 7% and only two Class II bucks classified. 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. Changes for 2023 include limitations to eliminate doe mule deer harvest during the general season in Hunt Area 124. While CWD remains the primary concern, we aim to maintain white-tailed deer harvest through increased Type 3 and Type 8 quotas in Hunt Areas 124 and 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. Given the low abundance of deer in this herd unit, another year of targeted sampling is not worth the effort to only marginally augment the sample size. 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 hot-spots.

Table 1. CWD prevalence of mule deer within Greybull River herd unit, 2019-2021.

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)

3.) Population Modeling:

The 2022 postseason population estimate for this herd unit from the PopR IPM is 707 (CL=567 – 851) mule deer. The model achieved convergence with an rhat value of 1.06 indicating agreement between modeled and observed input values. Despite an abrupt decrease from the 2021 population estimate, the 2022 estimate matches a steep decline in the population as evident by decreases in harvest since 2020.

Figure 1.

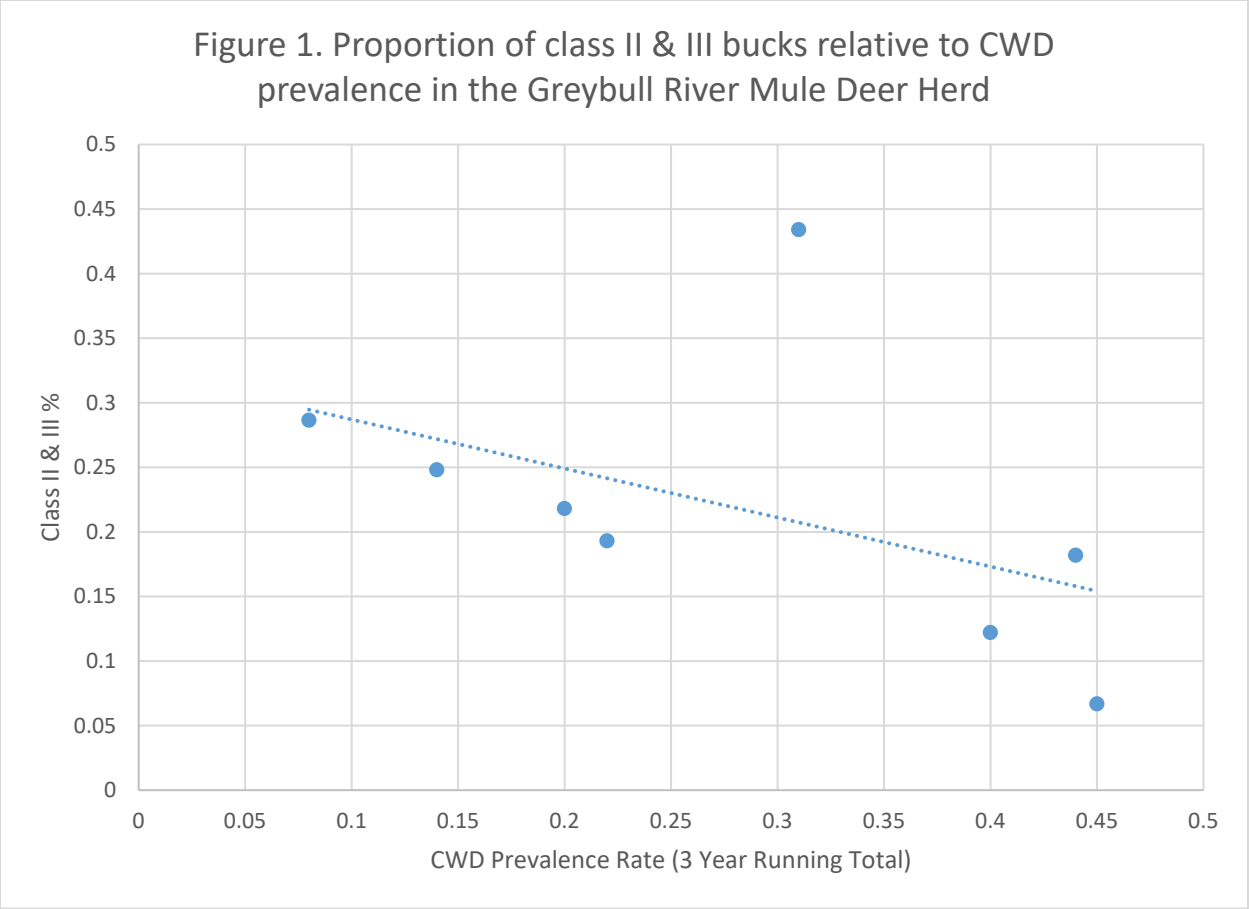


Figure 1. Proportion of class II & III bucks relative to CWD prevalence in the Greybull River Mule Deer Herd
Class II & III %
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
CWD Prevalence Rate (3 Year Running Total)

2022 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2022 - 5/31/2023

HERD: MD211 - SHOSHONE RIVER

HUNT AREAS: 121-123
PREPARED BY: SAM STEPHENS

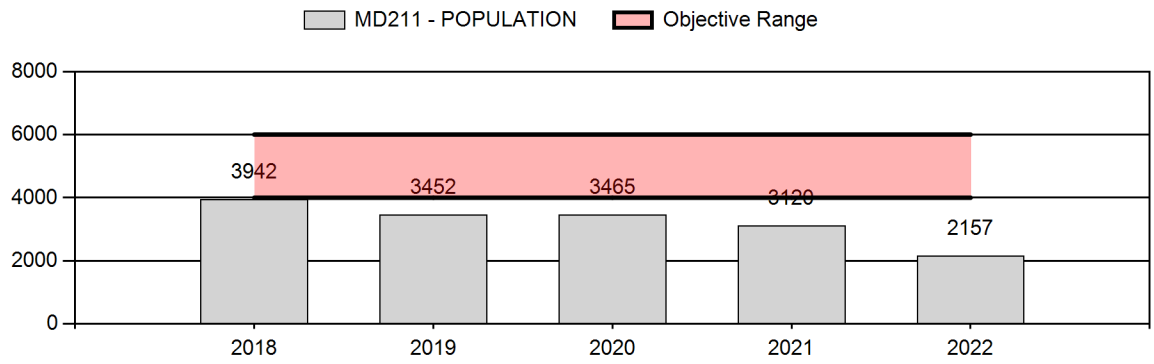
	2017 - 2021 Average	2022	2023 Proposed
Population:	3,639	2,157	2,161
Harvest:	627	325	200
Hunters:	1,452	1,018	700
Hunter Success:	43%	32%	29 %
Active Licenses:	1,547	1,087	800
Active License Success:	41%	30%	25 %
Recreation Days:	5,465	3,805	2,400
Days Per Animal:	8.7	11.7	12
Males per 100 Females	31	40	
Juveniles per 100 Females	69	59	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-56.9%
Number of years population has been + or - objective in recent trend:	7
Model Date:	02/26/2023

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

	JCR Year	Proposed
Females ≥ 1 year old:	8%	4%
Males ≥ 1 year old:	41%	40%
Proposed change in post-season population:	-18%	-13%

Population Size - Postseason



2023 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	Sep.1	Sep. 30	Oct. 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

2023 Region X nonresident quota: 200 licenses

2022 Hunter Satisfaction: 46% Satisfied, 23% Neutral, 31% Dissatisfied

2022 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 31% in 2022 and effort increased to 12 days/harvest. Standardized efforts to classify mule deer in the post-season period resulted in a record low count of 149 (2017-21 avg; 289). 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 2022 hunters experienced another significant decline in harvest (-48%) from the 2017-21 average. Similarly hunter satisfaction also decreased from 2021 to 2022 (54% to 46%). 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 a declining population and concern from hunters, 2023 saw the removal of the "antlerless deer" general season in Hunt Areas 121-122. This change is intended to reduce doe harvest in an attempt to stabilize the population decline. Additionally, in light of increasing CWD prevalence and buck ratio (40:100) these season proposals are likely to increase buck harvest which exhibit a significantly higher CWD prevalence than does.

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 2022 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, 2019-2022.

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)

3.) Population Modeling:

The 2022 postseason population estimate for this herd unit from the PopR IPM is 2,157 (CL=1,824 – 2,547) 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 2022 estimate matches all-time low mule deer harvest and number of deer classified in the herd unit.

2022 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2022 - 5/31/2023

HERD: MD212 - OWL CREEK/MEETEETSE

HUNT AREAS: 116-120
PREPARED BY: BART KROGER

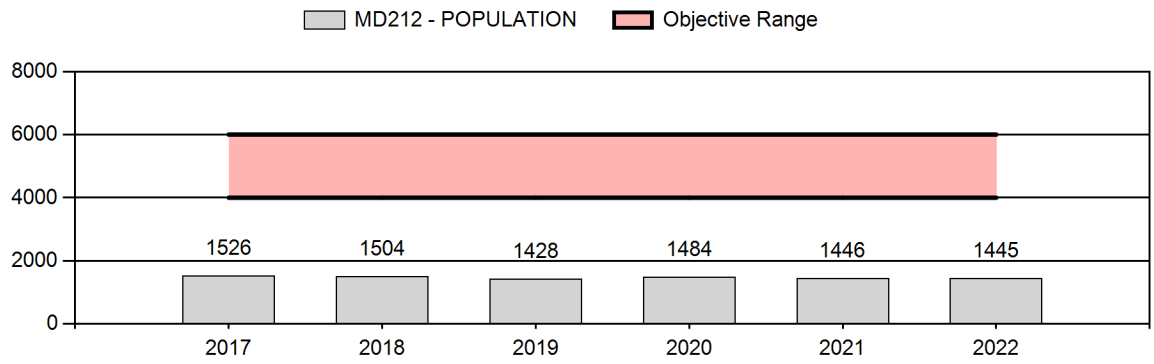
	2017 - 2021 Average	2022	2023 Proposed
Population:	1,478	1,445	1,500
Harvest:	240	175	160
Hunters:	324	294	275
Hunter Success:	74%	60%	58 %
Active Licenses:	343	294	275
Active License Success:	70%	60%	58 %
Recreation Days:	1,408	1,321	1,300
Days Per Animal:	5.9	7.5	8.1
Males per 100 Females	35	43	
Juveniles per 100 Females	68	60	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-71.1%
Number of years population has been + or - objective in recent trend:	15
Model Date:	2/26/2023

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:	41%	41%
Proposed change in post-season population:	0%	0%

Population Size - Postseason



2023 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 deer
118	1	Sep. 1	Sep. 30	Nov. 1	Nov. 30		Any white-tailed deer
119	1	Sep. 1	Sep. 30	Nov. 1	Nov. 15	50	Antlered deer
119	2	Sep. 1	Sep. 30	Oct. 1	Oct. 15	50	Antlered 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 deer
120	8			Sep. 1	Dec. 15	200	Doe or fawn white-tailed deer

2022 Hunter Satisfaction: 61% Satisfied, 19% Neutral, 20% Dissatisfied

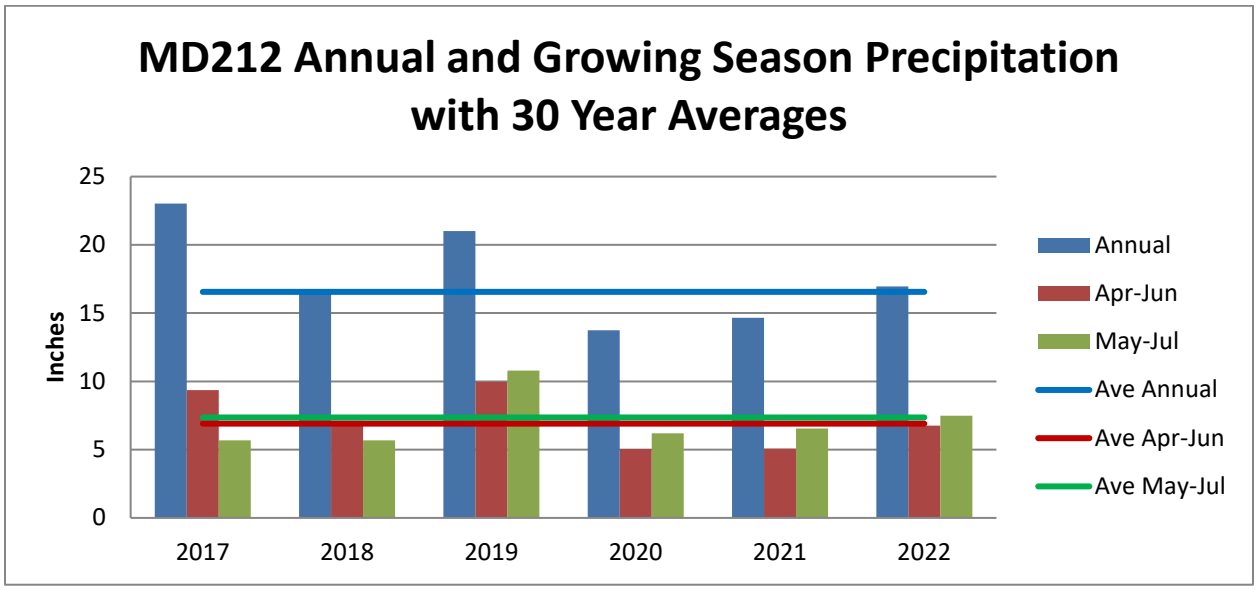
2023 Management Summary

1.) Hunting Season Evaluation: The 2023 hunting season structure will remain fairly conservative in order to promote herd growth. No 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, despite conservative hunting seasons the past 10 years. Hunter satisfaction has decreased from a high of 74% in 2020 to 61% in 2022. Hunter harvest and success (60%) in 2022, is the lowest on record, while hunter effort (7.5 days) is the highest on record. The 2022 fawn ratio was 60:100, compared to the previous 5-year average of 68:100. Buck ratios have increased in recent years with the 2022 ratio at 43:100. However, the number of deer classified has declined by 63% since 2016. Since this mule deer herd has remained below objective levels, mostly conservative seasons will again be implemented. Changes for the 2023 hunting season include a reduction of 25 licenses for the HA119 Type 2 quota, which is being driven by hunter dissatisfaction, and that hunter success has declined by 30% the last 7 year. A slight increase of 25 licenses for HA116 Type 8 quota will allow for some additional white-tailed deer harvest.

2.) Management Objective Review: The Owl Creek/Meeteetse Mule Deer herd unit objective was last reviewed in 2019, with no objective changes being made.

3.) Mule Deer Initiative Habitat Information:

Weather



Precipitation

Annual precipitation within the herd unit from October 2021 thru September 2022 was 102% of the 30-year average. Growing season precipitation (April thru June 2022) within winter ranges was 98% of average. Growing season precipitation (May - July 2022) within spring/summer/fall ranges was 102% of average.

Winter Severity

The 2021-2022 winter was similar to the long-term average. Data from the Thermopolis climate station showed the average December-March temperature was 3.64 degrees higher than the long term average, and total inches of snowfall in December-March was slightly less than average.

Habitat

Rapid Habitat Assessments are conducted annually across the state to assess condition of seasonal mule deer habitats. These data are used to inform decisions on population objectives at each 5-year review. In 2022, 15 aspen, 5 riparian and 5 rangeland assessments were conducted within the Owl Creek Meeteetse Herd Unit area. The results of these surveys will be analyzed during the herd unit objective review in 2024. All aspen communities were in advanced stages of succession and at high risk of replacement by conifers. In 2022, 386 acres of aspen were treated on Shoshone National Forest, BLM and private lands on mule deer summer range. The Department translocated 35 beavers into three steams within the herd unit between 2019 and 2022 for the purpose of enhancing riparian habitat. Over 50 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, no meaningful CWD prevalence data is available within this herd unit and the only CWD management actions have been to increase white-tailed deer harvest to reduce densities. 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.

5.) Population Modeling: In 2021, WGFD managers began using PopR integrated population models (IPM) to estimate population indices for pronghorn and mule deer. The 2022 postseason population estimate for this herd unit from the PopR IPM was approximately 1,400 (CL=1100 – 1800) mule deer. A mostly stable model trend of the population is questionable given hunter/harvest statistics, hunter satisfaction, number of deer classified and overall field personnel perceptions of deer numbers have declined sharply in the last several years.

2022 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2022 - 5/31/2023

HERD: MD215 - UPPER SHOSHONE

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

	2017 - 2021 Average	2022	2023 Proposed
Population:	7,440	7,900	8,000
Harvest:	470	584	650
Hunters:	1,259	1,351	1,450
Hunter Success:	37%	43%	45 %
Active Licenses:	1,279	1,397	1,400
Active License Success:	37%	42%	46 %
Recreation Days:	6,549	6,885	7,000
Days Per Animal:	13.9	11.8	10.8
Males per 100 Females	25	26	
Juveniles per 100 Females	60	59	

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

Management Strategy: Recreational

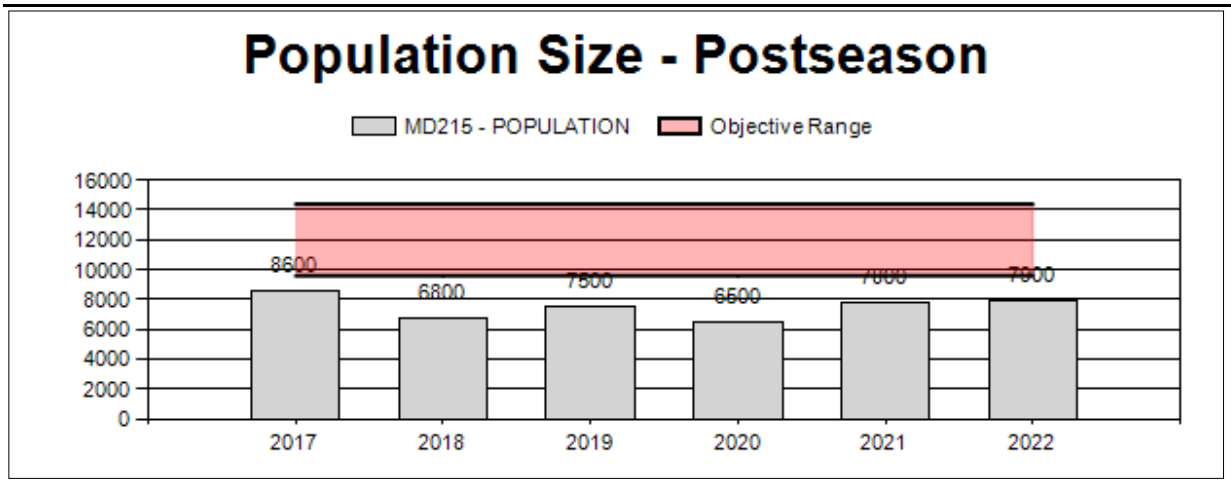
Percent population is above (+) or below (-) objective: -34.2%

Number of years population has been + or - objective in recent trend: 5

Model Date: 03/02/2023

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

	JCR Year	Proposed
Females ≥ 1 year old:	0.7%	0.1%
Males ≥ 1 year old:	26%	43%
Proposed change in post-season population:	14%	5%



2023 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	400	Doe or fawn white-tailed deer 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	150	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

2023 Region F nonresident quota: 550 licenses

2022 Hunter Satisfaction: 50% Satisfied, 27% Neutral, 24% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: We are increasing opportunity on white-tailed deer through longer season dates in 2023. In addition, we are continuing to offer many opportunities for white-tailed deer in the South Fork area with the 112, 113 Type 8 license as well as mule deer doe opportunity in the Irma Flats area through the 113 Type 7 license. These opportunities are in relation to rising Chronic Wasting Disease concerns. Hunt Area 113 recorded a prevalence rate of

43% in harvested mule deer bucks. Based on distribution of positive deer the highest percent of positives are coming from the northern portion of the Hunt Area near the Irma Flats area. Mule deer buck harvest has increased ~60% since 2020. We anticipate continued increases to mule deer buck harvest in 2023 due to increasing numbers of deer in the population. Tooth age data indicated a slight reduction in the harvested age of bucks from 2021 (2021 Average = 4.2, 2022 Average = 3.6).

2.) Management Objective Review: This herd is managed by a post-season population estimate. Currently the herd is below the objective of 12,000. The last review of this management objective was 2014.

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 near Cody and Irma Flats. Since at least 2014-16, prevalence of CWD in adult male and female mule deer has increased (Table 1).

Table 1. CWD prevalence of mule deer within Upper Shoshone herd unit, 2020-2022.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2014-16	1% (0-3%, n=258)	0% (21)	0% (41)
2017-19	2% (1-5%, n=224)	0% (7)	0% (88)
2020-22	14% (9-18%, n=311)	0% (15)	3% (30)

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 2023 postseason population estimate for this herd unit was 8,000 (CL = 6,200 – 9,700) 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. 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. Because this herd inhabits Yellowstone National Park for a majority the summer and fall months the only opportunity to harvest mule deer is when they leave the NP is during migration. This can cause harvest to vary not due to numbers of deer available but rather availability of deer on migration paths. Secondly, we have not conducted any additional population estimates and therefore have no idea how the estimates relate to actual numbers of deer on the landscape. 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. Finally, this herd has very little (N=40 collars in 2016-2018) survival data collected from collars. This would be a vital piece of data to help anchor the model and allow for more reliable estimates. This will be resolved over the coming year with the launch of the Focal Herd project and over 200 collars deployed on doe, fawn and buck mule deer.

2022 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2022 - 5/31/2023

HERD: MD216 - CLARKS FORK

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

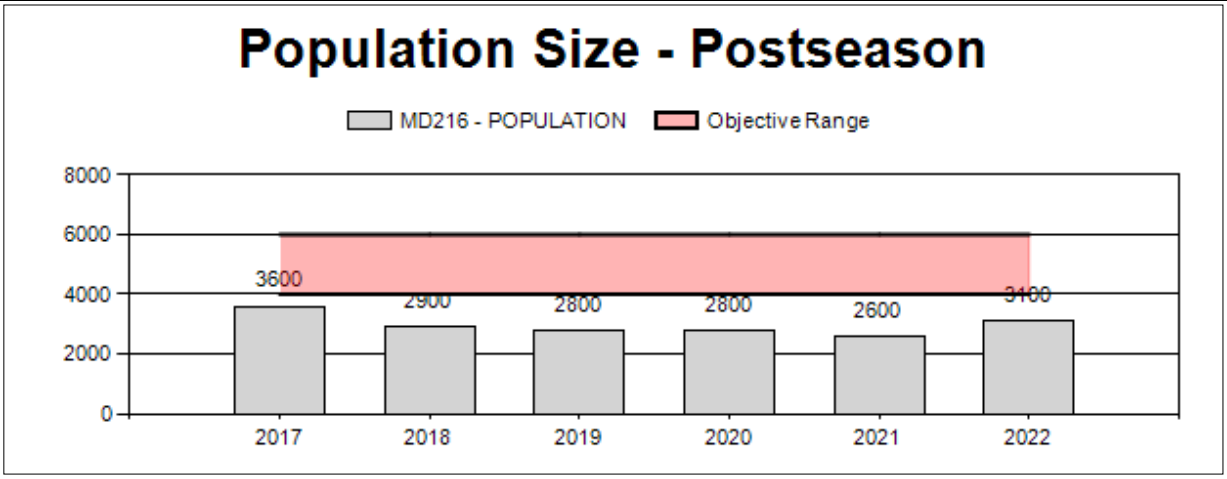
	2017 - 2021 Average	2022	2023 Proposed
Population:	2,940	3,100	3,200
Harvest:	220	154	160
Hunters:	631	518	520
Hunter Success:	35%	30%	31 %
Active Licenses:	638	518	520
Active License Success:	34%	30%	31 %
Recreation Days:	3,576	3,055	2,900
Days Per Animal:	16.3	19.8	18.1
Males per 100 Females	26	37	
Juveniles per 100 Females	56	53	

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

Management Strategy: Recreational
Percent population is above (+) or below (-) objective: -38%
Number of years population has been + or - objective in recent trend: 5
Model Date: 3/01/2023

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

	JCR Year	Proposed
Females ≥ 1 year old:	0%	2%
Males ≥ 1 year old:	31%	24%
Proposed change in post-season population:	11%	1%



2023 Proposed 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. 24		Antlered mule deer or any white-tailed deer valid on national forest
105	Gen	Sep. 1	Sep. 30	Nov. 1	Nov. 5		Antlered mule deer or any white-tailed deer valid off national forest
105	Gen	Sep. 1	Sep. 30	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	Sep. 1	Sep. 30	Oct. 1	Oct. 24		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	8	Sep. 1	Sep. 30	Nov. 1	Dec. 15	100	Doe or fawn white-tailed deer

2022 Region F nonresident quota: 550 licenses

2022 Hunter Satisfaction: 47% Satisfied, 26% Neutral, 28% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: We are increasing the opportunity for white-tailed deer hunters across the Herd Unit. White-tailed deer continue to grow in numbers and we are giving longer time periods and increasing licenses in Hunt Area 109 to allow hunters continue to have more opportunity to harvest white-tailed deer. Overall with mule deer seasons there is a general dissatisfaction with the hunting across the herd unit. Although some of that dissatisfaction is manufactured by the hunting seasons put in place to decrease overall buck harvest, the other issue is that overall lower fawn ratios and mixed data on buck ratios indicate a continued slow population response during the last 5 years. Overall, fawn (5-year average 56:100 doe) and yearling (5-year average 11:100 doe) ratios are low for this herd. Interpreting data, estimating population size and understanding the influence of harvest on bucks ratios for this herd is difficult and can be attributed to the life history of these mule deer and the harvest parameters that have to be implemented because of that life history. Ninety-five percent of the mule deer in this herd are migratory deer that reside in Yellowstone National Park during the summer and early fall therefore making them unavailable to hunt until they enter their migration paths. In some years deer move early and often whereas in other years little movement is seen until late in

October or even into November. These weather patterns can be the driving force for harvest success and total harvest. Over the last several years we have not seen early weather that would push deer into areas that are frequented by hunters. This year we did see a steep increase in buck ratios mainly driven by the highest yearling buck ratio recorded since 2013. This should allow for a good proportion of those bucks to make it through to older age classes, which will allow for expanded harvest opportunities. We are planning to increase mule deer buck opportunity through an increase in the General Season days in 2024.

2.) Management Objective Review: This herd is managed by a post-season population estimate. Currently the herd is below the objective of 5,000. The last review of this management objective was 2014.

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 (~8hr 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.

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

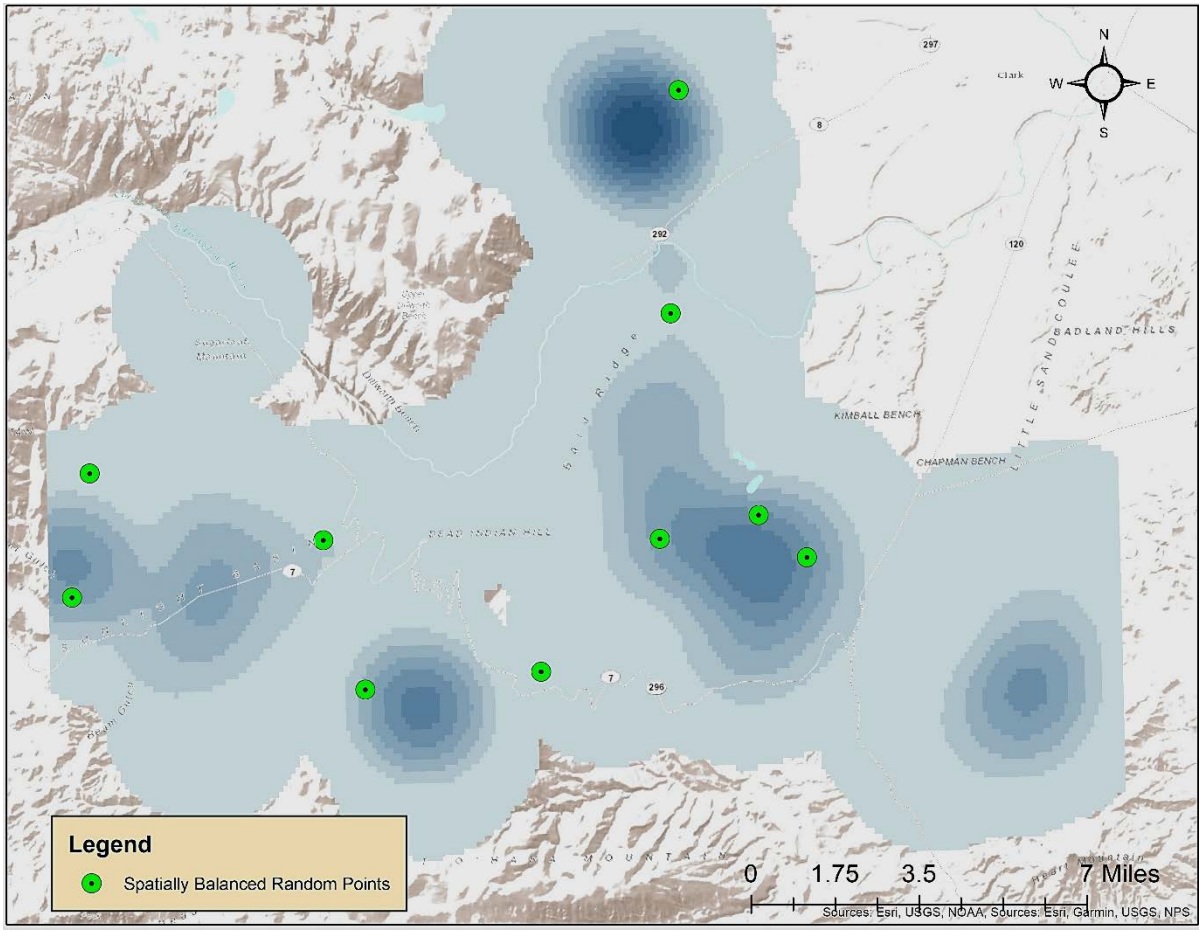
Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2020-22	6% (1-15%, n=54)	0% (9)	0% (7)

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 2023 postseason population estimate for this herd unit was 3,200 (CL = 2,300 – 3,900) 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. Because this herd inhabits Yellowstone National Park for a majority the summer and fall months the only opportunity to harvest mule deer is when they leave the NP is during migration. This can cause harvest to vary not due to numbers of deer available but rather availability of deer on migration paths. Secondly, we have not conducted any additional population estimates and therefore have no idea how the estimates relate to actual numbers of deer on the landscape. 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. Finally, this herd has very little (N=40 collars in 2016-2018) survival data collected from collars. This would be a vital piece of data to help anchor the model and allow for more reliable estimates.

5) Winter Range Trail Camera Occupancy Modeling
During the winter of 2021/2022 we implemented a trail camera occupancy modeling study on the Clark's Fork mule deer winter range with the intent to estimate the wintering population size. We consulted with Speedgoat on study design and placed 10 trail cameras across the winter range

based on mule deer use determined by GPS collar locations from 32 doe deer collared from 2016 to 2018 and on local knowledge (Figure 1). We distributed cameras in March and collected images using both motion-triggering and a fixed time interval of 15 minutes. In addition to the cameras, markers were set in front of the cameras so “distance bins” could be determined. These markers were set at 10, 20, 30 and 40 meters. When deer were seen in photos they were placed into “distance bins” of 0-10 meters, 10-20 meters, 20 to 30 meters, 30-40 meters and 40+ meters. Data from the images was collected using the Timelapse software during the winter of 2022/23. 78,021 images were used to analyze the occupancy modeling data from all the time lapse photos. Mule deer observations were used from the 10-40 meter bins in order to more easily estimate the sampling area of each camera. See Appendix A for more detailed analysis information.
From the analysis we estimated a total of 3,693 mule deer (SE = 239, LCI = 3,253, UCI = 4,193). This is the first time a statistically reliable estimate of herd size has been attempted and completed. We will use this information to better inform the PopR model as well as make adjustments to herd management objectives.

Figure 1. Trail camera locations in relation to a utilization distribution (UD) of GPS collar data from 32 doe mule deer collared from 2016 to 2018. Cut offs on the UD mapped areas are based on local knowledge of actual mule deer use on the landscape. This UD was used to define the total winter range area for analysis of 648,129,996 square meters.



Appendix A. Detailed occupancy modeling analysis information.

Space-to-Event Analysis
Once all photos were processed using timelapse to identify species present and distance from the camera, we estimated abundance using the R package spaceNtime. First we calculated an estimated viewshed assuming the viewing angle reported by the manufacturer (40°) and a uniform detection distance of 40 meters. Using the formula A_sector=r^2*θ*π/360 we obtained an estimated viewshed of 558.5 square meters for each camera.

Encounter History
Next we created an encounter history for use in the function ste_estN_fn. First we removed all detections of mule deer at distances greater than 40 meters to comply with our estimated viewshed. Since only timelapse photos (as opposed to motion-triggered) were included we were able to treat each unique image timestamp as a separate sampling occasion. We then calculated the space-to-event value for each occasion by placing the cameras in random order and summing the area sampled up to and including the first camera that detected at least one deer.

Abundance Calculation
Finally we used the ste_estN_fn function with our encounter history data and the area of our winter range polygon (648,129,996 square meters) to obtain an abundance estimate.

2022 - JCR Evaluation Form

SPECIES: White tailed Deer | PERIOD: 6/1/2022 - 5/31/2023

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

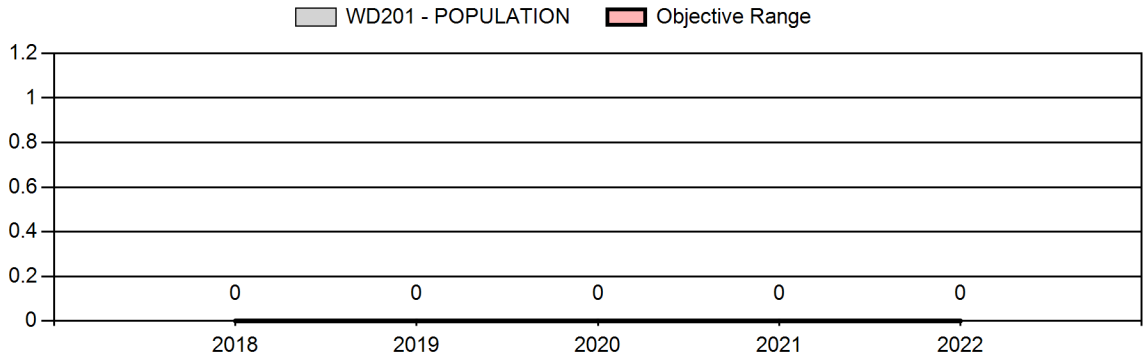
	2017 - 2021 Average	2022	2023 Proposed
Population:	0	N/A	N/A
Harvest:	2,588	2,549	2,500
Hunters:	4,670	4,408	4,400
Hunter Success:	55%	58%	57 %
Active Licenses:	5,880	5,868	5,800
Active License Success:	44%	43%	43 %
Recreation Days:	21,911	23,284	23,200
Days Per Animal:	8.5	9.1	9.3
Males per 100 Females	32	20	
Juveniles per 100 Females	66	58	

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%

Population Size - Postseason



2023 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 Area 35
40	8	Sep. 1	Sep. 30	Oct. 15	Nov. 30	300	Doe or fawn white-tailed deer; also valid in 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
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
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	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	400	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, 117, 118	8	Sep. 1	Sep. 30	Oct. 15	Nov. 30	200	Doe or fawn white-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	100	Doe or fawn white-tailed deer
124	3	Sep. 1	Sep. 30	Nov. 1	Nov. 30	150	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 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 Area 125
164	8	-	-	Sep. 1	Dec. 31	200	Doe or fawn white-tailed deer, also valid in 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

2022 Hunter Satisfaction: 57% Satisfied, 21% 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 occurred 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. Despite sporadic outbreaks of EHD in certain hunt areas in 2020, the population appears to be stable 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. Increases to buck and doe licenses for the 2022 season were created to address Chronic Wasting

Disease which exhibits higher prevalence in white-tailed deer relative to sympatric Bighorn Basin mule deer herds. 2023 season changes include some modest increases and season extensions to Type 3 and 8 licenses.

2.) 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, 2020-2022.

Mule Deer Herd	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males	Yearling Males	Adult Females
Paintrock	35% (46)	0% (8)	18% (39)
North Bighorn [a]	48% (40)	0% (1)	28% (18)
Southwest Bighorn	27% (96)	11% (9)	31% (52)
Shoshone River	41% (126)	27% (15)	21% (43)
Greybull River	46% (90)	20% (10)	28% (81)
Clark's Fork	29% (17)	0% (1)	33% (21)
Upper Shoshone	24% (76)	0% (5)	14% (42)

[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 and are proposed to continue. 2022 changes within the Bighorn Basin, include increased Type 3 licenses in four hunt areas, and numerous increases to Type 8 licenses. Other increases in opportunity include expanded seasons and general licenses that include any white-tailed deer.

2022 - JCR Evaluation Form

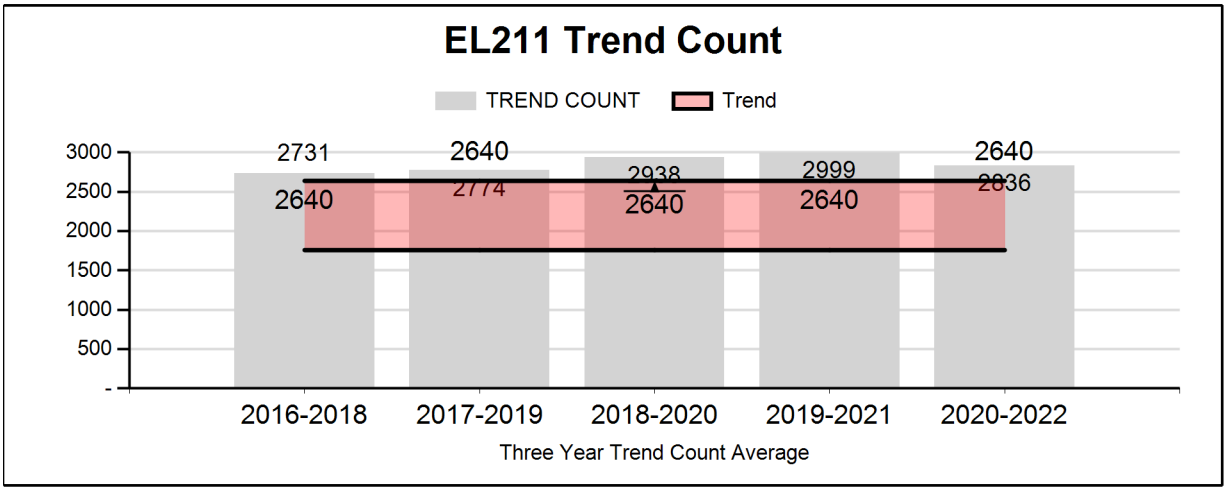
SPECIES: Elk
PERIOD: 6/1/2022 - 5/31/2023
HERD: EL211 - MEDICINE LODGE
HUNT AREAS: 41, 45
PREPARED BY: SAM STEPHENS

	2017 - 2021 Average	2022	2023 Proposed
Trend Count:	2,939	2,136	2,200
Harvest:	792	916	900
Hunters:	1,992	2,227	2,200
Hunter Success:	40%	41%	41 %
Active Licenses:	2,052	2,343	2,300
Active License Success	39%	39%	39 %
Recreation Days:	14,194	15,078	15,000
Days Per Animal:	17.9	16.5	16.7
Males per 100 Females:	28	33	
Juveniles per 100 Females	37	28	

Trend Based Objective (± 20%)	2,200 (1760 - 2640)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	-2.9%
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:	26%	26%
Males ≥ 1 year old:	33%	33%
Juveniles (< 1 year old):	11%	11%



2023 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	75	Any elk valid off national forest north of Trapper Creek
41	4			Oct. 1	Oct. 10	350	Antlerless elk
41	4			Oct. 15	Nov. 20		Antlerless elk
41	6			Dec. 1	Dec. 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	150	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			Dec. 1	Dec. 21	200	Cow or calf
45	9			Sep. 1	Sep. 30	175	Any elk, archery only

2022 Hunter Satisfaction: 63% Satisfied, 19% Neutral, 18% Dissatisfied

2022 Management Summary

1) Hunting Season Evaluation:
Changes for the 2023 season seek to refine newly adopted seasons implemented in 2022. Increased snowfall and dynamic elk harvest strategies in 2022 increased elk harvest in Hunt Area 41 to a record 513 elk. Changes made in 2022 intended to (1) decrease elk hunter crowding and (2) increase elk available to public land hunters. Early season Type 3 and 7 licenses had the desired effect of reducing concentrations of elk on private land. Hunter crowding was also alleviated with the reduction in Type 1 licenses and creation of a Type 2 “late” season. A ten day break was implemented between the Type 4 and Type 6 seasons, which rendered a desired outcome of increased cow harvest in the December season (58% success). The success of these

changes was reflected through increased elk harvest and hunter satisfaction (63%in 2022 vs 58% in 2021). Hunt Area 45 showed relatively stable harvest rates despite decreased success on the Type 4, 5, and 6 license types. The total cow harvest for Hunt Area 45 was augmented with the addition of a new Type 7 December cow/calf season. Success rates for this license type were the highest in Hunt Area 45 at 50%. Classification and trend flights conducted in January showed a decrease of elk across the board. The total number of elk counted in the herd unit was just under the trend objective at 2,136 with a stable bull ratio of 33 bulls per 100 cows. It's likely some elk were missed during our flights due to inclement weather however follow-up ground surveys and February deer sightability flights didn't reveal any major groups. 2023 will see the the continuance of these new seasons with some minor changes to diffuse hunter crowding and increase hunt quality. Despite a relatively high success rate of 68%, the Hunt Area 41 Type 2 license holders expressed dissatisfaction with the overcrowding of fellow elk hunters. Conversely crowding during the Type 1 season was significantly diminished. To balance out the pressure the Type 2 quota was reduced to 100 and difference reallocated into the Type 1 quota. Lastly, critical comments received from 45 Type 9 hunters reference overcrowding during the September 15-30 period. This has prompted changes to eliminate "special archery seasons" for full price License Types 1, 4 & 5. Based on the lack of cow elk harvest from archers, there appears to be little merit to maintaining special archery seasons for full-price antlerless hunters. To account for the removal of the "special archery season" for the Type 1 license a modest increase to the Type 9 quota was warranted.

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 2, 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 2023.

Table 1. CWD prevalence for hunter-harvested elk in the Medicine Lodge Elk Herd, 2020-22.

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

2022 - JCR Evaluation Form

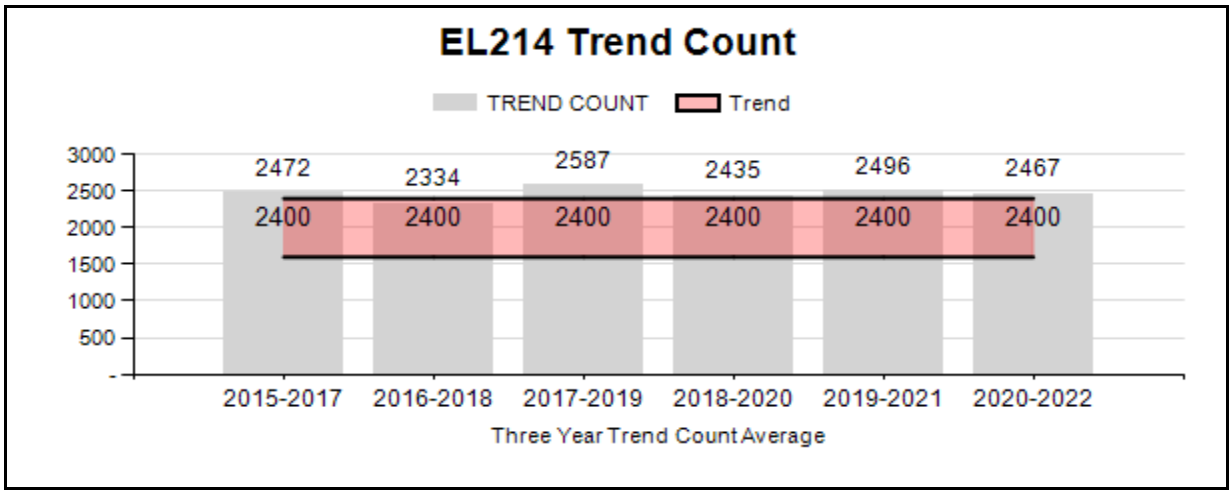
SPECIES: Elk
PERIOD: 6/1/2022 - 5/31/2023

HERD: EL214 - GOOSEBERRY

HUNT AREAS: 62-64
PREPARED BY: BART KROGER

	2020 - 2022 3-yr Average	2022	2023 Proposed
Trend Count:	2,467	2,901	2,800
Harvest:	627	601	615
Hunters:	1,179	1,082	1,100
Hunter Success:	53%	56%	56 %
Active Licenses:	1,218	1,138	1,150
Active License Success	51%	53%	53 %
Recreation Days:	7,398	6,814	6,800
Days Per Animal:	11.8	11.3	11.1
Males per 100 Females:	32	20	
Juveniles per 100 Females	18	16	

Trend Based Objective (± 20%)	2,000 (1600 - 2400)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	+23%
Number of years population has been + or - objective in recent trend:	4



2023 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	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	25	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	200	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

2022 Hunter Satisfaction: 75% Satisfied, 15% Neutral, 10% Dissatisfied

2023 Management Summary

1.) Hunting Season Evaluation: The 2023 hunting season structure is again fairly liberal with numerous Type 4, 6 and 7 licenses and long seasons to hopefully continue reducing elk numbers. Type 1, 2, 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 2022 herd unit hunter success was 56% and hunter effort was 11.3 days/harvest, which are mostly similar to previous years. A total of 601 elk were harvested in 2022, which is similar to the previous 5-year average. Calf ratios have remained below 20:100 cows the previous 5 years, and below 30:100 the last 10 years. The 2022 calf ratio was 16:100. Total number of elk counted on winter trend flights was 2,901 elk for the herd unit. The 3-year average count is 2467, which is 23% above the objective of 2,000 elk. Hunting season changes for 2023 are to remove HA63 from the HA62 Type 5 license to allow for regulation simplicity, and to increase that quota by 25 licenses.

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

3.) Chronic Wasting Disease and Brucellosis Monitoring and 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 for CWD. Brucellosis is present in this herd, and measures to reduce elk/cattle interaction have and will continue. The 2018-2022 seropositive brucellosis prevalence was 22%, compared to 10-15% from 2011-2015.

2022 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2022 - 5/31/2023

HERD: EL216 - CODY

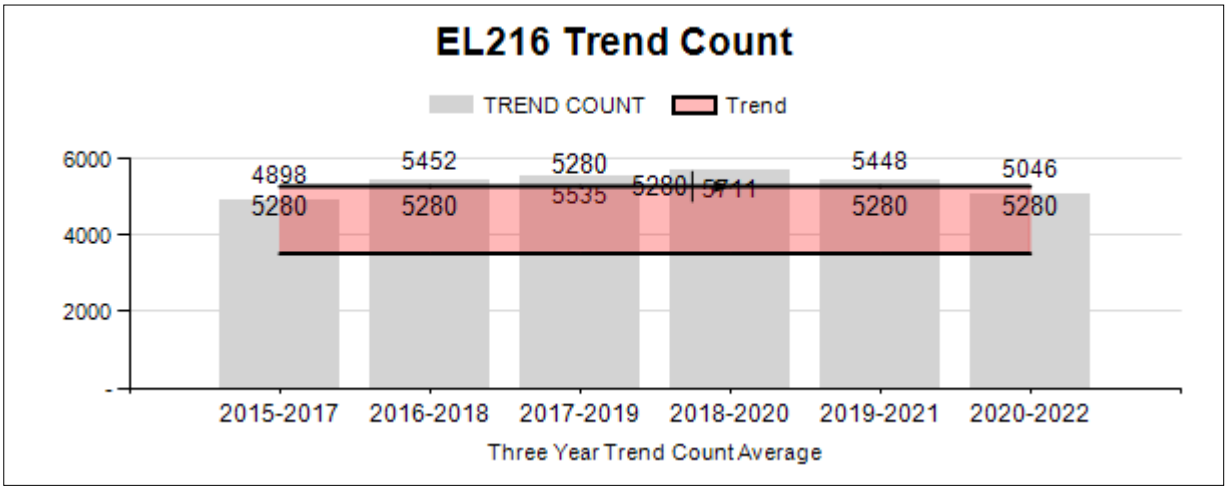
HUNT AREAS: 55-56, 58-61, 66

PREPARED BY: TONY MONG

	2017 - 2021 Average	2022	2023 Proposed
Trend Count:	5,560	3,946	4,700
Harvest:	1,170	1,232	1,300
Hunters:	2,833	2,347	2,340
Hunter Success:	41%	52%	56 %
Active Licenses:	2,992	2,459	2,440
Active License Success	39%	50%	53 %
Recreation Days:	19,574	13,295	13,300
Days Per Animal:	16.7	10.8	10.2
Males per 100 Females:	38	23	
Juveniles per 100 Females	17	20	
Trend Based Objective (± 20%)			4,400 (3520 - 5280)
Management Strategy:			Special
Percent population is above (+) or (-) objective:			-10.3%
Number of years population has been + or - objective in recent trend:			5

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%
Proposed change in post-season population:	n/a%	n/a%



2023 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	50	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. 1	Dec. 7	10	Any elk
56	6	Sep. 1	Sep. 30	Oct. 1	Dec. 21	100	Cow or calf
56	7	Sep. 1	Sep. 30	Oct. 1	Dec. 21	100	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	150	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. 15	10	Any elk
59	6	Sep. 1	Sep. 30	Oct. 1	Dec. 21	125	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 valid in the entire area
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	100	Cow or calf

2022 Hunter Satisfaction: 67% Satisfied, 18% Neutral, 15% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: We made minor changes to seasons this year to increase cow harvest in Hunt Area 58. Three year average trend count numbers have increased in Hunt Areas 55-56 (2022 3-year trend count, 1260) and Hunt Areas 58-59 (2022 3-year trend count, 1121) and decreased in Hunt Area 61 count block (2022 3-year trend count, 2,618). We have seen a marked decrease in the number of elk wintering in Hunt Area 61 over the last 2 years. This coincides with an increase in hunting pressure in the area which has resulted in higher harvest and we believe moving elk out of that area. The increase in Hunt Area 58 licenses are to deal with the movement of elk out of Hunt Area 61 into 58. This redistribution of cow elk is not limited to Hunt Area 58 and seems to have also occurred in Hunt Areas 62 and 67. We are have kept cow license levels at the same level in order to try and continue to keep trend numbers at the current level.

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 1150, 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 2020. CWD was first detected in this herd in 2018, and has since been detected in hunter harvest in 2020 and 2021 but not in 2022 with all positives found in HA 66 concentrated primarily along the Greybull River. Combined 2020-2022 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, 2019 - 21.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2020-22	**2.4% (0.6-5.9%, n=169)**

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

a) 58 Type 1 (94.3%): No increase. This license is dependent on access to private land 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.

b) 59 Type 1 (70.0%): 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.

c) 60 Type 9 (70.0%): This archery license is within General Area and is typically dominated by non-residents that are outfitted. This makes the opportunity and success high.

d) 61 Type 1 (79.1%): 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 5 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 (83.3%): 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.

2022 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2022 - 5/31/2023

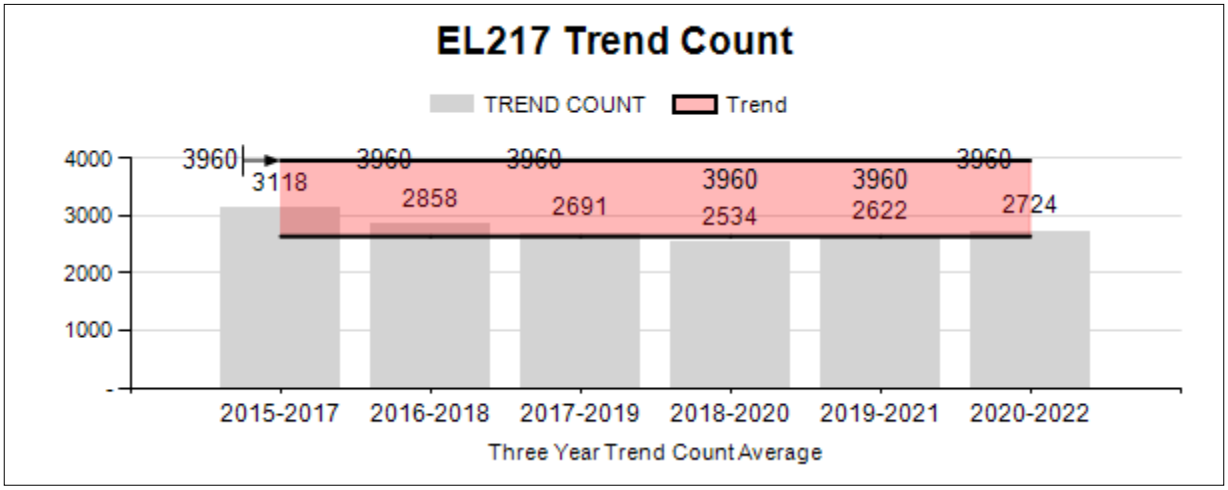
HERD: EL217 - CLARKS FORK

HUNT AREAS: 51, 53-54 | PREPARED BY: TONY MONG

	2017 - 2021 Average	2022	2023 Proposed
Trend Count:	2,647	3,010	3,200
Harvest:	407	340	335
Hunters:	912	843	850
Hunter Success:	45%	40%	39 %
Active Licenses:	956	885	890
Active License Success	43%	38%	38 %
Recreation Days:	6,918	6,945	7,000
Days Per Animal:	17.0	20.4	20.9
Males per 100 Females:	20	10	
Juveniles per 100 Females	19	19	
Trend Based Objective (± 20%)			3,300 (2640 - 3960)
Management Strategy:			Special
Percent population is above (+) or (-) objective:			-8.8%
Number of years population has been + or - objective in recent trend:			5

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%
Proposed change in post-season population:	n/a%	n/a%



2023 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	100	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	75	Any elk, archery only
53	1			Oct. 1	Oct. 31	10	Any elk
53	2			Nov. 1	Nov. 30	25	Any elk
53	6			Oct. 15	Dec. 21	100	Cow or calf valid in the North Fork Shoshone River Drainage
53	7			Sep. 1	Dec. 21	25	Cow or calf valid on private land
53	9			Sep. 1	Sep. 30	10	Any elk, archery only
54	1			Oct. 1	Nov. 30	50	Any elk valid south of the Clarks Fork River
54	2			Oct. 1	Oct. 31	25	Any elk valid north of the Clarks Fork River
54	6			Sep. 1	Sep. 30	150	Cow or calf valid on private land or east of Wyoming Highway 120
54	6			Oct. 1	Oct. 31		Cow or calf valid in the entire area
54	6			Jan. 1	Jan. 15		Cow or calf valid east of Wyoming Highway 120
54	7			Nov. 1	Nov. 26	400	Cow or calf
54	7			Nov. 27	Dec. 21		Cow or calf valid east of Wyoming Highway 120 or north of the Clarks Fork River
54	7			Jan. 1	Jan. 15		Cow or calf valid east of Wyoming Highway 120

54	9			Sep. 1	Sep. 30	35	Any elk, archery only

2022 Hunter Satisfaction: 59% Satisfied, 23% Neutral, 18% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: We are adjusting licenses and dates to allow better harvest success for bull harvest in Hunt Area 53, increase bull opportunity in Hunt Area 51, increasing elk numbers in Hunt Area 51 and continuing to decrease numbers of elk in the Heart Mountain Area. Three year average trend count numbers have increased in Hunt Areas 53 (2022 3-year trend count, 486) and Hunt Area 54 (2022 3-year trend count, 1,473) and decreased in Hunt Areas 51 (2022 3-year trend count, 766). We are only above objective in Hunt Area 54 therefore we are increasing the opportunity to harvest cows in areas where we are having the most issues with private land damage by increasing licenses and adding a January portion to both the Hunt Area 54 Type 7 and Type 6 licenses. Because of continued low population trend numbers in Hunt Area 51 we are decreasing cow licenses, however, in order to provide some additional bull harvest opportunity we are proposing an increase in the Hunt Area 51 Type 9 licenses. The harvest success for the Hunt Area 53 Type 2 license has been low (5-year average: 40%) therefore we are decreasing licenses by ten and removing the North Fork drainage restriction on this license to raise the success and satisfaction for that license.

2.) Management Objective Review: This herd is managed by a 3-year average mid-winter trend count by Hunt Area blocks (HA51, HA53 and HA54). In 2022, managers reviewed the current objective structure and are not proposing any changes at this time. As we develop more complex population models we will be considering changes that incorporate these better modeling applications in the future.

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.

2022 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2022 - 5/31/2023

HERD: MO201 - ABSAROKA

HUNT AREAS: 8-9, 11

PREPARED BY: BART KROGER

	2017 - 2021 Average	2022	2023 Proposed
Population:	n/a	n/a	n/a
Harvest:	9	8	8
Hunters:	9	8	8
Hunter Success:	100%	100%	100 %
Active Licenses:	9	8	8
Active License Success:	100%	100%	100 %
Recreation Days:	69	43	50
Days Per Animal:	7.7	5.4	6.2

Limited Opportunity Objective:

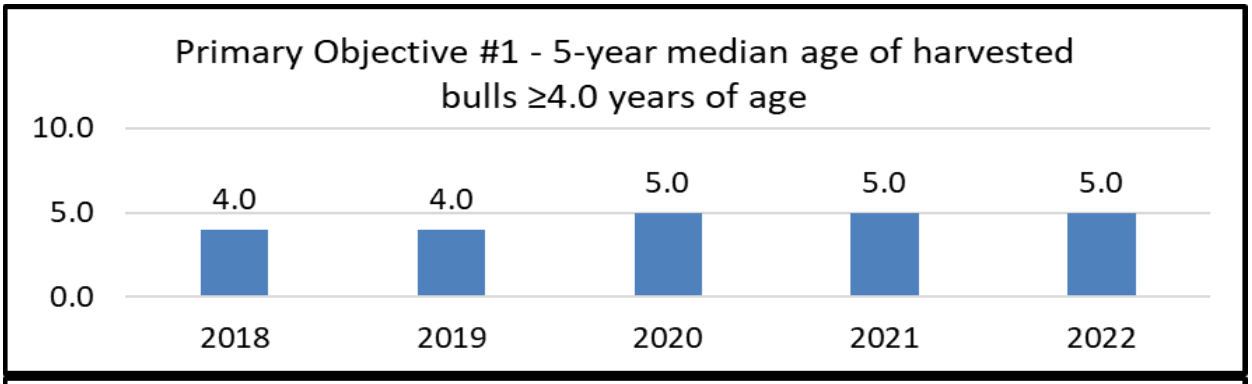
5-year median age of ≥ 4.0 years for harvested moose

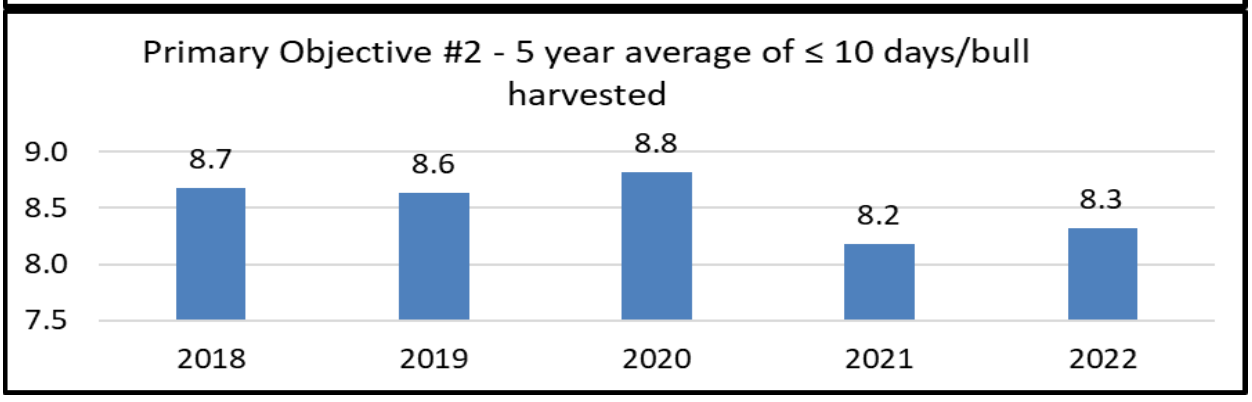
5-year average of ≤ 10 days/animal to harvest

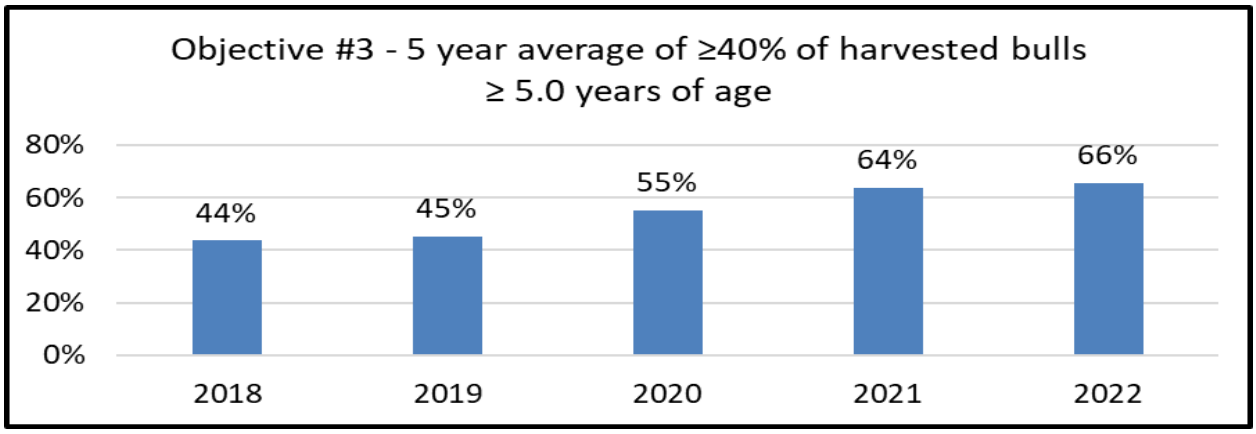
Secondary Objective:

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%
44%
45%
55%
64%
66%
2018
2019
2020
2021
2022

2023 Hunting Seasons
Absaroka Moose (MO201)

Hunt Area	Type	Special Archery Dates Opens	Special Archery Dates Closes	Regular Season Dates Opens	Regular Season Dates Closes	Quota	Limitations
8							Closed
9	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	3	Antlered moose (3 resident)
11	1	Sep. 1	Sep. 9	Sep. 10	Nov. 10	5	Antlered moose (5 resident)

2023 Management Summary

1.) Hunting Season Evaluation: The 2023 hunting season for the Absaroka moose herd is unchanged from 2022, except for the license allocation for residents was added. Moose numbers in this herd unit are considered at low densities, but it appears to have been slightly increased in recent years. Enough moose do exist to support a limited bull harvest. Number of moose observed during the 2023 winter aerial trend survey was 26 moose in area 9 and 8 in area 11. Limited flight time in area 11 didn't allow for the Sunlight and Crandall areas to be surveyed. Trail camera pictures taken during 2022 had at least 15 different bull moose in area 9, with only 2 of those being collared animals. In 2021, area 11 had 26 different bulls on camera. Eight (8) bull moose were harvested in 2022, including 3 from HA 9 and 5 from HA 11, for a hunter success of 100%. The 2022 5-year median age of harvested bulls is 5.0 years, and 66% of the bulls harvested the past 5 years are ≥5 years of age. The 5-yr average hunter effort is 8.3 days/harvest. Currently all management objectives for this moose herd are being met for 2022.

2.) Field Data: Both trail cameras and trend counts surveys need to continue annually to document the presence of bull moose, as well as monitor 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, 31 moose, including 15 bulls and 16 cows were radio collared as part of the Meeteetse Moose Project. In 2021 and 2022, additional moose were collared using redeployments from mortalities, along with all cows being recaptured and fixed with new collars. Project goals include survival rates, movement patterns, habitat selection, forage preference and hunter vulnerability. Results from this study should be available in late 2023.

2022 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2022 - 5/31/2023

HERD: BS200 - ABSAROKA

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

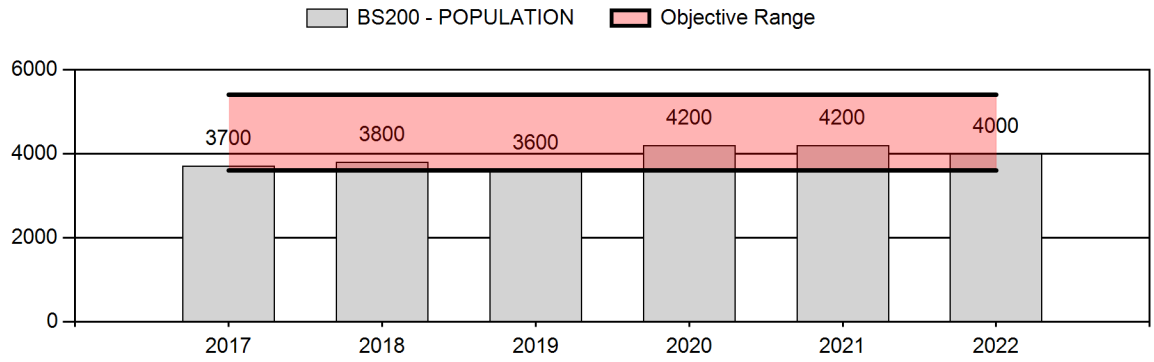
	2017 - 2021 Average	2022	2023 Proposed
Population:	3,900	4,000	4,100
Harvest:	109	103	105
Hunters:	137	125	126
Hunter Success:	80%	82%	83%
Active Licenses:	137	125	126
Active License Success:	80%	82%	83 %
Recreation Days:	1,192	1,052	1,100
Days Per Animal:	10.9	10.2	10.5
Males per 100 Females	36	50	
Juveniles per 100 Females	35	44	

Population Objective (± 20%) :	4500 (3600 - 5400)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-11.1%
Number of years population has been + or - objective in recent trend:	0
Model Date:	02/15/2023

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%
Proposed change in post-season population:	n/a%	0%

Population Size - Postseason



2023 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 (14 res., 1 nonres.)
2	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	25	Any ram (22 res., 3 nonres.)
3	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	25	Any ram (23 res., 2 nonres.)
4	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	25	Any ram (23 res., 2 nonres.)
5	1			Aug. 1	Aug. 31	31	Any sheep valid within the Owl Creek drainage (27 res., 4 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 (5 res.)

2022 Management Summary

1.) Hunting Season Evaluation: We are increasing licenses in three hunt areas and decreasing in two hunt areas for a total increase of 5 licenses in the herd unit. Overall, we are making adjustments for the new 90/10 resident/non-resident split and therefore we increased or decreased licenses to hit a multiple of 5 or 10 except for Hunt Area 5, which had an additional license added for the non-resident random draw. We are decreasing licenses in Hunt Areas 3 and 5. Harvest statistics and hunter comments from Hunt Area 3 continue to show low numbers of available rams and most likely overall population numbers for the area. Despite good harvest statistics in Hunt Area 5 in 2022, early flight numbers indicate a possible loss of overall numbers of rams in the area, thus the decrease in licenses. 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.

2.) Management Objective Review: In 2022, managers reviewed the current herd level estimated population objective of 4,500 and determined that no change in that objective type or level was needed. Because this is a large population spread over a very large area, the herd level objective is only used a very course level to determine the herd performance. We also reviewed the individual hunt area objective metrics (harvest success, days to harvest and average age of ram harvested) used to determine population performance at a more fine scale and have determined that no change is necessary at this time. Currently, harvest parameters for each of the hunt areas seem to be the best gauge on how rams are doing in each of the hunt areas that allows us to make inferences on how many licenses should be in the hunt area the next hunting season.

2022 - JCR Evaluation Form

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

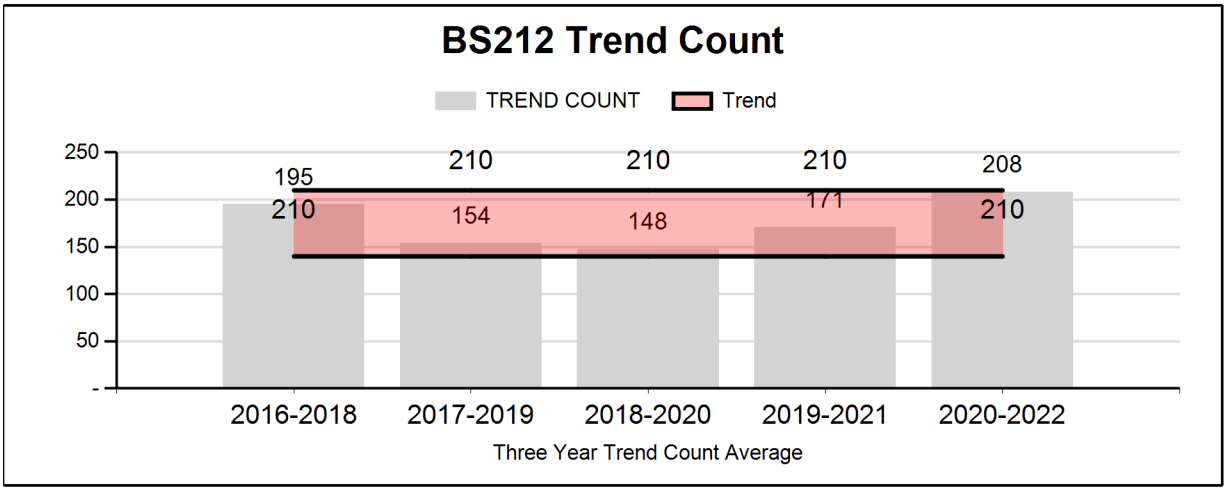
PERIOD: 6/1/2022 - 5/31/2023
PREPARED BY: SAM STEPHENS

	2017 - 2021 Average	2022	2023 Proposed
Trend Count:	167	253	100
Harvest:	6	11	2
Hunters:	6	12	2
Hunter Success:	100%	92%	100 %
Active Licenses:	6	12	2
Active License Success	100%	92%	100 %
Recreation Days:	40	42	10
Days Per Animal:	6.7	3.8	5
Males per 100 Females:	59	53	
Juveniles per 100 Females	47	12	

Trend Based Objective (± 20%)	175 (140 - 210)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	45%
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:	4%	0%
Males ≥ 1 year old:	9%	5%
Juveniles (< 1 year old):	0%	0%



2023 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	2	Any ram

2022 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. The death of a GPS collared ewe in late October revealed another 36 sheep carcasses over the course of three days. Fresh carcasses were necropsied and samples sent to the Wyoming Game and Fish Department's Wildlife Health Laboratory. Four living sheep were removed by department personnel after exhibiting clinical signs of pneumonia such as nasal discharge and extreme lethargy (unwillingness to move). Wildlife Health Laboratory staff concluded that this outbreak was triggered by a novel strain of the pathogen *Mannheimia haemolytica.* 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. Although the impact to the entire herd is not yet known, surveillance flights were conducted in November, December, January, and February where 30-83 sheep were counted. The steep decline in survival for the 2022-23 winter prompted the reduction in Type 1 licenses and the removal of any ewe harvest. The summer 2023 aerial classification and trend flight results will dictate future management decisions and be published in the 2023 JCR.

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 have 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. A total of 15 mortalities were detected from a starting total of 30 GPS collared sheep in 2022. Each event was investigated and cause was attributed to every mortality (Figure 1).

Figure 1. Cause-Specific Mortality of GPS Collared Bighorn Sheep

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

The remaining collars are expected to collect data until June 2023, and will allow us to detect additional disease-related mortalities for the remainder of the 2022 Biological Year.

2022 - JCR Evaluation Form

SPECIES: Mountain Goat
HERD: MG201 - BEARTOOTH
HUNT AREAS: 1, 3, 5, 514, 999

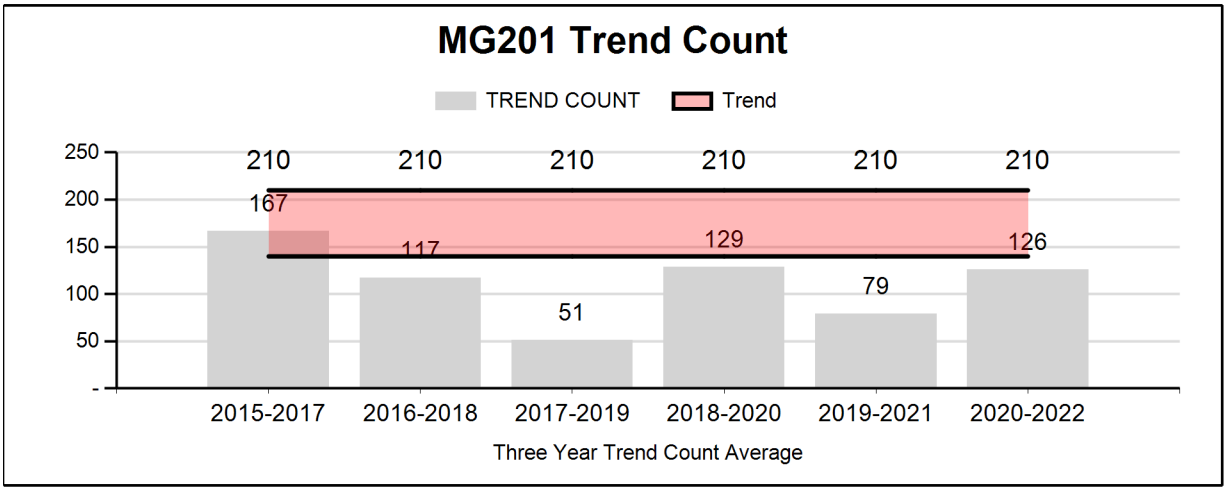
PERIOD: 6/1/2022 - 5/31/2023
PREPARED BY: TONY MONG

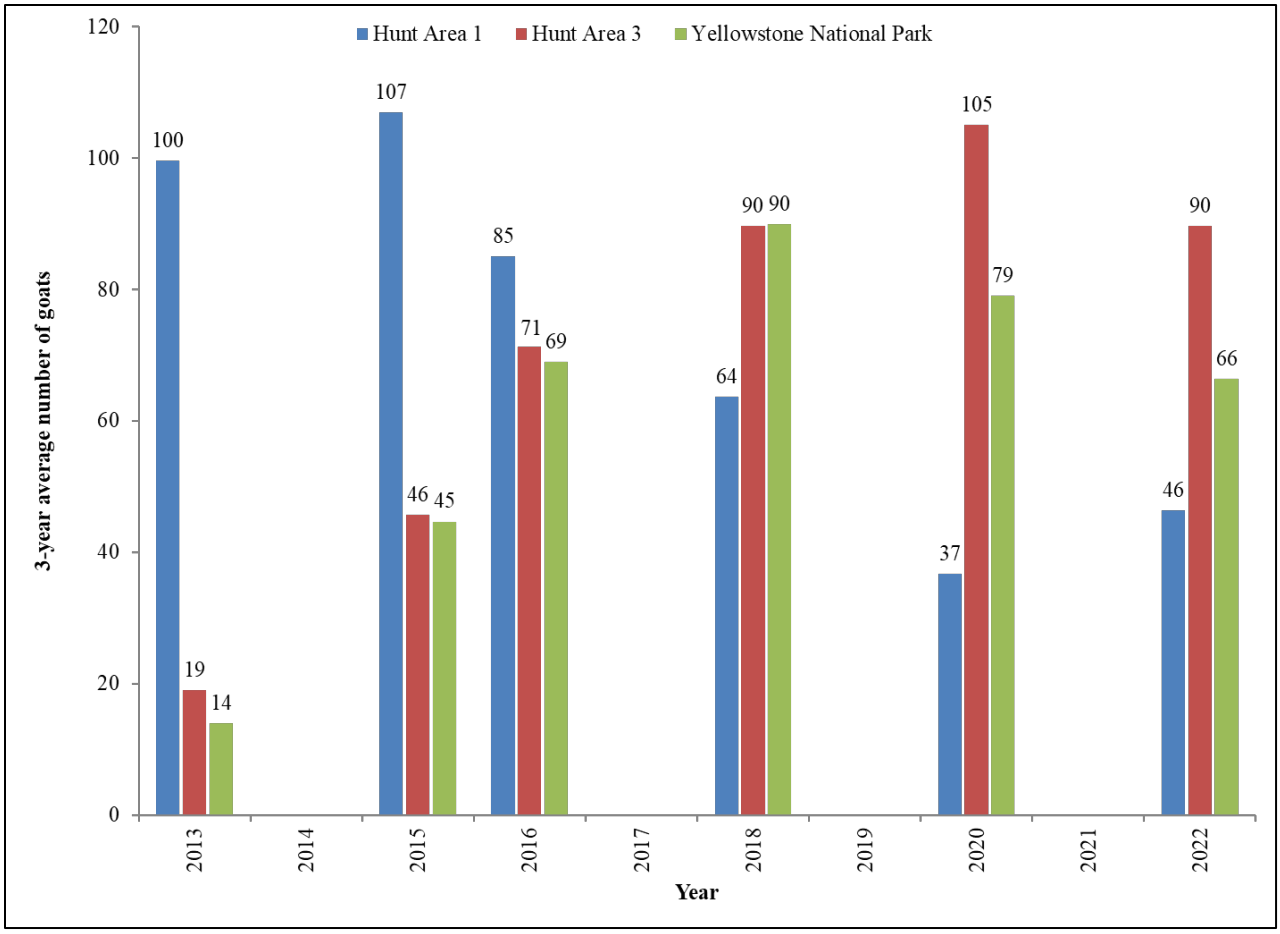
	2017 - 2021 Average	2022	2023 Proposed
Trend Count:	194	143	143
Harvest:	32	36	30
Hunters:	42	47	40
Hunter Success:	76%	77%	75%
Active Licenses:	42	47	40
Active License Success	76%	77%	75%
Recreation Days:	270	319	300
Days Per Animal:	8.4	8.9	10
Males per 100 Females:	0	0	
Juveniles per 100 Females	39	24	

Trend Based Objective (± 20%)	175 (140 - 210)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-18.3%
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%




Hunt Area 1
Hunt Area 3
Yellowstone National Park
3-year average number of goats
Year
120
100
80
60
40
20
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
100
19
14
107
46
45
85
71
69
64
90
90
37
105
79
46
90
66

2023 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
3	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	20	Any mountain goat
3	2	Aug. 15	Aug. 31	Sep. 1	Oct. 31	10	Any mountain goat valid in the North Fork Shoshone River Drainage

2022 Management Summary

1.) Hunting Season Evaluation: We are increasing licenses in Hunt Area 1 to allow for 1 non-resident license, decreasing licenses in the Hunt Area 3 and removing the Hunt Area 5A licenses. We counted the lowest number of mountain goats in Hunt Area 3 this year and saw low success (72%) with the Hunt Area 3 Type 1 license. Over the last several years, our goal was to reduce mountain goat numbers over the entire area and it seems we have been successful in that management action. We would like to maintain current numbers of mountain goats in Hunt Area 3. 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. The Hunt Area 3 Type 2 license was created to keep mountain goats from expanding south into areas we do not want to see mountain goats become established. However, we are making adjustments for the new 90/10 resident/non-resident split and therefore we decreased licenses in the Hunt Area 3 Type 2 license to hit a multiple of 10. Hunt Area 5A was created to keep goats from expanding into this area. Over the course of the last 4 seasons only 3 mountain goats have been harvested. We are removing this license and will look for alternative management options to keep goats from expanding into this area.