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ACKNOWLEDGEMENTS

The field data contained in these reports is the result of the combined efforts of Jackson Region Wildlife Division personnel including District Wildlife Biologists, District Game Wardens, the Disease Biologist, Feedground Manager, Wildlife Management Coordinator, and Region Supervisor, as well as other Department personnel working check stations and in the field. The authors wish to express their appreciation to all those who assisted in data collection.

2021 - JCR Evaluation Form

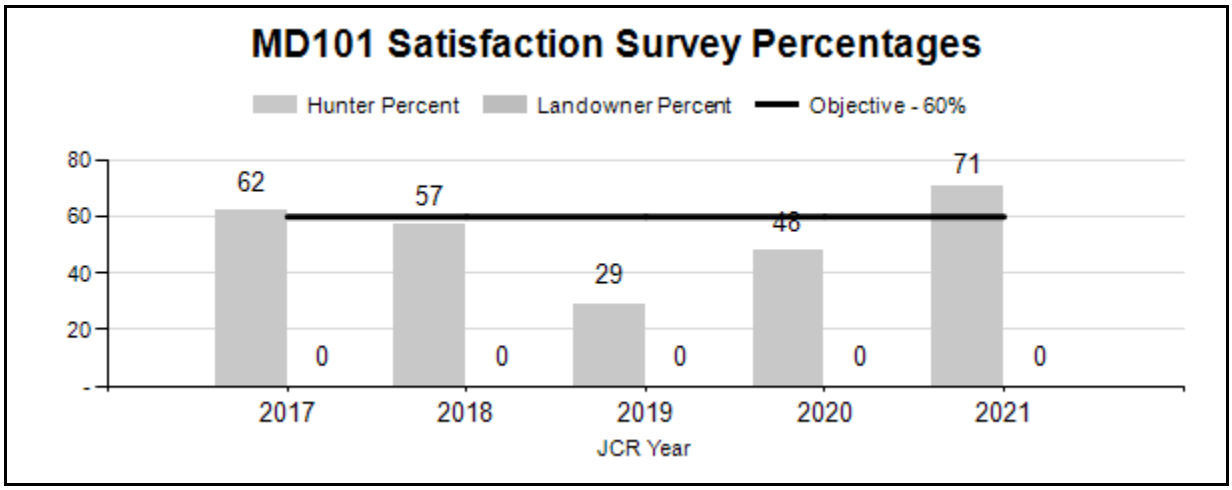
SPECIES: Mule Deer
PERIOD: 6/1/2021 - 5/31/2022

HERD: MD101 - TARGHEE

HUNT AREAS: 149
PREPARED BY: ALYSON COURTEMANCH

	2016 - 2020 Average	2021	2022 Proposed
Hunter Satisfaction Percent	56%	71%	71%
Landowner Satisfaction Percent	N/A	N/A	N/A
Harvest:	19	28	28
Hunters:	81	82	82
Hunter Success:	23%	34%	34%
Active Licenses:	81	82	82
Active License Success:	23%	34%	34 %
Recreation Days:	445	336	336
Days Per Animal:	23.4	12	12
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	

Satisfaction Based Objective	60%
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	1



2022 HUNTING SEASONS
TARGHEE MULE DEER HERD (MD101)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
149	Gen	Sep. 1	Sep. 14	Sep. 15	Oct. 6		Antlered mule deer or any white-tailed deer
148, 149, 150, 151, 152, 155, 156	3	Sep. 1	Sep. 14	Sep. 15	Nov. 30	50	Any white-tailed deer
148, 149, 150, 151, 152, 155, 156	8	Sep. 1	Sep. 14	Sep. 15	Nov. 30	75	Doe or fawn white-tailed deer

2022 Regional H Non-Resident Quota: 600 licenses

2021 Hunter Satisfaction: 70.8% Satisfied, 25.0% Neutral, 4.2% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: Hunting seasons were not changed in 2022. Hunting opportunity in this herd unit is limited due to few access points to public lands, steep terrain, and fall migration of mule deer to Idaho. Eighty-two hunters harvested 28 mule deer in the herd unit in 2021. Six white-tailed deer were harvested in 2021 (4 with a Type 3 license, 2 with a Type 8 license, and zero with a general license). Hunter satisfaction was high in 2021 at 71% even though overall harvest was low. This year was the first time since 2017 that the hunter satisfaction objective was met for this herd. The Type 3 and Type 8 white-tailed deer licenses were combined with other hunt areas in the Jackson Region in the Sublette Herd in 2021 to provide hunters more flexibility with where they can use these licenses and address areas where white-tailed deer numbers have been increasing.

2.) Management Objective Review: The next objective review is scheduled for 2024.

3.) Chronic Wasting Disease Management: This is a Tier 3 surveillance herd that is not a priority for CWD sampling at this time due to its very low deer harvest and difficulty in encountering hunters with harvested animals in the field. Collecting an adequate sample size in this herd is not feasible at this time. CWD management in this herd focuses on opportunistic hunter-harvest, roadkill sampling, and sampling any animals that are displaying signs of

sickness. A total of 1 hunter-harvested mule deer was sampled in 2021 (Table 1). No hunter-harvested white-tailed deer were sampled. CWD has not been detected in this herd, however confidence intervals are large due to very low sample size.

Table 1. CWD prevalence for hunter-harvested mule deer in the Targhee Mule Deer Herd, 2019-2021.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2021	**0% (CI 0%-97.5%%, n=1)**	None sampled	None sampled
2019-2021	**0% (CI 0%-97.5%, n=1)**	None sampled	None sampled

2021 - JCR Evaluation Form

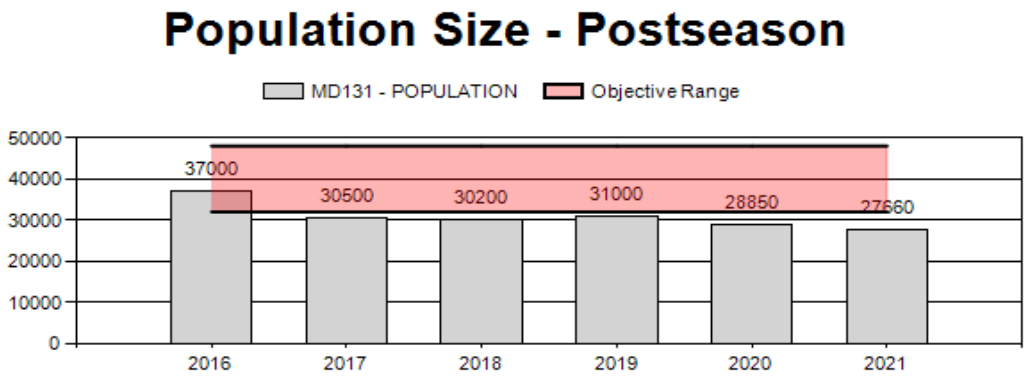
SPECIES: Mule Deer
PERIOD: 6/1/2021 - 5/31/2022
HERD: MD131 - WYOMING RANGE
HUNT AREAS: 134-135, 143-145
PREPARED BY: GARY FRALICK

	2016 - 2020 Average	2021	2022 Proposed
Population:	31,510	27,660	29,000
Harvest:	1,935	1,673	1,725
Hunters:	5,331	4,807	4,985
Hunter Success:	36%	35%	35 %
Active Licenses:	5,331	4,807	4,985
Active License Success:	36%	35%	35 %
Recreation Days:	29,595	26,375	27,650
Days Per Animal:	15.3	15.8	16.0
Males per 100 Females	31	33	
Juveniles per 100 Females	59	64	

Population Objective (± 20%) :	40000 (32000 - 48000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-30.8%
Number of years population has been + or - objective in recent trend:	6
Model Date:	02/24/2022

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%	27%
Proposed change in post-season population:	-4%	+5%



2022 HUNTING SEASONS
WYOMING RANGE MULE DEER HERD (MD131)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
134	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 11		Antlered mule deer four (4) or more points on either antler or any white-tailed deer
135	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 11		Antlered mule deer three (3) points or more on either antler or any white-tailed deer
143	Gen	Sep. 1	Sep. 14	Sept. 15	Oct. 6		Antlered mule deer or any white-tailed deer
144	Gen	Sep. 1	Sep. 14	Sept. 15	Oct. 6		Antlered mule deer or any white-tailed deer
145	Gen	Sep. 1	Sep. 14	Sept. 15	Oct. 6		Antlered mule or any white-tailed deer
145	3	Sep. 1	Sep. 14	Sept. 15	Nov. 15	25	Any white-tailed deer
145	3			Nov. 16	Jan. 31		Antlerless white-tailed deer
145	8	Sep. 1	Sep.14	Nov. 1	Jan. 31	25	Doe or fawn white-tailed deer

2022 Region G nonresident quota: 400 licenses

2021 Hunter Satisfaction: 48% Satisfied, 24% Neutral, 28% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: Deer seasons in the northern areas remain unchanged from 2021, and are proposed to open September 15 and close October 6 in Hunt Areas 143, 144, and 145. These hunting seasons, along with 14 other mule deer hunt areas in the Jackson and Pinedale Regions open and close concurrently, and continue to promote population growth and buck retention into the postseason population by focusing on antlered only hunting and closing deer seasons prior to the onset of the fall migration and the October general elk hunting seasons.

Antlered only hunting and the insignificant antlerless harvest (typically < 100 does taken primarily by youth hunters), will allow the population to increase toward the objective this year since high overwinter survival is anticipated on all major winter ranges. High winter mortality was observed during the 2017, 2019, and 2020 winter, primarily on the southern winter ranges, and was responsible for the slight downturn in the population estimate observed the last three years (2017-2020). This

followed 5 years of sustained population growth during the period from 2012-2016. It was during this 5-year period (2012-2016) the population approached the objective of 40,000.

Green River Region Hunting Season Recommendation Hunt Areas 134 and 135

Due to requests from the general public, seasons that included two weekends with 14 days of general deer hunting opportunity are typically adopted. This season configuration is very conservative and the population is not limited by this level of hunting. Continuing to offer this type of hunting opportunity in light of having lower deer survival during some past winters is still biologically appropriate, as changes in hunting seasons will not resurrect deer that died in past winters, nor limit future growth of the herd. However, due to low deer numbers there was a push from a highly vocal segment of the public to have a season length shorter than 14 days. This a social issue rather than a biological one, but in response the season was reduced from 14 days to 11 days in 2020, and remained so for 2022 as deer populations have not completely rebounded. This season offered two full weekends of hunting opportunity in 2022.

2.) **Management Objective Review:** The Wyoming Range mule deer population objective was reviewed by the public and federal agency personnel in 2016. At that time the population objective was reduced from 50,000 to 40,000 (± 20%) deer based on public review, and approval by the Wyoming Game and Fish Commission. An objective review was conducted in 2021, and no change was recommended.

3.) **Herd Unit Evaluation**: Management strategies have emphasized population growth since 1993 by promoting antlered deer only hunting opportunity. A concerted management effort to retain trophy class bucks in the posthunt population has been adopted by not extending the deer hunt into the migration period or the October 15 general license elk season. Antlered deer hunts occur in mid-September and early October throughout the herd unit. Hunt seasons close in the northern hunt areas prior to the onset of the annual fall migration in order to minimize vulnerability of bucks that migrate from subalpine summer ranges to sagebrush winter ranges in the Upper Green River Basin and Bear River Basin.

Over the last 27 years the population has remained stable at an annual average of approximately 33,000 deer. The only recent sustained, population growth occurred during the period from 2012 – 2016, which followed the winter of 2011 and prior to the 2017 winter. During this period the population estimate was 38,000 deer in 2016.

Sustained population growth has been largely tempered by the frequency of high to extreme overwinter mortality approximately every 3 years over the last 30 years. The most recent period of extreme winter mortality occurred in 2017, 2019 and 2020. Most of this mortality occurred exclusively on the southern winter ranges where an estimated 60% of the Wyoming Range herd spends the winter.

New estimation techniques were evaluated in 2022, and the spreadsheet model derived population estimate, which has been in place since 2012 after replacing POP2 (circa 1985-2012), was compared to the PopR Integrated Population Model (IPM) estimate. Those comparative reports for the respective models are provided below (Table 1).

Table 1. Comparison between spreadsheet model derived population estimates and PopR Integrated Population Model (IPM) estimates for the Wyoming Range Mule Deer Herd Unit.

Population	Year	Integrated Population Model	Spreadsheet Model
Postseason	2021	32,092 (29,317 - 35,095)	27,660
Postseason **(projected)**	2022	31,854 (26,317 - 38,204)	29,000

During the period from 2014-2022, buck:doe ratios have met or exceeded the special management objective of 30-45 bucks:100 does in the posthunt population in all years except 2017, 2018, 2020 because of moderate to severe winter mortality on the southern winter ranges. However, since 2017, moderate to high overwinter survival has ensured recruitment of 1.5+ year old bucks on the LaBarge winter ranges, where buck:doe ratios exceeded 40 bucks:100 in years 2014, 2015, 2019, and 2021 (Appendix A) The highest buck ratios achieved in at least 20 years were observed in 2013 (46:100) and 2021 (45:100) on the LaBarge winter ranges (Figure 1). The effects of winter mortality observed during the 2017, 2019, and 2020 winters had a deleterious impact on buck:doe ratios herd unit-wide, but most notably on the southern ranges. The 29 bucks:100 does observed in 2017 was only the second time since 1993 that the buck:doe ratio dropped below the management minimum of 30 buck:100 does (Appendix A).

High winter survival was observed on the LaBarge winter ranges from 2018 - 2022, and mitigated the high losses observed in Areas 134 and 135 in 2019 and 2020. As a result of the higher survival on the northern winter ranges near LaBarge, observed buck:doe ratios climbed to 41 bucks:100 does after the 2019 and 45:100 after the 2021 hunting seasons (Figure 1, Appendix A).

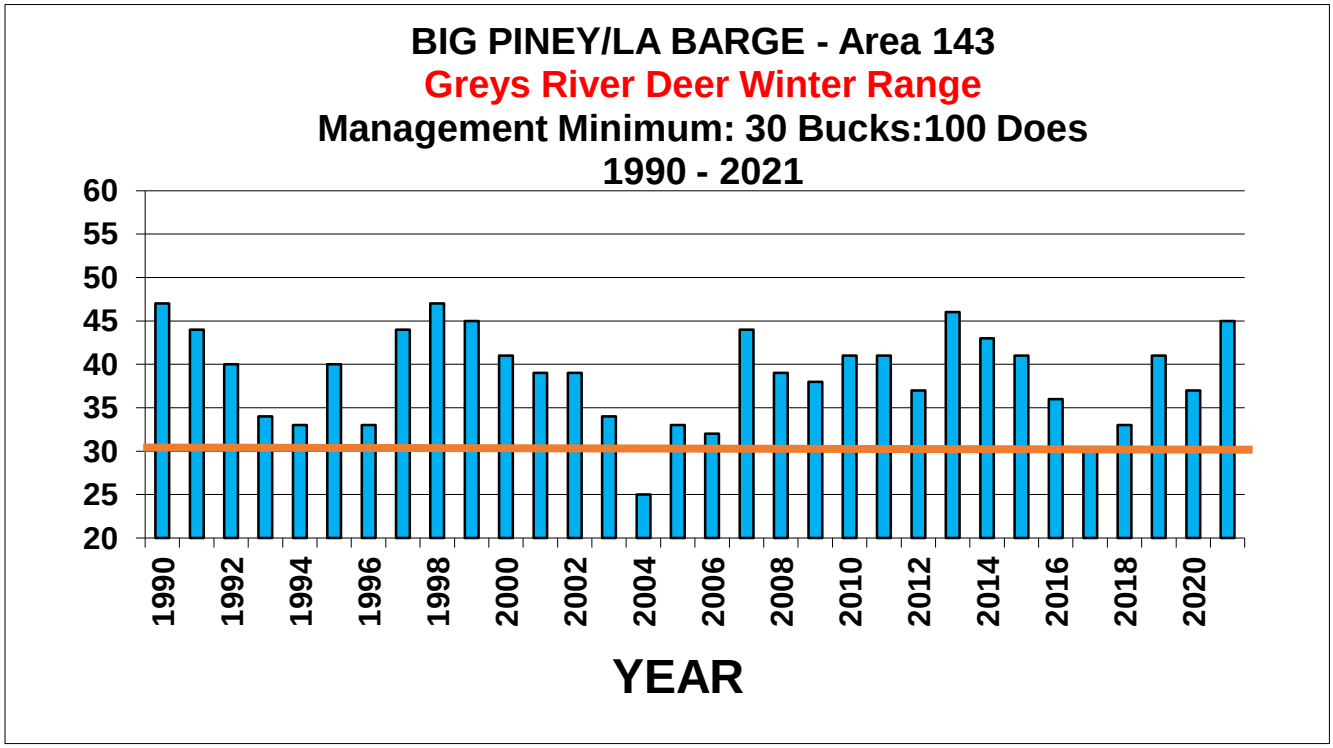


Figure 1. A summary of posthunt observed buck:doe ratios, LaBarge area winter ranges,1990-2021.

Wyoming Range Mule Deer Herd JCR – 2021 Habitat Report

Weather

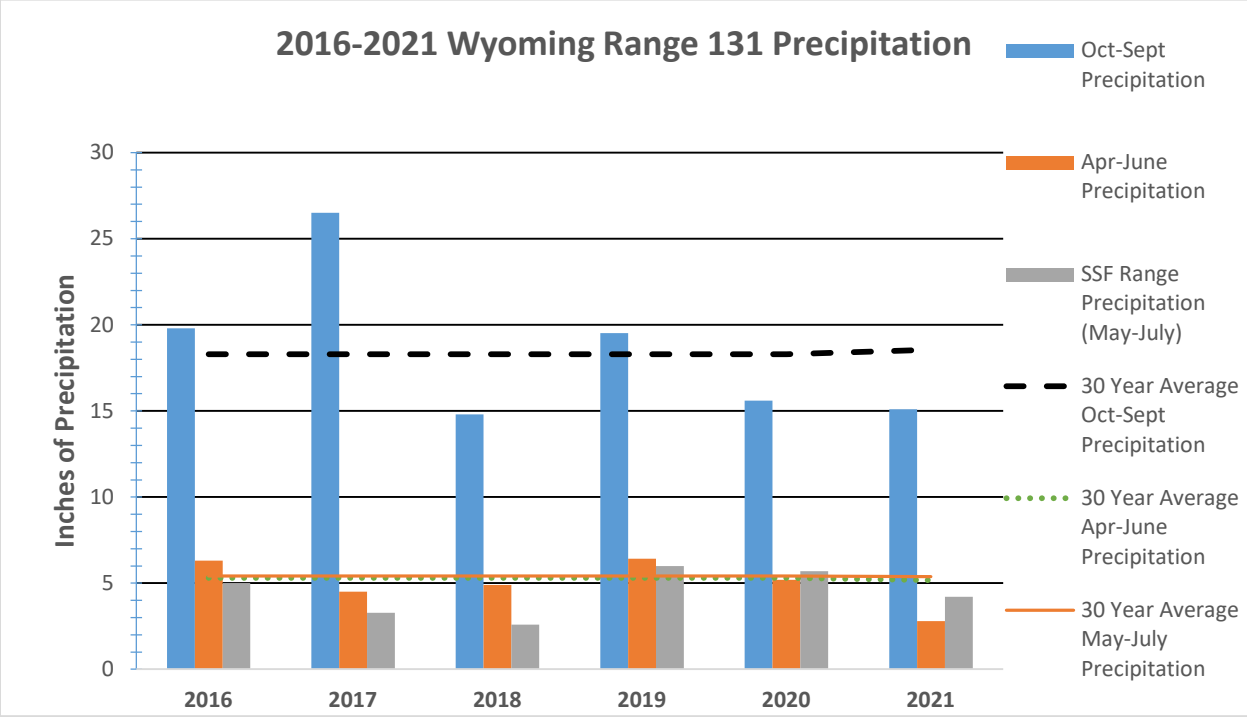


Figure 2. Parameter-Elevation Relationships on Independent Slopes Model (PRISM) estimates of precipitation for the Wyoming Range Mule Deer Herd Unit.

Precipitation

The Parameter-Elevation Relationships on Independent Slopes Model (PRISM) was utilized to estimate precipitation by calculating a climate-elevation regressions for each Digital Elevation Model grid cell (4km resolution) for the Wyoming Range Mule Deer Herd Unit during the water year period from October 2020 through September 2021 (Figure 2). Annual precipitation was below the 30 year (Sept-Oct) average. Precipitation during the growing season (April-June) and during the spring-summer use period (May-July) were below the 30 year averages. Generally, 2020-2021 winter precipitation varied from below average in the Kemmerer and Bondurant areas to above average in the Afton and Fossil Butte locations. Spring precipitation in 2021 was below average across the herd unit, except for the month of May which was above average. Early summer precipitation in 2021 was generally below average across the herd unit, however August experienced above average precipitation. Precipitation in fall 2021 was variable, ranging from below average to above average depending on location.

Winter Severity

Most low elevation winter ranges experienced below average monthly snow accumulation between November 2021 and February 2022, with the exception of the Afton area having slightly above normal winter snow accumulation. SNOWTEL sites at higher elevations showed the snow water equivalent ranging from 70-86% of the median as of February 24, 2022, suggesting less than ideal soil moisture for early 2022 growing season conditions. Average monthly temperatures recorded from locations near winter ranges were above the long term average during November and December, but colder than the long term average monthly temperatures during January and February with the exception of the Kemmerer area where temperatures were above the monthly average all four months.

Habitat

Significant Events

Two notable wildfire events occurred during July within the herd unit. The Shale Creek fire occurred in remote country on the southern end of Commissary Ridge, burning 198 acres of aspen stands and mixed conifer with beetle kill. The Soda Lake fire burned 98 acres of subalpine fir stands and sagebrush meadows in the South Cottonwood Creek drainage approximately three miles west of the forest boundary.

Several habitat improvement efforts also occurred within the herd unit during 2021. In the Pinedale Region, approximately 5,204 acres of sagebrush-grassland habitat were treated with herbicide to control cheatgrass, and four miles of temporary electric fence were installed and two livestock riders were hired to defer grazing on 19,000 acres during the growing season on the Calpet winter range. Three miles of fence were converted to wildlife friendly specifications. Approximately 709 acres of sagebrush were mowed on winter ranges in the Bridger Creek drainage, 1,700 acres were chemically treated to control cheatgrass in the Mill Creek area of Raymond Mountain, and an additional 26,883 acres were chemically treated to control cheatgrass near Sage Junction in the Green River Region. More details about these projects can be found in the Pinedale and Green River Region's section of the 2021 Statewide Habitat Plan (SHP) report.

Habitat Monitoring

Winter range shrub transects were monitored at five locations on the Big Piney Front during 2021 to evaluate trends in annual leader growth of True Mountain Mahogany. The average annual mahogany leader growth of all five sites during 2021 was 1.56 inches, which was 57% of the long-term average leader length (Figure 3). One of the sites monitored in 2021 exhibited leader growth which was 27% of the long-term average.

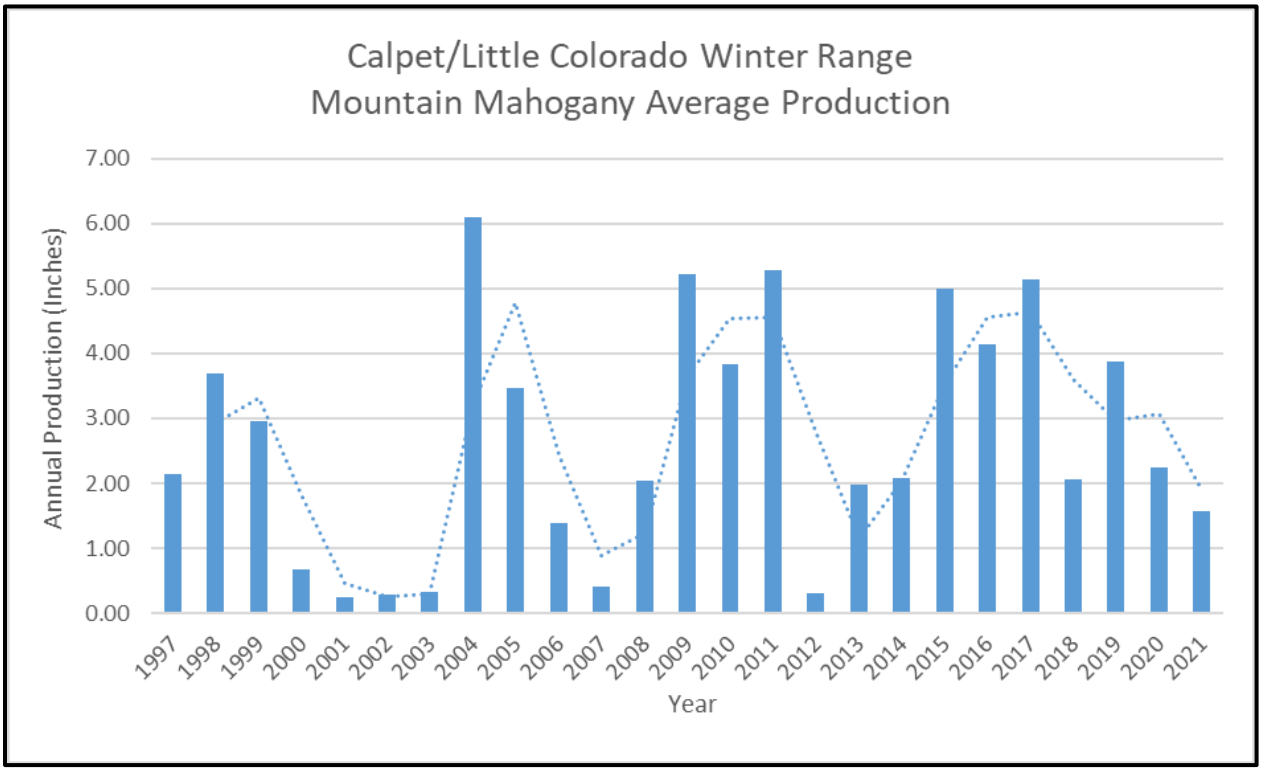


Figure 3. Average annual mahogany leader growth for five sites along Piney Front winter ranges of the Wyoming Range Mule Deer Herd.

Department personnel also conducted monitoring associated with past and future treatments throughout the herd unit, which is discussed in more detail in the 2021 SHP Report.

Rapid Habitat Assessments

Rapid Habitat Assessments (RHA) were first implemented by the Department in 2015 to generally characterize conditions of important habitat types on the landscape within Mule Deer Initiative Herd Units. Summarized RHA data are used as a habitat component during herd population objective reviews to evaluate whether or not deer numbers are in balance with sustaining habitat at an acceptable level or higher quality condition.

Department personnel completed 2,626 acres of rangeland RHAs, 552 acres of aspen RHAs, and 106 acres of special feature RHAs within the Wyoming Range Herd Unit during 2021. Surveys were conducted in transitional, summer, and crucial winter range mule deer habitats.

4) Chronic Wasting Disease Management: The Wyoming Range mule deer herd is a Tier 1 surveillance herd, and specific efforts were directed at gathering CWD samples. The sample goal of 200 adult males was not obtained in 2021, but the desired sample goal was collected during the period from 2019-2021; a total of 300 samples were gathered during this period (Table 2). During the 2021 sampling period there was one (1) positive hunter-harvested adult male that tested positive. This adult male was harvested in the Deadman Creek drainage of Hunt Area 144. Samples in 2021 were collected without the assistance of CWD technicians, so it is felt a similar

level of effort and corresponding CWD samples should be expected into the foreseeable future. This level of effort is felt to be appropriate with the high profile and importance of this deer herd.

Table 2. CWD prevalence for hunter-harvested mule deer in the Wyoming Range Herd, 2021.

Year	Percent CWD-Positive and sample size (n) *Hunter Harvest Only*
	All Adult Male Deer (CI = 95%)
2019-2021	0.3% (0.0% - 1.8%, 1, n=300)

5.) **Harvest Field Checks:** Harvest field checks provide a relative indication of buck quality and, in addition to hunter comments received during the hunting season, can provide deer managers with the insight to assess hunter sentiment. A total of 283 bucks were field check in 2021. Areas 144 and 135 accounted for 39% (n=112) and 33% (n-94), respectively, of all antlered deer field-checked in 2021. The percentage of Class 3 (≥26") bucks tallied 16% (n=45) of all antlered deer checked in the field. Area 144 tallied 53% (n=24) of the Class 3 bucks, while areas 134, 135, 143 and 145 accounted for 4%, 24%, 2%, and 15%, respectively, of the remaining 2021 sample size (Appendix B).

During the current year a total of 116 Class 2 (≥20" – 26") bucks were examined in the field. Areas 135 and 144 accounted for 38% (n=44) and 44% (n=51), respectively, of the Class 2 bucks examined in 2021. The percentage of Class 2 bucks checked in Areas 143 and 145 accounted for 8% and 9%, respectively, of herd unit's field checked bucks (Appendix B).

6.) **Hunter Satisfaction**: Hunter satisfaction is a metric that can be evaluated as an index of population performance prior to and subsequent to substantial winter mortality events. Winter weather patterns exert a substantial effect on deer populations and on hunters' perception of the hunt following a winter mortality event. Consequently, hunters' perceptions of their deer hunting experience is an evaluation of the Department's deer management program.

These ratings are determined based on a hunter response of *Very Satisfied* or *Satisfied* following the outcome of their deer hunt. There have been multiple winters since 2010 when above normal winter mortality has been documented throughout the herd unit. It was following the severe winters of 2011, 2017, 2019, and 2020 when declines in hunter satisfaction were recorded in this herd unit (Appendix C). During the period from 2012 – 2016, and following the 2011 winter hunter satisfaction increased to some of the highest levels recorded in any deer population in Wyoming (Appendix C). Hunters reported favorable satisfaction ratings that exceeded 70% in most areas, and approached 80% in the Greys River, Area 144.

The factor that has complicated the sustained population growth and consequently hunter satisfaction, at least in the southern hunt areas, was the high herd unit wide winter survival noted in 2018. That year was followed by high winter mortality events on the southern (Cokeville, Kemmerer, and Evanston) winter ranges in 2019 and 2020. These regions support approximately 60% of the Wyoming Range wintering mule deer population. In Areas 134 and 135 which experienced three substantial winter mortality events in 2017, 2019, and 2020, hunter satisfaction was lower than the herd unit average. It was in these hunt areas where a substantial decline in hunter satisfaction was reported in 2017 (41%) and 2019 (40%). Hunter satisfaction in Areas 143, 144 and 145 was higher than the herd

unit average because these northern areas did not experience the higher losses observed during the 2019 winter as the southern areas (Appendix C). Since 2019 hunter satisfaction has been increasing in the northern hunt areas, especially in the Greys River (Area 144) and Salt River (Area 145) as high over winter survival has been observed on those winter ranges. The winter ranges along the east slope of the Wyoming Range near LaBarge support approximately 40% of the Wyoming Range deer herd, while Salt River winter ranges support <5% of the winter deer population.

7.) **Male Age at Time of Harvest and Antler Morphology Measurements**:

A metric that is essential in the management of male deer in the Wyoming Range herd is the data associated with antler morphology and age at time of harvest (Appendix D). Since antler width or spread, is perhaps the primary component in determining the "trophy" status of harvested buck deer, the Department initiated an effort in 1989 to collect the outside spread and age at time of harvest during routine field checks.

These data provide managers with the understanding that is derived from the morphology of antlers with a corresponding age of the buck at time of harvest. Average age, range of ages, oldest aged buck, and the corresponding antler width metrics are relevant to the public and provide a foundation to effective deer management in the Wyoming Range herd.

During the period from 2014 – 2021, buck deer antler morphology measurements and incisiform teeth were collected from 414 buck deer during routine field checks in Areas 143, 144, and 145 (Appendix D). The age of the harvested deer were determined using cementum annul aging methodology. These metrics are the results of an effort to sample buck deer older than 2+ years of age, and collect the corresponding antler spread associated with the age of the harvested buck.

During this 8-year period the average age of male deer was 4.87 years of age. Yearling bucks comprised less than 1% (n=2) of the 414 bucks aged. Buck deer aged 4, 5 and 6 years of age compromised 26%, 22% and 19%, respectively, of the antlered deer aged, while bucks that were 7, 8, 9, and 10 years of aged comprised 14% (n=60) of sample.

A total of 348 deer, or 84%, of the total number of deer aged during the period were harvested in Hunt Area 144. Areas 143 and 145 accounted for 7% (n=28) and 9% (n=38), respectively, of the deer aged.

Appendix A. Wyoming Range Mule Deer Herd, posthunt herd composition data, 2014-2021.

							Ratio:100 Females			
2014	Yrlng Males	Adult Males	Total Males	Does	Fawns	Total	Yrlng Males	Adult Males	Total Males	Fawns
HA134	100	138	238	565	466	1269	18	24	42	82
HA135	191	322	513	1386	1128	3027	14	23	37	81
HA143	291	271	562	1288	884	2734	22	21	43	68
144/145	Survey conducted in February 2015					1005				
TOTAL	582	731	1313	3239	2478	8035	18	22	40	76
2015										
HA134	81	173	254	737	406	1397	11	23	34	55
HA135	176	302	478	1188	828	2494	15	25	40	70
HA143	415	399	814	2005	1147	3966	21	20	41	57
144/145	Survey conducted in February 2016					440				
TOTAL	672	874	1546	3930	2381	8297	17	22	39	60
2016										
HA134	95	190	285	774	489	1549	12	24	36	63
HA135	182	380	562	1605	1008	3175	11	24	35	63
HA143	256	260	516	1430	723	2669	18	18	36	50
144/145	Survey conducted in February 2017					517				
TOTAL	533	830	1363	3809	2220	7910	14	22	36	58
2017*	Herd Unit Wide Antlered Deer, 3 points APR Hunt Season									
HA134	14	153	167	672	389	1228	2	23	25	58
HA135	47	282	329	1105	701	2135	4	25	30	63
HA143	111	348	459	1547	701	2707	7	22	30	45
144/145	Sightability Survey Conducted in February 2018					1405				
TOTAL	172	783	955	3324	1791	7475	5	23	29	54
2018*	Herd Unit Wide Antlered Deer, 3 points APR Hunt Season									
HA134	134	135	269	1223	721	2213	11	11	22	59
HA135	197	375	572	1752	1070	3394	11	21	33	61
HA143	178	239	417	1277	742	2436	14	19	33	58
144/145	Survey conducted in February 2019					823				
TOTAL	509	749	1258	4252	2533	8,866	12	18	30	59
2019*	Herd Unit Wide Antlered Deer, 3 points APR Hunt Season									
HA134	14	86	100	520	287	907	3	16	19	55
HA135	111	318	429	1346	730	2505	8	24	32	54
HA143	338	365	703	1706	1088	3497	20	21	41	64
144/145	Survey conducted in February 2020					142				
TOTAL	463	769	1232	3572	2105	7051	13	21	34	59
2020										
HA134	14	82	96	635	395	1126	2	13	15	62
HA135	50	260	310	1302	835	2447	4	20	24	64
HA143	120	225	345	937	672	1954	13	24	37	72
144/145	Survey conducted in February 2021					632				
TOTAL	184	577	751	2874	1902	6159	6	20	26	66
2021										
HA134	39	29	68	210	99	377	18	14	32	47
HA135	101	131	232	909	520	1661	11	14	25	57
HA143	141	140	281	620	491	1392	23	22	45	79
144/145	Survey conducted in February 2022					493				
TOTAL	281	300	581	1739	1110	3923	16	17	33	64

Appendix B

2012 - 2021 Harvest Age Structure by Hunt Area

for Mule Deer Herd MD131 - WYOMING RANGE - Hunt Area ALL

		MALES											FEMALES							
Year	Area	Juv	1	% 1	2+ C1	2+ C2	2+ C3	2+ UC	% 2+	Total Aged	Unk	Total Chkd	Juv	1	% 1	2+	% 2+	Total Aged	Unk	Total Chkd
2012	134	0	18	72%	0	0	0	3	28%	25	14	39	0	0	0%	1	100%	1	1	2
	135	0	20	35%	0	0	0	19	65%	57	21	78	0	1	33%	2	67%	3	3	6
	143	0	4	18%	0	0	0	16	82%	22	0	22	0	0	0%	0	0%	0	0	0
	144	0	7	6%	0	0	0	101	94%	108	1	109	0	0	0%	1	100%	1	0	1
	145	0	0	0%	0	0	0	8	100%	8	0	8	0	0	0%	0	0%	0	0	0
2013	134	0	1	50%	0	0	0	1	50%	2	0	2	0	0	0%	0	0%	0	0	0
	135	0	0	0%	0	0	0	7	100%	7	0	7	0	0	0%	1	100%	1	0	1
	143	0	4	44%	0	0	0	5	56%	9	0	9	0	0	0%	0	0%	0	0	0
	144	1	31	22%	0	0	0	107	77%	139	5	144	0	0	0%	3	100%	3	0	3
	145	0	4	22%	0	0	0	14	78%	18	4	22	0	0	0%	1	100%	1	0	1
2014	135	0	1	17%	2	1	0	2	83%	6	0	6	0	0	0%	3	100%	3	0	3
	143	0	7	41%	4	5	1	0	59%	17	0	17	0	0	0%	0	0%	0	0	0
	144	0	18	15%	1	0	0	100	85%	119	0	119	0	0	0%	3	100%	3	0	3
	145	0	0	0%	0	0	0	7	100%	7	0	7	0	0	0%	0	0%	0	0	0
2015	135	0	0	0%	0	0	0	0	100%	4	0	4	0	0	0%	0	0%	0	0	0
	144	13	0	0%	0	0	0	3	86%	96	0	96	0	0	0%	3	100%	3	0	3
	145	0	0	0%	0	0	0	1	100%	12	0	12	0	0	0%	2	100%	2	0	2
2016	144	1	10	8%	0	0	0	107	91%	118	1	119	0	0	0%	2	100%	2	1	3
	145	0	0	0%	0	0	0	12	100%	12	1	13	0	0	0%	0	0%	0	0	0
2017	134	0	5	11%	32	12	0	0	89%	45	0	45	0	0	0%	4	100%	4	1	5
	135	1	1	5%	8	9	3	0	91%	22	0	22	0	1	33%	2	67%	3	1	4
	143	0	0	0%	5	10	3	0	100%	19	0	19	0	0	0%	0	0%	0	0	0
	144	0	1	2%	7	24	7	0	98%	47	1	48	0	2	40%	3	60%	5	0	5
	145	0	0	0%	2	1	1	0	100%	6	0	6	0	0	0%	0	0%	0	0	0
2018	134	0	10	19%	27	16	0	0	81%	53	0	53	0	0	0%	1	100%	1	1	2
	135	2	17	17%	25	39	15	0	81%	98	0	98	0	0	0%	4	100%	4	0	4
	143	0	3	9%	5	20	6	0	91%	34	0	34	1	0	0%	1	50%	2	4	6
	144	0	3	7%	2	23	16	0	93%	44	0	44	0	0	0%	0	0%	0	2	2
	145	0	0	0%	0	2	0	0	100%	2	0	2	0	0	0%	0	0%	0	0	0

2012 - 2021 Harvest Age Structure by Hunt Area

for Mule Deer Herd MD131 - WYOMING RANGE - Hunt Area ALL

		MALES											FEMALES							
Year	Area	Juv	1	% 1	2+ C1	2+ C2	2+ C3	2+ UC	% 2+	Total Aged	Unk	Total Chkd	Juv	1	% 1	2+	% 2+	Total Aged	Unk	Total Chkd
2019	134	0	3	15%	13	3	1	0	85%	20	1	21	0	0	0%	2	100%	2	2	4
	135	0	3	17%	9	4	2	0	83%	18	2	20	0	0	0%	1	100%	1	0	1
	143	0	6	21%	5	13	4	0	79%	28	7	35	0	0	0%	1	100%	1	0	1
	144	0	3	5%	14	25	18	0	95%	60	2	62	0	0	0%	1	100%	1	0	1
	145	0	1	8%	7	3	1	0	92%	12	0	12	0	0	0%	0	0%	0	0	0
2020	134	0	0	0%	8	9	0	0	100%	17	0	17	0	0	0%	1	100%	1	0	1
	135	1	6	13%	19	17	3	0	85%	46	0	46	0	0	0%	2	100%	2	0	2
	143	0	5	23%	6	10	1	0	77%	22	0	22	0	0	0%	2	100%	2	0	2
	144	0	13	16%	17	38	13	0	84%	81	12	93	0	1	20%	4	80%	5	0	5
	145	0	0	0%	5	4	2	0	100%	11	0	11	0	0	0%	0	0%	0	0	0
2021	134	0	1	11%	5	1	2	0	89%	9	0	9	0	0	0%	1	100%	1	0	1
	135	0	9	10%	28	44	11	0	90%	92	2	94	1	1	11%	7	78%	9	2	11
	143	2	12	34%	11	9	1	0	60%	35	1	36	0	0	0%	7	100%	7	0	7
	144	0	12	11%	23	51	24	0	89%	110	2	112	0	0	0%	4	100%	4	1	5
	145	0	2	7%	9	11	7	0	93%	29	3	32	0	0	0%	1	100%	1	0	1

APPENDIX C

WYOMING RANGE MULE DEER HERD
(HUNT AREAS 134, 135, 143, 144, 145)

A SUMMARY OF HUNTER SATISFACTION WITH EMPHASIS ON BIG PINEY, GREYS RIVER, AND SALT RIVER 2011 – 2021

Prepared by:

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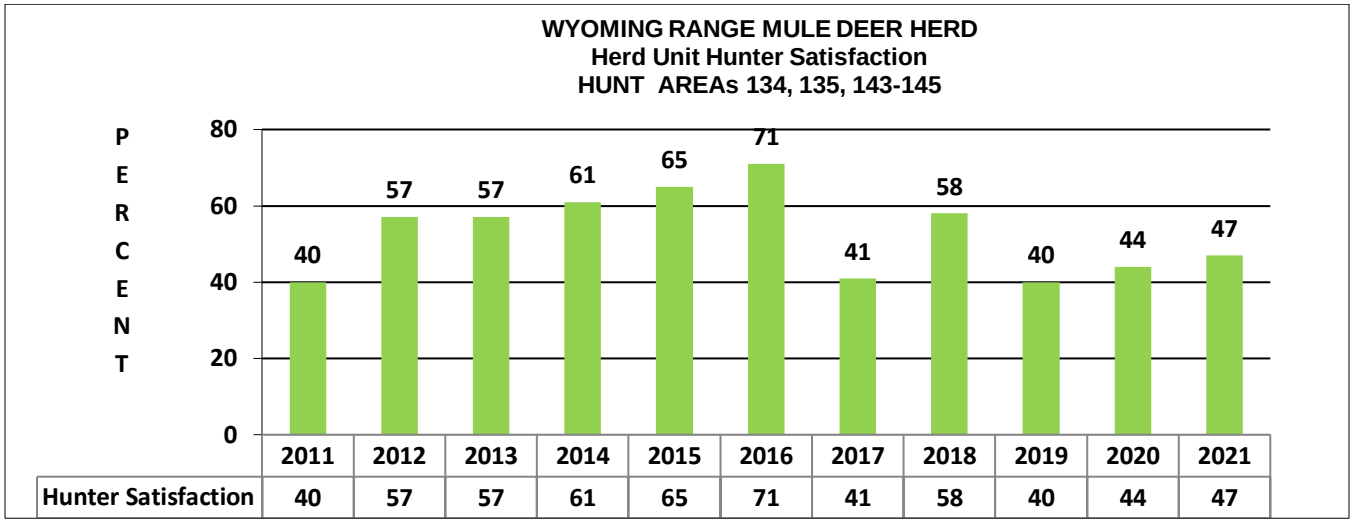
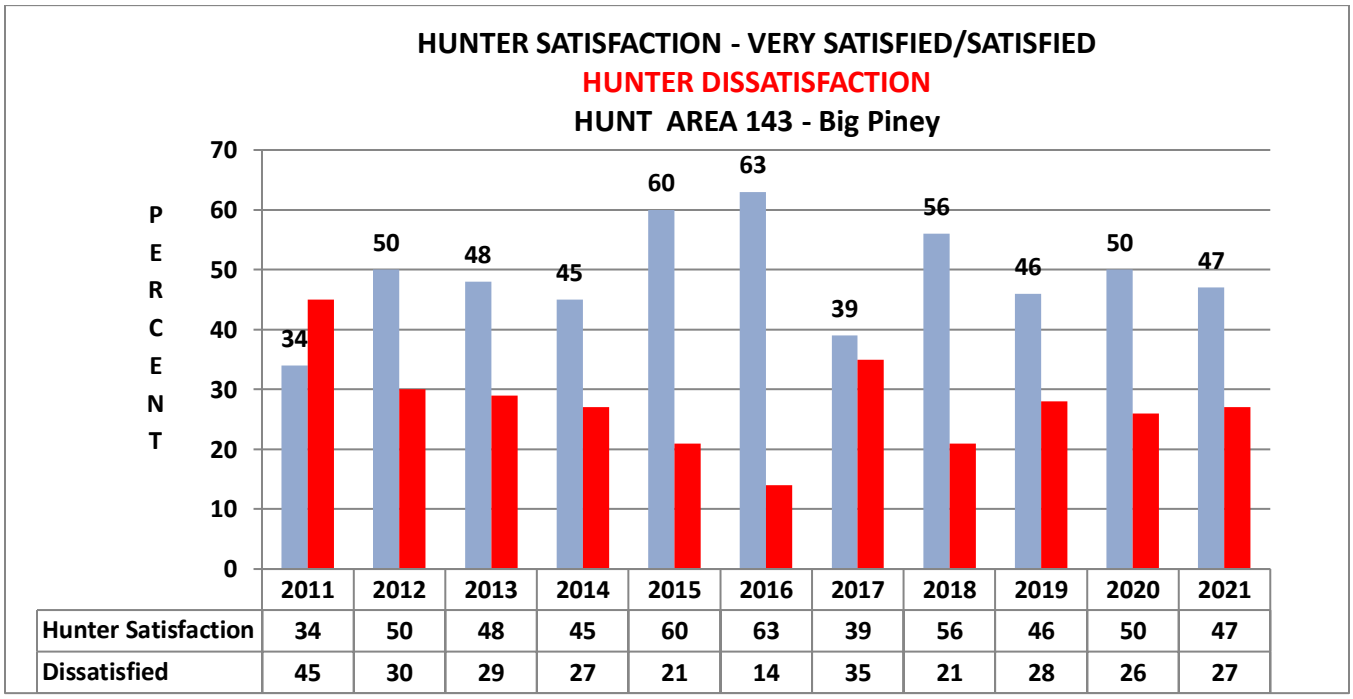
March 1, 2022

APPENDIX C

WYOMING RANGE MULE DEER HERD (HA 143)
PERCENT HUNTER SATISFACTION (*VERY SATISIFIED AND SATISFIED*)



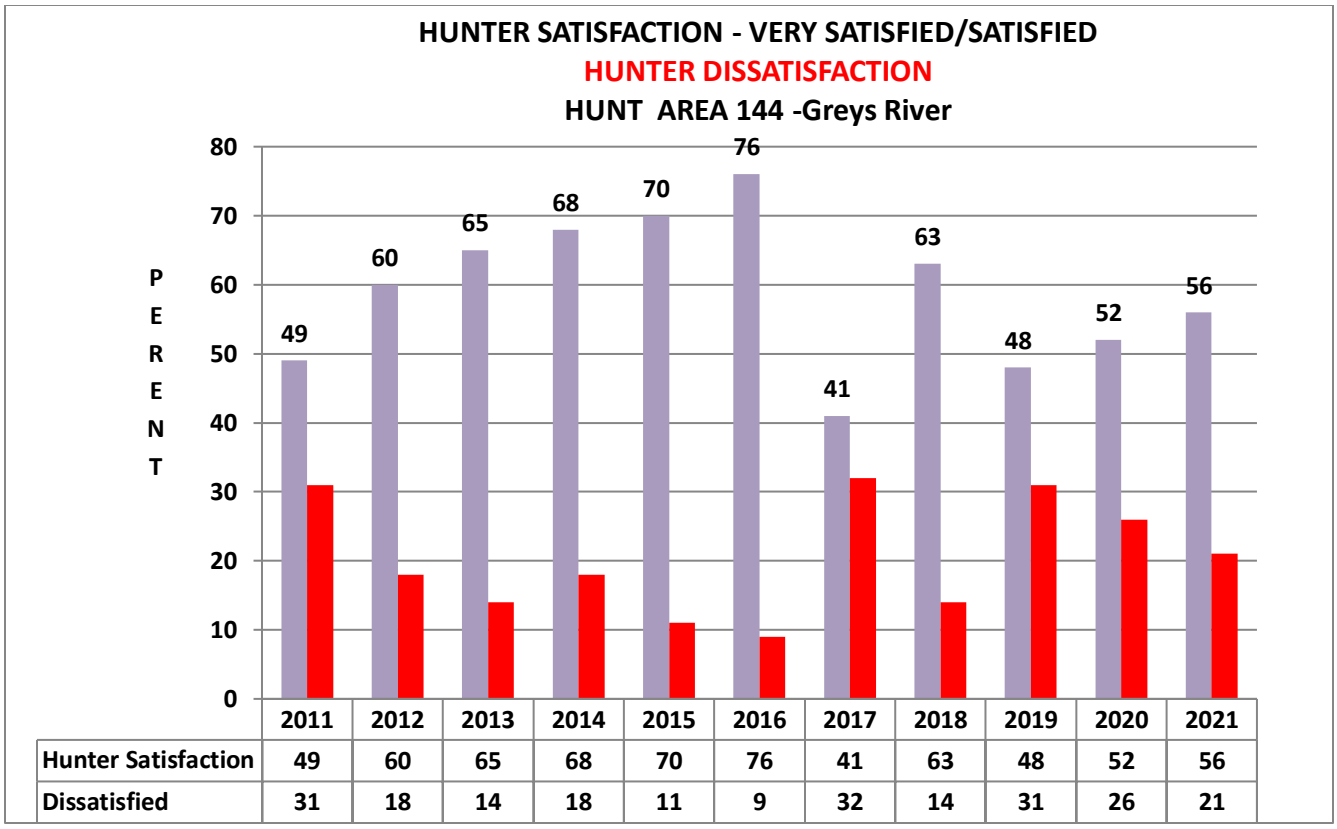
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hunter Satisfaction	40	57	57	61	65	71	41	58	40	44	47



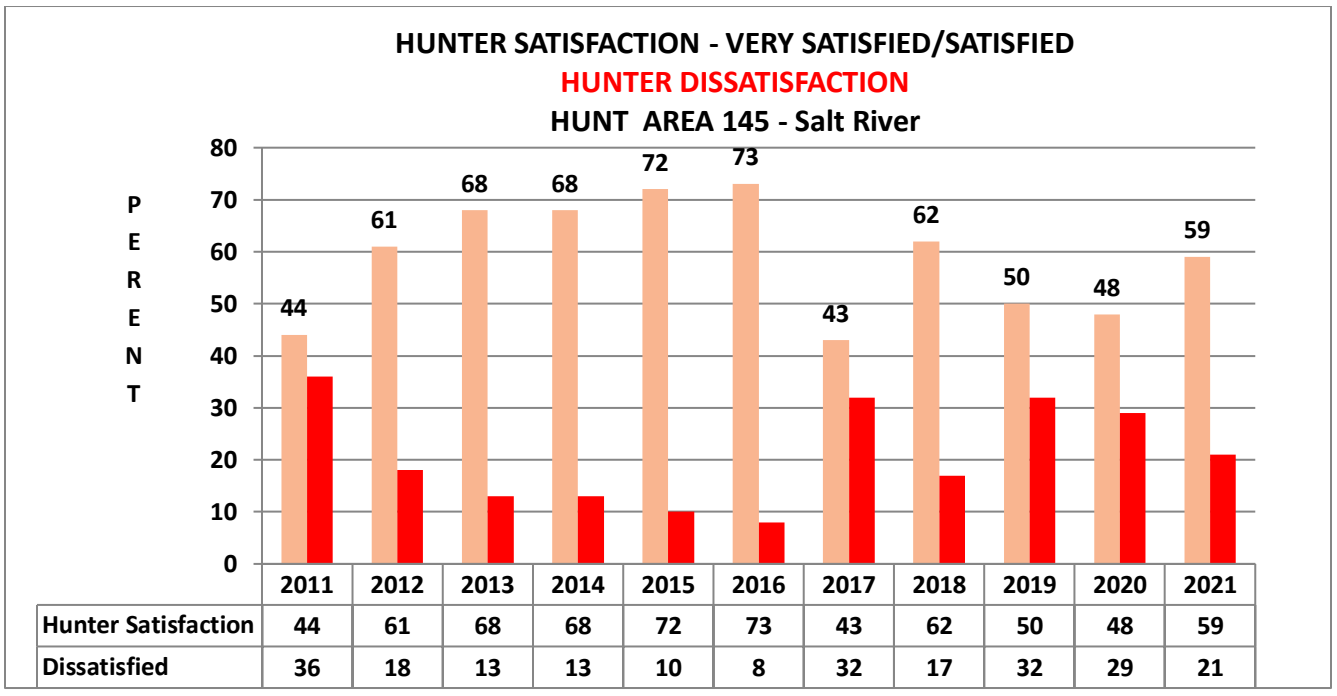
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hunter Satisfaction	34	50	48	45	60	63	39	56	46	50	47
Dissatisfied	45	30	29	27	21	14	35	21	28	26	27

APPENDIX C

WYOMING RANGE MULE DEER HERD (HAs 144, 145)
PERCENT HUNTER SATISFACTION (*SATISIFIED vs DISSATISFIED*)



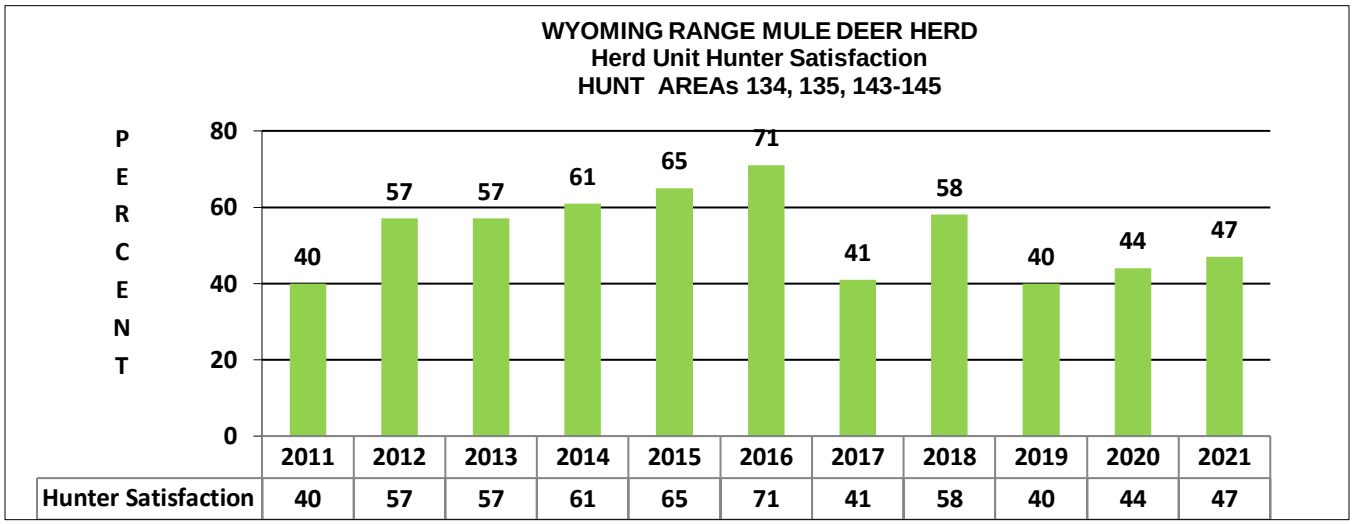
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hunter Satisfaction	49	60	65	68	70	76	41	63	48	52	56
Dissatisfied	31	18	14	18	11	9	32	14	31	26	21



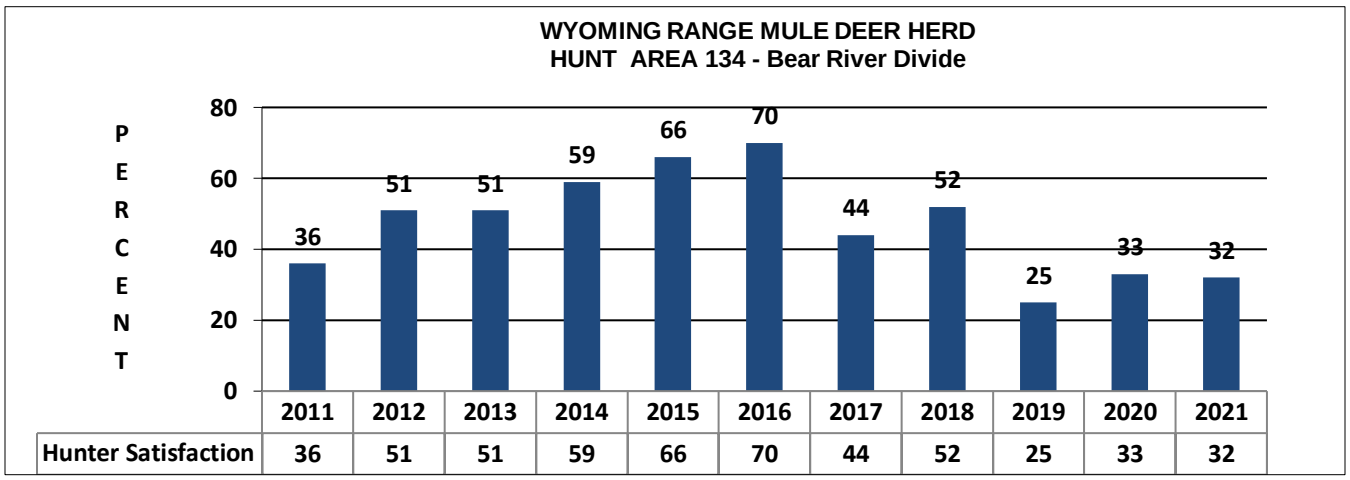
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hunter Satisfaction	44	61	68	68	72	73	43	62	50	48	59
Dissatisfied	36	18	13	13	10	8	32	17	32	29	21

APPENDIX C

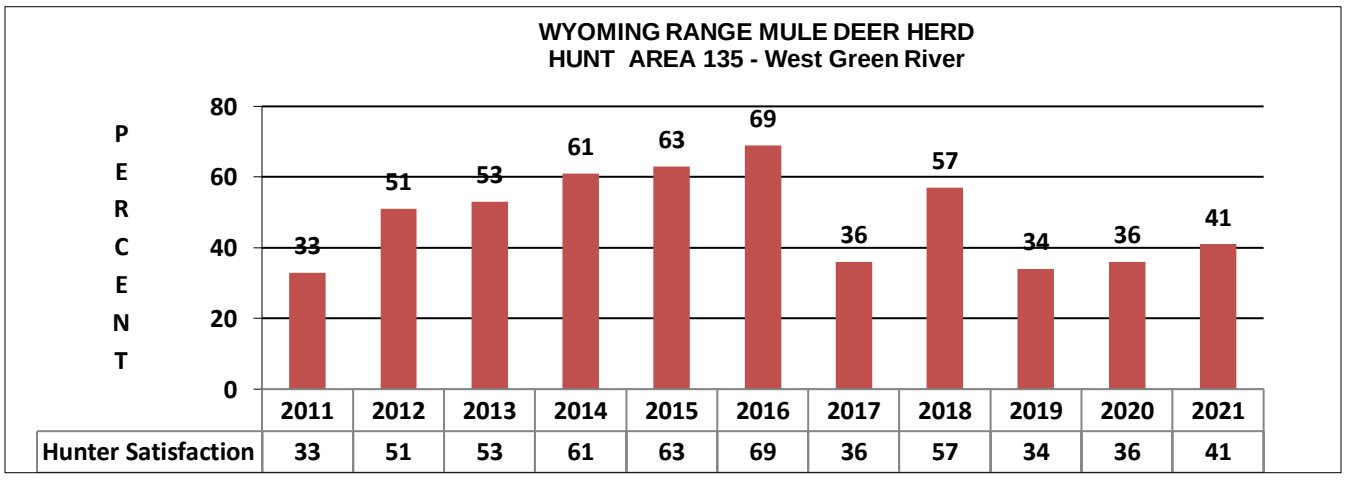
WYOMING RANGE MULE DEER HERD (HAs 134, 135)
PERCENT HUNTER SATISFACTION (*VERY SATISIFIED AND SATISFIED*)



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hunter Satisfaction	40	57	57	61	65	71	41	58	40	44	47



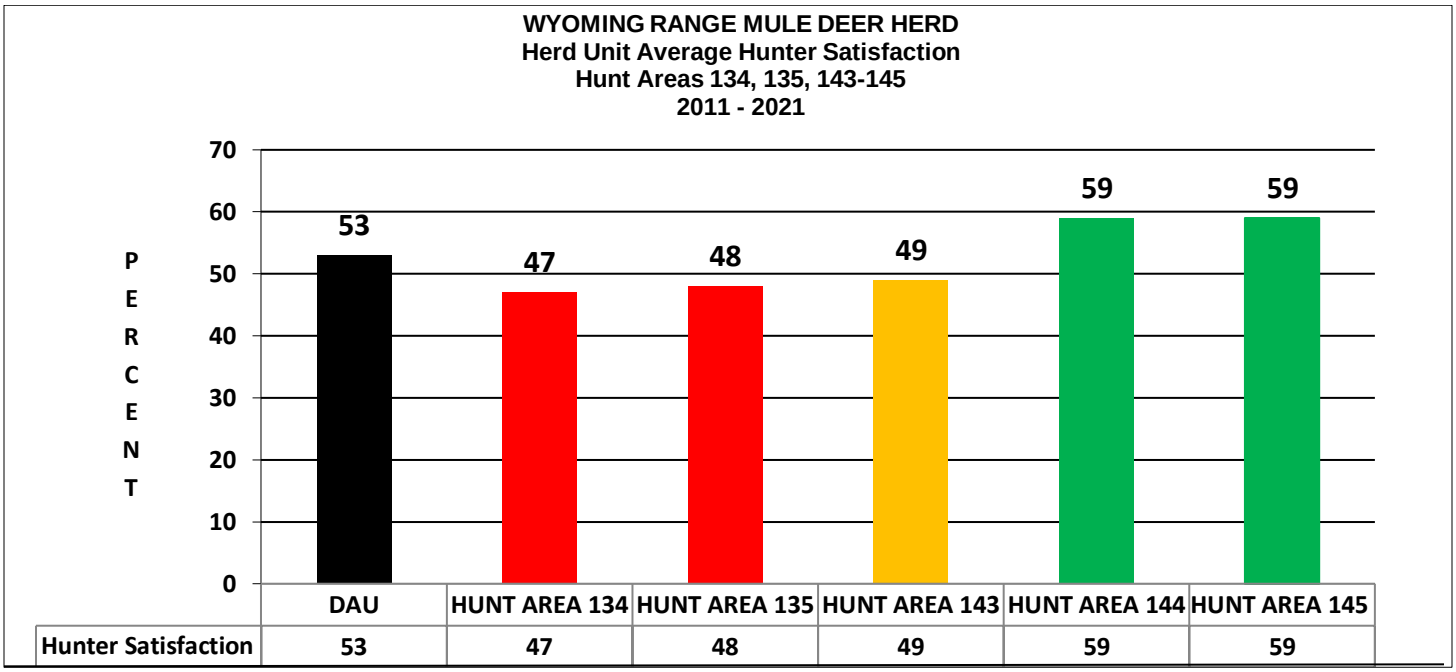
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hunter Satisfaction	36	51	51	59	66	70	44	52	25	33	32



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hunter Satisfaction	33	51	53	61	63	69	36	57	34	36	41

APPENDIX C

WYOMING RANGE MULE DEER HERD
AVERAGE HUNTER SATISFACTION (*VERY SATISIFIED AND SATISFIED*)
BY HUNT AREA
2011 - 2021



APPENDIX D

WYOMING RANGE MULE DEER HERD
HUNT AREAS 143, 144, 145

A SUMMARY OF THE AGES OF HUNTER-HARVESTED BUCK DEER 2014 – 2021

Prepared by:

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March 8, 2022

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2014

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
0	1.5	143	21	M	3	4
1	2.5	143	26	M	5	5
1	2.5	143	12	M	2	2
1	2.5	143	8.5	M	1	2
1	2.5	143	23	M	5	5
1	2.5	143	23.25	M	4	5
1	2.5	143	24.5	M	7	9
2	3.5	143	16	M	4	3
3	4.5	143	11.75	M	2	2
3	4.5	143	27	M	4	4
2	3.5	144	24	M	6	6
2	3.5	144	17.75	M	4	4
2	3.5	144	24	M	4	5
2	3.5	144	21.5	M	7	5
2	3.5	144	31.75	M	4	4
2	3.5	144	25	M	2	4
2	3.5	144	27	M	5	5
2	3.5	144	29	M	7	7
2	3.5	144	26	M	4	5
3	4.5	144	23	M	4	3
3	4.5	144	23	M	4	4
3	4.5	144	25.75	M	8	6
3	4.5	144	18	M	5	5
3	4.5	144	14	M	3	3
3	4.5	144	19	M	4	4
3	4.5	144	28	M	5	5
3	4.5	144	24	M	5	5
3	4.5	144	28	M	5	5
4	5.5	144	31.5	M	5	4
4	5.5	144	19.75	M	3	5
4	5.5	144	29.25	M	5	8
4	5.5	144	25.75	M	6	8
4	5.5	144	28	M	5	6
4	5.5	144	26	M	5	6
4	5.5	144	25.25	M	5	5
4	5.5	144	20.25	M	4	5
4	5.5	144	25	M	NA	NA
4	5.5	144	26	M	5	6

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2014

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
4	5.5	144	16.5	M	4	4
4	5.5	144	28.5	M	6	6
4	5.5	144	17.5	M	4	5
4	5.5	144	26	M	6	7
4	5.5	144	24.75	M	5	5
5	6.5	144	23.5	M	6	5
5	6.5	144	22	M	NA	NA
5	6.5	144	15	M	4	3
5	6.5	144	25	M	6	5
5	6.5	144	15.75	M	5	4
5	6.5	144	22	M	4	4
5	6.5	144	23.25	M	2	3
5	6.5	144	22.25	M	5	5
5	6.5	144	31.5	M	5	5
5	6.5	144	31.5	M	5	5
5	6.5	144	19.75	M	5	4
5	6.5	144	19.25	M	3	3
5	6.5	144	31.5	M	5	5
5	6.5	144	24.25	M	5	5
5	6.5	144	29	M	4	5
5	6.5	144	22.5	M	5	5
6	7.5	144	17	M	2	4
6	7.5	144	27.5	M	5	5
6	7.5	144	23	M	7	5
6	7.5	144	29.75	M	5	7
6	7.5	144	16	M	5	5
7	8.5	144	18	M	2	2
6	7.5	145	28	M	5	5
7	8.5	145	NA	M	NA	NA
7	8.5	145	NA	M	NA	NA
8	9.5	145	NA	M	NA	NA
9	10.5	145	30.24	M	6	8

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2015

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
2	3.5	143	17.5	M	3	2
3	4.5	143	15.5	M	6	5
3	4.5	143	22.75	M	5	5
3	4.5	143	23	M	4	4
3	4.5	143	23.5	M	4	5
5	6.5	143	22.75	M	NA	NA
6	7.5	143	28.75	M	4	6
6	7.5	143	25.5	M	4	5
1	2.5	144	27.25	M	5	5
1	2.5	144	18.75	M	3	4
2	3.5	144	NA	M	NA	NA
2	3.5	144	24	M	6	7
2	3.5	144	27	M	4	5
2	3.5	144	29.75	M	4	5
2	3.5	144	27.5	M	5	4
2	3.5	144	20.25	M	4	4
2	3.5	144	21	M	7	7
2	3.5	144	22.5	M	5	6
2	3.5	144	NA	M	3	3
2	3.5	144	26.5	M	6	6
2	3.5	144	26.25	M	5	5
3	4.5	144	29	M	5	5
3	4.5	144	25.5	M	5	5
3	4.5	144	25.5	M	5	5
3	4.5	144	29.25	M	5	5
3	4.5	144	27.5	M	5	5
3	4.5	144	17	M	3	4
3	4.5	144	32.5	M	5	6
3	4.5	144	27	M	5	5
3	4.5	144	23.75	M	7	5
3	4.5	144	24.5	M	5	4
3	4.5	144	27.25	M	3	4
3	4.5	144	17	M	4	4
3	4.5	144	25.5	M	5	5
3	4.5	144	17.75	M	4	4
4	5.5	144	19.5	M	5	5
4	5.5	144	22.75	M	5	6
4	5.5	144	30	M	5	6
4	5.5	144	24.5	M	5	5

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2015

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
4	5.5	144	25	M	5	5
4	5.5	144	19.5	M	4	4
4	5.5	144	22.5	M	5	6
4	5.5	144	26	M	5	6
4	5.5	144	27.75	M	5	5
5	6.5	144	9.5	M	2	3
5	6.5	144	28.5	M	7	8
5	6.5	144	23.5	M	7	7
5	6.5	144	17.25	M	3	3
5	6.5	144	21.25	M	5	5
5	6.5	144	18.5	M	5	4
6	7.5	144	29	M	4	6
6	7.5	144	23	M	9	5
6	7.5	144	25.5	M	4	5
6	7.5	144	20.25	M	4	4
7	8.5	144	24	M	4	5
7	8.5	144	23.5	M	4	4
5	6.5	145	28	M	NA	NA
6	7.5	145	25.75	M	5	4
6	7.5	145	27	M	5	6

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2016

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
1	2.5	144	16.5	M	3	3
2	3.5	144	14	M	4	5
2	3.5	144	22	M	4	4
2	3.5	144	16	M	3	4
2	3.5	144	14	M	3	3
2	3.5	144	23.25	M	5	5
2	3.5	144	16	M	5	5
2	3.5	144	19.75	M	4	4
2	3.5	144	19.25	M	4	4
2	3.5	144	18.5	M	5	4
2	3.5	144	18.5	M	5	5
3	4.5	144	21.25	M	4	4
3	4.5	144	14.25	M	5	5
3	4.5	144	23.75	M	4	5
3	4.5	144	22.25	M	5	5
3	4.5	144	21.5	M	5	5
3	4.5	144	22.25	M	5	5
3	4.5	144	20	M	5	5
3	4.5	144	18.25	M	4	4
3	4.5	144	20	M	5	5
3	4.5	144	24.75	M	5	5
3	4.5	144	24	M	3	4
3	4.5	144	19.5	M	4	3
3	4.5	144	20.25	M	5	4
3	4.5	144	22	M	5	5
3	4.5	144	22.25	M	5	5
3	4.5	144	18	M	3	3
3	4.5	144	24	M	5	5
3	4.5	144	23	M	5	5
3	4.5	144	24.5	M	4	5
3	4.5	144	24.25	M	5	5
3	4.5	144	23.25	M	5	5
4	5.5	144	24.75	M	5	4
4	5.5	144	28	M	7	6
4	5.5	144	24	M	4	4
4	5.5	144	23.75	M	5	5
4	5.5	144	25	M	5	6
4	5.5	144	22.75	M	6	6
4	5.5	144	25.25	M	8	8
4	5.5	144	27.75	M	5	6
4	5.5	144	31.5	M	5	5

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2016

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
4	5.5	144	23	M	6	6
4	5.5	144	20.75	M	5	5
5	6.5	144	27	M	5	5
6	7.5	144	26.5	M	4	2
6	7.5	144	26.25	M	6	6
6	7.5	144	26.75	M	6	6
6	7.5	144	28.5	M	4	5
6	7.5	144	29.75	M	7	5
6	7.5	144	27.5	M	5	4
6	7.5	144	26	M	5	5
7	8.5	144	23.5	M	5	6
7	8.5	144	29.5	M	4	4
8	9.5	144	29.25	M	4	6
4	5.5	145	NA	M	5	5

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2017

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
1	2.5	144	16	M	4	4
2	3.5	144	22	M	5	5
2	3.5	144	21.5	M	4	5
2	3.5	144	22.75	M	5	5
3	4.5	144	24	M	5	5
3	4.5	144	22	M	4	4
3	4.5	144	21.25	M	5	5
3	4.5	144	28	M	6	6
3	4.5	144	22	M	5	5
3	4.5	144	23.5	M	5	5
3	4.5	144	28.75	M	5	5
3	4.5	144	25.25	M	7	7
3	4.5	144	17.5	M	4	5
4	5.5	144	23.5	M	5	5
4	5.5	144	NA	M	4	4
4	5.5	144	20	M	4	4
4	5.5	144	27.5	M	5	5
5	6.5	144	25.25	M	5	5
5	6.5	144	23.75	M	4	4
5	6.5	144	29.25	M	5	5
5	6.5	144	22	M	4	5
5	6.5	144	23.25	M	6	6
6	7.5	144	25.25	M	6	5
5	6.5	145	23.5	M	5	5

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2018

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
2	3.5	143	19	M	4	4
3	4.5	143	21	M	5	5
4	5.5	143	16.5	M	2	4
4	5.5	143	23.5	M	6	6
6	7.5	143	23	M	4	4
2	3.5	144	16	M	4	5
2	3.5	144	19	M	5	5
3	4.5	144	21.5	M	5	5
3	4.5	144	28.25	M	5	5
3	4.5	144	30	M	6	9
3	4.5	144	20	M	5	5
3	4.5	144	23	M	5	5
3	4.5	144	31.25	M	5	5
3	4.5	144	25.25	M	5	5
3	4.5	144	27.75	M	5	5
3	4.5	144	21.25	M	5	4
3	4.5	144	20	M	6	6
3	4.5	144	24.5	M	5	5
3	4.5	144	20	M	3	7
4	5.5	144	25	M	5	6
4	5.5	144	22.5	M	5	6
4	5.5	144	23	M	6	5
4	5.5	144	25.25	M	5	4
4	5.5	144	29	M	5	6
4	5.5	144	23.5	M	3	3
4	5.5	144	27.5	M	5	5
4	5.5	144	24.25	M	5	4
4	5.5	144	28.25	M	6	10
4	5.5	144	25	M	5	5
5	6.5	144	26	M	6	7
5	6.5	144	28	M	5	5
5	6.5	144	26	M	8	8
5	6.5	144	32	M	6	5
5	6.5	144	26.25	M	6	5
5	6.5	144	28	M	4	4
5	6.5	144	28.5	M	5	5
6	7.5	144	25	M	5	5
6	7.5	144	29	M	6	5
7	8.5	144	25	M	5	5

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2018

Annuli	LabAge	**HuntArea**	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
5	**6.5**	**145**	**25.5**	**M**	**6**	**5**
5	**6.5**	**145**	**26**	**M**	**4**	**4**

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2019

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
2	3.5	144	16.5	M	3	3
2	3.5	144	20.25	M	5	5
2	3.5	144	18	M	4	5
2	3.5	144	18	M	3	4
3	4.5	144	31	M	5	5
3	4.5	144	24	M	5	5
3	4.5	144	19	M	5	4
4	5.5	144	20	M	4	5
4	5.5	144	16.5	M	5	5
4	5.5	144	26	M	5	7
4	5.5	144	26	M	4	4
4	5.5	144	25	M	4	5
4	5.5	144	27	M	7	5
4	5.5	144	22	M	6	5
4	5.5	144	22	M	8	7
4	5.5	144	24	M	6	6
4	5.5	144	30	M	5	4
5	6.5	144	24.75	M	5	5
5	6.5	144	21.5	M	5	4
5	6.5	144	24	M	5	6
5	6.5	144	28.5	M	4	7
5	6.5	144	26.25	M	6	6
5	6.5	144	24.5	M	4	4
5	6.5	144	22.5	M	7	8
5	6.5	144	29.5	M	5	4
6	7.5	144	17.5	M	6	6
7	8.5	144	26	M	8	6
2	3.5	145	15	M	3	4
3	4.5	145	31	M	4	5
3	4.5	145	26	M	3	2
4	5.5	145	29	M	5	5
6	7.5	145	27.5	M	8	6

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2020

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
0	1.5	143	12	M	2	2
2	3.5	143	24	M	5	5
1	2.5	144	14.5	M	4	4
2	3.5	144	11	M	3	3
2	3.5	144	12	M	3	3
2	3.5	144	17.75	M	3	3
2	3.5	144	NA	M	NA	NA
2	3.5	144	18	M	3	3
2	3.5	144	22	M	5	5
2	3.5	144	18.5	M	4	5
2	3.5	144	21	M	6	5
3	4.5	144	23.5	M	4	4
3	4.5	144	20	M	4	3
3	4.5	144	28	M	4	6
3	4.5	144	15.5	M	5	6
3	4.5	144	24.25	M	4	5
3	4.5	144	22	M	5	5
3	4.5	144	20.5	M	5	5
3	4.5	144	NA	M	5	5
4	5.5	144	24	M	5	6
4	5.5	144	26	M	8	7
4	5.5	144	26.5	M	5	4
4	5.5	144	24	M	5	5
4	5.5	144	23.5	M	5	5
4	5.5	144	23	M	5	5
4	5.5	144	24	M	5	5
4	5.5	144	28	M	6	6
4	5.5	144	24.5	M	5	6
4	5.5	144	25	M	6	5
4	5.5	144	NA	M	NA	NA
5	6.5	144	24	M	5	4
5	6.5	144	26.25	M	6	5
5	6.5	144	24.5	M	5	5
5	6.5	144	24.5	M	7	8
5	6.5	144	26	M	5	5
5	6.5	144	25.25	M	5	5
5	6.5	144	27	M	4	5
5	6.5	144	27	M	4	4
5	6.5	144	25	M	6	7
5	6.5	144	29	M	6	5

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2020

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
5	6.5	144	21	M	4	4
5	6.5	144	25	M	4	4
5	6.5	144	26	M	6	6
5	6.5	144	22.5	M	5	5
6	7.5	144	31.5	M	5	4
6	7.5	144	23.5	M	5	5
6	7.5	144	22.5	M	5	5
6	7.5	144	27	M	5	5
6	7.5	144	24.5	M	3	4
7	8.5	144	30	M	5	6
3	4.5	145	23	M	5	6
4	5.5	145	25.5	M	5	5
4	5.5	145	27	M	5	5
4	5.5	145	24.75	M	5	5
4	5.5	145	26	M	6	4
5	6.5	145	24.5	M	5	6
5	6.5	145	32	M	7	8
7	8.5	145	24	M	4	5

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2021

Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
2	3.5	143	25	M	5	5
5	6.5	143	27	M	9	10
7	8.5	143	NA	M	4	7
2	3.5	144	28.25	M	7	8
2	3.5	144	14	M	3	4
2	3.5	144	22	M	5	5
2	3.5	144	18	M	6	4
2	3.5	144	14	M	3	3
2	3.5	144	17.75	M	4	3
2	3.5	144	13.25	M	3	3
3	4.5	144	22	M	4	3
3	4.5	144	23	M	5	4
3	4.5	144	17.5	M	4	4
3	4.5	144	21	M	5	5
3	4.5	144	26	M	4	4
3	4.5	144	26	M	4	4
3	4.5	144	21.5	M	5	5
3	4.5	144	22	M	4	5
3	4.5	144	19.5	M	4	5
3	4.5	144	24	M	5	6
3	4.5	144	22	M	5	5
3	4.5	144	24	M	5	5
3	4.5	144	25.5	M	5	5
3	4.5	144	20.5	M	5	5
3	4.5	144	28	M	5	5
3	4.5	144	15	M	4	4
3	4.5	144	23	M	5	5
3	4.5	144	24.5	M	5	5
3	4.5	144	20	M	4	4
3	4.5	144	16.75	M	4	3
4	5.5	144	31	M	5	4
4	5.5	144	23.5	M	5	5
4	5.5	144	26	M	5	5
4	5.5	144	20.5	M	5	4
4	5.5	144	25.5	M	5	5
4	5.5	144	23	M	4	4
4	5.5	144	25	M	5	4
4	5.5	144	23.5	M	4	4

APPENDIX D

Wyoming Range Mule Deer Herd - Hunt Areas 143, 144, 145
A Summary of The Ages of Hunter-harvested Buck Deer
2021

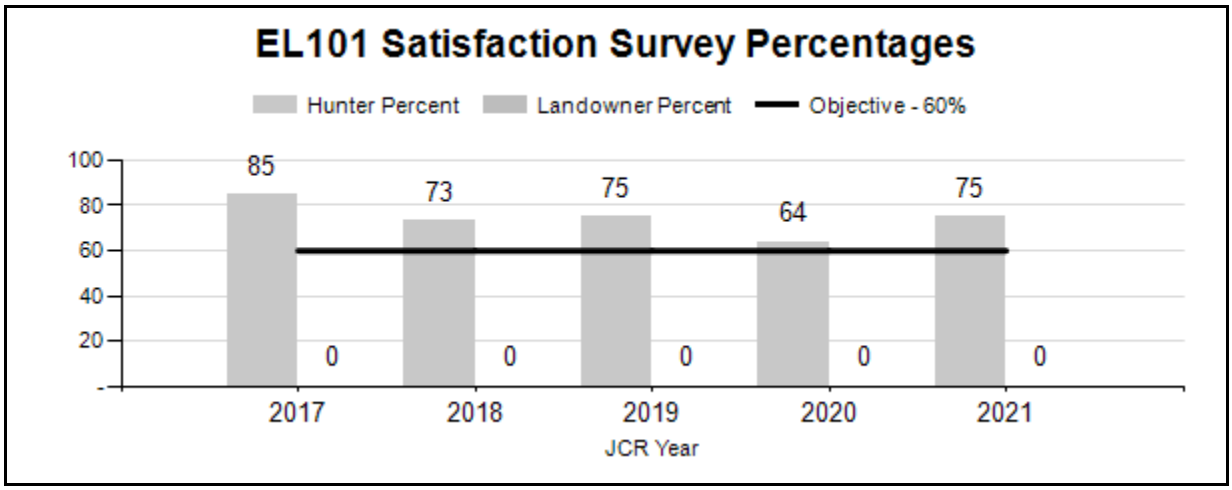
Annuli	LabAge	HuntArea	AntlerSpread	SexofAnimal	NumPtsLeft	NumPtsRight
4	5.5	144	26	M	6	7
4	5.5	144	NA	M	0	0
4	5.5	144	21	M	5	5
4	5.5	144	22	M	4	3
5	6.5	144	34.25	M	6	6
5	6.5	144	NA	M	0	0
5	6.5	144	20	M	5	6
5	6.5	144	27	M	3	4
5	6.5	144	26	M	3	5
5	6.5	144	29	M	5	5
5	6.5	144	26	M	4	4
5	6.5	144	31.25	M	3	3
5	6.5	144	24	M	5	5
5	6.5	144	31	M	4	5
5	6.5	144	22.25	M	5	5
5	6.5	144	NA	M	5	5
6	7.5	144	22.5	M	5	5
6	7.5	144	26	M	3	2
6	7.5	144	21	M	4	5
6	7.5	144	27	M	4	5
7	8.5	144	24	M	2	5
7	8.5	144	18	M	5	5
7	8.5	144	24	M	5	5
8	9.5	144	27.5	M	3	4
2	3.5	145	18	M	5	5
2	3.5	145	23	M	4	5
3	4.5	145	21	M	5	4
3	4.5	145	19.5	M	6	5
3	4.5	145	27	M	5	6
3	4.5	145	24.5	M	5	6
5	6.5	145	26	M	4	4
5	6.5	145	34.25	M	5	5
5	6.5	145	27.75	M	6	6
6	7.5	145	32.75	M	6	7
6	7.5	145	26	M	4	4
6	7.5	145	28	M	6	7
7	8.5	145	24	M	5	5

2021 - JCR Evaluation Form

SPECIES: Elk
PERIOD: 6/1/2021 - 5/31/2022
HERD: EL101 - TARGHEE
HUNT AREAS: 73
PREPARED BY: ALYSON COURTEMANCH

	2016 - 2020 Average	2021	2022 Proposed
Hunter Satisfaction Percent	73%	75%	75%
Landowner Satisfaction Percent	N/A	N/A	N/A
Harvest:	45	36	45
Hunters:	105	138	105
Hunter Success:	43%	26%	43 %
Active Licenses:	112	146	112
Active License Success:	40%	25%	40 %
Recreation Days:	785	780	785
Days Per Animal:	17.4	21.7	17.4
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	

Satisfaction Based Objective	60%
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	6



2022 HUNTING SEASONS
TARGHEE ELK HERD (EL101)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
73	Gen	Sep. 1	Sep. 19	Sep. 20	Oct. 25		Antlered elk, spikes excluded
73	6	Sep. 1	Sep. 19	Aug. 15	Jan. 31	35	Cow or calf valid on private land

2021 Hunter Satisfaction: 75% Satisfied, 13.6% Neutral, 11.4% Dissatisfied

2022 Management Summary

1.) Hunting Season Explanation: There were no changes to the 2022 hunting season. Hunting opportunity in this herd unit is limited due to limited access points to public lands, steep terrain, and fall migration of elk to Idaho. Despite relatively low overall harvest numbers (36 elk were harvested in 2021), hunter satisfaction in this herd unit is relatively high and the herd is meeting its hunter satisfaction objective.

2.) Management Objective Review: The next objective review is scheduled for 2024.

3.) Chronic Wasting Disease Management: This is a Tier 3 surveillance herd that is not a priority for CWD sampling at this time due to its very low elk harvest. Collecting an adequate sample size in this herd is not feasible at this time due to very low elk harvest over a very large area. CWD management in this herd focuses on opportunistic hunter-harvest and roadkill sampling and sampling any animals that are displaying signs of sickness. Two CWD samples were collected from hunter-harvested elk in 2021 (Table 1). CWD has not been detected in this elk herd, although confidence intervals are large due to very low sample size.

Table 1. Chronic wasting disease prevalence for hunter-harvested elk in the Targhee Elk Herd Unit in 2021 and for 3-year period of 2019-2021.

Year	Percent CWD-Positive and sample size (n) *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2021	0.0% (CI 0.0% - 84.2%, n=2)
2019 - 2021	0.1% (CI 0.0% - 70.8%, n=3)

2021 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2021 - 5/31/2022

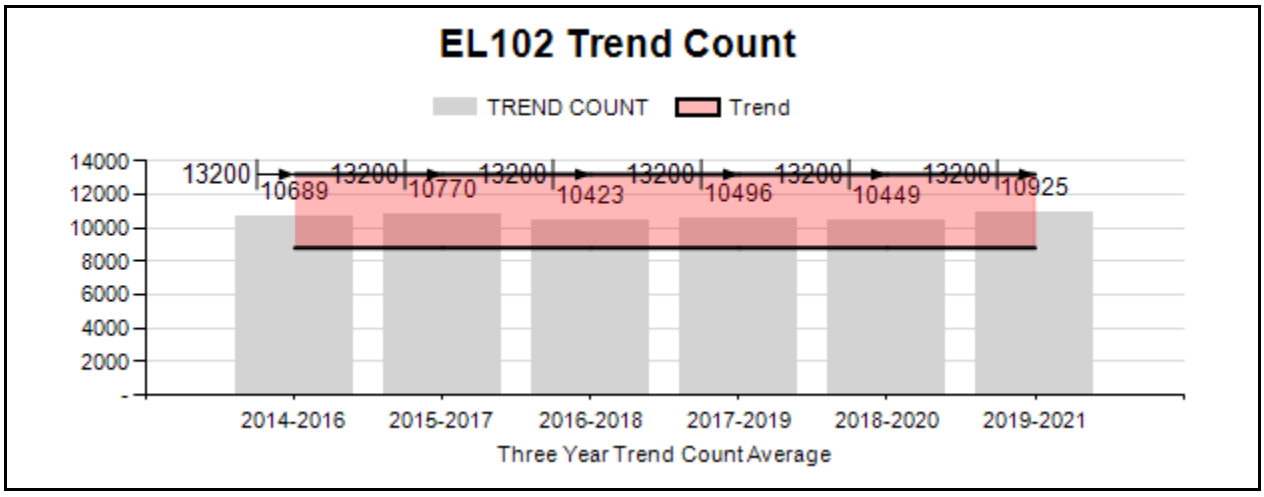
HERD: EL102 - JACKSON

HUNT AREAS: 70-72, 75, 77-83

PREPARED BY: ALYSON COURTEMANCH

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	10,598	11,057	11,000
Harvest:	1,240	743	1,240
Hunters:	2,875	2,292	2,875
Hunter Success:	43%	32%	43 %
Active Licenses:	3,015	2,408	3,015
Active License Success	41%	31%	41 %
Recreation Days:	18,621	14,368	18,621
Days Per Animal:	15.0	19.3	15.0
Males per 100 Females:	35	36	
Juveniles per 100 Females	20	21	

Trend Based Objective (± 20%)	11,000 (8800 - 13200)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	1%
Number of years population has been + or - objective in recent trend:	1



2022 HUNTING SEASONS
JACKSON ELK HERD (EL102)

Area	Type	Archery Dates		General Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
70	Gen	Sep. 1	Sep. 19	Sep. 20	Oct. 31		Antlered elk, spikes excluded
71	Gen	Sep. 1	Sep. 19	Sep. 20	Oct. 31		Antlered elk, spikes excluded
72							Closed
75	4			Nov. 5	Nov. 20	50	Antlerless elk; the Snake River Bottom portion of Area 75 shall be closed, also valid in that portion of Area 81 west of the Shadow Mountain Loop Road (U.S.F.S. Road 30340)
75	4			Nov. 21	Dec. 11		Antlerless elk; the Snake River Bottom and Antelope Flats portions shall be closed
75	6			Nov. 5	Nov. 20	425	Cow or calf; the Snake River Bottom portion of Area 75 shall be closed
75	6			Nov. 21	Dec. 11		Cow or calf; the Snake River Bottom and Antelope Flats portions shall be closed
77	Gen			Oct. 11	Oct. 25		General license and unused limited quota licenses, excluding limited quota cow or calf licenses, valid for any elk
77				Oct. 26	Nov. 23		General license and unused limited quota licenses; antlerless elk
77	Youth only			Nov. 24	Nov. 26		National Elk Refuge permits shall be issued only for those in possession of a full price youth elk license, any elk; youth only
77				Nov. 27	Dec. 16		General license and unused limited quota

							licenses, antlerless elk
78	Gen	Sep. 1	Sep. 25	Aug. 15	Oct. 31		Antlerless elk valid on private land
78	1			Aug. 15	Sep. 25	50	Any elk valid off national forest
78	1			Sep. 26	Jan. 31		Any elk valid in the entire area
78	2			Aug. 15	Oct. 31	50	Any elk valid on private land
78	6			Aug. 15	Sep. 25	175	Cow or calf valid off national forest
78	6			Sep. 26	Jan. 31		Cow or calf valid in the entire area
79							Closed
80	Gen	Sep. 1	Sep. 25	Sep. 26	Oct. 31		Any elk
80	6	Sep. 1	Sep. 25	Oct. 15	Nov. 20	300	Cow or calf
80	6			Nov. 21	Nov. 30		Cow or calf valid south of the Curtis Canyon and Sheep Creek Roads (U.S.F.S. Road 30440 and 30445)
81	Gen	Sep. 1	Sep. 25	Sep. 26	Oct. 25		Antlered elk, spikes excluded
82	Gen	Sep. 1	Sep. 25	Sep. 26	Oct. 25		Antlered elk, spikes excluded
82	4	Sep. 1	Sep. 9	Sep. 10	Nov. 15	40	Antlerless elk
82	4			Nov. 16	Jan. 31		Antlerless elk on private land, also valid on private land in Area 81
83	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 25		Antlered elk, spikes excluded

2021 Hunter Satisfaction: 66.1% Satisfied, 19.0% Neutral, 14.9% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 season structure was maintained similar to recent years and continues to focus antlerless harvest on short and medium-distance migratory herd segments and more conservative, mostly antlered harvest on long-distance migratory and Gros Ventre herd segments. The current hunting season structure has succeeded in stabilizing the herd to within a very small margin of the 11,000 mid-winter trend count objective. The 2021 mid-winter trend count was 11,057 elk and the calf:cow ratio was 21:100, which is slightly higher

than the 5-year average of 20:100. The adult bull:cow ratio was 26.7:100 and the spike bull:cow ratio was 9.0:100.

The 2021 harvest was fairly stable in the northern and eastern hunt areas of 70, 71, 81, 82, and 83. However, the relatively long and warm fall resulted in late elk migration, which impacted antlerless harvest in the southern hunt areas of 75, 77, and 80. Antlerless harvest in these areas and Hunt Area 78 was the second lowest in over a decade.

The main changes to the 2022 seasons included increasing the quota in Hunt Area 75 by 75 licenses due to low harvest in 2021 and slightly higher population in winter 2021/2022, lengthening the Hunt Area 77 season by 4 days, and shortening the closure for the north end of Hunt Area 80 by 6 days. The quota for the Hunt Area 82 Type 4 license was increased by 5 licenses.

2.) Management Objective Review: The Jackson Elk Herd objective review was scheduled for 2021. However, herd unit managers decided to postpone the objective review until the current Elk Feedgrounds Public Collaborative Process is completed. The results of this process may have direct implications to the evaluation of the herd unit objective. This process is expected to be completed in 2023.

3.) Chronic Wasting Disease Management: This is a Tier 1 surveillance herd. The first CWD-positive elk in this herd unit was detected in 2020 in Hunt Area 75. No additional positive elk have been detected. Prevalence estimates and sample sizes are presented below (Table 1). Sample quantity is excellent in this herd due to mandatory sampling in Hunt Areas 75 (Grand Teton National Park) and 77 (National Elk Refuge) and efforts by Department personnel in the Jackson Region to collect samples from meat processors, head barrels, and from hunter contacts in the field. However, sample distribution is skewed to the southern hunt areas that are primarily antlerless harvest where access is easier. Samples are limited from backcountry hunt areas, however Department personnel are working to improve this by prioritizing time spent contacting backcountry camps and trailheads as well as training hunters and outfitters to collect their own samples. The Department initiated the Elk Feedgrounds Public Collaborative Process in 2020, with the goal of developing a long-term management plan for feedgrounds. Currently, CWD management activities are focused on proper carcass disposal and surveillance through hunter-harvested elk, road-kills, and any elk that is exhibiting signs of sickness. In addition, the Department is employing general disease management principles on feedgrounds such as low-density feeding and reducing the length of the feeding season when feasible to reduce animal-to-animal contact and density.

Table 1. Chronic wasting disease prevalence for hunter-harvested elk in the Jackson Elk Herd Unit in 2021 and for 3-year period of 2019-2021.

Year	Percent CWD-Positive and sample size (n) *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2021	0.0% (CI 0.0% - 1.8%, n=201)
2019 - 2021	0.1% (CI 0.0% - 0.7%, n=815)

4.) Mid-Winter Trend Count: The 2021 mid-winter trend count for the Jackson Elk Herd was 11,057 elk. The number of elk supplemental feed on the National Elk Refuge (NER) was 7,229 and the calf:cow ratio was 16.4:100. The calf ratio on the NER was lower this year compared to 18:100 in both postseason 2018 2019 (there was no calf ratio obtained in 2020 due to survey limitations from COVID). There were a total of 2,533 elk counted in the Gros Ventre drainage, which is an increase of 1,047 elk (70%) compared to last year when 1,486 elk were observed. This is due to more elk staying in the Gros Ventre for the winter instead of migrating to the NER or other surrounding winter ranges. A total of 1,859 elk were on the Patrol Cabin Feedground and 674 on native winter range in this year's survey. Elk attended the Fish Creek Feedground briefly earlier in the winter but were not there during the trend count. Feeding did not occur at Alkali Feedground this year. The calf:cow ratio in the Gros Ventre 32.7 calves per 100 cows. The adult bull ratio was 13.0 and the yearling bull ratio was 8.1. There were 1,295 elk on other native winter ranges, primarily in areas east of the NER near Flat Creek and Curtis Canyon, north end of the NER, Spread Creek, Elk Ranch, and Buffalo Valley. Overall, winter conditions were mild to average. Several large snowstorms occurred around Christmas and the New Year, however January and early February experienced a long dry spell with very little snowfall. March was also generally warm and dry, however, several large snowstorms and prolonged cold and wet weather occurred in April and May.

5.) Research: Managers are continuing to focus collaring efforts in the Gros Ventre herd segment in order to better understand elk winter distribution, movements in and out of the drainage, and cow elk survival. These efforts began in fall 2018 and collaring efforts continued in 2019 and 2021 in order to maintain a sample size of elk. In total, 53 Gros Ventre cow elk have been collared over four years. Overall, 15 elk have died during the study. Two (13%) were harvested during cow elk seasons outside of the Jackson Herd Unit near Dubois or the Upper Green, one (7%) died of wounding loss on the NER during the Hunt Area 77 cow elk season, four (26%) died from predation (three from wolves and one from a mountain lion), one (7%) died from necrotic stomatitis, one (7%) died from a systemic infection from unknown cause, and 6 (40%) died of unknown causes. Annual survival has been between 84% - 90%. The collars have also increased our knowledge of Gros Ventre elk winter distribution and movements in and out of the Gros Ventre drainage. During some winters, more than 50% of the collared elk have migrated down drainage and wintered on the NER. These shifts in winter distribution help explain why mid-winter trend count numbers can fluctuate dramatically year to year in the Gros Ventre drainage. A current research collaboration with a PhD student at the University of California at Berkeley will help shed light on the factors that are driving these shifts, including wolf density and activity, weather, and snowpack.

6.) Other Management: In 2020, the U.S. Fish and Wildlife Service began its implementation of the Bison and Elk Management Step-Down Plan: a Structured Framework for Reducing Reliance on Supplemental Winter Feeding (2019) on the NER. Following the direction in this plan, supplemental feeding was ceased one week earlier in the 2020-21 winter and two weeks earlier in the 2021-22 winter compared to what would have traditionally occurred based on snow conditions. In the 2021-22 winter the NER also delayed the initiation of feeding by one week. Biologists from the WGFD and NER jointly monitor forage and snow conditions prior to the initiation of feeding and in the past, and have recommended that feeding start when available

forage has declined to an average of 300 lbs/acre on the NER. This threshold was reached on January 31, 2022 and the NER delayed feeding for one week until February 7, 2022. Managers closely monitored elk distribution and movements during the one week delay period, both through collar data and daily visual observations. We did not observe any large movements of elk during this time. A small group of approximately 50-100 elk exited the NER into Cache Creek but mostly stayed on Forest Service lands and did not cause private lands damage. Once supplemental feeding began, the majority of these elk returned to the NER. There were no observations of large groups of elk moving north and exiting the NER to the north or northwest.

2021 - JCR Evaluation Form

SPECIES: Elk
HERD: EL103 - FALL CREEK
HUNT AREAS: 84-85

PERIOD: 6/1/2021 - 5/31/2022

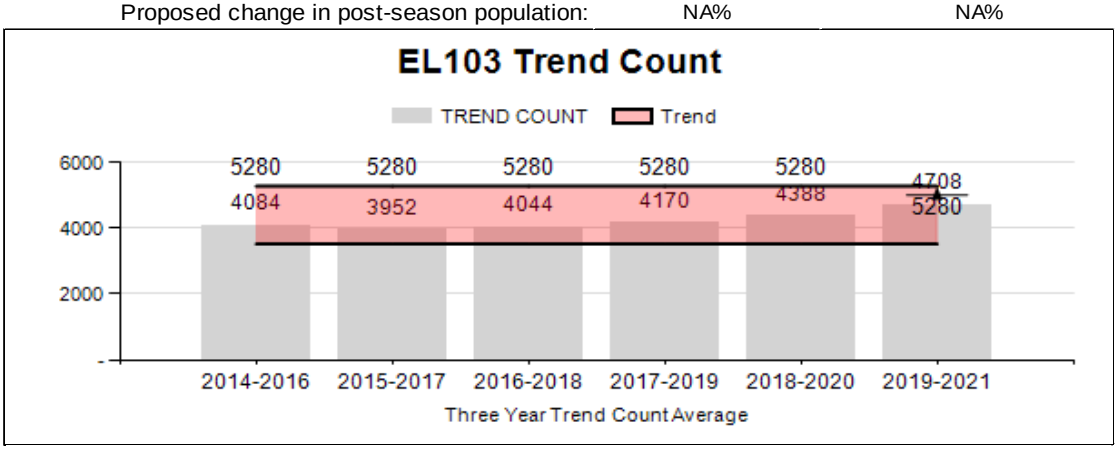
PREPARED BY: GARY FRALICK

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	4,241	5,052	4,750
Harvest:	523	455	560
Hunters:	1,532	1,474	1,550
Hunter Success:	34%	31%	36%
Active Licenses:	1,594	1,523	1,600
Active License Success	33%	30%	35%
Recreation Days:	9,810	9,251	9,910
Days Per Animal:	18.8	20.3	17.7
Males per 100 Females:	19	19	
Juveniles per 100 Females	28	31	

Trend Based Objective (± 20%)	4,400 (3520 - 5280)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	15%
Number of years population has been + or - objective in recent trend:	3

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

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



2022 HUNTING SEASONS
FALL CREEK ELK HERD (EL103)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
84	Gen	Sep. 1	Sep.25	Sep.26	Oct.31		Any elk, spikes excluded
84	Gen			Nov. 1	Nov. 7		Antlerless elk
84	1			Nov. 1	Jan.31	20	Any elk valid on private land west of U.S. Highway 191 and north and east of the Snake River starting at the South Park Bridge
84	6	Sep. 1	Sep. 25	Sep.26	Nov.20	300	Cow or calf; that portion of Area 84 east and south of Granite Creek to the Hoback River shall be closed after October 31
84,85	7			Aug. 15	Jan. 31	250	Cow or calf valid on private land in Area 84; also valid in that portion of Area 85 on or within 200 yards of irrigated land north of Fall Creek
85	Gen	Sep. 1	Sep. 25	Sep.26	Oct.31		Any elk, spikes excluded
85	6	Sep. 1	Sep. 25	Sep.26	Oct. 31	100	Cow or calf

2021 Hunter Satisfaction: 72% Satisfied, 17% Neutral, 10% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 hunting season structure promotes any elk hunting, (with spikes excluded) from September 26 - October 31 because of the high number of elk observed during postseason trend counts (but remaining within the population trend objective range). Public sentiment, primarily from resident hunters, supported more opportunity to harvest antlerless elk in this herd. Any elk hunting opportunities, in which hunters may select antlerless elk can decrease hunting pressure on the antlered segment of the population and thereby potentially increase the number of antlered elk observed in the postseason population.

A November general license season in Area 84 provides additional opportunity to harvest antlerless elk, again due to the increase in elk numbers documented during the current postseason trend survey. In addition, the number of Type 6 licenses valid for cow or calf only in Area 84 increased from 50 to 300 licenses and the closing date was extended from November 10 to

November 20. The later closing date in November for Type 6 license holders offers up to 81 days of hunting recreation.

A modest increase in the number of Type 6 cow calf licenses from 50 to 100 licenses was made in Area 85. The management strategy associated with the issuance of Type 7 licenses has proven to be popular with the hunting public and as a result, these limited quota licenses increased from 225 to 250 licenses in 2022. These late season hunts provide an opportunity to harvest elk in areas where depredation to privately stored crops and/or co-mingling with livestock occurs.

2.) **Management Objective Review**: The Fall Creek elk herd postseason trend objective is 4,400 elk. The postseason trend count objective was last reviewed by the public, and approved by the Wyoming Game and Fish Commission, in 2017. The next objective review is scheduled for 2022.

3.) **Herd Unit Evaluation**: The number of elk counted during postseason surveys increased from 4,400 in 2021 to 5,052 in 2022 (Appendix A). The increase in the number of elk counted was largely observed on the Camp Creek and Horse Creek feedgrounds. The number of elk increased from a combined 2,300 elk in 2021 to 2,900 elk in 2022 on these feedgrounds. The increase in elk numbers, especially in Area 84, warranted a more liberal approach to elk management in 2022. Consequently, a November general season for antlerless elk and an increase in the number of Area 84 Type 6 licenses were adopted in order to decrease the number of elk on the Camp Creek and Horse Creek feedgrounds.

The spikes excluded restriction, while shown to have no positive effect on increasing bull:cow ratios or total numbers of 2+-year old bull elk, was kept in place. The popularity of this season with segments of the hunting public, based in part on hunter satisfaction surveys, encouraged the Department to continue with this management program.

4. **Chronic Wasting Disease Management:** This is a Tier 2 Surveillance herd. No CWD positive elk have been documented in this herd unit (Table 1). Sample sizes have been quite good due to efforts by Department personnel in the Jackson Region to collect samples from meat processors, head barrels, and from hunter contacts in the field. Currently, CWD management activities are focused on proper carcass disposal and surveillance through hunter-harvested elk, road-kills, and any elk that is exhibiting signs of sickness. In addition, the Department is employing general disease management principles on feedgrounds such as low-density feeding and reducing the length of the feeding season when feasible to reduce animal-to-animal contact and density.

Table 1. Chronic wasting disease prevalence of hunter-harvested elk in the Fall Creek Herd Unit.

Year	Percent CWD-Positive and sample size (n) *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2019-2021	0.0% (0.0% - 1.7%, n=216)

Appendix A. Fall Creek Elk Herd, posthunt herd composition data, 2016-2021.										
							Ratio:100 Females			
2016	Adult Males	Yrlng Males	Total Males	Cows	Calves	Total	Adult Males	Yrlng Males	Total Males	Calves
84 HCFG	116	76	192	833	281	1306				
84 CCGF	37	46	83	485	118	686				
84 SPFG	117	90	207	647	250	1104				
84 NR	25	3	28	19	9(92)	148				
85 DCFG	72	57	129	627	240	996				
85 NR	9	1	10	1	0(35)	46				
TOTAL	376	273	649	2612	898(127)	4286	14	10	24	34
2017										
84 HCFG	115	52	167	787	148	1102				
84 CCGF	5	12	17	446	47	510				
84 SPFG	73	42	115	609	218	942				
84 NR	24	7	31	64	25(59)	179				
85 DCFG	23	30	53	551	85	689				
85 NR	11	15	26	44	24(240)	334				
TOTAL	251	158	409	2501	547(299)	3756	10	6	16	22
2018										
84 HCFG	78	50	128	927	203	1258				
84 CCGF	11	28	39	512	157	708				
84 SPFG	74	42	116	513	167(50)	846				
84 NR	22	9	31	61	36(110)	238				
85 DCFG	48	29	77	595	201	873				
85 NR	8	8	16	111	25(15)	167				
TOTAL	241	166	407	2719	789(175)	4090	9	6	15	29
2019										
84 HCFG	181	89	270	1194	314	1778				
84 CCGF	10	27	37	563	201	801				
84 SPFG	88	45	133	553	185	871				
84 NR	18	13	31	46	29(56)	162				
85 DCFG	54	39	93	705	177	975				
85 NR	2	5	7	12	14(45)	78				
TOTAL	353	218	571	3073	920(101)	4665	11	7	18	30
2020										
84 HCFG	124	43	167	671	205	1043				
84 CCGF	19	39	58	990	201	1249				
84 SPFG	63	48	111	541	134	786				
84 NR	44	11	55	139	26(175)	395				
85 DCFG	28	14	42	398	78	518				
85 NR	15	2	17	30	1(369)	417				
TOTAL	293	157	450	2769	645(544)	4408	10	6	16	23
2021										
84 HCFG	175	125	300	1314	320	1934				
84 CCGF	14	50	64	688	203	955				
84 SPFG	72	60	132	539	193	864				
84 NR	1	0	1	0	0(174)	174				
85 DCFG	47	42	89	660	265	1014				
85 NR	6	1	7	0	0(111)	111				
TOTAL	315	278	593	3201	981(277)	5052	10	8	18	31

2021 - JCR Evaluation Form

SPECIES: Elk
HERD: EL105 - AFTON
HUNT AREAS: 88-91

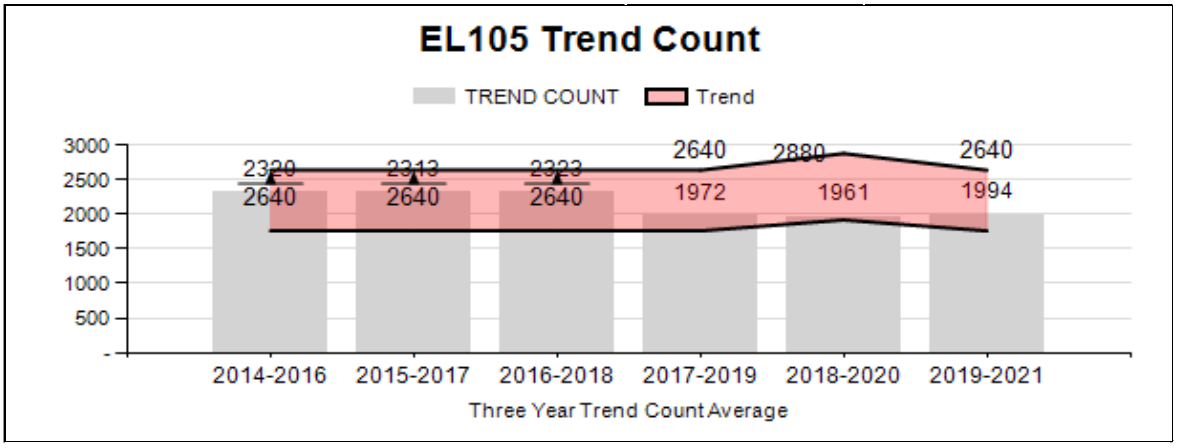
PERIOD: 6/1/2021 - 5/31/2022
PREPARED BY: GARY FRALICK

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	2,197	1,968	2,050
Harvest:	870	848	860
Hunters:	2,600	2,367	2,290
Hunter Success:	33%	36%	38 %
Active Licenses:	2,704	2,475	2,500
Active License Success	32%	34%	34 %
Recreation Days:	16,616	15,293	15,800
Days Per Animal:	19.1	18.0	18.4
Males per 100 Females:	20	27	
Juveniles per 100 Females	33	57	

Trend Based Objective (± 20%)	2,200 (1760 - 2640)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	-10.5%
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:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%
Total:	NA%	NA%
Proposed change in post-season population:	NA%	NA%



2022 HUNTING SEASONS
AFTON ELK HERD (EL105)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
88	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	40	Any elk
88	1	Sep. 1	Sep. 30	Nov. 1	Jan. 31		Antlerless elk valid south of Peterson Lane and south and west of the Greys River Wildlife Habitat Management Area Elk Fence
89	Gen	Sep. 1	Sep. 30	Oct.15	Oct. 19		Any elk
89	Gen			Oct. 20	Oct. 25		Antlered elk
90	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 19		Any elk
90	Gen			Oct. 20	Oct. 25		Antlered elk
90	6	Sep. 1	Sep. 30	Oct. 15	Oct. 25	50	Cow or calf
91	Gen	Sep. 1	Sep. 30	Oct.15	Oct. 31		Any elk
91	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	100	Any elk
91	1			Nov. 1	Dec. 31		Antlerless Elk
91	1			Jan. 1	Jan. 31		Antlerless elk in the entire area. Archery, muzzle loading firearm or shotgun only in that portion of Area 91 south of Cedar Creek and east of Muddy String Road (Lincoln County Road 117), north of Lost Creek Road (Lincoln County Road 120), and north of Lost Creek off national forest
91	6	Sept. 1	Sept. 30	Oct. 1	Dec.31	250	Cow or calf

91	6			Jan. 1	Jan. 31		Cow or calf valid in the entire area. Archery, muzzle loading firearm or shotgun only in that portion of Area 91 south of Cedar Creek and east of Muddy String Road (Lincoln County Road 117), north of Lost Creek Road (Lincoln County Road 120), and north of Lost Creek off national forest
91	7	Sept.1	Sept. 30	Nov. 1	Jan. 31	100	Cow or calf valid west of U.S. Highway 89 and south of Wyoming Highway 239

2021 Hunter Satisfaction: 73% Satisfied, 17% Neutral, 11% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 hunting season was designed to promote population growth, especially of antlered elk in the Greys River segment of the population (Hunt Areas 89 and 90).

In Areas 89 and 90, the 2022 hunting season represents the second year of shortened seasons designed to promote an increase in total elk numbers, and specifically bull numbers, observed on native winter ranges and on the Greys River and Forest Park feedgrounds (Appendix A). The general, any elk season is five (5) days, October 15 to October 19 to reduce hunting pressure on the antlered segment of the population. The antlered elk portion of the hunt will continue from October 20 to October 25.

The seasons in Area 90 were designed to address one of the lowest elk counts (N=399) documented on the Forest Park feedground since its inception in 1979, and represents one of the shortest hunting seasons in the upper Greys River in recent history.

In Area 91, the current season structure continues with a significant departure in historical elk management along the Idaho-Wyoming Stateline. In an attempt to address long-term, chronic damage issues and potential elk-livestock co-mingling concerns, a Type 7 license focused on antlerless elk along the Idaho-Wyoming Stateline from November to January was continued for 2022. Managers believe this continued management response to increasing elk numbers, largely from elk moving into Wyoming from Idaho, will alleviate damage and co-mingling concerns along a portion of Area 91 that historically has proven difficult to manage. In order to accommodate access to private property and not over subscribe the number of licenses that will be commensurate with access opportunity, the number of Type 7 licenses were reduced from 200 to 100 licenses.

No changes are proposed in Area 88 in 2022.

2.) **Management Objective Review**: The Afton elk herd postseasons trend objective is 2,200 elk. The postseason trend count objective of 2,200 elk was last reviewed by the public and approved by the Wyoming Game and Fish Commission in 2017. The next objective review is scheduled for 2022.

3.) **Herd unit Evaluation**: Recent management strategies have focused on increasing overall elk numbers and specifically that of bulls in the Greys River (Hunt Areas 89 and 90). This strategy of shortening the general license hunting season, and closing the general any elk season on the same day in both areas was continued for 2022, and enjoyed widespread public support.

In Area 91, management efforts to promote late season antlerless harvest and reduce damage to stored crops and the potential for elk to co-mingle with livestock on private lands were continued.

4). **Chronic Wasting Disease Management**: This is a Tier 1 surveillance herd. No CWD positive elk have been documented in this herd unit (Table 1). Sample sizes in this herd are quite good due to Regional efforts by Department personnel to collect samples from meat processors, head barrels, and from hunter contacts in the field. Currently, CWD management activities are focused on proper carcass disposal and surveillance through hunter-harvested elk, road kills, and any elk that is exhibiting signs of sickness. In addition, the Department is employing general disease management principles on feedgrounds such as low density feeding and reducing the length of the feeding season when feasible to reduce animal-to-animal contact and density.

Table 1. Chronic wasting disease prevalence for hunter-harvested elk in the Afton Elk Herd Unit.

Year	Percent CWD-Positive and sample size (n) *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2019-2021	0.0% (0.0% - 1.8%, n=204)

5. **Archery Hunting in the Afton Elk Herd - A Historical Perspective of Archery Only Licenses**

Archery hunters have played a substantial, historical role in the management of antlered elk in the Afton elk herd that dates back to the late 1980s. It was during the period from 1987 to 1989 that limited quota archery hunting opportunity was provided in Areas 89, 90, and 91. In 1987 and 1988, 100 limited quota archery only licenses were issued, and in 1989, a total of 150 licenses were issued that were valid in those three hunt areas. At the time, this archery only license was only one of two areas in the state to offer archery only hunting with limited quota hunting opportunity.

The limited quota archery only licenses generated controversy from hunters outside of the Star Valley area. Archery hunters from other areas of the state had grown accustomed to the general license archery hunting opportunity and were now excluded from hunting the Greys River and Salt River hunt areas. Furthermore, a very low number of archers from the Star Valley area successfully petitioned the Department to make the change to limited quota archery only seasons.

The limited quota archery only license was ultimately discontinued in 1990 because "*archers were not buying all the limited quota permits. This season was changed because of public outcry (outside of Star Valley) and the either/or restriction could not be justified biologically"* (Wyoming Game and Fish Department, 1989 Afton Elk Job Completion Report, page 74).

Recent Archery Harvest History: 2015 -2021

During the last five years the number of hunters expressing concerns regarding the perceived increase in the number of archery hunters and the declining quality of bull elk being harvested during hunting seasons in Greys River (Areas 89 and 90) have increased. Written public comments received during the 2021 hunting season and 2022 season setting process were in general supportive of future restrictions on general license archery hunting. The public call for restrictions on archery hunting centered on a reduction in the number of archery season days in September, which would be consistent with the reduced number of days during the general rifle elk season in October in Areas 89 and 90 in 2021 and 2022.

Recent archery harvest data indicates the Afton elk herd reported the highest number of elk harvested in herds administered by the Jackson and Pinedale Regions in 2020 (Figure 1) and 2021 (Figure 2). During the period from 2015 to 2021 the percentage of elk harvested by archery hunters in the Afton elk herd has increased by an estimated 31% (Figure 2).

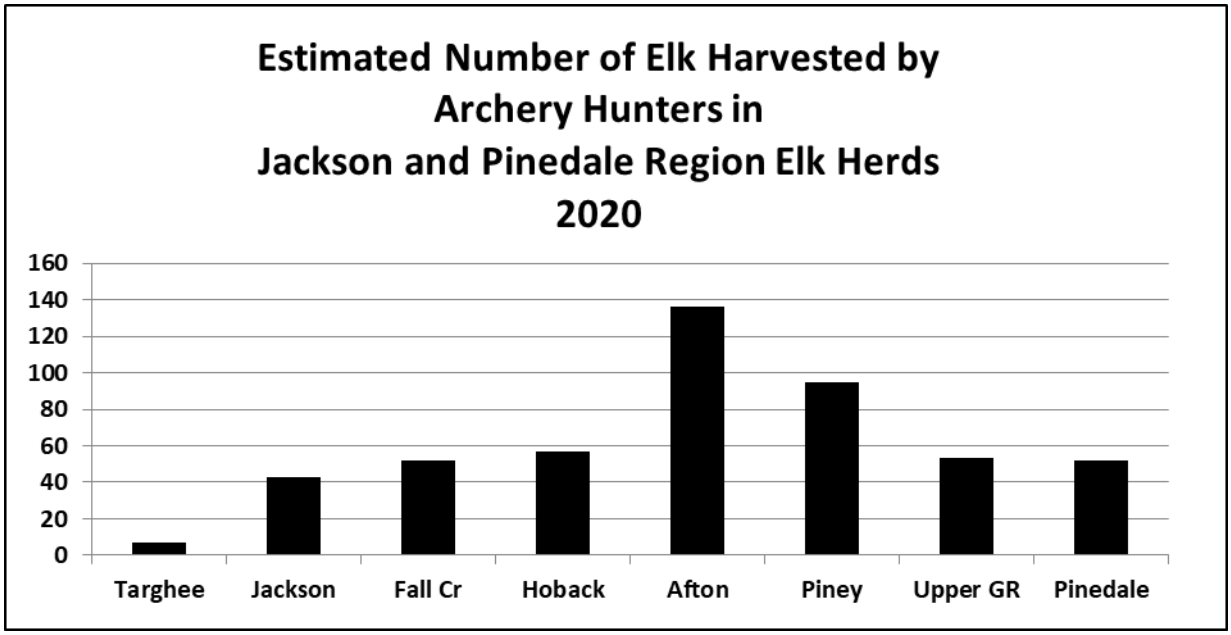


Figure 1. The number of elk harvested with archery weapons in elk herds administered by the Jackson and Pinedale Regions, 2020.

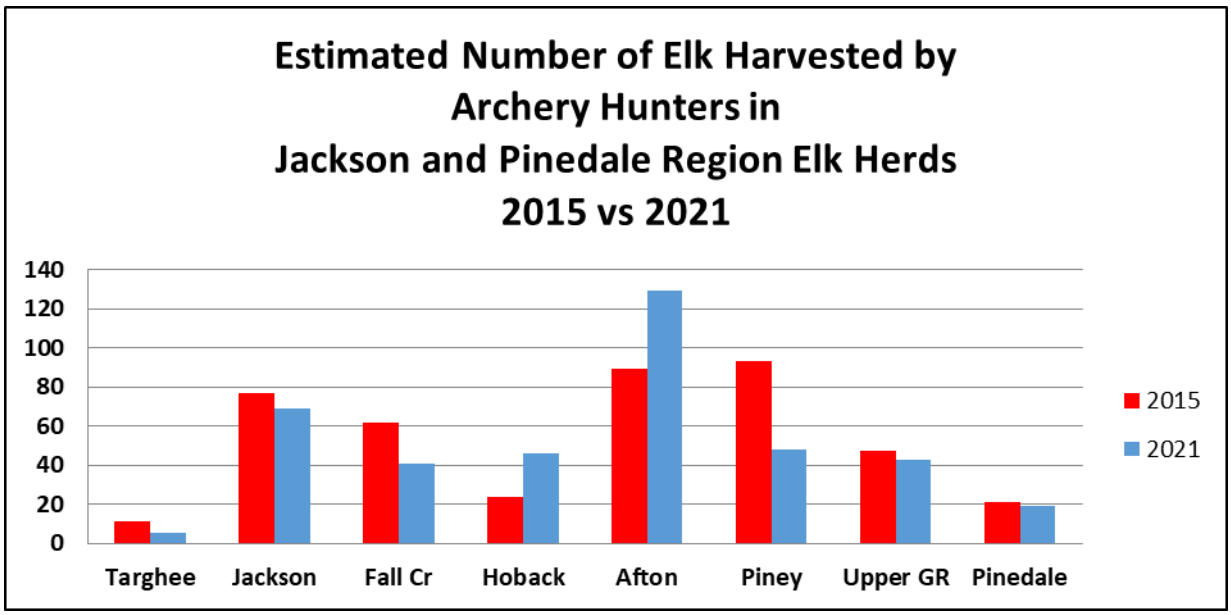


Figure 2. The number of elk harvested with archery weapons in elk herds administered by the Jackson and Pinedale Regions, 2015 and 2021.

Archery hunters typically pursue the branch-antlered elk segment of the population during the archery only season limitation. In 2021, the highest percentage of antlered elk taken with archery equipment occurred in the Hoback and Afton elk herds. The Hoback and Afton elk herds accounted for 26% (n=37) and 23% (n-115), respectively, of all antlered elk harvested with archery weapons in 2021 in all elk herds in the Jackson and Pinedale Regions (Figure 3).

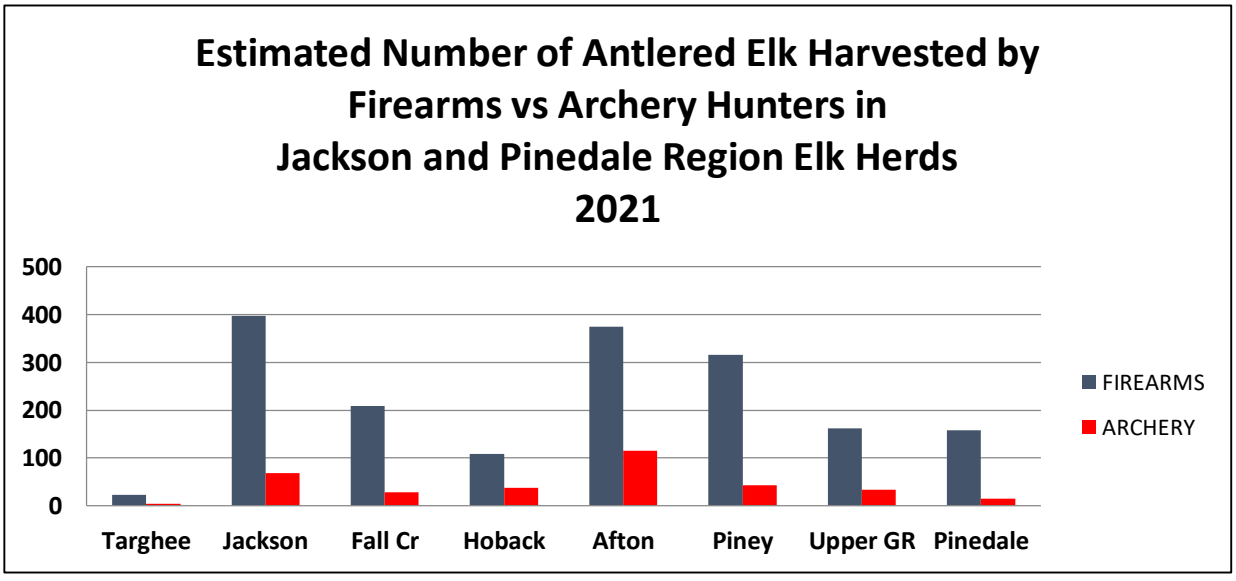


Figure 3. A comparison between the numbers of antlered elk harvested with firearms and archery weapons in elk herds administered by the Jackson and Pinedale Regions, 2021.

During the 2021 big game season setting process a substantial number of public comments pertained to the decline in numbers of antlered elk and older age class bulls observed during the archery hunt, and calls were made for changes to the administration of archery elk hunting in the Afton elk herd. As a result, managers should evaluate whether future management adjustments to archery seasons are necessary. If the objective is to promote an increase in antlered elk and specifically older age class bulls, hunting pressure on bulls could be reduced through shorter archery seasons and/or implementation of limited quota archery only hunts.

Appendix A. Afton Elk Herd, posthunt herd composition data, 2017-2021.										
							Ratio:100 Females			
Year	Adult Males	Yrlng Males	Total Males	Cows	Calves	Total	Adult Males	Yrlng Males	Total Males	Calves
2017										
88 GRFG	29	7	36	358	82	476				
88 NR	0	0	0	0	0	0				
89 NR	7	4	11	37	15(562)	625				
90 FPFG	66	25	91	409	79	579				
90 NR	0	1	1	0	0(8)	9				
91 NR	57	1	58	8	0(658)	724				
TOTAL	159	38	197	812	176(1228)	2413	19	5	24	22
2018										
88 GRFG	18	13	31	378	110	519				
88 NR	0	0	0	0	0	NS				
89 NR	1	12	13	111	85(108)	317				
90 FPFG	36	11	47	326	94	467				
90 NR	0	0	0	0	0	NS				
91 NR	49	21	70	227	90(177)	564				
TOTAL	104	57	161	1042	379(285)	1867	10	5	15	36
2019										
88 GRFG	22	13	35	343	110	488				
88 NR	0	1	1	3	1	5				
89 NR	15	10	25	187	82 (63)	357				
90 FPFG	36	25	61	318	108 (2)	489				
90 NR	3	0	3	6	4	13				
91 NR	20	7	27	18	9 (230)	284				
TOTAL	96	56	152	875	314(295)	1636	11	6	17	36
2020										
88 GRFG	33	16	49	400	95	544				
88 NR	0	0	0	2	3	5				
89 NR	19	7	26	59	21(156)	262				
90 FPFG	31	6	37	312	50	399				
90 NR	0	0	0	7	5	12				
91 NR	70	34	104	175	102(776)	1157				
TOTAL	153	63	216	955	276(932)	2379	16	7	23	29
2021										
88 GRFG	30	36	66	385	132	583				
88 NR	0	0	0	0	0	0				
89 NR	2	9	11	54	22(270)	357				
90 FPFG	50	24	74	407	169	650				
90 NR	0	0	0	1	2	3				
91 NR	19	9	28	95	51(201)	375				
TOTAL	101	78	179	942	376(471)	1968	11	8	19	40

2021 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2021 - 5/31/2022

HERD: MO101 - TARGHEE

HUNT AREAS: 16, 37

PREPARED BY: ALYSON COURTEMANCH

	2016 - 2020 Average	2021	2022 Proposed
Population:		N/A	N/A
Harvest:	4	5	5
Hunters:	5	5	5
Hunter Success:	80%	100%	100 %
Active Licenses:	5	5	5
Active License Success:	80%	100%	100 %
Recreation Days:	43	52	43
Days Per Animal:	10.8	10.4	8.6

Limited Opportunity Objective:

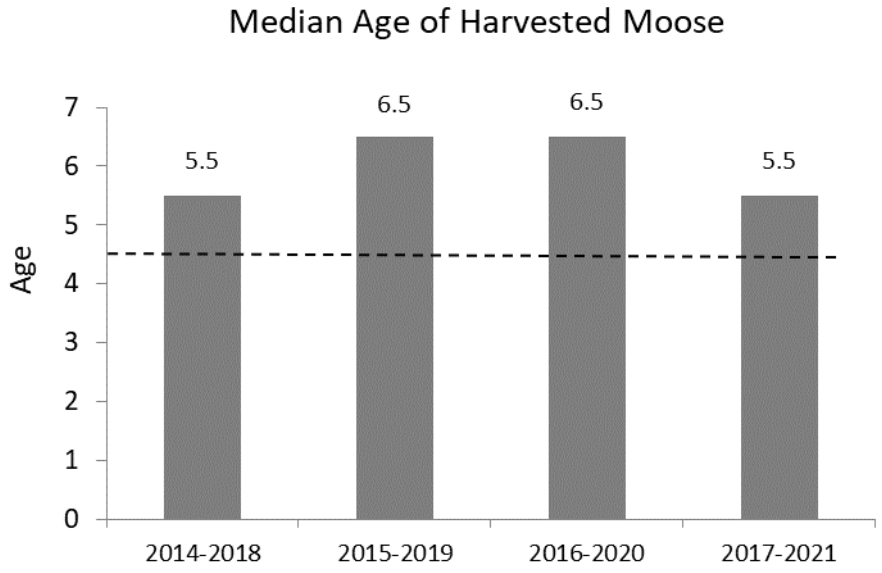
5-year median age of > 4.5 years for harvested moose

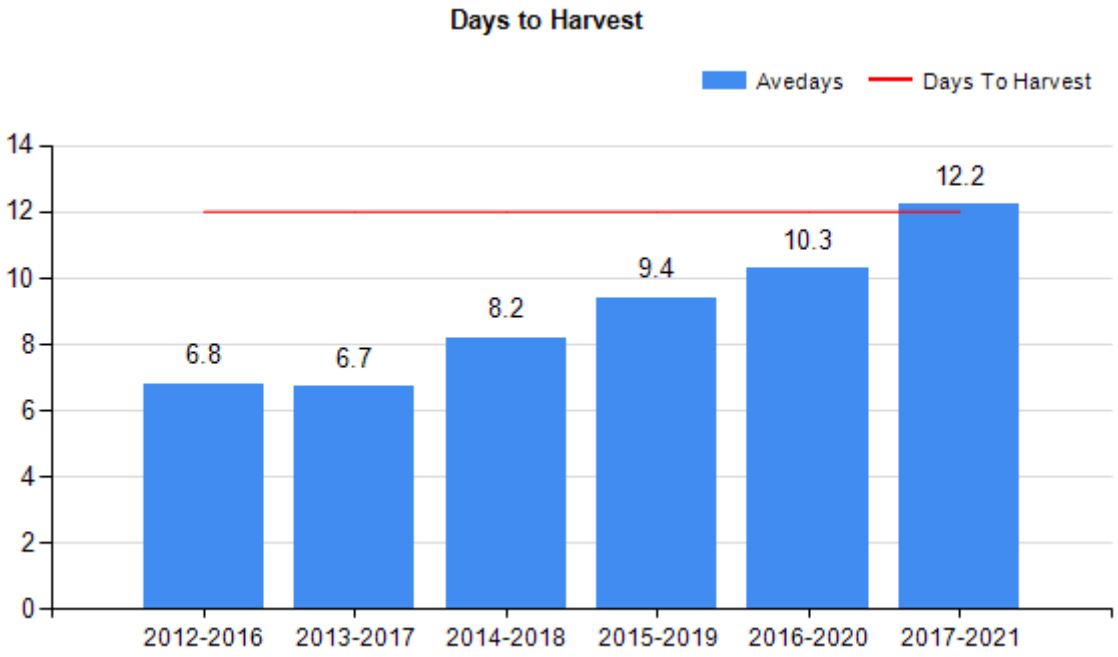
5-year average of <= 12 days/animal to harvest

Secondary Objective:

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

Management Strategy: Special




Days to Harvest
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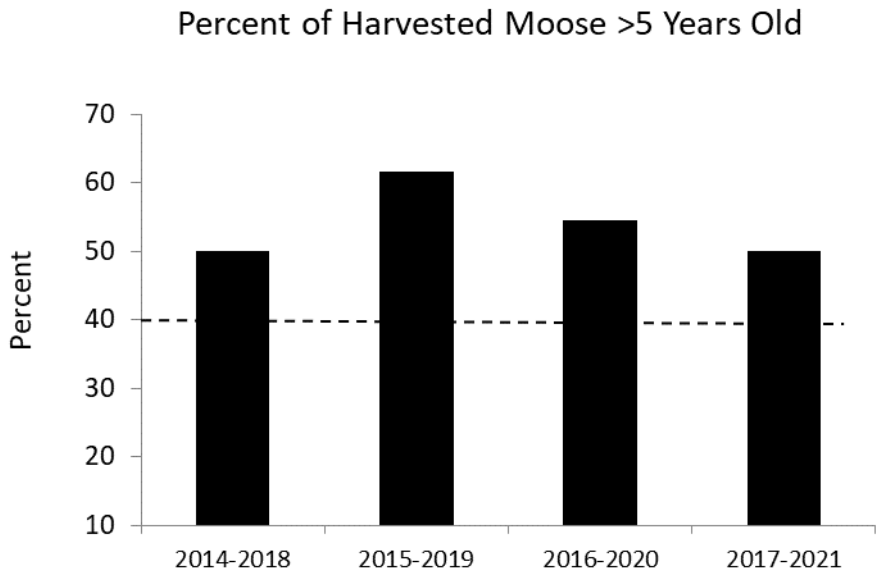

Percent of Harvested Moose >5 Years Old
Percent
70
60
50
40
30
20
10
2014-2018
2015-2019
2016-2020
2017-2021

2022 HUNTING SEASONS
TARGHEE MOOSE HERD (MO101)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
16, 37	1	Sep. 1	Sep. 14	Sep. 15	Nov. 15	5	Antlered moose

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 seasons remained unchanged from 2021. In 2021, harvest success was 100% and days to harvest was 10.4 (5-year average 12.2). In 2021, no hunters submitted teeth for aging. Currently, the herd is meeting two of its three limited opportunity objectives that are based on 5-year averages, however managers will need to improve tooth submissions from hunter-harvested moose to effectively monitor herd objectives in the future. The days to harvest has been steadily increasing in this herd and beginning in 2021 did not meet the objective of a 5-year average of <= 12 days to harvest. This herd is not surveyed from the air due to its interstate nature (many moose migrate to Idaho for the winter) and winter ranges in Wyoming have poor aerial moose sightability due to tree cover.

2.) Management Objective Review: The next scheduled herd unit review is in 2024.

2021 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2021 - 5/31/2022

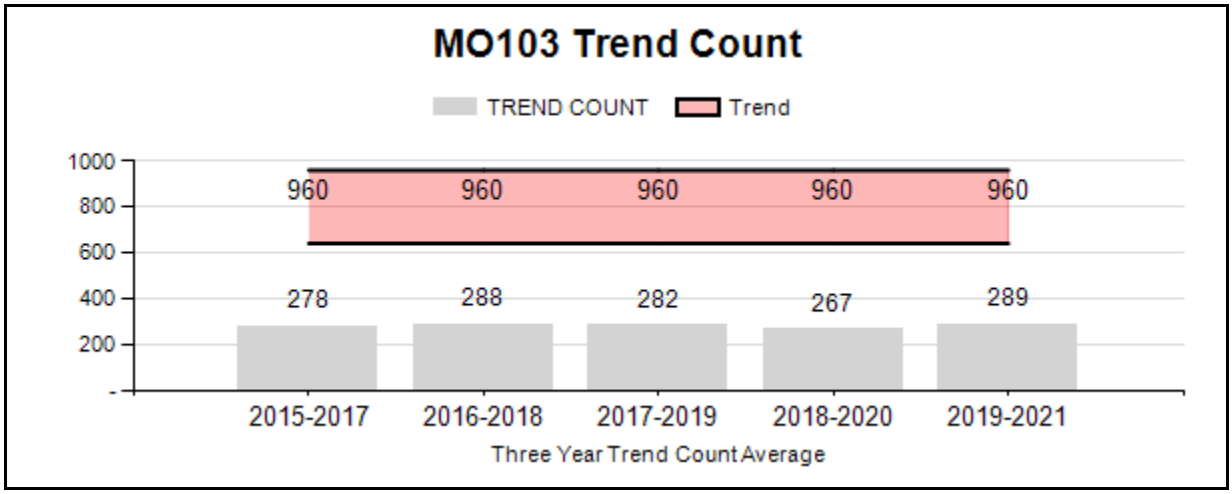
HERD: MO103 - JACKSON

HUNT AREAS: 7, 14-15, 17-19, 28, 32

PREPARED BY: ALYSON COURTEMANCH

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	281	326	400
Harvest:	9	10	10
Hunters:	10	10	10
Hunter Success:	90%	100%	100 %
Active Licenses:	10	10	10
Active License Success	90%	100%	100 %
Recreation Days:	86	93	86
Days Per Animal:	9.6	9.3	8.6
Males per 100 Females:	81	91	
Juveniles per 100 Females	48	58	

Trend Based Objective (± 20%)	800 (640 - 960)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-59.2%
Number of years population has been + or - objective in recent trend:	20



2022 HUNTING SEASONS
JACKSON MOOSE HERD (MO103)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
7, 14, 15, 19, 32							CLOSED
17, 28	1	Sep. 1	Sep. 14	Sep. 15	Oct. 31	5	Antlered moose
18	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	5	Antlered moose

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 hunting seasons remained the same as 2021. Even though the herd continued to be below objective, managers feel that limited antlered moose hunting in some areas is still sustainable due to high bull ratios. Harvest success was 100% in 2021 with average days to harvest at 9.3:100. Bull ratios were high again during the 2021 post-season classification at 91 bulls per 100 cows. Even though overall numbers remain low, calf:cow ratios have been steadily increasing in recent years. In 2009, the calf:cow ratio was 15 calves per 100 cows. Since then, it has increased to 58 calves per 100 cows in February 2022, which is the highest since 1994. Managers anticipate that this calf ratio will lead to a growing population in the future. Hunt areas 7, 14, 15, 19, and 32 remained closed in 2022. We have received clear feedback from the public that they do not support opening these areas at this time.

2.) Management Objective Review: The next scheduled objective review is in 2025.

3.) Research: There are several research projects currently occurring in the Jackson Herd Unit. Managers initiated a moose GPS-collaring project in collaboration with Wyoming Department of Transportation (WYDOT) in the southern end of the herd unit and northern end of the Sublette Moose Herd Unit in winter 2019 to evaluate moose movements around roadways in relation to moose-vehicle collisions. The areas surrounding the Snake River Bridge on Highway 22 have the highest rate of moose-vehicle collisions in Teton County. For that reason, wildlife underpasses have been incorporated into the planning design for a bridge replacement project planned for 2023. Over the past 4 years, a total of 30 moose have been GPS-collared to provide movement data for the wildlife crossings project. Funding support has been provided by WYDOT, Teton Conservation District, Greater Yellowstone Coalition, U.S. Geological Survey at Montana State University, Veterinary Initiative for Endangered Wildlife, and Teton County Commission.

In recent years, managers have become increasingly concerned about the number of moose mortalities reported by the public in the southern portion of the herd unit, particularly during winter and spring. The WGFD partnered with a PhD student at Montana State University and a local veterinarian from Veterinary Initiative for Endangered Wildlife to study moose health, focusing on impacts of winter tick (*Dermacentor albipictus*), carotid artery worm (*Elaeophora schneideri*), and other mortality/morbidity factors in causes of death for moose in the Jackson area. The winter tick project has produced some preliminary results that indicate winter tick is causing morbidity and potentially some level of calf mortality, especially in the southern portion of the herd. The average number of ticks per 10 cm transect on captured adult cow moose in

winter 2020 was 44, 150 in 2021, and over 400 in 2022. Over this same time period, the PhD student has seen a correlated increase in the percent of collared moose exhibiting more severe levels of hair loss in the late winter/spring. Nearly 1/3 of the collared moose exhibited the highest category of hair loss (category 5) in spring 2022, also termed colloquially as “ghost moose”. Calf survival of collared moose also declined in late winter/spring 2022. Cause of death could not be determined because calves were not collared, however we presume that many of these mortalities could be due to winter tick. This study is ongoing with final results expected in a few years. From 2020-2021, we also collected 27 fresh moose mortalities (found less than 24 hours from death) and performed thorough necropsies. These included both collared moose and un-collared moose that were reported by the public, mostly in residential areas. Most of the deaths occurred during the winter months. Out of the 27 moose that died, 13 were calves and 14 were adults. Several causes of death were identified: 29% died due to infectious disease, 15% due to emaciation with high tick burden, 7% due to vehicular trauma, 15% from a presumed toxin, 15% due to unknown cause, and 15% due to presumed trauma. Overall, the study found that moose are dying from a wide variety of factors in the southern portion of the Jackson Herd Unit. We will continue to perform moose necropsies and collect mortality data through 2022.

2021 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2021 - 5/31/2022

HERD: BS106 - TARGHEE

HUNT AREAS: 6

PREPARED BY: ALYSON COURTEMANCH

	2016 - 2020 Average	2021	2022 Proposed
Population:		N/A	N/A
Harvest:	1	0	1
Hunters:	1	1	1
Hunter Success:	40%	0%	100 %
Active Licenses:	1	1	1
Active License Success:	40%	0%	100 %
Recreation Days:	19	24	19
Days Per Animal:	19	0	19

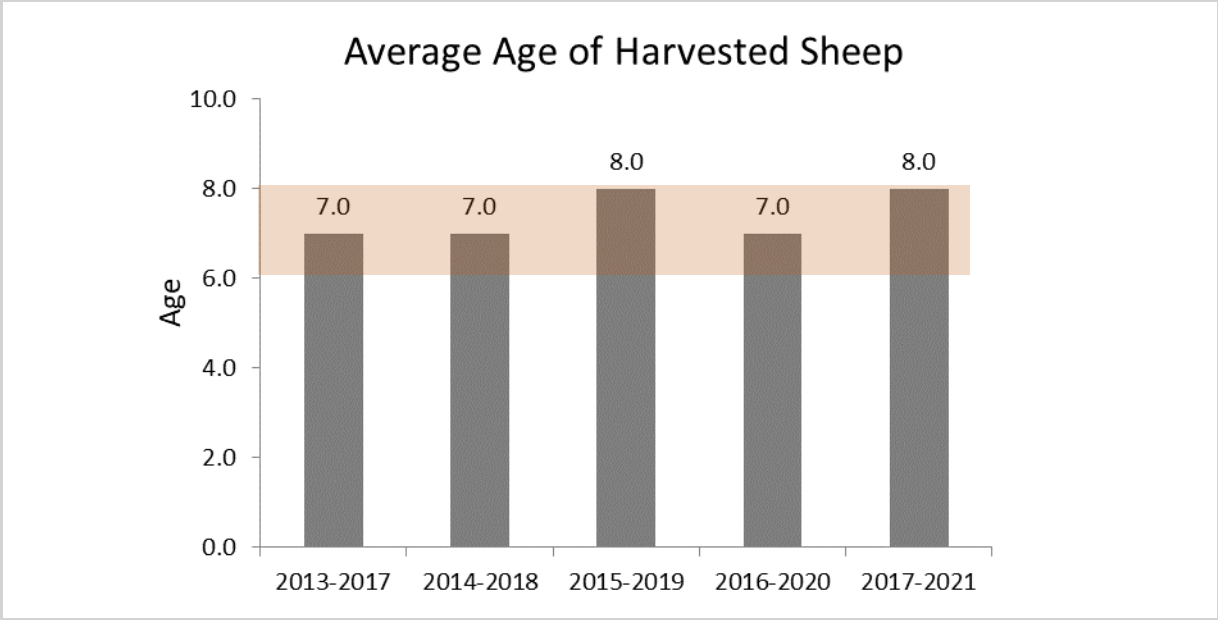
Limited Opportunity Objective:

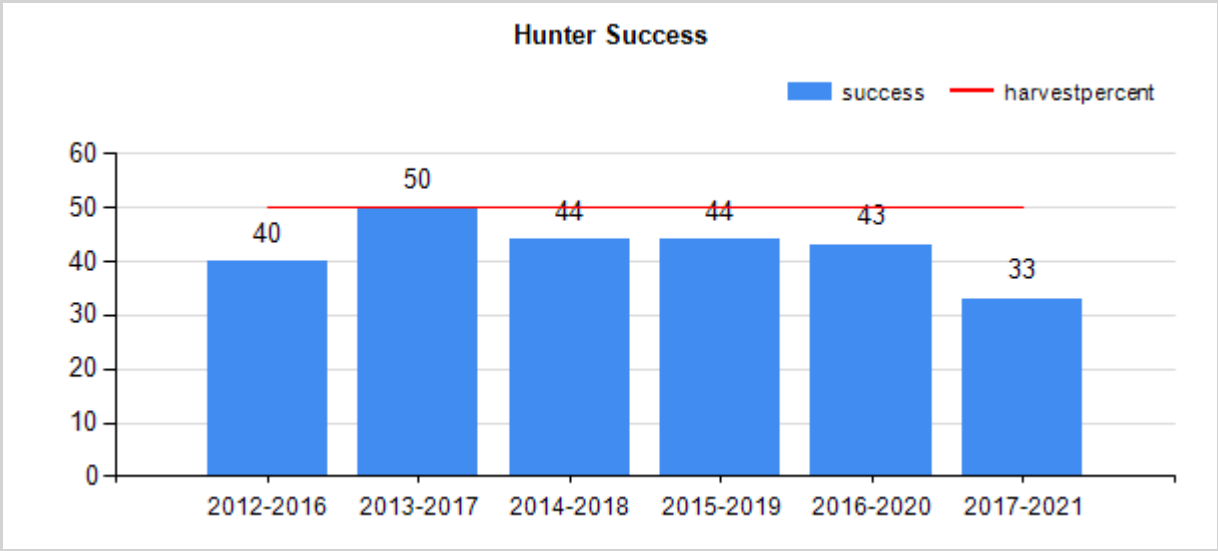
5-year average harvest age of 6-8 years

5-year average hunter success of >= 50%

Secondary Objective:

Management Strategy: Special





2022 HUNTING SEASONS
TARGHEE SHEEP HERD (BS106)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
6	1	Aug. 1	Aug. 14	Aug 15.	Oct. 31	1	Any ram (1 resident)

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 hunting season remained the same as 2021. The one hunter in 2021 was not successful; however, the hunter reported seeing mature rams and had opportunity. This is a limited opportunity management herd with two objectives: 1) 5-year average harvest age of 6-8 years, and 2) 5-year average hunter success of at least 50%. In 2021, the herd met the first objective but not the second.

Managers reduced the license quota from 2 to 1 beginning in 2018 because mature ram numbers were low, particularly in the southern herd segment where all harvest has occurred in the past 20 years. This is likely due to relatively easier access in the southern portion of the hunt area. During the 2021 mid-winter trend count, a total of 104 sheep were classified (49 sheep in the north herd segment and 55 sheep in the south). A total of 20 lambs were observed in the herd and the lamb ratio was 50 per 100 ewes, which is an improvement over the long-term average. Eleven rams of three-quarter curl or better were observed in the southern herd segment and 16 in the northern herd segment. The WGFD is currently working with Grand Teton National Park and Oregon State University on a genetic analysis of the herd. Managers will continue to monitor

population trends in the herd and evaluate the feasibility of increasing licenses again in the future.

2.) Management Objective Review: The next scheduled objective review is 2024.

3.) Teton Range Bighorn Sheep Working Group: The Teton Range Bighorn Sheep Working Group was very active during the past year. The working group includes representatives from WGFD, Grand Teton National Park, Bridger-Teton National Forest, Caribou-Targhee National Forest, Wyoming Wild Sheep Foundation, and Northern Rockies Conservation Collaborative (retired biologist who studied the herd in the 1970s). The working group initiated the Teton Sheep and Winter Recreation Community Collaborative Process in winter 2019/2020 to address the impacts of backcountry skiing on this herd. Final results of this collaborative process were delayed due to COVID-19, however a final plan was released in October 2021. The various agencies are now working on moving forward with a combination of voluntary winter range closures, a public education and stewardship campaign, and possibly mandatory winter range closures in some areas to protect bighorn sheep from disturbance.

4.) Mountain Goats: The WGFD implemented a new mountain goat hunt area (Hunt Area 4) that overlaps with Bighorn Sheep Hunt Area 6 in fall 2019. The hunt was continued in fall 2020 and 2021. The purpose of this hunt is to reduce the mountain goat population in this area to alleviate potential impacts to the Targhee Bighorn Sheep Herd (transmission of respiratory disease pathogens and competition for limited winter habitat). Forty-eight Type A licenses were issued for this hunt area in 2019, 2020, and 2021. Twenty-three goats were harvested in 2019, 11 in 2020, and 1 in 2021. Hunters enjoyed this new hunt area and the opportunity to harvest a goat, even though goat densities were low. Details about the Hunt Area 4 Type A license are available in the Palisades Mountain Goat Herd season proposal.

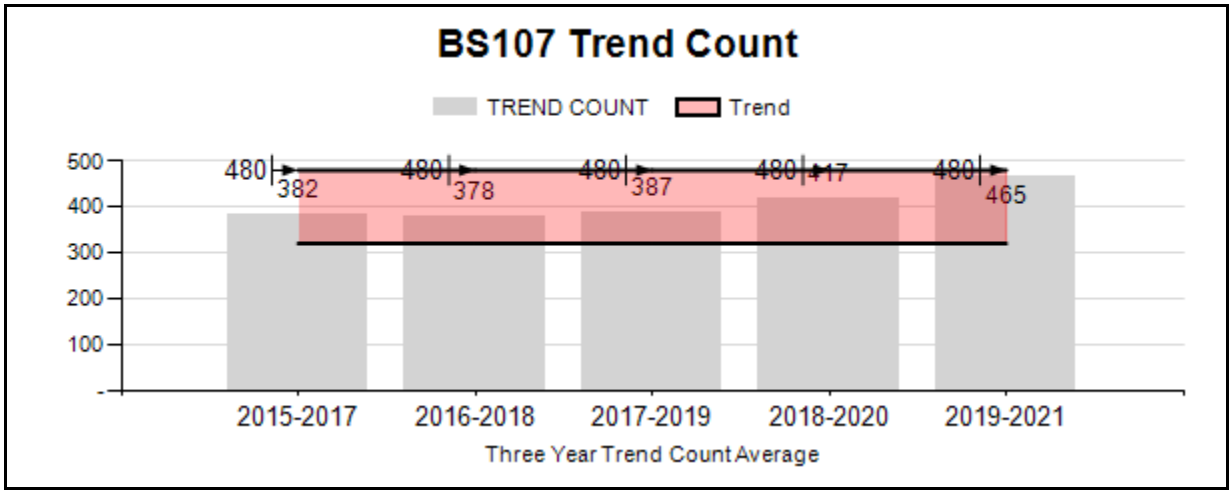
Grand Teton National Park also implemented a qualified volunteer program in fall 2020 and 2021 to reduce mountain goat densities. Forty-three mountain goats were removed in 2020 and 20 in 2021 by qualified volunteers as part of this effort in the park. The park also conducted aerial removals of mountain goats in February 2020 and 2022 and removed 36 and 58 goats, respectively. Through all of these efforts, mountain goat numbers have been significantly reduced in the Teton Range over the last three years.

2021 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2021 - 5/31/2022
HERD: BS107 - JACKSON
HUNT AREAS: 7
PREPARED BY: ALYSON COURTEMANCH

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	405	505	475
Harvest:	8	10	32
Hunters:	11	13	32
Hunter Success:	73%	77%	100 %
Active Licenses:	11	13	32
Active License Success	73%	77%	100 %
Recreation Days:	121	141	400
Days Per Animal:	15.1	14.1	12.5
Males per 100 Females:	37	46	
Juveniles per 100 Females	38	39	

Trend Based Objective (± 20%)	400 (320 - 480)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	26%
Number of years population has been + or - objective in recent trend:	2



2022 HUNTING SEASONS
JACKSON SHEEP HERD (BS107)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
7	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	16	Any bighorn sheep
7	6	Aug. 15	Aug. 31	Sep. 15	Oct. 16	16	Ewe or lamb valid within the Gros Ventre River drainage

2022 Management Summary

1.) Hunting Season Evaluation: The Jackson Bighorn Sheep Herd has been increasing since 2012 after its last pneumonia die-off. In recent years, the herd surpassed its objective and it has been above its objective (400 sheep) +20% (480 sheep) for the past two years. A total of 505 sheep were were counted during the 2022 mid-winter trend count. The lamb:ewe ratio was 39:100 and the ram:ewe ratio was 46:100. Fifty-seven rams with ¾ curl or larger horns were observed during the 2021 survey. Due to the increasing overall numbers and number of mature rams, managers increased Type 1 licenses from 12 to 16 in 2022.

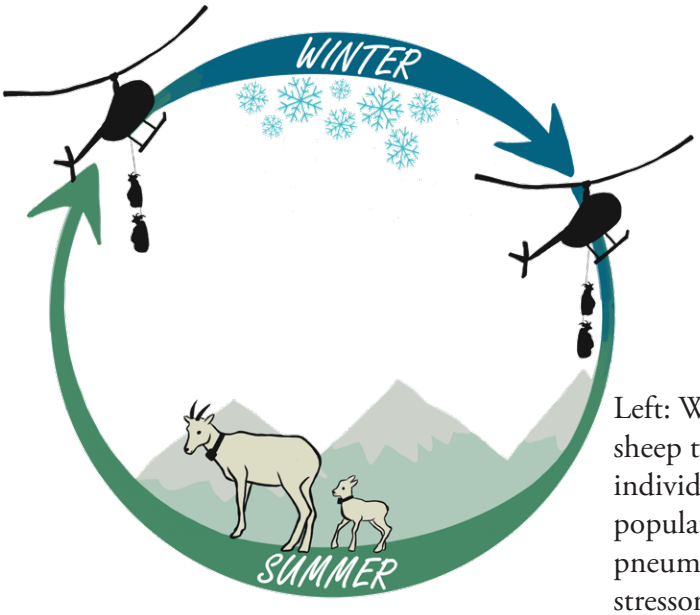
In addition, managers added a Type 6 ewe/lamb license in 2022 with 16 licenses, valid for the Gros Ventre drainage. In the past, this sheep herd has undergone pneumonia die-offs when the population reaches approximately 500 sheep. Ongoing research with the University of Wyoming has shown that the body fat of collared ewes on the Gros Ventre winter ranges has declined during the past two years, while ewes on the Curtis Canyon/Flat Creek winter ranges have remained relatively stable. Managers believe this decline in body fat may be a signal that bighorn sheep are competing for resources due to the growing population and may be a precursor to another pneumonia outbreak. Managers instituted a ewe/lamb season in the Gros Ventre drainage in 2022 to reduce the population density of that herd segment. There were 182 ewes and 68 lambs classified on the Gros Ventre low elevation winter ranges in February 2022. If harvest success is 100%, approximately 9% of the 2021 post-season ewe population in the Gros Ventre would be harvested in fall 2022. A total of 265 ewes were classified in the entire herd, therefore harvest would remove approximately 6% of the entire ewe population. Concurrent research will continue with the University of Wyoming to monitor how the ewe/lamb season affects body condition, population demographic rates, and disease in the Gros Ventre drainage, compared to the segment of the population that winters in Curtis Canyon and Flat Creek.

2.) Management Objective Review: The next scheduled objective review is 2025.

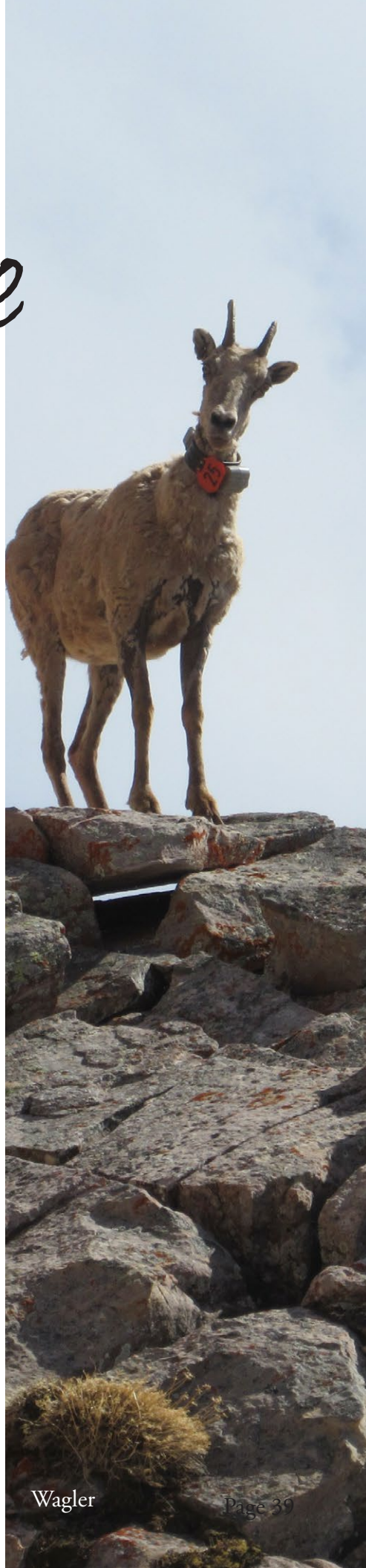
Bighorn Sheep Nutrition-Disease Research Project

Once the largest Rocky Mountain bighorn sheep herd, the Whiskey Mountain herd experienced a pneumonia die-off in the early 1990's and has continued to decline ever since. Nearby herds have experienced similar die-offs, but have not continued to decline like the Whiskey herd. Herds infected with pneumonia can experience different fates—some slowly decline, some undergo crash-recovery cycles, and some tolerate it without significant mortality. Ecological factors such as population size, food availability, nutritional condition, immune function, and disease could all influence trends in population size and the ability for herds to recover after pneumonia die-offs. Untangling these complex interactions is critical to developing management plans to maintain healthy populations of bighorn sheep.

We are investigating how nutrition and disease interact to influence population dynamics. Our work focuses on the Whiskey Mountain, Gros Ventre, and Upper Shoshone bighorn sheep herds, which all hold the same bacterial pathogens associated with pneumonia but have drastically different population trends. By monitoring the same animals through time, we are tracking pathogen presence, nutritional condition, reproduction, adult and lamb survival, mortality causes, and forage.



Left: We capture bighorn sheep twice a year to track how individuals, and ultimately populations, fare in the face of pneumonia and environmental stressors.



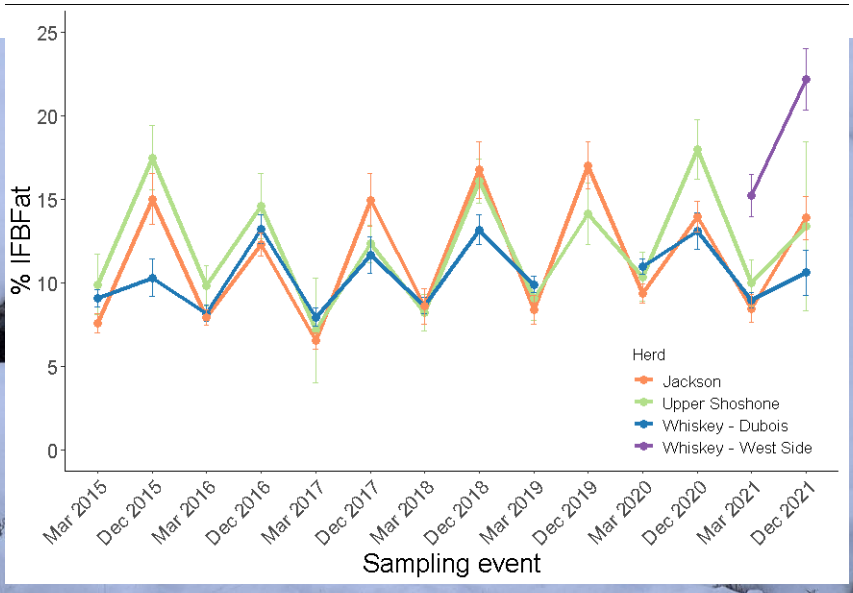
Wagler

Introducing: The high elevation residents of the Whiskey herd

The bighorn sheep on the west side of the Wind River Range live around 10,000 feet year-round. We might expect that living in these harsh conditions would make life tough for these sheep, which may mean they need to be equipped for it. The West Side sheep were impressively fat—and much fatter than the Dubois portion of the Whiskey herd whether in December or March. We handled the fattest bighorn sheep seen in this project from the West Side: 32% of her body mass was comprised of fat, and all that after having reared a lamb! Surviving all year in such a harsh, rugged environment may well require that sheep store incredible fat reserves, which differs from bighorn sheep that migrate throughout the year.

In March 2021, we collared 14 adult females from the herd, eleven of which were pregnant. The Wyoming State Health Laboratory detected 4 out of the 5 pathogens that we test for in the West Side sheep. We detected both Mycoplasma ovipneumoniae and Pasturella multocida, which are the primary culprits in pneumonia mortalities in lambs in the Dubois segment of the Whiskey herd. This suggests that it is not an absence of pathogens that allows for high rates of lamb survival in the West Side sheep.

These sheep present a fascinating contrast to the declining segment of the Whiskey herd and are an opportunity to better understand why lamb survival in most of the Whiskey herd is so low.

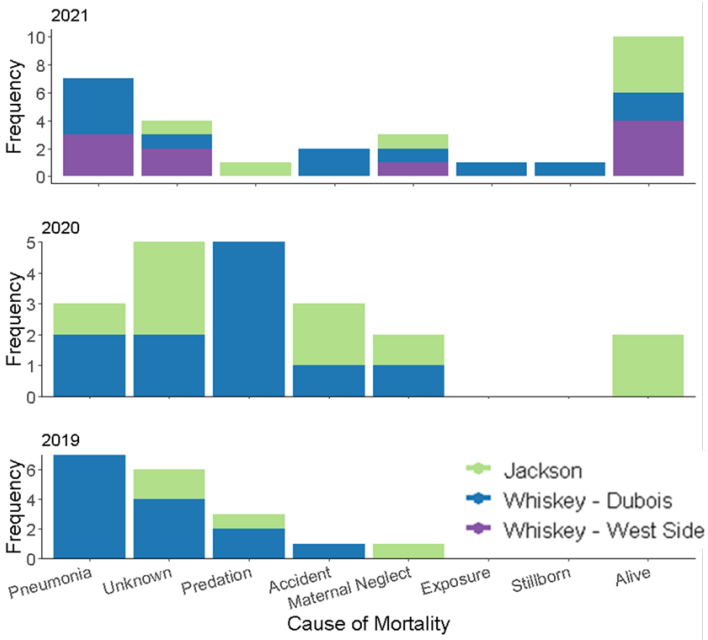


The role of habitat

How much fat a sheep has likely reflects the quality of its habitat—a high-quality summer range is extremely important for bighorn sheep to build fat reserves to help them survive through the winter when resources are limiting. There are obvious differences in nutritional condition in the three herds, and these differences are especially noticeable in autumn, after they have migrated off summer range. Individuals in the Dubois portion of the Whiskey Mountain herd consistently come off summer range in poorer condition than those in the other three herds. To identify why the Whiskey Mountain herd seems to have poorer summer nutrition than the Jackson herd, we are piecing together the quality of each sheep's summer range by analyzing forage clippings to look at digestibility, crude protein, and micronutrients. Biomass seems to be driving increased availability of digestible dry matter, protein, and trace minerals on the Jackson summer range. Forage samples that we've collected from the past 3 years have just been sent out to the lab, and we hope to share more results in 2022.

Leading cause of lamb mortality

We captured 29 lambs during the 2021 summer. Two lambs (16%) from the Dubois herd are still alive as of February 2022. The two segments of the Whiskey herd that we're studying—sheep in Dubois, and sheep in the West Side—had different lamb recruitment. Similar to previous summers, most of the lambs in Dubois segment of the Whiskey herd eventually succumbed to pneumonia. Two lambs, however, survived throughout the winter in this part of the herd. Four lambs (40%) are still alive in the West Side, and pneumonia was the primary cause of lamb mortality in that portion of the herd. Though our work is just beginning on the West Side, it seems that West Side lambs are more resistant to pneumonia than Dubois lambs. Lamb survival remains the best in the Jackson herd, with four lambs (57%) still alive.

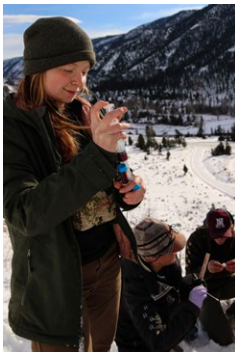


Next steps

We will continue monitoring adults and lambs in the Whiskey Mountain, Upper Shoshone, and Gros Ventre herds to understand the interaction of disease and nutritional dynamics in these herds. With this long-term dataset, we have an excellent baseline knowledge of the conditions of these herds that will help to identify potential management options that could improve population growth and health. One potential management action is testing and culling chronically infected individuals, which attempts to alleviate pathogen burdens within populations. Another is a ewe harvest, which aims to reduce population densities to improve overall condition of individuals of the herd. Using these herds as case studies, we hope our research and continued monitoring will help to inform bighorn sheep management throughout the West.

Project leads

This project is led by PhD student Rachel Smiley (left) and master's student Brittany Wagler (right).



Collaborators, partners, and funders

The Northwest Wyoming Bighorn Sheep Project benefits from being highly collaborative in development, operations, and funding. We fortunate to partner with the Wyoming Game and Fish Department and the Wyoming State Veterinary Laboratory, a collaboration through which we can pull expertise from managers, disease specialists, and ecologists. Funds have been provided by the Wyoming Game and Fish Department, Wyoming Game and Fish Commission, Wyoming Wildlife and Natural Resource Trust, National Wild Sheep Foundation, Wyoming Wild Sheep Foundation, Wyoming Governor's Big Game License Coalition, Bureau of Land Management, Wyoming Animal Damage Management Board, Wyoming Wildlife Livestock Disease Research Partnership, Teton Conservation District, and Bowhunters of Wyoming Inc. Special thanks to the Wyoming Game and Fish Department, United States Forest Service, Wyoming State Veterinary Lab, the Pinto Ranch, Steve Kilpatrick, Sara Bridge, and Des Brunette for assistance with logistics, lab analyses, field housing, and fieldwork.

2021 - JCR Evaluation Form

SPECIES: Mountain Goat
HERD: MG101 - PALISADES
HUNT AREAS: 2, 4

PERIOD: 6/1/2021 - 5/31/2022

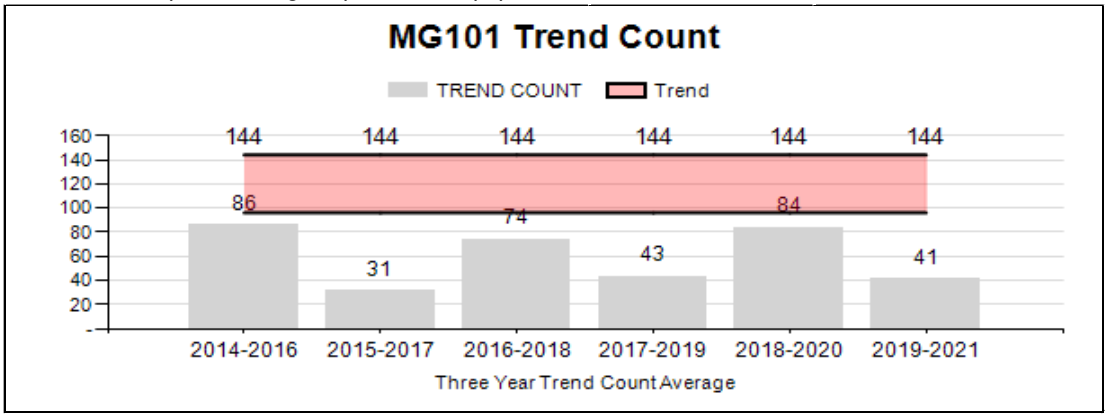
PREPARED BY: GARY FRALICK

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	115	0	125
Harvest:	15	8	8
Hunters:	25	42	12
Hunter Success:	60%	19%	67 %
Active Licenses:	25	42	12
Active License Success	60%	19%	67%
Recreation Days:	153	358	30
Days Per Animal:	10.2	44.8	3.8
Males per 100 Females:	0	0	
Juveniles per 100 Females	33	0	

Trend Based Objective (± 20%)	120 (96 - 144)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	3

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

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



2022 HUNTING SEASONS
PALISADES MOUNTAIN GOAT HERD (MG101)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
2	1	Aug. 15	Aug. 31	Sept. 1	Oct.31	8	Any mountain goat
4	A	Aug. 1	Aug. 14	Aug. 15	Nov.15	4	Any mountain goat; also valid in Area 5

2021 Hunter Satisfaction: NA

2022 Management Summary

1.) Hunting Season Evaluation: In Area 2 a total of eight (8) licenses, valid for any goat, were issued in 2022, with a season September 1 – October 31. The number of licenses issued will be similar to that issued since 2017 and has maintained the population within the management trend count threshold of 120 (+/- 20%) mountain goats. Management emphasis in Hunt Area 4 will continue to be the elimination of mountain goats and discouraging future occupation of important bighorn sheep habitats in the Teton Range. Licenses were reduced from 48 licenses in 2021 to 4 licenses in 2022.

2.) **Management Objective Review:** The Palisades mountain goat mid-summer trend count objective is 120 goats (all in Hunt Area 2), and was established by the Wyoming Game and Fish Commission in 2015. This mid-summer population objective will be reviewed in 2022.

3.) **Herd Unit Evaluation**: A most recent mid summery trend count was conducted in August 2020 (Appendix A), with the next summer survey scheduled for 2022. This survey was conducted from a helicopter and is a collaborative and concurrent effort with Idaho Department of Fish and Game to survey the inter-state Snake River Range mountain goat population.

The Palisades herd offers hunters the opportunity to harvest trophy class billies that typically are at least 5 years old. Management goals of the Wyoming subpopulation have focused on maintaining a flexible management approach through the annual issuance of 4 – 12 licenses valid for any goat since 1999. This approach has resulted in a high degree of hunter satisfaction, exceptionally high hunter success, low days/animal harvest, and trophy class males being taken in most years since the hunt was initiated in 1999.

The 2021 hunting season was the 23nd year that goats were hunted in Area 2. A total of eight (8) licenses were issued, and seven goats were harvested. A total of six billies and one nanny were harvested. Since 1999, a total of 157 mountain goats (132 billies, 25 nannies) have been harvested in Hunt Area 2, and 84% and 16% of the total harvest during that period has been comprised of billies and nannies, respectively.

In Area 4, a total of 33 hunters harvested one mountain goat in 2021, equating to a hunter success of 3%. This follows the harvest of 23 goats in 2019 (56% success) and 11 goats in 2020

(28% success). During February 2020, 36 goats were lethally removed via aerial efforts in Grand Teton National Park. The operation was discontinued due to public outcry, and a skilled volunteer program was implemented in its place. This program removed 43 goats in the fall of 2020 and 20 goats in the fall of 2021. Following this extensive effort an aerial operation was needed to remove any remaining goats, and 58 were lethally removed through aerial operations in February 2020. It is possible a few goats remain in the Tetons, but for the time being they have been functionally extirpated.

Appendix A. Mountain goat population surveys in the Snake River Range of Wyoming and Idaho, 1982-2020.

Idaho Summary of Mountain Goat Surveys in Unit 67 south of Palisades Creek					
Year	Adults	Kids	Unknown	Total	Kids:100 adults
1982[a]	33	13	0	46	39
1985[a]	35	16	0	51	46
1986[b]	0	0	104	104	--
1986[a]	37	15	0	52	41
1988[b]	71	21	0	92	30
1990[b]	45	18	0	63	40
1993[b]	104	33	16	153	34
1994[a]	73	42	0	115	58
1996[a]	151	66	0	217	44
1998[a]	118	45	0	163	38
2000[a]	61	29	0	90	48
2002[a]	35	7	0	42	20
2004[a]	83	24	0	107	29
2006[a]	103	19	0	122	18
2008[a]	96	27	0	123	28
2010[a]	96	33	0	129	34
2012[a]	87	23	0	113	26
2014[a]	109	26	0	135	24
2016[a]	86	34	0	120	39
Wyoming Summary of Mountain Goat Surveys, Hunt Area 2, Palisades Goat Herd					
Year	Adults	Kids	Unknown	Total	Kids:100 adults
1996[a]	16	8	0	24	50
1997[a]	34	20	0	54	59
1998[a]	47	15	0	62	32
2000[a]	58	18	0	76	31
2002[a]	37	17	0	54	46
2004[a]	90	31	0	121	34
2006[a]	98	32	0	130	33
2008[a]	52	13	0	65	33
2010[a]	97	30	0	127	31
2012[a]	83	25	0	108	30
2014[a]	144	21	0	165	14
2016[a]	71	22	0	93	31
2017[WH]	74	6	0	80	8
2018[WH]	65	5	0	70	8
2018[a]	96	33	0	129	34
2020[a]	91	31	0	122	34

[a] - Helicopter Survey (August)

[b] - Ground Count

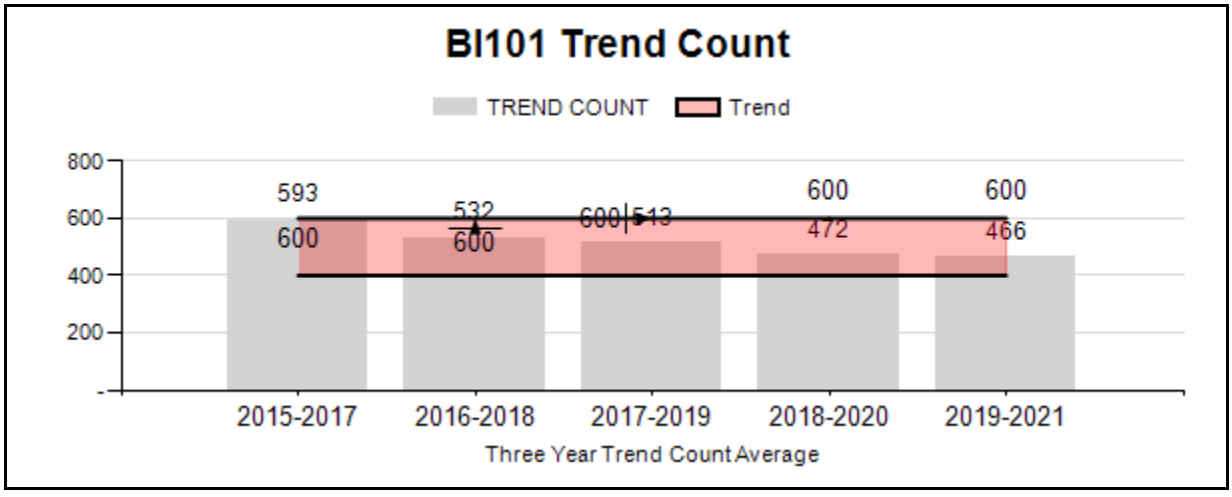
[WH]- Winter Helicopter Survey

2021 - JCR Evaluation Form

SPECIES: Bison
PERIOD: 6/1/2021 - 5/31/2022
HERD: BI101 - JACKSON
HUNT AREAS: 2
PREPARED BY: ALYSON COURTEMANCH

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	506	466	463
Harvest:	127	0	90
Hunters:	176	0	150
Hunter Success:	72%	0%	60%
Active Licenses:	176	0	150
Active License Success	72%	0%	60%
Recreation Days:	1,357	0	900
Days Per Animal:	10.7	0	10
Males per 100 Females:	112	49	
Juveniles per 100 Females	48	28	

Trend Based Objective (± 20%)	500 (400 - 600)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	-6.8%
Number of years population has been + or - objective in recent trend:	4



2022 HUNTING SEASONS
JACKSON BISON HERD (BI101)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
2	1			Aug. 15	Jan. 31	125	Any wild bison; from Jan. 2 – Jan. 31 limited alternate permits for the National Elk Refuge may be available through the Department's Jackson Regional Office on a first-come first-served basis until the season closes or forage/weather conditions dictate that supplemental feeding is necessary. Also valid in Area 1 within the Clark's Fork River and Soda Butte Creek drainages from Aug. 15 – Dec. 31. Valid in other parts of Area 1 upon notification by the Department.
2	4			Aug. 15	Jan. 31	25	Any female or calf wild bison; from Jan. 2 – Jan. 31 limited alternate permits for the National Elk Refuge may be available through the Department's Jackson Regional Office on a first-come first-served basis until the season closes or forage/weather conditions dictate that supplemental feeding is necessary. Also valid in Area 1 within the Clark's Fork River and Soda Butte Creek drainages from Aug. 15 – Dec. 31. Valid in other parts of Area 1 upon notification by the Department.

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 hunting season remained the same as 2021. A total of 466 bison were counted during the 2021 mid-winter trend count. The majority of bison were on supplemental feed on the National Elk Refuge (432) and the remainder were on native winter ranges in Grand Teton National Park (GTNP) (34). This is the first in the past four winters that the majority of the herd came to the National Elk Refuge instead of staying in GTNP, although most of this movement happened after the hunting season. Sixty-seven calves were classified during the mid-winter trend count, meaning that an annual harvest of less than 100 bison will hold this population stable or slightly decrease. Annual harvest over the past 3 years has been 91 bison (2021), 109 (2020), and 92 (2019). The bull ratio in the herd continues to decrease due to more availability of bulls to harvest outside of GTNP than cows. The bull ratio this year was 49 bulls per 100 cows and the mature bull ratio was 42. This ratio has been consistently declining in

recent years. A total of 100 adult bulls were classified during the mid-winter trend count, however there may have been additional bulls in a group 50 bison that were unclassified.

In the past when the Jackson Bison Herd was above objective, hunter success was commonly 80-98%. During the past six years when the herd has been close to the 500 objective, hunter success has been lower (50-63% success). This is because much of the bison harvest (and nearly all of the cow/calf harvest) occurs when bison migrate to the National Elk Refuge. For the past five years, this migration has happened in very late January and bison may only be there for 1-2 days. This uncertainty of the timing of the migration and extremely limited opportunity has been frustrating for hunters. Managers are limited in their options to increase hunter opportunity because the majority of the herd resides within GTNP during the hunting season. For the past two years, managers have opted to offer mostly Type 1 licenses to allow hunters to have opportunity for any bison that may cross the GTNP boundary into the open hunt area. While most Type 1 hunters choose to harvest bulls, some harvest cows or calves due to very limited availability of bison. In 2021, harvest success on Type 1 licenses was 58%. Type 1 license-holders harvested 59 bulls and 16 cows/calves. Harvest success on Type 4 licenses was 64% and 16 cows/calves were harvested. Achieving cow/calf harvest continues to be a challenge in this herd. If the majority of harvest continues to be bulls in the future, the bull ratio is expected to continue to decrease.

2.) Management Objective Review: The next objective review is scheduled for 2024.

2021 - Jackson Region Disease Monitoring/Management

PREPARED BY: BEN WISE PERIOD: 6/1/2020-5/31/2021

Wildlife disease management and mitigation is an integral part of supplemental elk and bison feedground management in the Jackson Region of the Wyoming Game and Fish Department (WGFD). Numerous disease issues are exacerbated by supplemental feeding of wildlife and wildlife managers in western Wyoming attempt to make all efforts to limit disease transmission, morbidity and mortality.

Brucellosis Mitigation and Management

Brucella abortus, a gram negative bacterial infection is the causative agent for the disease Brucellosis. Brucellosis is a mammalian bacterial disease that has been endemic in the Greater Yellowstone Ecosystem (GYE) since the early 1900's. The main route of transmission of this disease is via physical contact with infected reproductive materials (aborted fetuses, placenta, amniotic fluids, live born fetuses, etc.) during the transmission period (February 15-June 1). Both the primary transmission route and transmission period were determined and validated through work that was partially undertaken by the WGFD's Brucellosis-Feedground-Habitat (BFH) section from the mid 1980's through 2018. Along with the information that was collected on what transmission in the environment looks like, several Best Management Practices (BMP) were developed in an effort to slow the rate of transmission of brucellosis in feedground settings. Due to the increased risk of disease proliferation in the feedground systems of western Wyoming, several of these practices have been adopted (referred to as the "Target Feedground Plan") at various levels of success in an effort to reduce and control communicable diseases both within wildlife and among livestock populations in the region. For the 2021-2022 feeding season, the following brucellosis (and overall wildlife disease) management efforts were implemented.

Brucellosis Surveillance

During the winter of 2021-2022, the Jackson Regional Disease Biologist captured elk using both chemical immobilization and corral traps at feedgrounds to deploy GPS collars on elk for brucellosis investigations and to continue long term brucellosis seroprevalence trend data. Conditions this winter began mild with average early winter snowfall and subsequent close to average feedground start dates. Below average snowfall in January and February resulted in an earlier than average end of supplemental feeding in the Jackson Region. As part of a regional surveillance plan, the Fall Creek Elk Herd was the priority surveillance herd for 2022. This effort included trapping elk at South Park feedground (last statistically significant sample effort in 2020) and Horse Creek feedground (last statistically significant sampling effort in 2013). Additional trapping efforts were also undertaken in the Jackson elk herd in order to deploy collars and collect baseline monitoring information as the National Elk Refuge (NER) begins

implementation of the Bison and Elk Management Step-Down Plan, as well as monitoring elk movements and connectivity with the Gros Ventre drainage and elk wintering there. A total of 309 elk were handled this winter at seven locations, including trapping 281 animals at the NER (n=91), Horse Creek (n=126) and South Park (n=64) feedgrounds (Figure 1). An additional 12 elk were darted on feed lines at Dog Creek (n=5), Greys River (n=5), and Forest Park (n=2) feedgrounds, and another 16 elk both darted at the Patorl Cabin feedground and net-gunned on native winter ranges in the Gros Ventre. A total of 57 GPS collars and were deployed on elk in the Jackson Region in 2022. In total, 171 yearling and adult cows were bled, feedground serology data available below (Figure 1).

Figure 1. GPS collar and brucellosis seroprevalence information for elk captured in the Jackson Region, 2021-2022 winter.

Feedground	Capture Method	GPS collars deployed	# Captured	# Tested	% Prevalence	Long Term Sero % (total tested)
National Elk Refuge (NER)	Trap	20	91	63*	39.68%	34% (1815)
Horse Creek	Trap	7	126	42*	57.14%	47% (174)
South Park	Trap	4	64	38*	18.42%	39% (308)
Dog Creek	Dart	5	5	5	40.00%	55% (73)
Greys River	Dart	5	5	5	40.00%	33% (1435)
Forest Park	Dart	0	2	2	50.00%	25% (365)
Patrol Cabin	Dart/Helicopter	16	16	16	56.25%	39% (84)
Totals =		57	309	171	40.93%	

*statistically significant *n* for estimated prevalence to be within +/- 15% of true prevalence

Target Feedground Plan

- Low Density Feeding: Low Density (LD) Feeding is a technique that was developed and validated by the BFH crew in the late 2000's in an effort to reduce contact (and subsequent transmission risk) between elk on supplemental feed. LD feeding has been shown to reduce contacts with aborted fetuses by 66-75% and is a cost effective method to directly reduce brucellosis prevalence among elk attending feedgrounds, and indirectly reduce risk of brucellosis spillover into livestock. The basic idea behind this technique is to distribute the hay in a uniform pattern across the feeding area, which reduces the linear travel of elk on feedlines. When done correctly the feedground looks similar to a checkerboard, allowing an individual animal up to eight potential paths of travel to move between hay piles as opposed to a linear feeding (traditional) system where there are only two directions of travel on the feed lines. Where applicable, the Jackson Region has implemented LD feeding to varying degrees throughout the region and where this techniques is utilized effectively, brucellosis seroprevelance appears to be decreasing. In

an effort to better implement LD feeding on feedgrounds utilizing mechanized equipment instead of draft horses, two (2) Square Spinner square bale feeders were used at South Park and Horse Creek Feedgrounds in 2021-2022. This new equipment allows for easier LD feeding and a better overall ability to spread elk out and utilize more feeding area compared to other equipment used in the past.

- Early End Dates: In conjunction with LD feeding, early supplemental feeding end dates has been shown to reduce brucellosis transmission on feedgrounds (and subsequently reduce brucellosis infection rates among attending elk). Research by the WGFD has found that the rate of elk abortion due to brucellosis on feedgrounds peaks in March, April and May, so the earlier in spring that managers can encourage elk to disperse to native ranges, the less the chance for elk to become exposed to the disease on a crowded feedground. However, to end feeding as early as possible there must be sufficient native forage available for the elk so they remain in good health, and the risk of elk causing damage to stored crops or co-mingling with cattle must be very low. Based on more than 35 years of WGFD feedground data, over 50% of the variation in brucellosis seroprevalence among elk attending feedgrounds can be explained by the end date of the feeding season (the later into spring a feedground operates, the higher brucellosis prevalence is). Therefore truncating feeding seasons, where possible and if successful, should lead to long term decreases in brucellosis prevalence over time.

The 2021-2022 winter in the Jackson region could be classified as mild with below average snowfall and an earlier that average melt out and green up. Conditions prior to the initiation of feeding in the Jackson Region were colder than average with little to no snow fall/snow pack through the month of December. Below average snowfall for the months of January and February coupled with a warming trend toward the middle of February allowed for the early termination of supplemental feeding throughout the region.

During the 2021-2022 feeding season, a mortality event was documented at the Horse Creek/Camp Creek Feedground complex south of Jackson. Based on visual and necropsy observations this prolonged morbidity/mortality event was determined to be from a buildup of *Fusobacterium necrophorum,* an anaerobic bacteria commonly found in the mammalian digestive tract. Based on past experience/documentation these outbreaks typically occur on a given feedground when animal densities are high and individuals cannot adequately spread out and utilize clean feeding areas throughout the spring. Typically these mortality events occur later in the feeding season as temperatures moderate and daily freeze-thaw cycles allow the proliferation of the anaerobic bacteria in the feeding areas. Combined with high densities of elk, the limited ability to spread animals out on clean feeding areas and the accumulation of feces throughout the feeding season results in an increased risk of this disease.

Typically this disease presents itself as either infectious necrotic pododermatitis (Hoof-rot) or Necrotic Stomatitis (mouth-rot) occur due to either inter-digital or inter-oral injury and subsequent infection from the environment of *F. necrophorum*. The majority of the mortality attributed to this disease occurs in calves attending feedgrounds. It is speculated this is due in part to their small size, limited resources and inability to adequately deal with the systemic infection that often accompanies a severe *F. necrophorum* infection. If infected individuals are able to survive a *F. necrophorum* infection often there will be lifelong morbidity (deformed hooves, necrosis of the jaw, etc.) in the afflicted areas due to the infection.

Based on a combination of feedground classification survey results and the overall size of the feeding area available at Horse Creek and Camp Creek Feedground during the 2021-2022 feeding season, we were able to predict with a significant level of certainty that there would be a *F. necrophorum* outbreak within the Horse Creek/Camp Creek Feedground complex. In early February WGFD began receiving reports from the feeder that calves were becoming lame and lethargic on the Horse Creek Feedground resulting in an increased focus on monitoring for animal health at this location. In early March, approximately 50% of the elk (~1000+) left the Horse Creek Feedground and traveled to Camp Creek Feedground presumably due to differences in quality and types of feed between the two feedgrounds (alfalfa hay fed at Camp Creek). Between February 11th and May 10, 2022 a total of 82 elk mortalities were documented, with 25 occurring either on or directly adjacent to the feeding areas and most being euthanized due to inability to move at time of discovery. An additional 48 elk were documented south of Camp Creek Feedground on national forests and private lands and based on scavenging patterns, locations, age and timing of mortality it is assumed that these individuals are highly likely to have been infected as well. This level of mortality accounts for a loss of more than 15% of the calves that were documented between Horse Creek and Camp Creek Feedgrounds in 2022.