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Acknowledgements

The data contained in these reports was collected by the combined efforts of Laramie Region and Cheyenne-based Wildlife Division personnel, including District Wildlife Biologists, District Game Wardens, Habitat Biologists, the Wildlife Management Coordinator, Regional Supervisor and other Department staff and volunteers working at check stations. The authors express their sincere appreciation to all those who assisted with data collection.

Post-Season Classification Data Statement

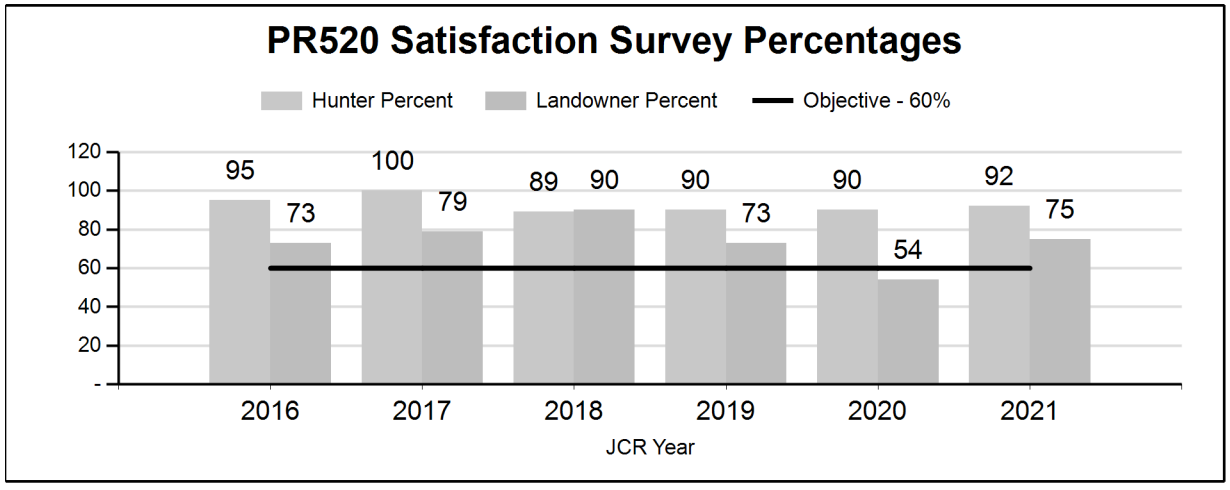
The Laramie Region worked closely with Biological Services and Speedgoat to revise the survey design for mule deer and elk post-season classification counts during the 2021/2022 field season. The new design allows for random sampling, thereby providing more rigorous, less biased estimates of herd composition. In addition, the design requires fewer hours to collect an appropriate sample. This helps to improve staff safety and fiscal efficiency. Readers will notice that, in many herds, fewer animals were counted during the 2021 biological year, compared to past years. This is expected and appropriate given the updated survey design.

2021 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2021 - 5/31/2022
HERD: PR520 - CHALK BLUFFS
HUNT AREAS: 111
PREPARED BY: KEATON WEBER

	2016 - 2020 Average	2021	2022 Proposed
Hunter Satisfaction Percent	92%	92%	92%
Landowner Satisfaction Percent	73%	75%	75%
Harvest:	147	155	154
Hunters:	150	153	160
Hunter Success:	98%	101%	96%
Active Licenses:	180	174	187
Active License Success:	82%	89%	82%
Recreation Days:	556	626	602
Days Per Animal:	3.8	4.0	3.9
Males per 100 Females:	44	48	
Juveniles per 100 Females	63	59	

Satisfaction Based Objective	60%
Management Strategy:	Private Land
Percent population is above (+) or (-) objective:	24%
Number of years population has been + or - objective in recent trend:	4



2022 Hunting Seasons
Chalk Bluffs Pronghorn Herd Unit (PR520)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
111	1	Aug. 15	Sept. 19	Sept. 20	Oct. 14	150	Any antelope
111	1			Oct. 15	Dec. 31		Doe or fawn
111	6	Aug. 15	Sept. 19	Sept. 20	Dec. 31	50	Doe or fawn

2021 Hunter Satisfaction: 92% Satisfied, 8% Neutral, 0 % Dissatisfied
2021 Landowner Satisfaction: 25% Above Desired Levels, 75% At Desired Levels, 0% Below Desired Levels

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 season is designed to provide opportunity while maintaining a hunter and landowner satisfaction of 60%. The season will continue to run through December 31 for doe and fawn pronghorn to reduce damage situations from pronghorn that migrate from Colorado as the season progresses. Access continues to be an issue with this herd unit so managers are cognizant of monitoring the satisfaction level of hunters (which is well above desired objective levels) along with success and effort trends to determine license structure. Based on those factors is does not appear a change in season structure is warranted at this time. In 2021, 87% of licenses available were active. The majority of those hunters were overwhelmingly satisfied with their hunt (92% satisfied). For the past several years hunter's satisfaction has remained high. It appears that the majority of hunters who are applying for this license have access secured prior to their hunt. A severe blizzard hit the I-25 corridor from the Colorado state line to Casper in March 2021 and left anywhere from 30-40" in the lower elevations resulting in excessive winter mortality due to snow depth as well as pronghorn getting hit by vehicles on plowed roads and highways. Because of the increased mortality and poor fawn survival, doe/fawn licenses will remain at 50. In 2021, the percentage of buck's harvested > 1 year old was 40%.

2.) Management Objective Review: The last time this herd unit's objective was reviewed was in 2018, so the next objective review will take place in 2023.

3.) Weather and Habitat: Over 3' of snow fell in a mid-March event, likely leading to some pronghorn mortalities. Early spring precipitation occurred during April and early May, but rain events decreased in frequency and moisture amounts thereafter. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather station data from Cheyenne, Wyoming, reported a 7% decline from average in annual precipitation in 2021.

2021 - JCR Evaluation Form

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

HERD: PR521 - HAWK SPRINGS

HUNT AREAS: 34
PREPARED BY: KEATON WEBER

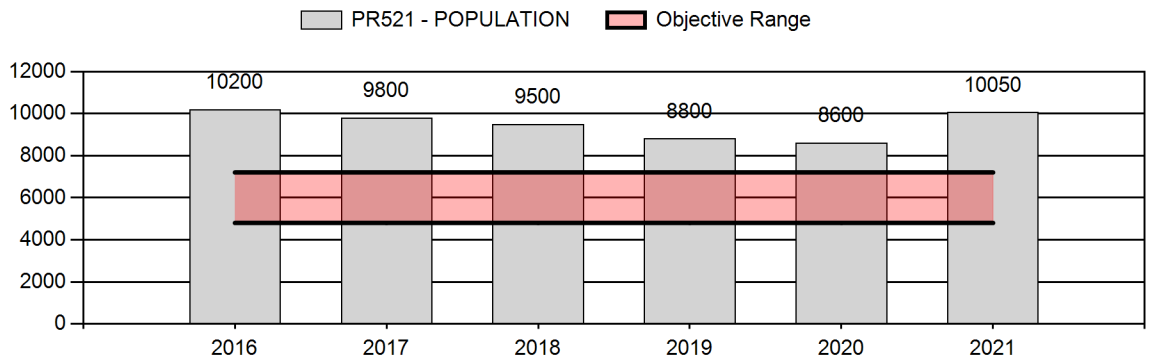
	2016 - 2020 Average	2021	2022 Proposed
Population:	9,380	10,050	10,500
Harvest:	1,039	503	400
Hunters:	1,339	627	500
Hunter Success:	78%	80%	80%
Active Licenses:	1,386	650	475
Active License Success:	75%	77%	84%
Recreation Days:	4,775	2,548	2,300
Days Per Animal:	4.6	5.1	5.8
Males per 100 Females	42	44	
Juveniles per 100 Females	39	34	

Population Objective (± 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	68%
Number of years population has been + or - objective in recent trend:	1
Model Date:	3/12/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	2%	7%
Males ≥ 1 year old:	24%	28%
Proposed change in post-season population:	-3%	4%

Population Size - Postseason



2022 Hunting Seasons
Hawk Springs Pronghorn Herd Unit (PR521)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
34	1	Aug. 15	Sept. 19	Sept. 20	Oct. 14	600	Any antelope
34	6	Aug. 15	Sept. 19	Sept. 20	Dec. 31	50	Doe or fawn

2021 Hunter Satisfaction: 74% Satisfied, 13% Neutral, 13% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The 2021 season structure was a reduction in Type 1 and Type 6 licenses to address a population that has experience poor fawn recruitment for five consecutive years (5-year average = 38 fawns:100 does) and poor buck ratios (5 year average = 40bucks:100 does). The proportion of males per 100 females in the population slightly increased which was not expected given five years of poor fawn recruitment. However, even with a declining population there are still damage situations that need a lengthy doe/fawn season structure to address. The reduction of the number female pronghorn licenses should offset poor juvenile recruitment thus slowing down the decreasing population trend. In addition an early spring blizzard hit the area on March 14-15 of 2021 leaving anywhere from 30-40" of heavy, wet snow along the I-25 corridor from the Colorado state line to Casper. Excessive mortalities in pronghorn were observed post-storm due to snow depths as well as getting hit by vehicles on plowed roads and highways. Licenses were drastically reduced in 2021 to accommodate mortalities as a result of the storm. Additionally, many fawns were likely aborted as a result of environmental stress and lack of nutrition due to the storm. An additional reduction in Type 6 licenses is warranted as a direct and indirect result of the storm. Hunter success remains steady (5 year average = 75% hunter success). Hunter success is limited due to the herd unit being predominately private land. In 2021, the percentage of buck's harvested > 1 year old was 24%. This is likely attributed to the poor fawn recruitment and population decline in the previous year. The 3 year average of buck's harvested > 1 year old is 26%.

2.) Management Objective Review: The last time this herd unit's objective was reviewed was in 2018, the next objective review will take place in 2023.

3.) Research: Managers of the Hawk Springs Herd Unit have expressed concern for this herd's recent poor performance. There is speculation that habitat quality has degraded significantly enough to a point that it is lacking the proper nutrient requirements for lactating does to sustain a fawn to weaning age. In particular the condition of lands enrolled into USDA's Conservation Reserve Program (CRP) are of concern as far as forage productivity and diversity. A grant was submitted to the USDA in 2020 for a 3-year survival study and was not granted. Managers will continue to further investigate the relationship between habitat use, parturition areas, survival and condition of CRP in southeast Wyoming.

4.) Weather and Habitat Data: Precipitation in Hunt Area 34 was well below normal for the biological year. Early spring precipitation occurred during April and May, but rain events decreased in frequency and amounts in early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather station data from sites in Cheyenne and Torrington documented a decrease in annual precipitation 7% and 27% from average. Continued poor fawn survival in this herd unit may be partially attributed to poor mid to late summer forage quality, particularly in areas lacking vegetative diversity, including dryland cropland and introduced cool season grass pastures.

Pronghorn depend on non-native vegetation for much of their year-round nutritional requirements due to native rangelands being converted to dryland croplands in this herd unit. Habitat improvement projects in the last 20 years have been limited to lands enrolled into the USDA's Conservation Reserve Program (CRP). Most of these CRP stands are in poor condition, lacking vegetative diversity, and are primarily dominated by cool season introduced grass species.

Managers of the Hawk Springs Herd Unit have expressed concern for this herd's recent poor performance. There is speculation that habitat quality has degraded significantly enough across this landscape and that lactating does may not be able to sustain a fawn to weaning age.

5). Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 9,250 pronghorn. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit from the PopR IPM was approximately 10,050 (CL = 9,016-11,157) pronghorn. Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022. The population estimates shown in the table and graph above reflect the population estimates derived from the PopR IPM model.

2021 - JCR Evaluation Form

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

HERD: PR522 - MEADOWDALE

HUNT AREAS: 11
PREPARED BY: KEATON WEBER

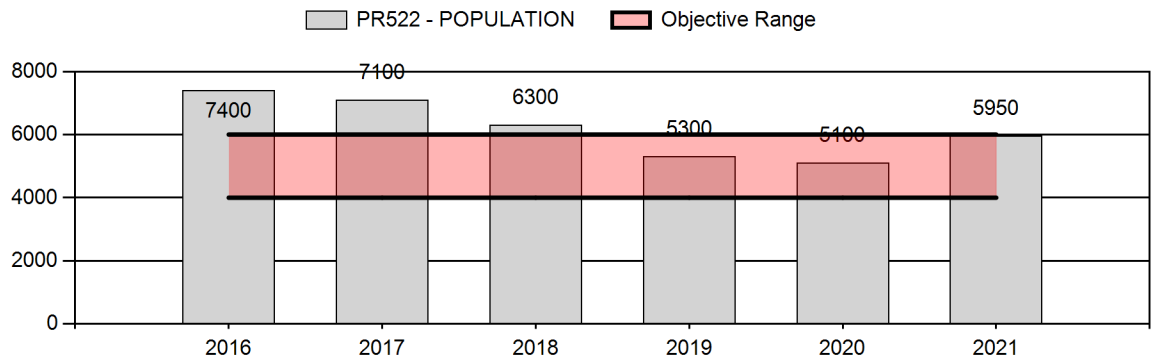
	2016 - 2020 Average	2021	2022 Proposed
Population:	6,240	5,950	6,200
Harvest:	628	339	300
Hunters:	707	399	350
Hunter Success:	89%	85%	86%
Active Licenses:	757	466	400
Active License Success:	83%	73%	75%
Recreation Days:	2,392	1,671	1,500
Days Per Animal:	3.8	4.9	5
Males per 100 Females	39	38	
Juveniles per 100 Females	40	29	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	19%
Number of years population has been + or - objective in recent trend:	6
Model Date:	2/14/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	3%	5%
Males ≥ 1 year old:	21%	26%
Proposed change in post-season population:	-7%	+5%

Population Size - Postseason



2022 Hunting Seasons
Meadowdale Pronghorn Herd Unit (PR522)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
11	1	Aug. 15	Sept. 30	Oct. 1	Oct. 31	400	Any antelope
11	6	Aug. 15	Sept. 30	Oct. 1	Oct. 31	100	Doe or fawn

2021 Hunter Satisfaction: 78% Satisfied, 14% Neutral, 8% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 season structure includes a reduction in Type 6 licenses to address a population that has experience poor fawn recruitment for five consecutive years (5-year average = 36 fawns: 100 does). The proportion of males in the population has remained steady in recent years, and does not warrant a reduction in Type 1 licenses nor hunter opportunity. An early spring blizzard hit the area on March 14-15 of 2021 leaving anywhere from 30-40" of heavy, wet snow along the I-25 corridor from the Colorado state line to Casper. Although this herd unit was not heavily impacted by the storm, it is very likely there was a decrease in adult and fawn survival. Additionally, many fawns were likely aborted as a result of environmental stress and lack of nutrition. The reduction of the number of female pronghorn licenses should offset poor juvenile recruitment and mortalities from the snow storm. There are no major damage concerns within the herd unit, so a reduction in type 6 licenses will not negatively impact reducing damage situations. In 2021, the percentage of buck's harvested > 1 year old was 21% and the 3 year average is 28%. Poor adult buck harvest is likely attributed to the poor fawn recruitment and population decline in the previous years. To strive for 25% harvest of >1 year old bucks, there have been no reductions in Type 1 licenses.

2.) Management Objective Review: The last time this herd unit's objective was reviewed was in 2018, so the next objective review will take place in 2023.

3.) Weather and Habitat Data: Precipitation in Hunt Area 11 was below normal for the biological year. In March 2021, a large snow event left depths of snow 30-40" throughout the I-25 corridor from Colorado to Casper. This snow storm drastically limited available forage available for wildlife in the western portion of the herd unit. Early spring precipitation occurred during April and May, but rain events decreased in frequency and amounts in early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. Annual precipitation data collected in Torrington and Douglas documented a -27% and -47% decline from long term averages in 2021. Poor fawn survival in this herd unit may be partially attributed to poor mid to late summer forage quality, particularly in areas lacking vegetative diversity, including dryland cropland and introduced cool season grass pastures.

5). Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 5,048 pronghorn. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population

indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit from the PopR IPM was approximately 5,950 (CL = 5,358 – 6,439) pronghorn. Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022. The population estimates shown in the table above reflect the population estimates derived from the PopR IPM model. In the population estimate graph, years 2016-2020 reflect estimates from the spreadsheet model and year 2021 reflects the estimate from the new PopR IPM model.

2021 - JCR Evaluation Form

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

HERD: PR523 - IRON MOUNTAIN

HUNT AREAS: 38
PREPARED BY: LEE KNOX

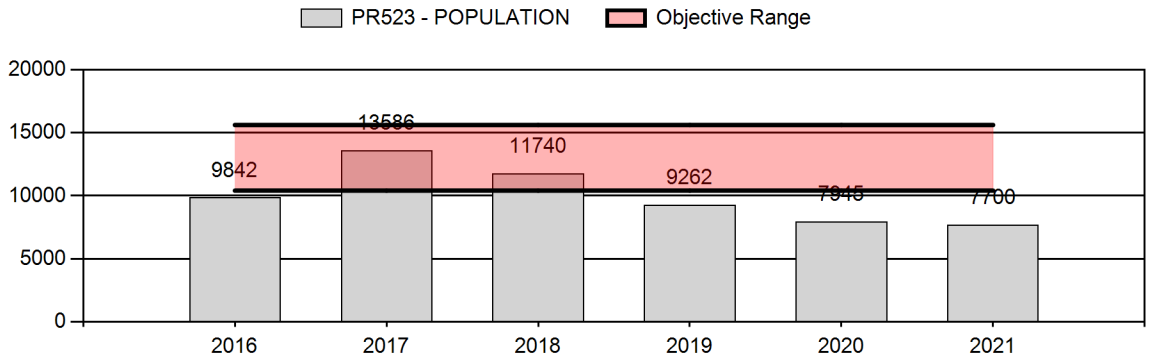
	2016 - 2020 Average	2021	2022 Proposed
Population:	10,475	7,700	8,100
Harvest:	1,288	570	550
Hunters:	1,582	722	650
Hunter Success:	81%	79%	85%
Active Licenses:	1,625	757	650
Active License Success:	79%	75%	85%
Recreation Days:	5,848	3,565	3,000
Days Per Animal:	4.5	6.3	5.5
Males per 100 Females	48	45	
Juveniles per 100 Females	54	42	

Population Objective (± 20%) :	13000 (10400 - 15600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-40.8%
Number of years population has been + or - objective in recent trend:	3
Model Date:	2/22/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	3%	8%
Males ≥ 1 year old:	37%	40%
Proposed change in post-season population:	3%	6%

Population Size - Postseason



2022 Hunting Seasons
Iron Mountain Pronghorn (PR523)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
38	1	Aug. 15	Oct. 4	Oct. 5	Oct. 31	400	Any antelope
38	2	Aug. 15	Oct. 4	Oct. 5	Nov. 30	400	Any antelope south of Wyoming Highway 34
38	6	Aug. 15	Oct. 4	Nov. 1	Dec. 31	25	Doe or fawn

2021 Hunter Satisfaction: 88% Satisfied, 6% Neutral, 6% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The Iron Mountain pronghorn herd is declining due to poor fawn recruitment. Fawn ratios overall have been in the high 50s and low 60s since 2016. While this is not especially low, we were seeing a large variation in fawn ratios from east to west, with fawn ratios from the eastern portion of the herd unit often in the high 30s to low 40s. The last two years we have seen poor fawn ratios throughout the herd unit with 40:100 does in 2020 and 42:100 in 2021(Appendix A). Buck ratios are slightly below the five year average of 47:100 does at 45:100 does. We have seen a decline in yearling bucks with only 5:100 does in 2021, further supporting poor fawn recruitment into the population. The season length will be shortened on the type 2 license, and the type 6 license will be decreased to a minimal level to continue to address the population being below objective.

Male harvest rates were 37% in 2021 and predicted to be 40% in 2022, meeting the goal of 25% male harvest in recreationally managed herds.

2.) Management Objective Review: The current objective was set at 13,000 in 1997. The management objective was last reviewed in 2019, and the next review will be in 2024.

3.) Habitat: Precipitation in Hunt Area 38 was well below normal for the biological year. Early spring precipitation occurred during April and May, but rain events decreased in frequency and amounts in early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather station data from Laramie documented a 12% decrease, and Cheyenne a 7% decrease in precipitation from average annual precipitation.

4.) Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 7,700 pronghorn. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit from the PopR IPM was approximately 7,700 (CL = 7,000 – 8,700) pronghorn. Postseason

population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The IPM model was used for the 2021 reporting period and there will be discrepancies in the estimate and the five year population graph on page one. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

Appendix A

Classification

2016 - 2021 Preseason Classification Summary

for Pronghorn Herd PR523 - IRON MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	11,909	162	259	421	24%	862	49%	463	27%	1,746	1,586	19	30	49	± 4	54	± 5	36
2017	15,282	157	387	544	25%	1,019	46%	630	29%	2,193	2,080	15	38	53	± 4	62	± 5	40
2018	13,097	142	296	438	25%	859	49%	451	26%	1,748	1,526	17	34	51	± 5	53	± 5	35
2019	10,431	142	158	300	21%	726	50%	417	29%	1,443	1,609	20	22	41	± 4	57	± 5	41
2020	8,743	90	211	301	24%	696	55%	276	22%	1,273	0	13	30	43	± 5	40	± 4	28
2021	8,500	24	189	213	24%	472	53%	199	23%	884	0	5	40	45	± 6	42	± 6	29

2021 - JCR Evaluation Form

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

HERD: PR524 - DWYER

HUNT AREAS: 103
PREPARED BY: KEATON WEBER

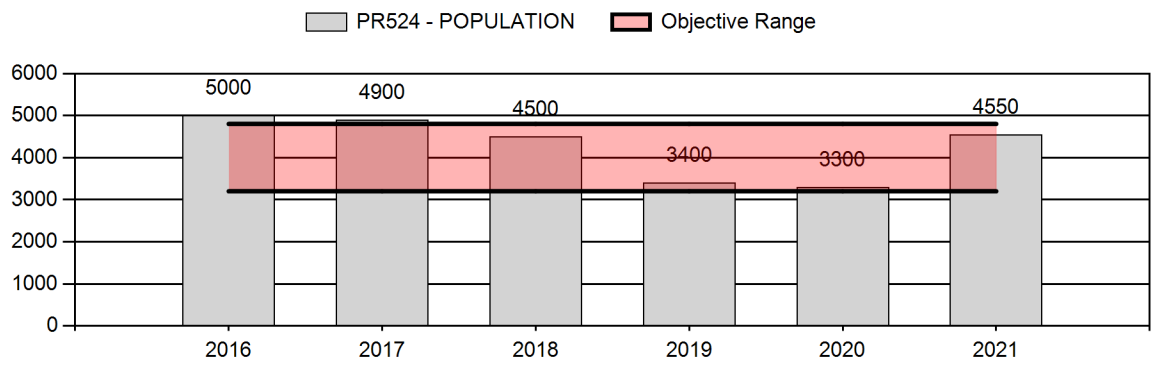
	2016 - 2020 Average	2021	2022 Proposed
Population:	4,220	4,550	4,900
Harvest:	672	217	150
Hunters:	793	318	200
Hunter Success:	85%	68%	75 %
Active Licenses:	841	367	230
Active License Success:	80%	59%	65 %
Recreation Days:	2,536	1,585	1,400
Days Per Animal:	3.8	7.3	9.3
Males per 100 Females	42	36	
Juveniles per 100 Females	36	36	

Population Objective (± 20%) :	4000 (3200 - 4800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	14%
Number of years population has been + or - objective in recent trend:	1
Model Date:	3/12/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	4%	8%
Males ≥ 1 year old:	16%	28%
Proposed change in post-season population:	+3%	+8%

Population Size - Postseason



2022 Hunting Seasons
Dwyer Pronghorn Herd Unit (PR524)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
103	1	Aug. 15	Oct. 4	Oct. 5	Oct. 31	250	Any antelope
103	6	Aug. 15	Oct. 4	Oct. 5	Nov. 30	50	Doe or fawn

2021 Hunter Satisfaction: 71% Satisfied, 14% Neutral, 15% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 season structure includes a reduction in both Type 1 and Type 6 licenses to address a population that has experienced poor fawn recruitment for five consecutive years (five-year average: 35 fawns:100 does) and population decline. The proportion of males in the population has steadily declined over the last 5 years from 56 males:100 females (2017) to 36 males:100 females (2021). In 2017, 1,072 pronghorn were classified. In 2021, only 406 pronghorn were classified, proving that this herd has been on a drastic decline. Even with a declining population there continues to be isolated areas of damage concerns, consequently a doe/fawn season will continue. Additionally, an early spring blizzard hit the area on March 14-15 of 2021 leaving anywhere from 30-40" of heavy, wet snow along the I-25 corridor from the Colorado state line to Casper. Excessive mortalities in pronghorn were observed post-storm due to snow depths as well as getting hit by vehicles on plowed roads and highways. Many fawns were likely aborted as a result of environmental stress and lack of nutrition during the weeks after the storm. A reduction in Type 6 licenses and shorter season length is warranted as a direct and indirect result of the storm. Hunter success has also drastically declined from 78% (2019) to 59% (2021). In 2021, the percentage of buck's harvested > 1 year old was 16% and the 3 year average is 32%. Poor adult buck harvest is likely attributed to the following: 1) excessive mortalities due to the snow storm, 2) poor fawn recruitment over multiple years and 3) overall population decline. At this time, this population cannot withstand an increase in hunter opportunity. Population estimates in the table above do not reflect the decreasing population trend due to the integration of a new population model in 2022 (see part 5. Population Modeling below). However, both models still indicate a decreasing trend in population size from 2011-present.

2.) Management Objective Review: The last time this herd unit's objective was reviewed was in 2019. The next objective review will take place in 2024.

3.) Weather and Habitat Data: Precipitation in this herd unit was well below normal in 2021. A large spring snowstorm event occurred in mid-March, likely resulting in some pronghorn mortalities, as snow depths exceeded 3'. Early spring precipitation occurred during April and May, but decreased significantly by early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather station data collected in Torrington and Douglas showed a 27% and 47% negative departure from average annual precipitation.

Cheatgrass control efforts post-Britannia wildfire continued in the western foothills portion of hunt area 103, with 5,399 acres being treated in 2020. Herbicide efficacy remains high post-treatment. Portions of the burned areas are utilized by pronghorn seasonally for their grass and forb components.

5). Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 3,000 pronghorn. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit from the PopR IPM was approximately 4,550 (CL = 4,074 - 4,979) pronghorn. Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022. The population estimates shown in the table above reflect the population estimates derived from the PopR IPM model. In the population estimate graph, years 2016-2020 reflect estimates from the spreadsheet model and year 2021 reflects the estimate from the new PopR IPM model.

2021 - JCR Evaluation Form

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

HERD: PR525 - MEDICINE BOW

HUNT AREAS: 30-32, 42, 46-48
PREPARED BY: LEE KNOX

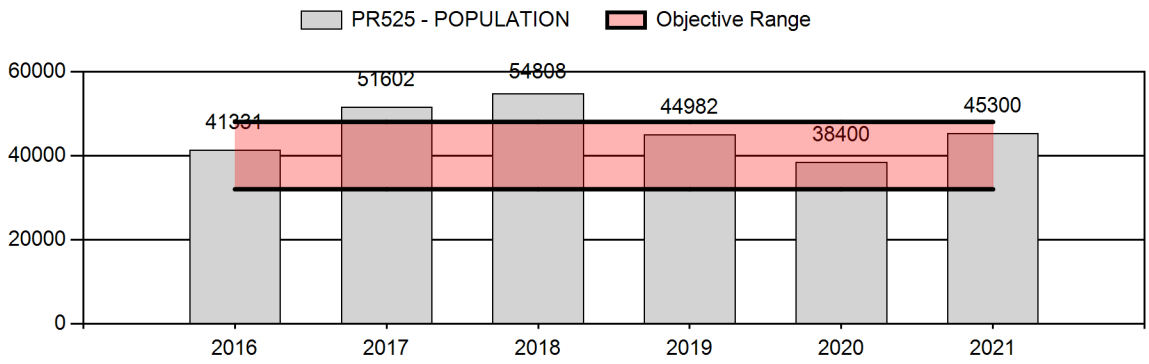
	2016 - 2020 Average	2021	2022 Proposed
Population:	46,225	45,300	44,000
Harvest:	3,224	2,560	2,600
Hunters:	3,534	2,855	3,000
Hunter Success:	91%	90%	87%
Active Licenses:	3,893	3,145	2,800
Active License Success:	83%	81%	93%
Recreation Days:	9,907	8,653	8,000
Days Per Animal:	3.1	3.4	3.1
Males per 100 Females	48	38	
Juveniles per 100 Females	67	74	

Population Objective (± 20%) :	40000 (32000 - 48000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	13%
Number of years population has been + or - objective in recent trend:	0
Model Date:	2/22/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	3%	4%
Males ≥ 1 year old:	27%	31%
Proposed change in post-season population:	7%	-3%

Population Size - Postseason



2022 Hunting Seasons
Medicine Bow Pronghorn Herd Unit (PR525)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
30	1	Aug. 15	Oct. 4	Oct. 5	Oct. 31	400	Any antelope
30	6	Aug. 15	Oct. 4	Oct. 5	Oct. 31	50	Doe or fawn
31	1	Aug. 15	Sep. 24	Sep. 25	Oct. 31	75	Any antelope
32	1	Aug. 15	Sep. 24	Sep. 25	Oct. 31	600	Any antelope
32	6	Aug. 15	Sep. 24	Sep. 25	Oct. 31	400	Doe or fawn
32	7	Aug. 15	Sep. 24	Sep. 25	Oct. 31	150	Doe or fawn valid on or within one (1) mile of irrigated land
42	1	Aug. 15	Sep. 24	Sep. 25	Oct. 31	200	Any antelope
42	6	Aug. 15	Sep. 24	Sep. 25	Oct. 31	50	Doe or fawn
46	1	Aug. 15	Sep. 24	Sep. 25	Oct. 31	100	Any antelope
46	2	Aug. 15	Sep. 24	Oct. 5	Oct. 31	25	Any antelope
46	6	Aug. 15	Sep. 24	Sep. 25	Oct. 31	25	Doe or fawn
47	1	Aug. 15	Sep. 24	Sep. 25	Oct. 31	500	Any antelope
47	2	Aug. 15	Sep. 24	Oct. 5	Oct. 31	500	Any antelope
47	6	Aug. 15	Sep. 24	Sep. 25	Oct. 31	500	Doe or fawn
48	1	Aug. 15	Sep. 24	Sep. 25	Oct. 31	150	Any antelope
48	2	Aug. 15	Sep. 24	Oct. 5	Oct. 31	150	Any antelope
48	6	Aug. 15	Sep. 24	Sep. 25	Oct. 31	50	Doe or fawn

2021 Hunter Satisfaction: 84% Satisfied, 10% Neutral, 6% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The current population estimate of 45,300 pronghorn is within 20% of the population objective of 40,000. However the effects of two hard winters and a persisting drought have reduced pronghorn numbers in the Medicine Bow herd unit, with hunt areas 31, 42, and 46, being the slowest to recover. Epizootic Hemorrhagic Disease (EHD) was also detected in several hunt areas in the herd unit with varying levels of impacts. Both type 2 and type 6 licenses were reduced in hunt areas 46 due to poor hunter success, and below average fawn and buck ratios of 43:100 does and 22:100 does respectively. Type 2 licenses were increased in hunt areas 47 and 48 due to above average hunter success at 95% and 92% respectively. Type 6 licenses were increased in hunt area 47 due to above average fawn ratios of 94:100 does. In hunt areas 30, 31, 32, and 42 license numbers and season structure remained status quo to maintain the population within objective.

Male harvest rates were 27% in 2021 and predicted to be 31% in 2022, meeting the goal of 25% male harvest in recreationally managed herds.

2.) Management Objective review: The current objective was set at 40,000 in 2014. The management objective was last reviewed in 2019 and will be up for review again in 2024.

3.) Habitat: Precipitation levels were below normal for the 2021 biological year. Early spring precipitation occurred during April and May, but quickly diminished in early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather stations in Laramie and Rawlins recorded departures from average annual precipitation of -12% and +6% respectively. Late summer monsoonal moisture patterns benefitted some areas in the southern portion of the herd unit, providing some late summer green-up of forages, which should have aided does with fawn rearing nutritional demands. Shrub conditions continue to be very poor with the landscape being dominated by late seral shrub plant communities and continued overutilization by big game.

In Hunt Area 48, the RR316 wildlife burned 14,200 acres in spring, summer and fall pronghorn ranges. High burn severity and xeric conditions will result in slow plant recovery and soil stabilization, and will result in the loss of sagebrush habitats for decades. Conversion of 10 miles of woven wire / barbed combination fence to 4 wire fence was completed south of HWY 30 within the wildfire area, which should lead to improved pronghorn movements. Additional fence on the highway ROW on Hwy 30 and Hwy 72 is also being considered for conversion to 4 wire fence from woven wire/barbed fence. This conversion should allow for some improvement in pronghorn movement in Area 48. Proposed solar and wind energy development could result in loss of pronghorn habitats and may impede pronghorn migration movements depending on final location of energy projects and associated infrastructure. The Department plans to work with conservation partners to improve habitats in uplands in Area 47 through construction of Zeedyk structures in ephemeral draws, which may improve summer forage quality and quantity available, resulting in better lactation for does and subsequent fawn survival.

4.) Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 40,000 pronghorn In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit from the PopR IPM was approximately 45,300 (CL = 42,500 – 48,600). Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The IPM model was used for the 2021 reporting period and there will be discrepancies in the estimate and the five year population graph on page one. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

Appendix A

Classification

2016 - 2021 Preseason Classification Summary

for Pronghorn Herd PR525 - MEDICINE BOW

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	43,874	614	806	1,420	22%	3,007	46%	2,046	32%	6,473	2,492	20	27	47	± 2	68	± 3	46
2017	54,726	516	996	1,512	24%	2,764	44%	1,962	31%	6,238	2,807	19	36	55	± 3	71	± 3	46
2018	58,808	537	1,186	1,723	25%	3,071	45%	2,073	30%	6,867	2,392	17	39	56	± 3	68	± 3	43
2019	49,195	335	791	1,126	21%	2,612	48%	1,730	32%	5,468	2,349	13	30	43	± 2	66	± 3	46
2020	42,300	260	724	984	19%	2,599	51%	1,560	30%	5,143	0	10	28	38	± 2	60	± 3	44
2021	50,900	253	634	887	18%	2,345	47%	1,724	35%	4,956	0	11	27	38	± 2	74	± 4	53

2021 - JCR Evaluation Form

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

HERD: PR526 - COOPER LAKE

HUNT AREAS: 43
PREPARED BY: LEE KNOX

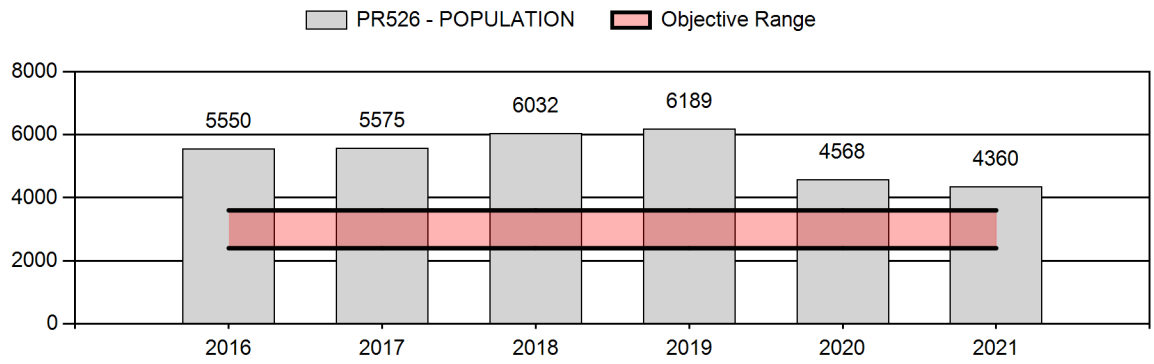
	2016 - 2020 Average	2021	2022 Proposed
Population:	5,583	4,360	3,731
Harvest:	837	586	400
Hunters:	1,016	840	450
Hunter Success:	82%	70%	89%
Active Licenses:	1,088	877	450
Active License Success:	77%	67%	89%
Recreation Days:	3,110	2,675	1,500
Days Per Animal:	3.7	4.6	3.8
Males per 100 Females	57	46	
Juveniles per 100 Females	79	98	

Population Objective (± 20%) :	3000 (2400 - 3600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	45%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/22/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	15%	15%
Males ≥ 1 year old:	34%	33%
Proposed change in post-season population:	4%	14%

Population Size - Postseason



2022 Hunting Seasons
Cooper Lake (PR526)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
43	1	Aug. 15	Sep. 14	Sep. 15	Oct. 31	350	Any antelope
43	6	Aug. 15	Sep. 14	Sep. 15	Oct. 31	25	Doe or fawn

2021 Hunter Satisfaction: 66% Satisfied, 16% Neutral, 18% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: Cooper Lake is predominantly a private land herd. The majority of harvest comes from the Laramie River and Diamond Lake Hunter Management Areas. This herd is above objective, but has declined drastically due to persistent drought conditions as well as Epizootic Hemorrhagic Disease (EHD), and is below desired social carrying capacity. Hunter success on type 1 licenses dropped below the five year average of 84% to 69%. Classification routes are standardized to make some inference to change in population over time, and the 2021 classification sample was the lowest since 2012 at 416 pronghorn. Above average buck ratios were observed in 2021 at 46:100 does (Appendix A). Fawn recruitment was exceptional with 98:100 does, and with the proposed license cuts, we should see the population increase.

Male harvest rate for 2021 was 34%, and is predicted to be 33% in 2022, meeting the goal of $\geq$25% male harvest in recreational management herds.

2.) Management Objective Review: The current objective was set at 3,000 in 1986. The management objective was last reviewed in 2018 and will be reviewed again in 2023.

3.) Habitat: Precipitation levels were below normal for the 2021 biological year. Over three feet of snow fell in a mid-March storm event, likely resulting in pronghorn mortalities. Early spring precipitation occurred during April and May, but quickly diminished in early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather station data from Laramie indicated a departure from average annual precipitation of 12%. Seasonal water sources dried up earlier than normal causing shifts in pronghorn habitat use.

4.) Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 4,900 pronghorn. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit from the PopR IPM was approximately 4,360 (CL = 3,500 – 5,300) pronghorn. Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The IPM model was used for the 2021 reporting period and there will be discrepancies in the estimate and the five year population graph on page one. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

Appendix A

Classification

2016 - 2021 Preseason Classification Summary

for Pronghorn Herd PR526 - COOPER LAKE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	6,367	109	139	248	27%	345	38%	324	35%	917	2,878	32	40	72	± 9	94	± 11	55
2017	6,500	135	243	378	27%	564	41%	437	32%	1,379	2,904	24	43	67	± 7	77	± 7	46
2018	6,998	52	88	140	23%	246	41%	211	35%	597	1,984	21	36	57	± 9	86	± 13	55
2019	7,137	34	100	134	19%	336	48%	236	33%	706	1,959	10	30	40	± 6	70	± 9	50
2020	5,447	48	52	100	18%	268	49%	182	33%	550	0	18	19	37	± 7	68	± 10	49
2021	5,400	23	55	78	19%	171	41%	167	40%	416	0	13	32	46	± 10	98	± 17	67

2021 - JCR Evaluation Form

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

HERD: PR527 - CENTENNIAL

HUNT AREAS: 37, 44-45
PREPARED BY: LEE KNOX

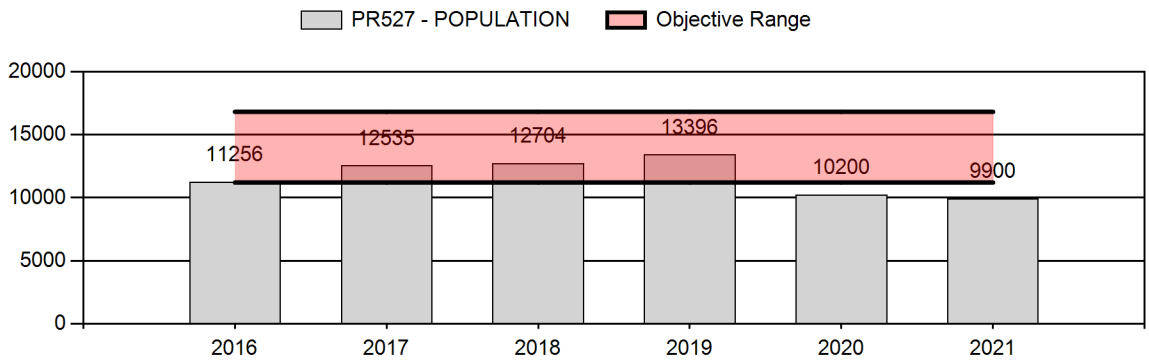
	2016 - 2020 Average	2021	2022 Proposed
Population:	12,018	9,900	9,600
Harvest:	993	1,009	900
Hunters:	1,095	1,291	1,100
Hunter Success:	91%	78%	82%
Active Licenses:	1,210	1,420	1,100
Active License Success:	82%	71%	82%
Recreation Days:	3,792	5,418	3,500
Days Per Animal:	3.8	5.4	3.9
Males per 100 Females	45	31	
Juveniles per 100 Females	54	54	

Population Objective (± 20%) :	14000 (11200 - 16800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-29.3%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/22/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	7%	7%
Males ≥ 1 year old:	35%	32%
Proposed change in post-season population:	2%	2%

Population Size - Postseason



2022 HUNTING SEASONS
Centennial Pronghorn Herd (PR527)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
37	1	Aug. 15	Sep. 19	Sep. 20	Oct. 14	300	Any antelope
37	6	Aug. 15	Sep. 19	Sep. 20	Oct. 14	100	Doe or fawn
44	1	Aug. 15	Sep. 14	Sep. 15	Oct. 31	100	Any antelope
44	6	Aug. 15	Sep. 14	Sep. 15	Oct. 31	25	Doe or fawn
45	1	Aug. 15	Sep. 14	Sep. 15	Oct. 31	500	Any antelope
45	6	Aug. 15	Sep. 14	Sep. 15	Oct. 31	50	Doe or fawn

2021 Hunter Satisfaction: 81% Satisfied, 15% Neutral, 4% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The management strategy is recreational management which prescribes for a buck ratio of 30 to 59:100 does. Buck ratios remain within management guidelines at 31:100 does, with a 3 year average of 38:100 does (Appendix A). Fawn ratios have been low, with the three year average of 54:100 does, due to severe drought. Epizootic Hemorrhagic Disease (EHD) was detected in hunt areas 44 and 45, with the largest impact to the population being in hunt area 44. Hunter success was 54% on type 1 licenses, and 44% on type 6 licenses in hunt area 44. To address the very low success rates we will be cutting the type 1 licenses by 350 and the type 6 by 75. Hunt area 45 type 6 will be reduced by 150 to address EHD and drought effects on the population. Hunt area 37 and hunt area 45 type 1 licenses will remain status quo due to good hunter success in 2021.

Male harvest rates were 35% in 2021 and predicted to be 32% in 2022, meeting the goal of 25% male harvest in recreationally managed herds.

2.) Management Objective review: The current objective was set at 14,000 in 1997. The management objective was last reviewed in 2018 and will be reviewed again in 2023.

3.) Habitat Precipitation levels were below normal for the 2021 biological year. Over three feet of snow fell in a mid-March storm event, causing pronghorn mortalities in parts of the herd unit. Early spring precipitation occurred during April and May, but quickly diminished in early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather station data from Laramie indicated a departure from average annual precipitation of 12%. Seasonal water sources dried up earlier than normal causing shifts in pronghorn habitat use.

4.) Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 11,000 pronghorn. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit

from the PopR IPM was approximately 10,000 (CL = 8,600 – 11,200) pronghorn. Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The IPM model was used for the 2021 reporting period and there will be discrepancies in the estimate and the five year population graph on page one. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

Appendix A

Classification

2016 - 2021 Preseason Classification Summary

for Pronghorn Herd PR527 - CENTENNIAL

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	12,388	182	353	535	25%	1,000	48%	565	27%	2,100	1,724	18	35	54	± 4	56	± 4	37
2017	13,681	107	284	391	21%	972	52%	508	27%	1,871	2,039	11	29	40	± 4	52	± 4	37
2018	13,800	124	260	384	23%	823	50%	439	27%	1,646	1,532	15	32	47	± 4	53	± 5	36
2019	14,782	132	328	460	23%	1,006	50%	562	28%	2,028	1,609	13	33	46	± 4	56	± 4	38
2020	11,100	79	207	286	20%	743	53%	383	27%	1,412	0	11	28	38	± 4	52	± 5	37
2021	11,400	61	170	231	17%	747	54%	400	29%	1,378	0	8	23	31	± 4	54	± 5	41

2021 - JCR Evaluation Form

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

HERD: PR528 - ELK MOUNTAIN

HUNT AREAS: 50
PREPARED BY: TEAL CUFAUDE

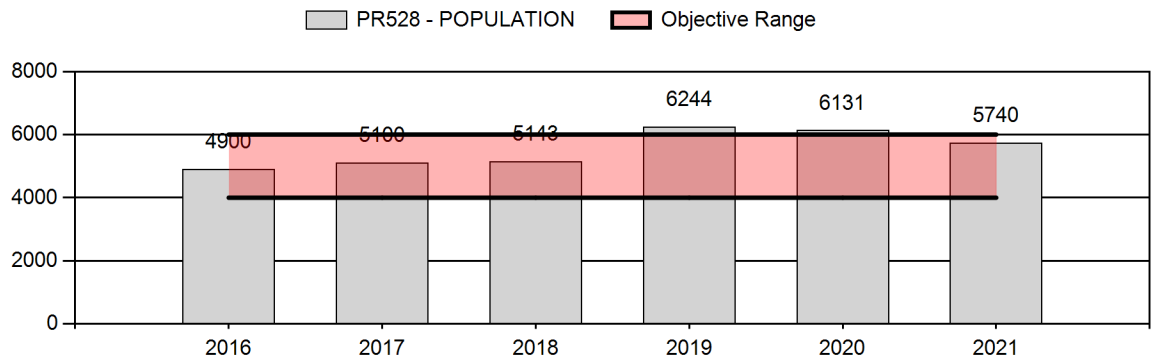
	2016 - 2020 Average	2021	2022 Proposed
Population:	5,504	5,740	5,800
Harvest:	368	382	395
Hunters:	388	406	415
Hunter Success:	95%	94%	95%
Active Licenses:	431	448	450
Active License Success:	85%	85%	88%
Recreation Days:	1,156	1,118	1,150
Days Per Animal:	3.1	2.9	2.9
Males per 100 Females	45	46	
Juveniles per 100 Females	50	31	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	15%
Number of years population has been + or - objective in recent trend:	7
Model Date:	2/14/2022

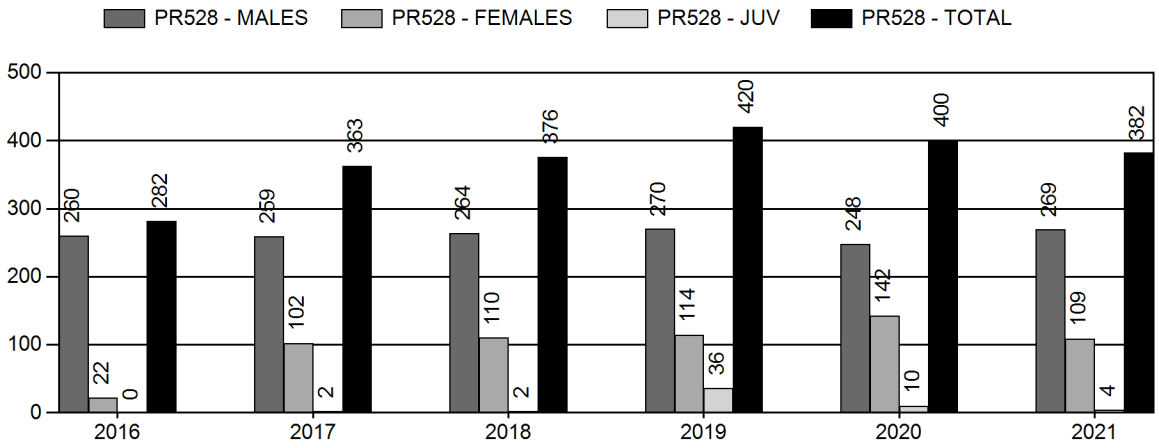
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	4.9%	3.9%
Males ≥ 1 year old:	20.3%	21.4%
Proposed change in post-season population:	1.3%	1.4%

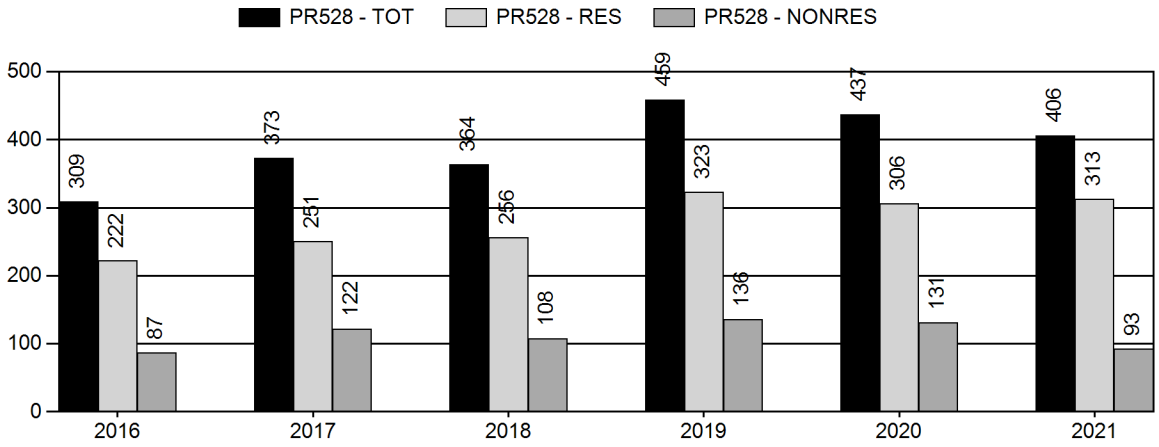
Population Size - Postseason



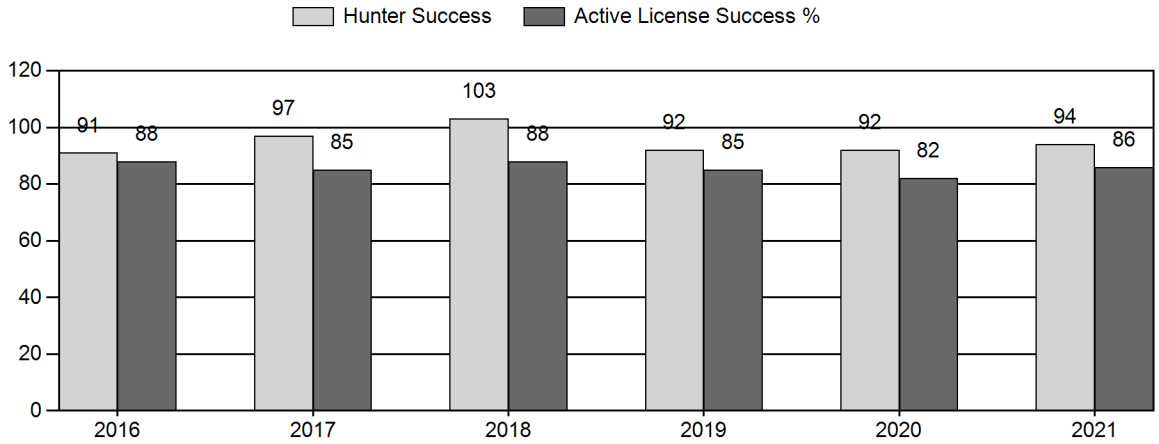
Harvest



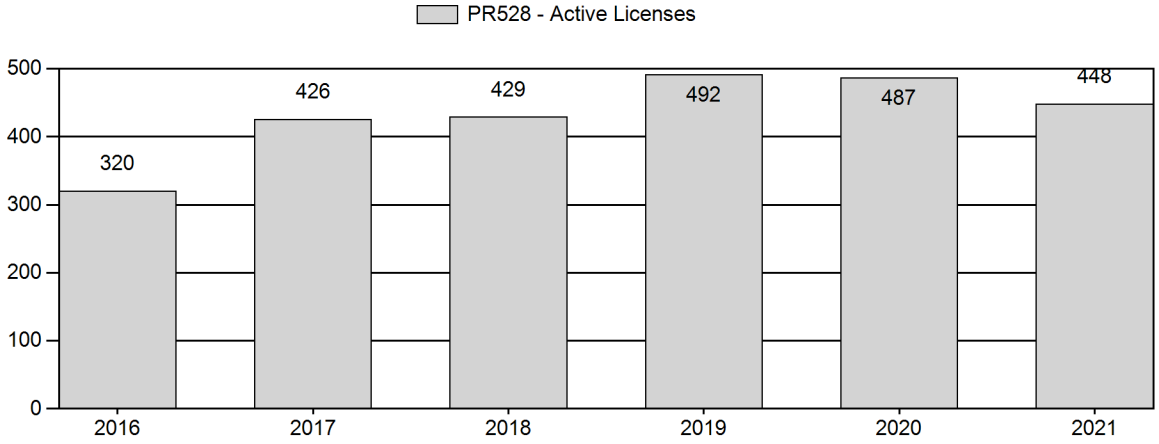
Number of Hunters



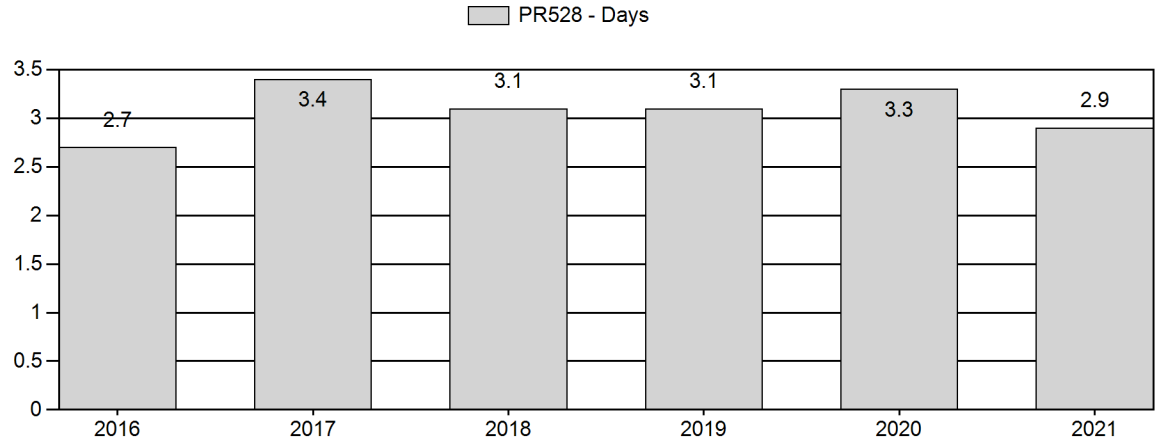
Harvest Success



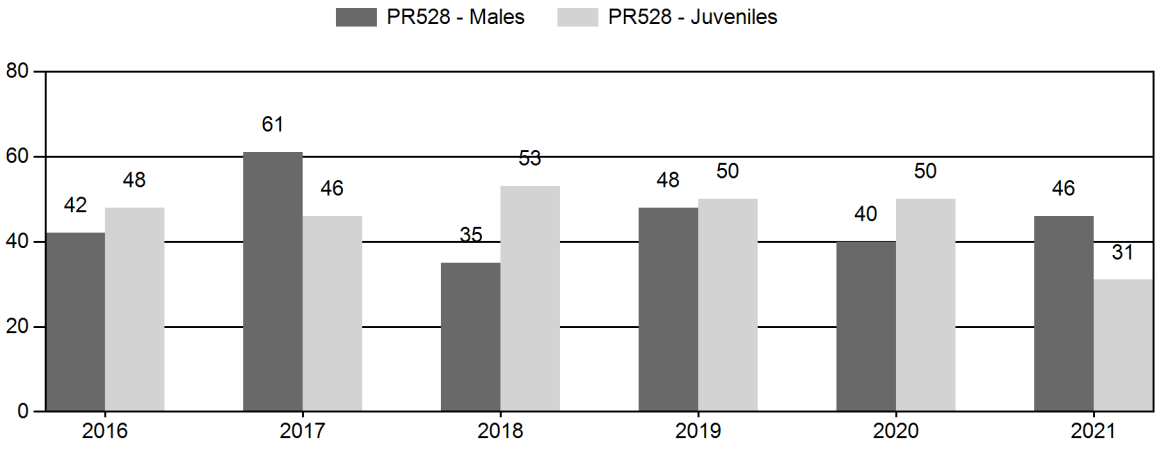
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2022 Hunting Seasons
Elk Mountain Pronghorn (PR528)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
50	1	Aug. 15	Aug. 31	Sep. 16	Oct. 31	300	Any antelope
50	6	Aug. 15	Aug. 31	Sep. 16	Oct. 31	200	Doe or fawn
50	0			Sep. 1	Sep. 15	50	Any antelope, muzzle-loading firearms only

2021 Hunter Satisfaction: 84% Satisfied, 13% Neutral, 3% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The pre-season fawn/doe ratio (31/100) was the lowest ratio observed in the last five years and the buck/doe ratio (46/100) remained within the recreational management objective limits (Appendix A). The yearling buck ratio (8/100) was also the lowest ratio observed in the last five years, indicating poor over winter juvenile survival. In 2021, hunter satisfaction decreased slightly, however days to harvest (2.9) was reasonable compared to the five-year average. Hunter success (94%) was also comparable to the last five years. The 2021 post-season population estimate was within the 5,000 (±20%) population objective range. The 2022 license allocation should allow for stabilizing pronghorn numbers near the upper end of the population objective range in 2022.

According to the spreadsheet model, projected harvest from the 2022 license quotas represent approximately 21% of the bucks estimated to be in the herd, which is below the 25% target. PopR IPM estimated that the 2022 license quotas represented approximately 30% of bucks predicted to be in the herd. In 2022, a Hunter Management Area that accommodated more than 90 hunt area 50 hunters each year was no longer enrolled in the Access Yes program. We expect this loss of hunter access to over 10,000 acres of pronghorn habitat will make a substantial number of pronghorn unavailable for harvest in 2022. Additionally, the poor fawn production (fawn/doe ratio) and recruitment (yearling buck/doe ratio) in 2021 could have an impact on the number of mature bucks available for harvest for several years.

2.) Management Objective Review: The objective was last reviewed in 2018 and will be reviewed again in 2023.

3.) Weather/Habitat: Snow accumulations, especially at higher elevations within this hunt area were below normal. Precipitation levels were also below normal for the 2021 biological year. Bureau of Land Management (BLM) rain gauge data indicate that precipitation levels at lower elevations ranged between 85-87% of normal throughout this hunt area. Precipitation events throughout the spring and summer were sporadic and covered very small geographic areas. Late summer monsoonal moisture at higher elevations provided some late summer green-up of forage which likely aided fawn rearing does in meeting nutritional demands. Temperatures were very high in early June, resulting in earlier senescence of grasses and forbs. This likely resulted in pronghorn

dietary shifts to shrub communities earlier in the year than normal. Through fall and early winter 2021, conditions remained mild, with no persistent snow accumulations.

The Wyoming Game and Fish Department and Carbon County Weed and Pest continued invasive weed treatments in hunt area 50. In 2021, 1,120 acres of important wildlife habitat on the Pennock Wildlife Habitat Management Area were aerially treated with Indaziflam (Rejuvra) to control cheatgrass infestations. Post-treatment monitoring to assess efficacy will be conducted in 2022. Additionally, WGFD and Carbon County Weed and Pest continued to treat leafy spurge across hunt area 50 and 51. Through the Platte Valley Habitat Partnership, the Saratoga-Encampment-Rawlins Conservation District, BLM, WGFD, United States Forest Service (USFS), and private landowners have worked together to identify fences in the Platte Valley in need of wildlife-friendly conversion. Approximately 1.8 miles of hazardous fence was converted to wildlife-friendly design in hunt area 50.

In September 2020, the Mullen Fire burned approximately 176,800 acres in the Snowy Range on the Medicine Bow National Forest. The burned acreage included the southern extent of hunt area 50. To combat cheatgrass infestations, over 10,300 acres in the Medicine Bow National Forest were aerially treated with Rejuvra during the summer of 2021. Due to high fire severity, some areas containing mixed mountain shrub stands experienced high levels of shrub mortality. Several thousand shrub seedlings were planted west of the North Platte River in the fall of 2021 by USFS, WGFD personnel, and volunteers. Additional shrub seeding efforts may be necessary to aid in shrub recovery. A large-scale monitoring effort, in conjunction with the USFS, will be completed in 2022 to evaluate herbicide efficacy in year 1 post-treatment.

4.) Line Transect Survey: A LT survey was conducted to estimate pronghorn abundance at the end of biological year 2018. The end of biological year population estimate was 13,107 pronghorn (95% confidence interval= 9,847-17,445 pronghorn).

5.) Population Modeling: The bio-year 2021 post-season population estimate for this herd unit from the WGFD spreadsheet model was approximately 5,744 pronghorn. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for pronghorn. The 2021 post-season population estimate for this herd unit from the PopR IPM was approximately 5,341(CL = 4,581–6,148) pronghorn. Post-season population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

2016 - 2021 Preseason Classification Summary

for Pronghorn Herd PR528 - ELK MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	5,200	80	83	163	22%	391	53%	189	25%	743	1,459	20	21	42	± 6	48	± 7	34
2017	5,500	157	152	309	30%	503	48%	230	22%	1,042	1,426	31	30	61	± 7	46	± 5	28
2018	5,557	74	111	185	19%	523	53%	276	28%	984	1,209	14	21	35	± 5	53	± 6	39
2019	6,706	95	197	292	24%	610	50%	308	25%	1,210	1,214	16	32	48	± 5	50	± 5	34
2020	6,571	85	187	272	21%	677	53%	340	26%	1,289	1,606	13	28	40	± 4	50	± 5	36
2021	6,160	43	219	262	26%	570	57%	176	17%	1,008	1,220	8	38	46	± 5	31	± 4	21

2021 - JCR Evaluation Form

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

HERD: PR529 - BIG CREEK

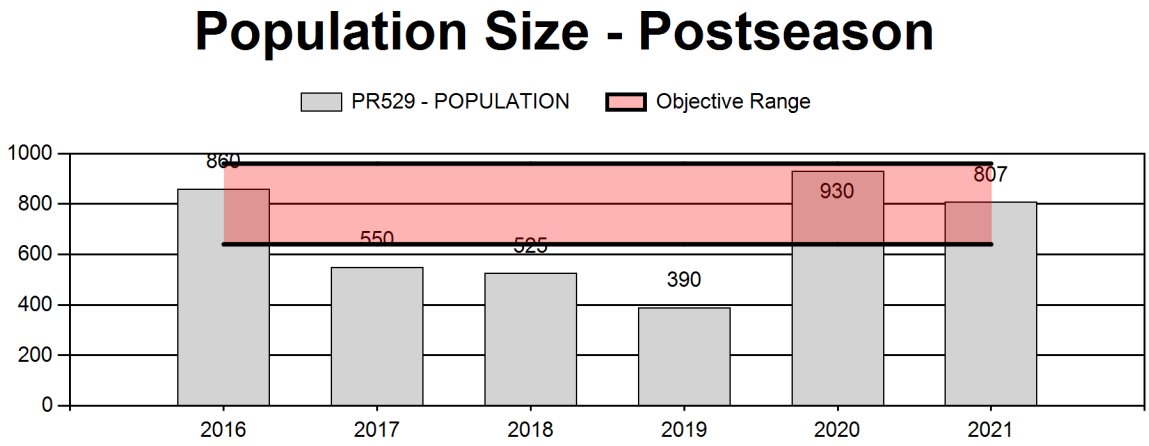
HUNT AREAS: 51
PREPARED BY: TEAL CUFAUDE

	2016 - 2020 Average	2021	2022 Proposed
Population:	651	807	680
Harvest:	150	150	160
Hunters:	156	181	175
Hunter Success:	96%	83%	91%
Active Licenses:	182	202	200
Active License Success:	82%	74%	80%
Recreation Days:	542	661	665
Days Per Animal:	3.6	4.4	4.2
Males per 100 Females	68	58	
Juveniles per 100 Females	54	69	

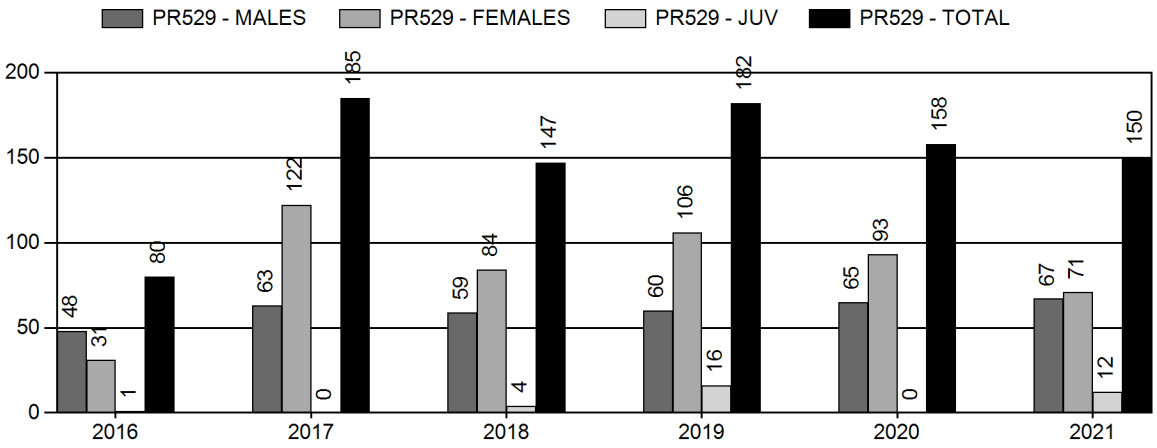
Population Objective (± 20%) :	800 (640 - 960)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	1%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/14/2022

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

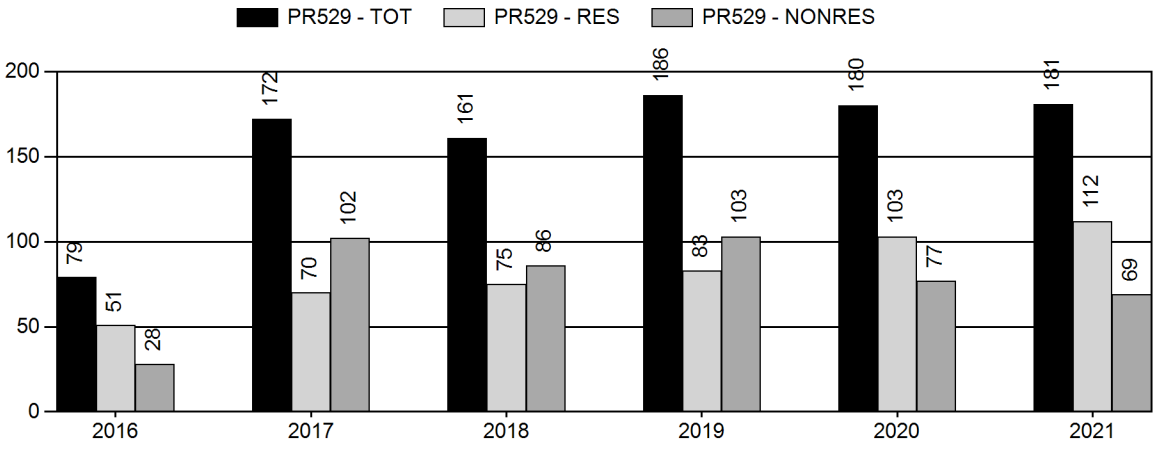
	JCR Year	Proposed
Females ≥ 1 year old:	25.1%	27%
Males ≥ 1 year old:	19.8%	25%
Proposed change in post-season population:	14%	16%



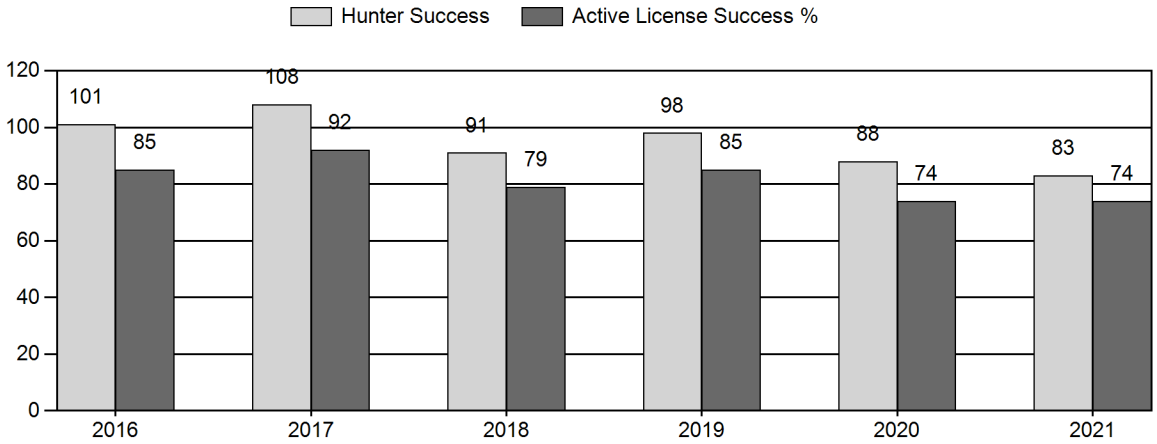
Harvest



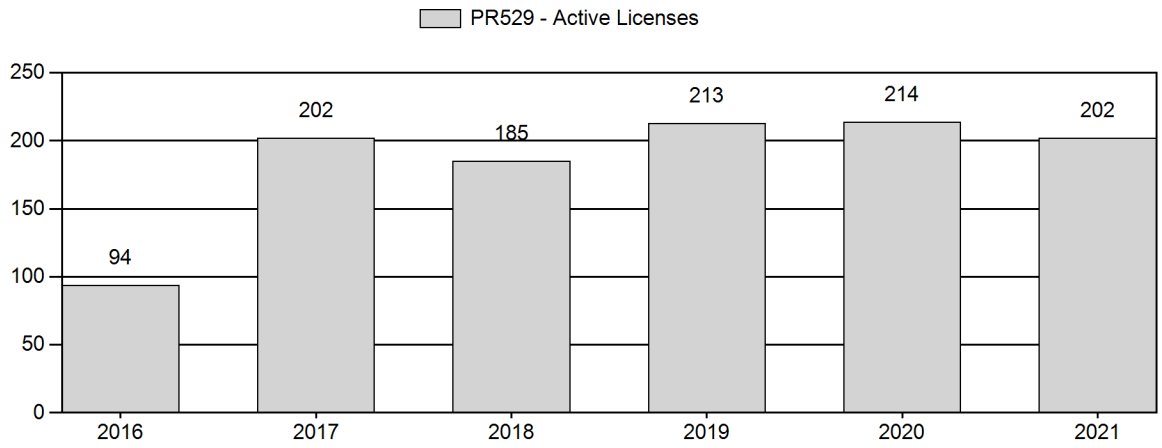
Number of Hunters



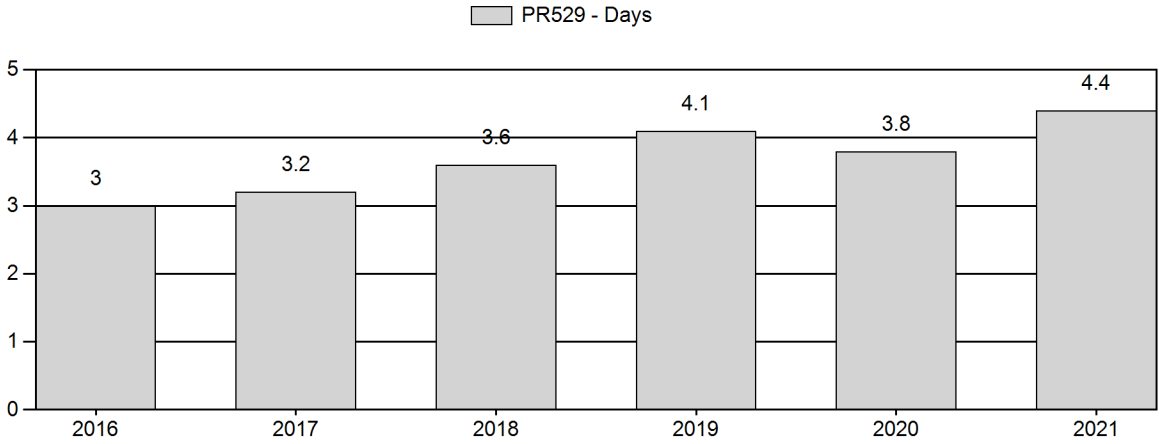
Harvest Success



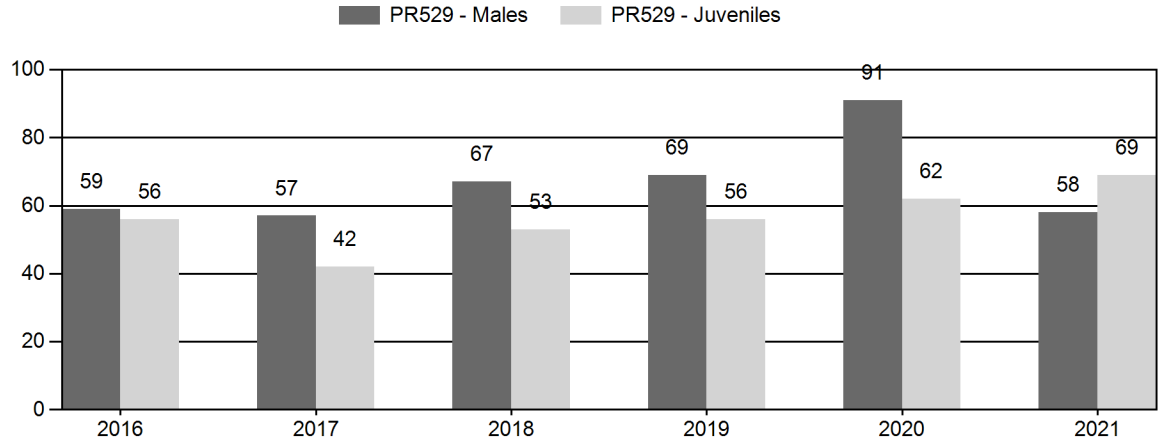
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2022 Hunting Seasons
Big Creek Pronghorn (PR529)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
51	1	Aug. 15	Sep. 15	Sep. 16	Nov. 14	100	Any antelope
	6			Aug. 15	Sep. 15	100	Doe or fawn valid on private land
		Aug. 15	Sep. 15	Sep. 16	Nov. 14		Doe or fawn valid in the entire area

2021 Hunter Satisfaction: 88% Satisfied, 11% Neutral, 1% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The pre-season fawn/doe ratio (69/100) exceeded the five-year average and buck/doe ratio (58/100) remained above recreational management objective limits (Appendix A). The yearling buck ratio was very low (4/100) indicating poor winter fawn survival. Hunter success (83%) decreased and days to harvest increased (4.4) compared to 2020 signifying a challenging 2021 hunting season. However, hunter satisfaction increased in 2021. The 2021 post-season population estimate was within the objective range, however the spreadsheet model for this herd affords managers little opportunity to obtain an accurate post-hunt population estimate. One challenge when modeling this herd is that it is an interstate population. Based on classification sample sizes and past Line Transect Surveys, managers estimate the herd to be performing better than the model estimates. The 2022 season structure is expected to maintain pronghorn numbers within the objective range.

According to the spreadsheet model, projected harvest from the 2022 license quotas represents 25% of the males estimated to be in this herd, meeting the 25% target. Doe pronghorn can be difficult to access in this herd unit as they often congregate on private land during the season. The type 6 hunter success (66%) in 2021, was below the five-year average success (80%) which was attributed to fewer does available to harvest on public land. Additionally, agricultural damage by pronghorn has been minimal over the last two years so type 6 licenses were reduced in 2022.

2.) Management Objective Review: The objective was last reviewed in 2018 and will be reviewed again in 2023.

3.) Weather/Habitat: Snow accumulations, especially at higher elevations within this hunt area were below normal. Precipitation events throughout the spring and summer were sporadic and covered very small geographic areas. Bureau of Land Management (BLM) rain gauge data indicate that precipitation levels ranged between 77-103% of normal throughout this hunt area. Temperatures were very high in early June, resulting in earlier senescence of grasses and forbs. This likely resulted in pronghorn dietary shifts to shrub communities earlier in the year than normal. Through fall and early winter 2021, conditions remained mild, with no persistent snow accumulations.

Through the Platte Valley Habitat Partnership, the Saratoga-Encampment-Rawlins Conservation District, BLM, Wyoming Game and Fish Department (WGFD), United States Forest Service (USFS), and private landowners have worked together to identify fences in the Platte Valley in need of wildlife-friendly conversion. These fence conversions are intended to increase overall habitat connectivity, decrease big game mortalities, and maintain proper grazing systems. In 2021, approximately 5 miles of hazardous fence was converted to wildlife-friendly design in hunt area 51. Additionally, WGFD and Carbon County Weed and Pest continued leafy spurge treatments in this hunt area.

In September 2020, the Mullen Fire burned approximately 176,800 acres in the Snowy Range on the Medicine Bow National Forest. The southeast portion of hunt area 51 falls within the Mullen Fire burn area. To combat cheatgrass infestations, over 10,300 acres in the Medicine Bow National Forest were aerially treated with Rejuvra during the summer of 2021. Due to high fire severity, some areas containing mixed mountain shrub stands experienced high levels of shrub mortality. Several thousand shrub seedlings were planted west of the North Platte River in the fall of 2021 by USFS, WGFD personnel, and volunteers. Additional shrub seeding efforts may be necessary to aid in shrub recovery. A large scale monitoring effort, in conjunction with the USFS, will be completed in 2022 to evaluate herbicide efficacy in year 1 post-treatment.

Past large-scale wildfires within the Sierra Madre Range (Snake fire – 2016, Beaver Creek fire – 2016, and Ryan fire – 2018) are recovering at varying rates. These fires have increased the age class diversity and reset succession within the fire perimeters.

4.) Line Transect Survey: A Line Transect (LT) survey was conducted to estimate pronghorn abundance at the end of biological year 2018. The end of biological year population estimate was 2,704 pronghorn (95% confidence interval=1,946-3,757 pronghorn).

5.) Population Modeling: The bio-year 2021 post-season population estimate for this herd unit from the WGFD spreadsheet model was approximately 807 pronghorn. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for pronghorn. The 2021 post-season population estimate for this herd unit from the PopR IPM was approximately 738 (CL = 576-915) pronghorn. Post-season population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

2016 - 2021 Preseason Classification Summary

for Pronghorn Herd PR529 - BIG CREEK

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	950	61	123	184	27%	311	46%	175	26%	670	657	20	40	59	± 5	56	± 5	35
2017	750	48	114	162	29%	285	50%	120	21%	567	435	17	40	57	± 5	42	± 4	27
2018	687	45	186	231	31%	344	45%	182	24%	757	546	13	54	67	± 3	53	± 3	32
2019	590	52	144	196	31%	283	44%	159	25%	638	448	18	51	69	± 3	56	± 3	33
2020	1,103	38	185	223	36%	245	39%	153	25%	621	587	16	76	91	± 9	62	± 7	33
2021	968	11	155	166	26%	287	44%	197	30%	650	640	4	54	58	± 5	69	± 6	43

2021 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS516 - DOUGLAS CREEK

HUNT AREAS: 18

PREPARED BY: Lee Knox

	2016 - 2020 Average	2021	2022 Proposed
Population:		N/A	N/A
Harvest:	1	1	2
Hunters:	1	2	2
Hunter Success:	100%	50%	100 %
Active Licenses:	1	1	2
Active License Success:	100%	100%	100 %
Recreation Days:	7	7	10
Days Per Animal:	7	7	10

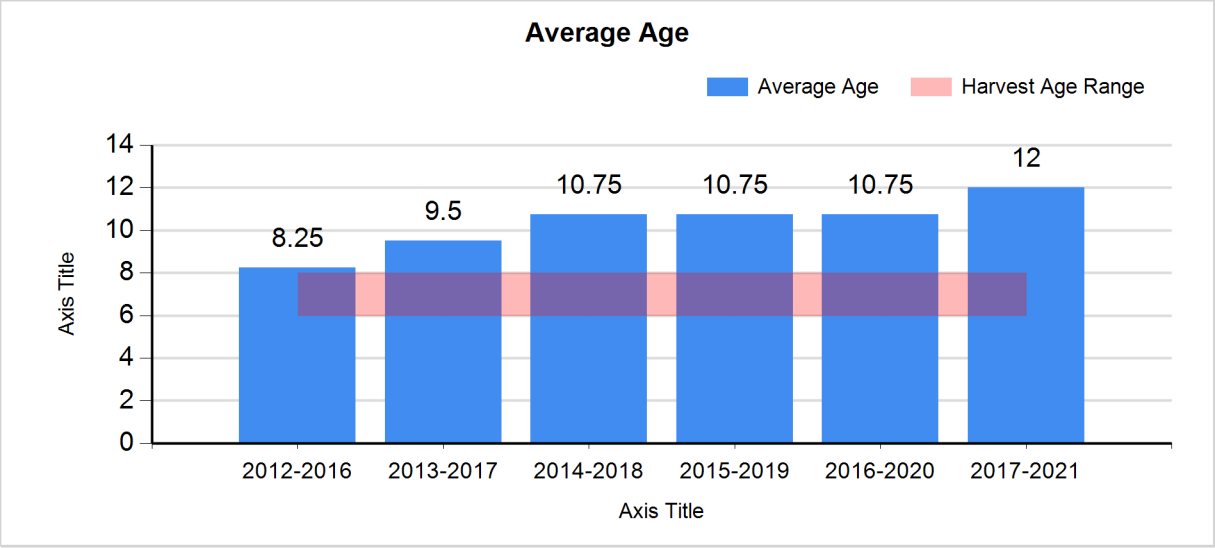
Limited Opportunity Objective:

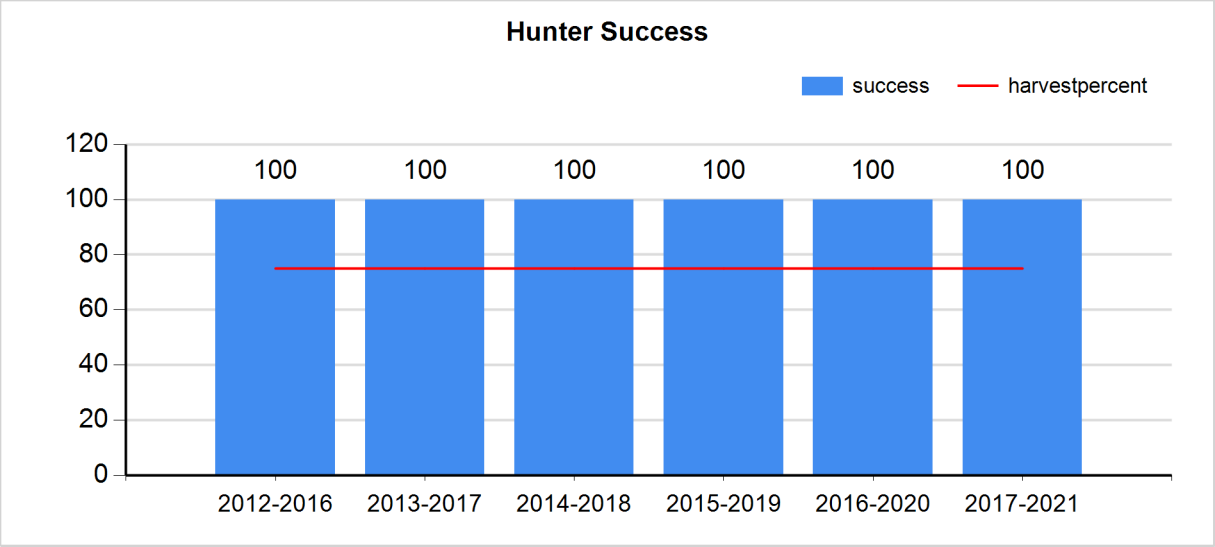
5-year average of > 75% hunter success

5-year average harvest age of 6-8 years

Secondary Objective:

Management Strategy: Special




Hunter Success
success
harvestpercent
120
100
80
60
40
20
0
100
100
100
100
100
100
2012-2016
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021

2022 Hunting Seasons
Douglas Creek Bighorn Sheep Herd Unit (BS 516)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
18, 21	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	2	Any ram (1 resident, 1 nonresident)
18,21	1			Nov.1	Nov. 30		Any ram, valid only in Hunt Area 18

Current Management Objective: Bighorn Sheep Limited Opportunity

1) 5-year running average of >75% hunter success
   - Currently Met: 2017-2021 Hunter Success- 100%
2) 5-year running average age of harvested rams between 6 and 8 years of age
   - Currently Met: 2017-2021 Harvest Mean Age- 12 years of age
3) Documented occurrence of adult rams in the population
   - Currently Met: > 12 adult rams observed in 2021

2022 Management Summary

1.) Hunting Season Evaluation The 2022 hunting season structure provided one resident hunter and one nonresident hunter the opportunity to harvest mature rams in hunt areas 18 or 21. Based on frequent observations of mature rams in both herds, managers elected to forgo the traditional season closure to provide more opportunity. We expect hunters will have a high likelihood of success and this herd will continue to meet the bighorn sheep limited opportunity management objectives.

2.) Management Objective Review: The management objective for the Douglas Creek Herd Unit is a limited opportunity. The herd management objective was reviewed in 2021 and will be reviewed again in 2026.

3.) Research: In February of 2022, 19 ewe bighorn sheep were collared in the Douglas Creek Herd Unit. We were able to recollar five of the ewes collared in 2019. This data will allow us to look at individual and population level effects of the Mullen Fire on bighorn sheep.

4.) Habitat Annual precipitation in the hunt area was below normal in 2021. Winter severity was light to moderate, likely resulting in little to no significant mortality events. In September 2020, the Mullen Fire burned approximately 176,800 acres in the Snowy Range, with the bulk of acres burned on national forest lands, including two wilderness areas. The western third of the wildfire encompasses occupied bighorn sheep habitat. Burning of beetle killed lodgepole pine stands is likely to open line of sight visibility, and create more open travel corridors for bighorns, aiding

their movements to escape terrain and lambing habitats. High fire severity in places is continued cause for concern for cheatgrass invasion in Savage Run and Platte River wilderness areas, as well as other areas adjacent to North Platte River. In summer 2021, 10,334 acres were treated with the herbicide Rejuvra via helicopter. Due to the high fire severity, some mortality of mixed mountain shrubs was documented, the full extent not yet known. Late summer monsoonal moisture patterns provided some much needed moisture for recovering shrubs and aspen, after an abnormally dry and hot Spring. Daytime temperatures at elevations up to 10,000' were in the upper 90's in early June. Heat in combination with lack of April – June precipitation did not provide ideal conditions necessary for grass and forb recovery. Several thousand shrub seedlings were planted west of the North Platte River in fall 2021 by USFS and WGFD personnel, and volunteers. Additional future shrub seeding efforts may be necessary depending on mortality observed in 2022. A large scale monitoring effort, in conjunction with the USFS, will be completed in summer 2022 to evaluate herbicide efficacy in year 1 post-treatment. An additional 5,000 acres are targeted for cheatgrass control treatments on the eastern flanks of the Snowy Range in 2022, with little to no bighorn sheep habitat targeted in that effort.

2021 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS517 - LARAMIE PEAK

HUNT AREAS: 19

PREPARED BY: KEATON WEBER

	2016 - 2020 Average	2021	2022 Proposed
Population:		N/A	N/A
Harvest:	7	6	7
Hunters:	8	8	8
Hunter Success:	88%	75%	88%
Active Licenses:	8	8	8
Active License Success:	88%	75%	88 %
Recreation Days:	78	149	83
Days Per Animal:	11.1	24.8	11.9

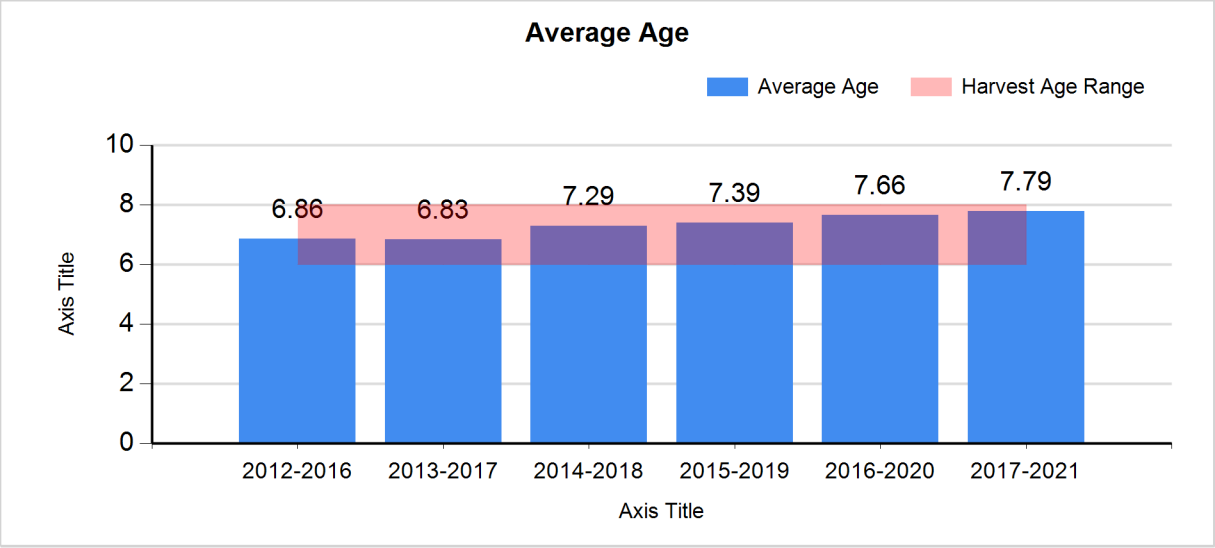
Limited Opportunity Objective:

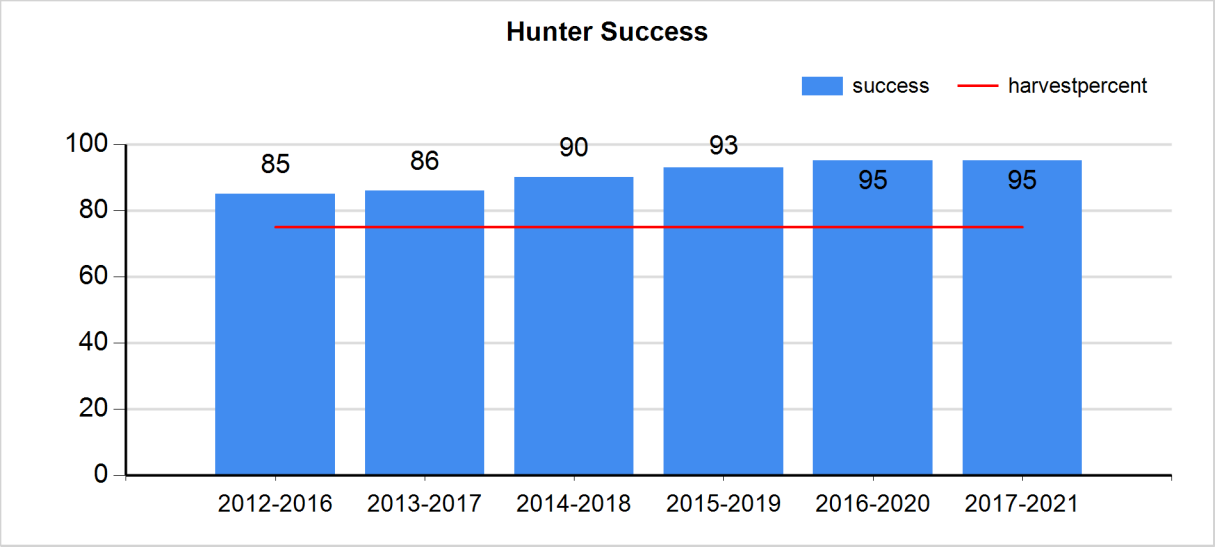
5-year average of > 75% hunter success

5-year average harvest age of 6-8 years

Secondary Objective:

Management Strategy: Special




Hunter Success
success
harvestpercent
100
80
60
40
20
0
85
86
90
93
95
95
2012-2016
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021

2022 Hunting Seasons
Laramie Peak Bighorn Sheep Herd Unit (BS517)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
19	1	Aug. 15	Aug. 30	Sept. 1	Oct. 31	8	Any ram

Current Management Objective:

1) **5-year running average of >75% hunter success-**95%
2) **5-year running average age of harvested rams between 6 and 8 years of age-**7.5
3) **Documented occurrence of adult rams in the population-** 28

2021 Management Summary

1) Hunting Season Evaluation: The 2022 season will provide 8 hunters the opportunity to harvest a mature ram, with a high likelihood of success. There are a number of older age rams in the population to maintain the management objective. However, access to the wild sheep remains difficult due to large tracts of private land within occupied sheep habitat that is not open for hunting opportunities. Hunter crowding is an issue if more than 8 licenses are prescribed and harvest statistics have suffered when there were more than 8 bighorn sheep hunters in the field.

2.) Management Objective Review: The herd objective was reviewed in 2019 and will be reviewed again in 2024.

3.) Ongoing Research: During the winter of 2019 sixteen bighorn sheep ewes were captured as part of the state-wide disease surveillance efforts focusing on bacterial pathogens that may lead to all age die offs. Results indicated that 4 pathogens were detected either through nasal or tonsil swabs that are associated with pneumonia: *Mycoplasma ovipneumonia, Mannheimia haemolytica, Pasteurella multocida* and *Bibersteina trehalosi*. GPS collar surveillance reveled a small die-off during the winter of 2019/20. Carcass searches resulted in 9 bighorn sheep, of which 4 were testable and *Mannheimia haemolytica* was discovered in all four sheep. An adult ram was euthanized in January 2021 just off Palmer Canyon road approximately 18 miles west of Wheatland and was determined to have severe bronchial pneumonia due to *Mannheimia haemolytica*. In January of 2021, seven additional female wild sheep were captured (3 Sybille Canyon, 4 Duck Creek) and fitted with GPS collars for additional disease surveillance. There were two collared ewe mortalities in September 2021. One ewe was severely scavenged and was not submitted for samples and cause of death was undetermined. The second ewe was recovered prior to being scavenged and was submitted for testing. Results came back negative for bluetongue, EHD, adenovirus, and sinus tumors. *Mannheimia haemolytica* was detected, but cause of death was ultimately not determined. In November of 2021, a young ram was found dead by a landowner and the entire carcass was submitted for sampling. *Mannheimia haemolytica*, *Mycoplasma ovipneumonia* and *Bibersteinia trehalosi* were all detected in this ram and cause of death is likely due to these pathogens. In January 2022, 10 additional GPS collars were deployed on ewes in order to better monitor die-offs and obtain samples to test for bacterial pathogens. Results detected 3 pathogens including *Mannheimia haemolytica, Pasteurella multocida,* and *Mycoplasma spp.* As of February 2022, there have been no mortalities in these collared sheep. In total, there are currently 21 GPS collars deployed and transmitting data. Two dynamic message signs were erected within Sybille Canyon along

Wyoming Highway 34 ROW to reduce wildlife collision as wild sheep tend to congregate along the right-of-way during winter months.

4) Weather and Habitat: Precipitation in this herd unit was slightly below normal in 2021. A large spring snow event occurred in mid-March, with accumulations of 3' – 4' seen. Early spring precipitation events occurred during April and May and quickly declined in number of events and precipitation received per event by early June. High elevations within the herd unit remained green well into the summer, providing highly palatable forages for bighorn sheep in summer ranges. While no NOAA weather stations are close to the vicinity of occupied habitats in Area 19, weather stations in Laramie, Cheyenne, and Torrington, all reported declines in annual precipitation, from 7% - 27% of normal. This was much improved from the 2020 year. Northern portions of the Laramie Range were much drier in 2021, as the Douglas weather station reported only 53% of normal precipitation received.

Cheatgrass control efforts completed in the last 3 years in Sybille Canyon and other areas directly west of Wheatland, continue to show real promise in recovery of native vegetation. Additional cheatgrass spraying efforts in occupied habitats will occur in Summer 2022 on the Thorne / Williams WHMA, a small wildfire scar on nearby public and private lands east of the WHMA, and private lands on Palmer Canyon Road.

2021 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2021 - 5/31/2022

HERD: BS519 - ENCAMPMENT RIVER

HUNT AREAS: 21
PREPARED BY: TEAL CUFAUDE

	2016 - 2020 Average	2021	2022 Proposed
Population:		N/A	N/A
Harvest:	1	0	1
Hunters:	1	0	1
Hunter Success:	100%	0%	100 %
Active Licenses:	1	0	1
Active License Success:	100%	0%	100 %
Recreation Days:	7	0	10
Days Per Animal:	7	0	10

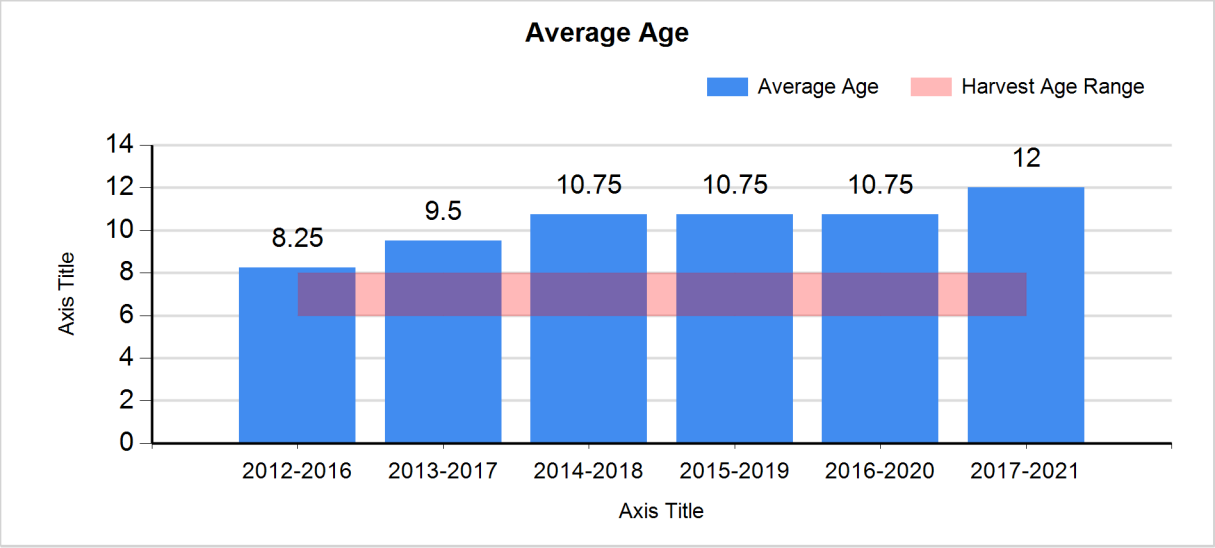
Limited Opportunity Objective:

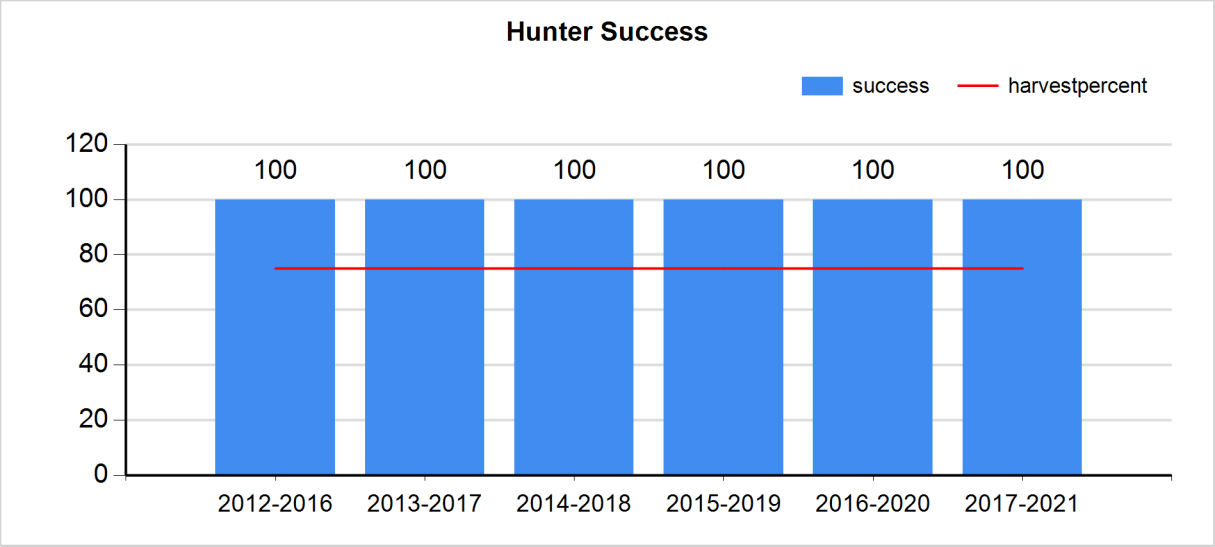
5-year average of > 75% hunter success

5-year average harvest age of 6-8 years

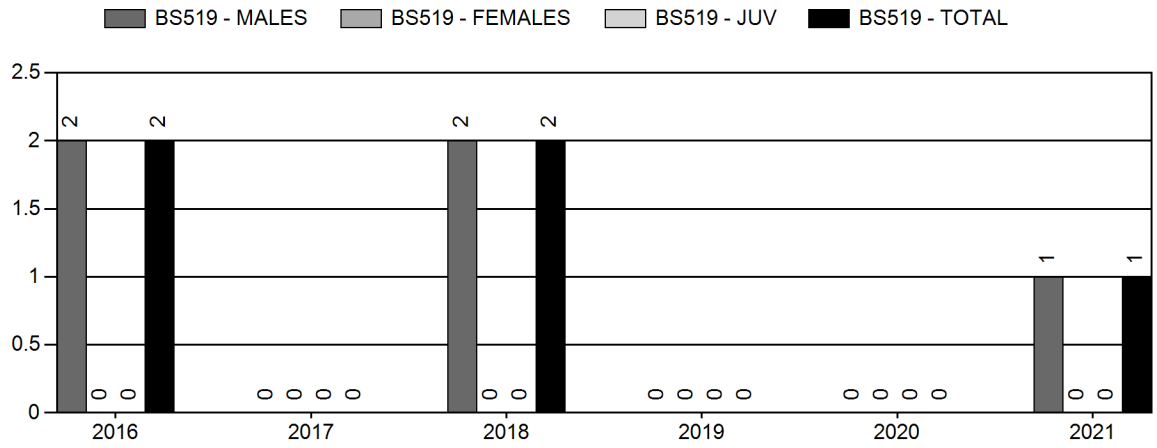
Secondary Objective:

Management Strategy: Special

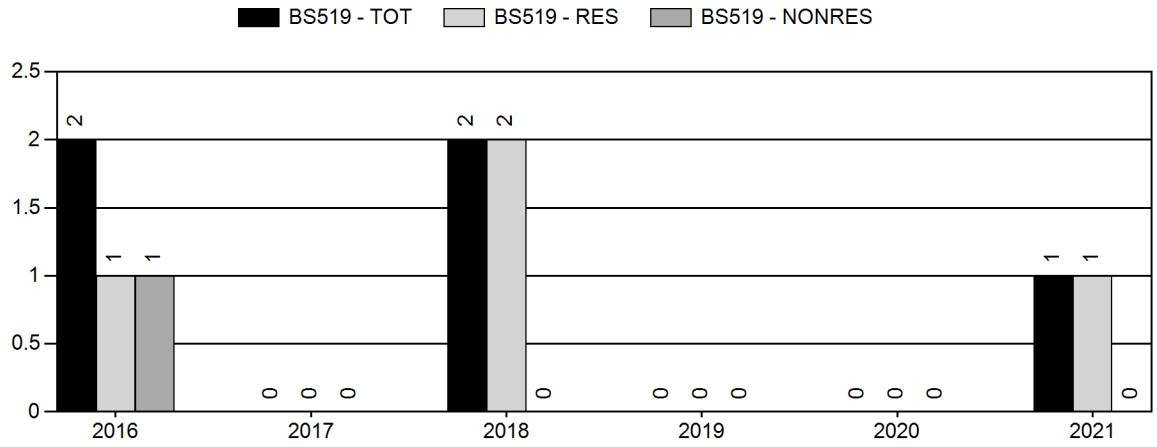



Hunter Success
success
harvestpercent
120
100
80
60
40
20
0
100
100
100
100
100
100
2012-2016
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021

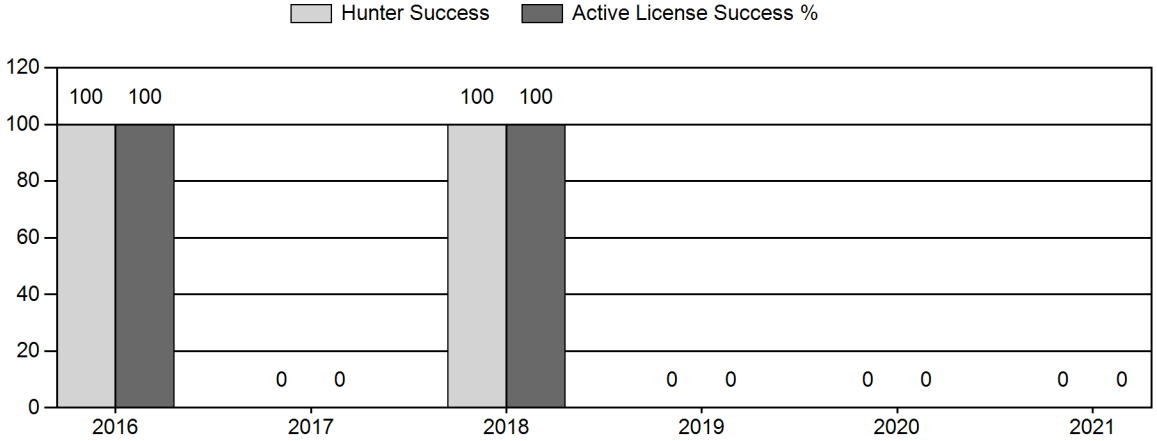
Harvest



Number of Hunters



Harvest Success



2022 Hunting Seasons
Encampment River Bighorn Sheep (BS519)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
18, 21	1	Aug. 15	Aug. 31	Sep. 1	Oct. 31	2	Any ram (1 resident, 1 nonresident)
18, 21	1			Nov. 1	Nov. 30		Any ram, valid only in Hunt Area 18

Current Management Objective: Bighorn Sheep Limited Opportunity

1) 5-year running average of >75% hunter success
   - Currently Met: 2017-2021 Hunter Success- 100%
2) 5-year running average age of harvested rams between 6 and 8 years of age
   - Currently Met: 2017-2021 Harvest Mean Age- 12 years of age
3) Documented occurrence of adult rams in the population
   - Currently Met: >10 adult rams observed in 2021

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 hunting season structure provided one resident hunter and one nonresident hunter the opportunity to harvest mature rams in hunt areas 18 or 21. Based on frequent observations of mature rams in both herds, managers elected to forgo the traditional season closure to provide more opportunity. We expect hunters will have a high likelihood of success and this herd will continue to meet the bighorn sheep limited opportunity management objectives.

2.) Management Objective: The herd management objective was reviewed in 2021 and will be reviewed again in 2026.

3.) Weather/Habitat: Annual precipitation in the hunt area was below normal in 2021 biological year. Winter severity was low, likely resulting in little to no significant mortality. Bureau of Land Management (BLM) rain gauge data indicate that precipitation levels were approximately 77% of normal. Precipitation events throughout the spring and summer were sporadic and covered very small geographic areas. Temperatures were very high in early June, resulting in earlier senescence of grasses and forbs. Through fall and early winter 2021, conditions remained mild, with no persistent snow accumulations.

No major habitat disturbances were documented in the areas associated with the Encampment River bighorn sheep herd. The lack of natural disturbances within this bighorn sheep herd unit has resulted in shrub communities trending towards late seral stages with older, decadent age classes and conifer encroachment, which may be limiting habitat availability. Cheatgrass continues to be an issue on the southeast facing slopes at lower elevations within this herd unit. The Wyoming Game and Fish Department (WGFD), in conjunction with the United States Forest Service, BLM, and Carbon County Weed and Pest, continue to monitor cheatgrass infestations and look for opportunities to conduct large-scale aerial treatments.

4.) Research: WGFD conducted several capture and collar events from 2018-2021 in this herd unit as part of a statewide disease assessment effort. Data gathered from 21 collared bighorn ewes will also be used for habitat selection analyses.

5.) Disease: In May 2021, we received our first collared sheep mortality since winter 2019. Johne's disease was detected in this sheep. Johne's disease (M. sub paratuberculosis or Map) is a bacterial disease, and ruminants are the most common hosts. After discovering that this sheep had Johne's Disease we were interested in determining prevalence in bighorn fecal samples from the herd. In order to test using PCR we needed to collect bighorn sheep fecal pellets from the environment. Based on the size of this herd, we attempted to collect samples from 38 individual animals (sample size for disease detection) during July and August. 73 samples were submitted (at least nine individuals identified by collars) and all were negative. We will continue with surveillance if we have subsequent captures or other mortalities from the area.

In fall 2021, an apparently sick young ram was observed and reported along Highway 70, west of the Continental Divide. We were unable to locate any bighorn sheep in this area. There is a high risk of commingling with domestic sheep herds in this area, so we will continue to monitor and respond to any reports of bighorn sheep west of the Continental Divide.

2021 - JCR Evaluation Form

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

HERD: EL531 - IRON MOUNTAIN

HUNT AREAS: 6
PREPARED BY: LEE KNOX

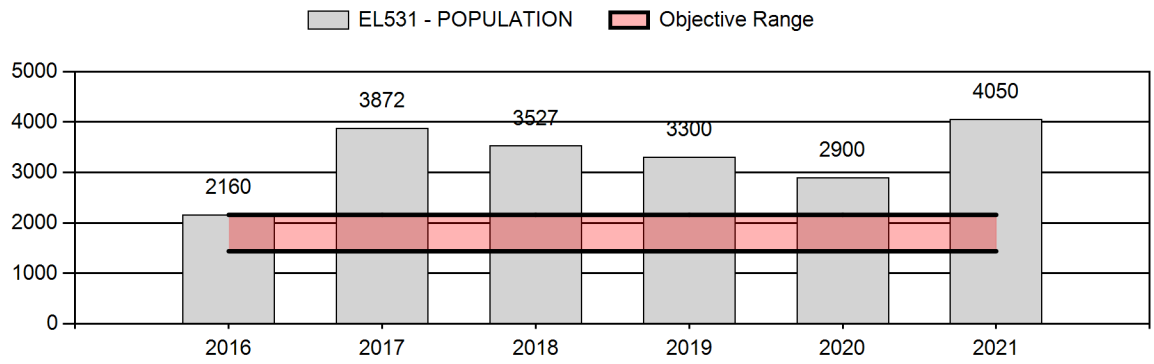
	2016 - 2020 Average	2021	2022 Proposed
Population:	3,152	4,050	3,700
Harvest:	570	635	650
Hunters:	1,359	1,312	1,350
Hunter Success:	42%	48%	48 %
Active Licenses:	1,399	1,357	1,400
Active License Success:	41%	47%	46 %
Recreation Days:	8,843	8,145	8,200
Days Per Animal:	15.5	12.8	12.6
Males per 100 Females	28	0	
Juveniles per 100 Females	49	0	

Population Objective (± 20%) :	1800 (1440 - 2160)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	125%
Number of years population has been + or - objective in recent trend:	20
Model Date:	3/1/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	14%	14%
Males ≥ 1 year old:	28%	33%
Proposed change in post-season population:	6%	8%

Population Size - Postseason



2022 Hunting Seasons
Iron Mountain Elk (EL531)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
6	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 31		Any elk valid off national forest
6	Gen			Nov. 1	Dec. 31		Antlerless elk valid off national forest
6	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	75	Any elk
6	1			Nov. 1	Jan. 31		Antlerless elk
6	4	Sep. 1	Sep. 30	Oct. 1	Jan. 31	50	Antlerless elk
6	6	Sep. 1	Sep. 30	Aug. 15	Jan. 31	1100	Cow or calf valid off national forest

2021 Hunter Satisfaction: 66% Satisfied, 20% Neutral, 14% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The Iron Mountain Elk Herd remains well above the population objective of 1,800 elk. The current season structure is designed to maximize cow elk harvest. The opening date for the type 1 and type 4 licenses will be moved to Oct 1st to align with the general season. General licenses will be valid through December for antlerless elk to provide additional opportunity. We maintain 1,100 type 6 licenses, even though they do not sell out, to ensure there are always licenses available.

2.) Management Objective review: We are maintaining this herd at the current objective and management strategy based on internal discussions and conversations with our constituents. We evaluated and considered population status and habitat data included in this document and a change is not warranted at this time. We will review this herd objective again in 2027; however, if the situation arises that a change is needed, we will review and submit a proposal as needed.

The management objective for Iron Mountain is a post season population objective of 1800 elk. This objective was set in 1997 and last reviewed in 2022.

3.) CWD management: The 3-year (2019-2021) CWD prevalence in the Iron Mountain Elk Herd is 14% (n= 249) LC 8.4% UC18.6%.

4.) Habitat and Weather: Precipitation in the herd unit area was below normal for 2021. NOAA weather station data gathered from Laramie and Cheyenne documented annual precipitation declines of 12% and 7% from average. A large spring snowstorm event in mid-March resulted in over 3’ of snow falling in the majority of the herd unit

The WGFD entered into an agreement to manage 3,110 acres of the Pilot Hill area as a WHMA in 2020. Suitable elk habitat is found mid-slope in mixed mountain shrub communities and at higher elevations in aspen / mixed conifer habitats on the WHMA. The USFS and Wyoming State Forestry Division have been working cooperatively to complete conifer and aspen mastication and prescribed fire treatments on USFS, OSLI, and intermixed private lands on Pole Mountain. Aspen regeneration in treatment areas has been mixed. Some browsing of young aspen regeneration has been high, likely by a combination of wild ungulates and livestock. Western Spruce Budworm infestations are having some effect on conifers in upper elevations at Pole Mountain. Aggressive timber harvest practices are likely the only means to reduce potential impacts to coniferous forest communities. Wyoming State Forestry has completed some harvest of infected trees in the Pole Mountain area.

In the southernmost portions of Area 6 south of Interstate 80, and in the northern half of the herd unit, overall habitat conditions continue to be negatively impacted by increasing elk numbers, lack of managed disturbances in shrub dominated rangelands, and increases in cheatgrass composition in preferred habitats. Elk use of irrigated hay meadows continues to create private land damage situations throughout the entire herd unit. In periods of drought, private landowners see higher competition for forage resources between cattle and elk. With increased competition we expect to see decreased landowner tolerance for elk.

2021 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2021 - 5/31/2022

HERD: EL533 - SNOWY RANGE

HUNT AREAS: 8-12, 110,125 | PREPARED BY: TEAL CUFAUDE

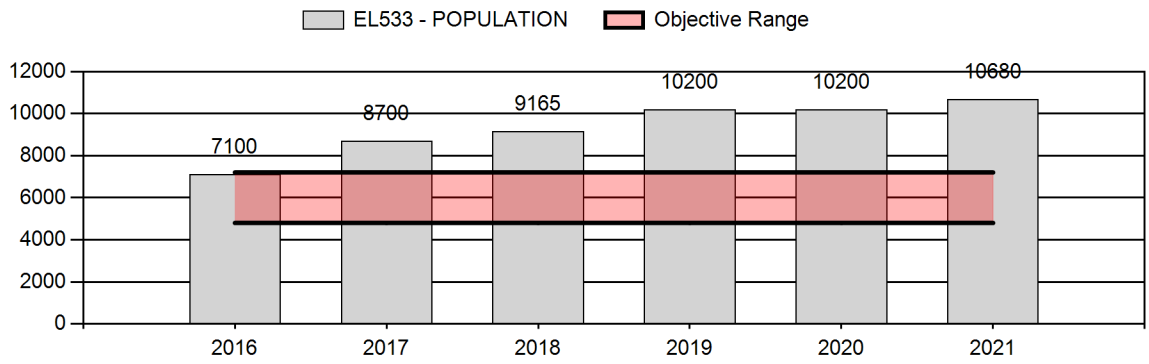
	2016 - 2020 Average	2021	2022 Proposed
Population:	9,073	10,680	10,200
Harvest:	1,977	2,018	2,035
Hunters:	5,576	5,481	5,600
Hunter Success:	35%	37%	36 %
Active Licenses:	5,923	5,976	6,000
Active License Success:	33%	34%	34 %
Recreation Days:	44,336	47,469	48,000
Days Per Animal:	22.4	23.5	23.6
Males per 100 Females	29	33	
Juveniles per 100 Females	41	39	

Population Objective (± 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	78%
Number of years population has been + or - objective in recent trend:	7
Model Date:	3/1/2022

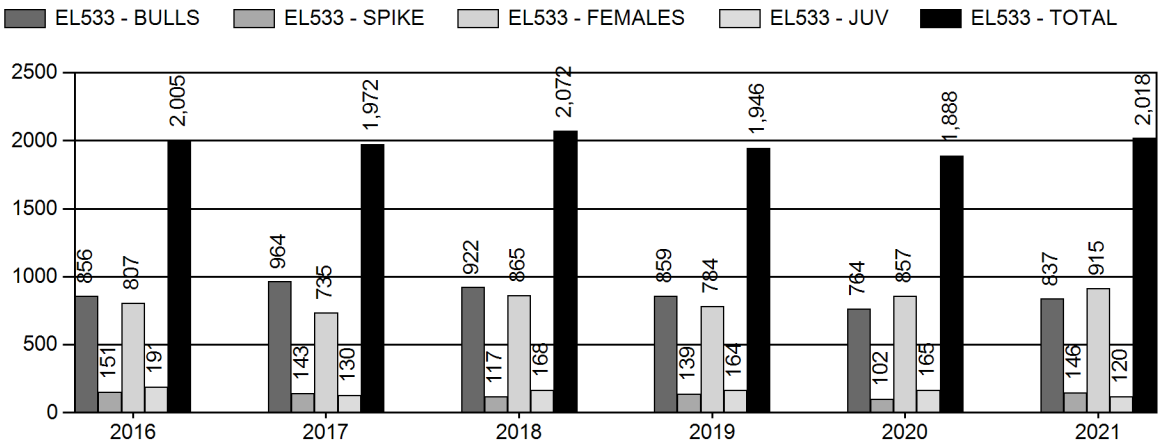
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	13.8%	14.4%
Males ≥ 1 year old:	36.1%	37%
Proposed change in post-season population:	4%	5%

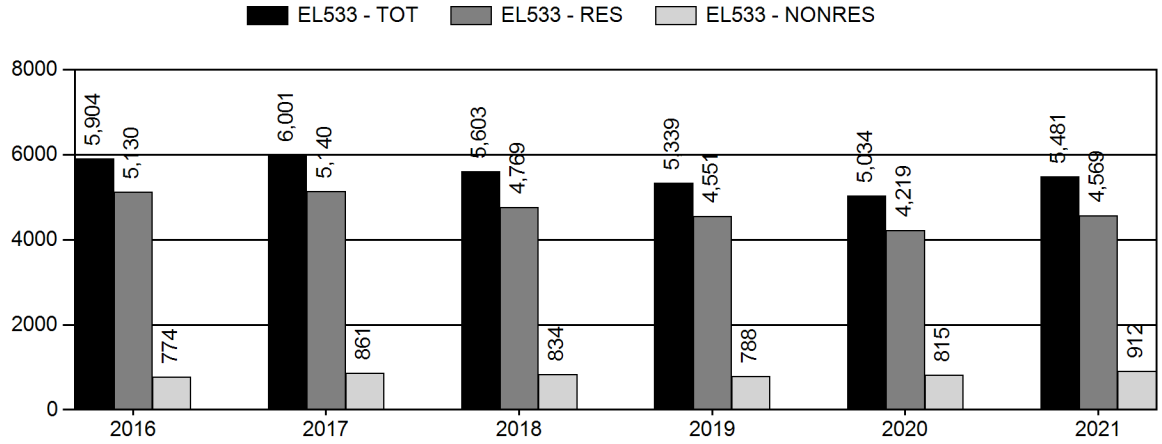
Population Size - Postseason



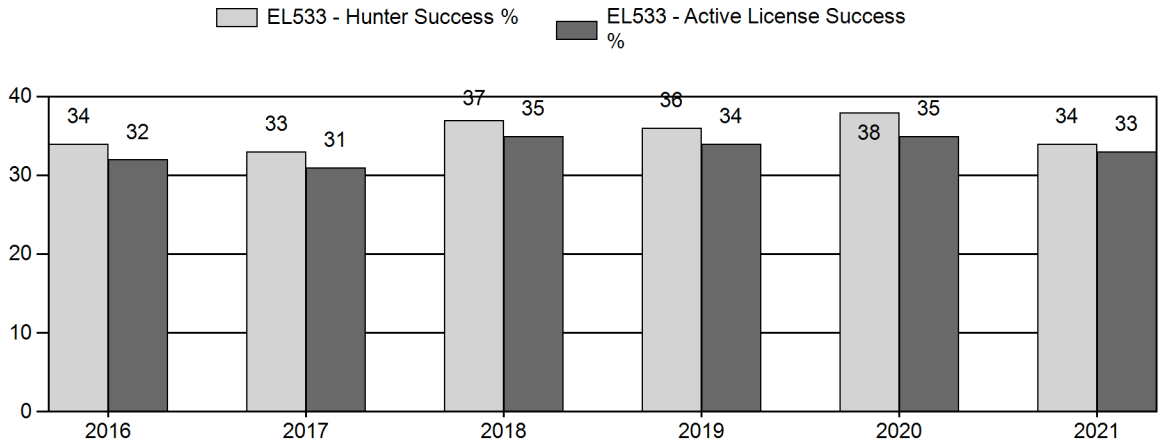
Harvest



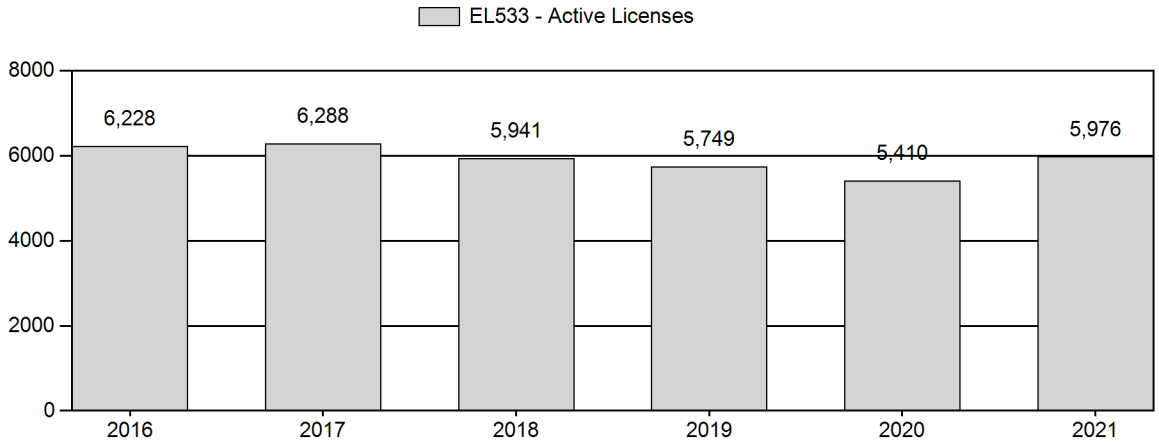
Number of Hunters



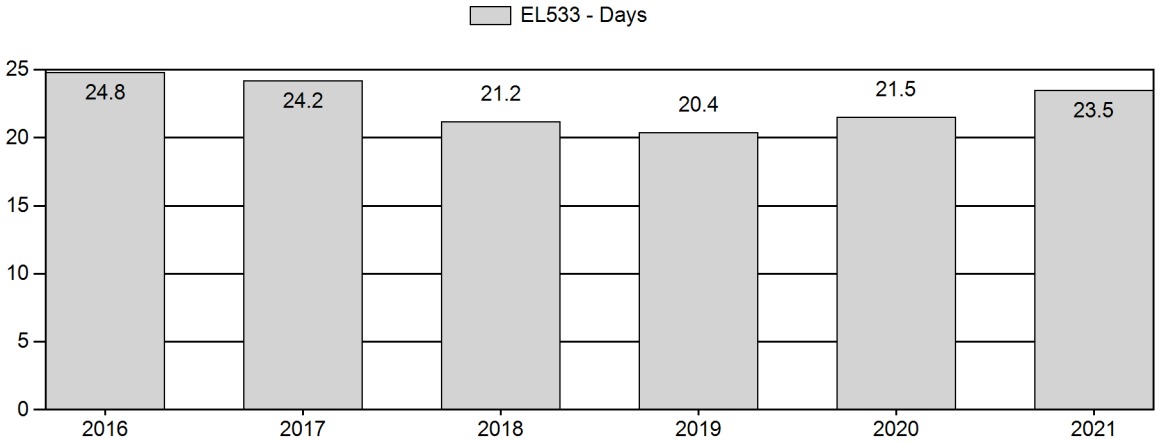
Harvest Success



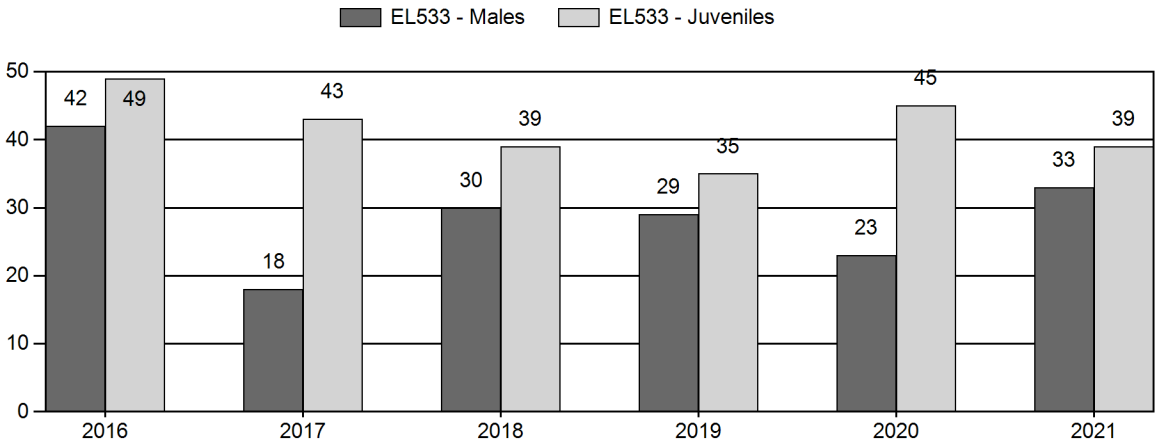
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2022 Hunting Seasons
Snowy Range Elk Herd Unit (EL533)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
8	1	Sep. 1	Sep. 30	Oct. 1	Jan. 31	150	Any elk
8	6			Aug. 15	Jan. 31	200	Cow or calf
8	7			Aug. 15	Jan. 31	100	Cow or calf valid on private land
9	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Any elk
9	6	Sep. 1	Sep. 30	Oct. 1	Dec. 31	250	Cow or calf
9, 10	7			Aug. 15	Jan. 31	350	Cow or calf valid off national forest
10	Gen	Sep.1	Sep. 30	Oct. 15	Oct. 31		Any elk
10	6	Sep.1	Sep. 30	Oct. 1	Dec. 31	100	Cow or calf
11	1	Sep. 15	Sep. 30	Oct. 1	Nov. 30	200	Any elk
11	1			Dec. 1	Jan. 31		Any elk valid off national forest; the Wyoming Game and Fish Commission's Wick Wildlife Habitat Management Area shall be closed south of Interstate 80
11	4	Sep. 15	Sep. 30	Oct. 1	Nov. 30	300	Antlerless elk
11	6			Aug. 15	Jan. 31	250	Cow or calf valid off national forest; the Wyoming Game and Fish Commission's Wick Wildlife Habitat Management Area shall be closed south of Interstate 80
11	9			Sep. 1	Sep. 30	75	Any elk, archery only
12	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Any elk
12	6	Sep. 1	Sep. 30	Oct. 1	Nov. 14	200	Cow or calf
12	6			Nov. 15	Dec. 31		Cow or calf valid off national forest and off Pennock Mountain Wildlife Habitat Management Area
12, 13, 15, 110	7			Aug. 15	Jan. 31	300	Cow or calf valid on private land
110	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Any elk
110	6	Sep. 1	Sep. 30	Oct. 1	Nov. 14	200	Cow or calf
110	6			Nov. 15	Dec. 31		Cow or calf valid off national forest
125	1	Sep. 1	Sep. 30	Oct. 1	Dec. 31	250	Any elk
125	1			Jan. 1	Jan. 31		Antlerless elk
125	6	Sep. 1	Sep. 30	Oct. 1	Jan. 31	300	Cow or calf

2021 Hunter Satisfaction: 66% Satisfied, 22% Neutral, 12% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The 2021 harvest survey report indicated 5,481 hunters harvested 2,018 elk. Hunter success (36.8%) decreased slightly compared to 2020 and days to harvest was comparable to the last five years. Appendix A describes the post-season classification summary from 2016-2021. The 2021 post-season population estimate of 10,680 elk remained above the objective. The 2022 hunting seasons in the Snowy Range herd unit will continue to provide recreational elk hunting opportunities while reducing the overall elk population towards the objective of 6,000 ±20%.

Hunt areas 9, 10, 12, and 110 remained general license hunting seasons in 2022. For the 2022 hunting season, hunt area 12 type 6 licenses were valid off national forest and off Pennock Mountain Wildlife Habitat Management Area from November 15–December 31. Hunt area 110 type 6 licenses were valid off national forest from November 15–December 31. These extended cow/calf seasons should improve type 6 harvest success, while acknowledging the crucial range road closures that begin November 14 on much of the national forest.

Type 7 license quotas were added in hunt area 8 and increased in hunt areas 9, 10, 12, 13, 15, and 110 to address increasing elk damage concerns on private lands. The season date for hunt area 11 type 1 licenses was extended to January 31 to address bull elk damage issues north of I-80.

Consideration was given to several requests to reduce hunt area 125 type 1 and type 6 licenses. Hunt area 125 is a difficult to access hunt area and hunter success typically improves if private land access is granted. Hunt area 125 landowners and ranch managers have experienced an increase in hunters seeking access to private lands and hunting on private land without permission was a frequent issue during the 2021 hunting season. Given this herd was above objective and there have been historical elk damage issues in hunt area 125 the license quotas were maintained for 2022. A general hunting season in hunt area 125 was discussed during local meetings, but the feasibility of this hunting season structure will be evaluated more closely in 2023.

In response to public comment requesting more opportunity for archery elk hunting in hunt area 11, the type 9 license quota was increased by 25.

2.) Management Objective Review: The post-season population objective was last reviewed in 2018 and will be reviewed again in 2023.

3.) Weather/Habitat: Annual precipitation in the Snowy Range elk herd unit was slightly below normal in 2021. Rapid melting of winter snowpack, low precipitation levels received in the key growing season months at high and low elevations, and abnormally high temperatures in the early growing season, resulted in decreased forage production for grasses, forbs, and shrubs across all seasonal ranges. Lack of precipitation led to early senescence of grasses and forbs, likely leading to dietary shifts to riparian areas and shrub communities earlier in the year than normal for wild ungulates.

In the western portion of this herd unit (hunt areas 12, 110, 125), Bureau of Land Management (BLM) rain gauge data for lower elevations indicated that precipitation levels were between 85-103% of normal for bio-year 2021. In the eastern portions of the herd unit (hunt areas 8-11), the NOAA weather station in Laramie received 12% less total precipitation for the year compared to long term averages.

Throughout the herd unit, some late summer monsoonal weather patterns developed, bringing much needed rain to higher elevations. These events aided in the recovery of some woody plant species post-Mullen wildfire within hunt area 9 and 110, but did little to aid in overall production or late green-up of herbaceous forages due to sustained high temperatures.

In fall 2020, the Mullen Creek Fire burned approximately 176,800 acres in the Snowy Range, affecting elk habitats in hunt areas 9 and 110, with the bulk of acres burned on national forest lands, including two wilderness areas in hunt area 110. Over 10,300 acres were sprayed with the herbicide Rejuvra to control cheatgrass within the North Platte River drainage, including in two wilderness areas. Recovery of herbaceous and woody plants has been slow post-fire, due to decreased precipitation amounts, poor timing of precipitation events, higher than average temperatures resulting in a shortened growing season, and high fire severity impacts on soils and perennial plant communities. Causing some concern post-Mullen wildfire, is the loss of security cover. Due to the high density of roads within the Medicine Bow National Forest, elk may find it increasingly more difficult to find places of refuge away from roads. Fire severity throughout the burn area varied greatly, and large pockets of timber remain intact, so we are optimistic that some security cover still exists in places.

The RR316 wildfire that affected over 12,000 acres of hunt area 125 is recovering slowly. Due to the arid nature of the country, plant response and recovery will be slower than what is normally seen at higher elevations in the herd unit. Large portions of the wildfire area were deferred from livestock grazing in 2021, aiding in overall plant re-establishment and putting vegetative recovery on a positive trajectory.

4.) Chronic Wasting Disease Management: This is a Tier 2 surveillance herd, and was last prioritized for Chronic Wasting Disease (CWD) sampling in 2019. The most current prevalence data is reported in the 2019 Job Completion Report.

2016 - 2021 Postseason Classification Summary

for Elk Herd EL533 - SNOWY RANGE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	7,100	242	470	712	22%	1,697	52%	837	26%	3,246	657	14	28	42	± 2	49	± 2	35
2017	8,700	182	146	328	11%	1,778	62%	768	27%	2,874	707	10	8	18	± 1	43	± 2	36
2018	9,165	187	278	465	18%	1,574	59%	608	23%	2,647	585	12	18	30	± 2	39	± 2	30
2019	10,200	434	326	760	18%	2,618	61%	919	21%	4,297	547	17	12	29	± 1	35	± 1	27
2020	10,200	41	46	87	13%	384	60%	174	27%	645	573	11	12	23	± 3	45	± 5	37
2021	10,680	155	234	390	19%	1,170	58%	462	23%	2,022	556	13	20	33	± 2	39	± 3	30

2021 - JCR Evaluation Form

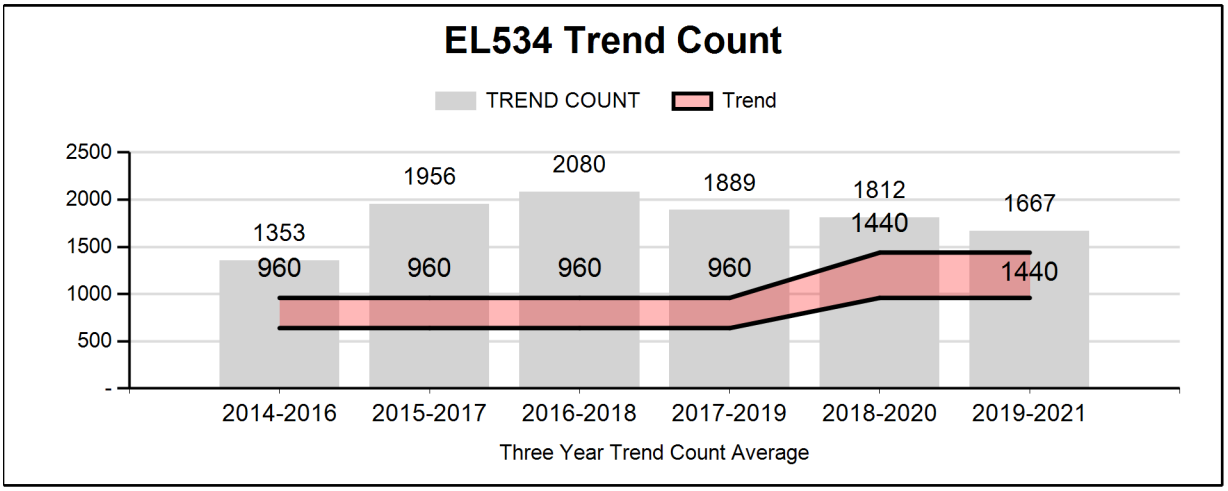
SPECIES: Elk
PERIOD: 6/1/2021 - 5/31/2022
HERD: EL534 - SHIRLEY MOUNTAIN
HUNT AREAS: 16
PREPARED BY: TEAL CUFAUDE

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	1,909	1,696	1,500
Harvest:	381	501	550
Hunters:	681	829	915
Hunter Success:	56%	60%	60%
Active Licenses:	703	862	930
Active License Success	54%	58%	59%
Recreation Days:	5,569	5,638	6,000
Days Per Animal:	14.6	11.3	10.9
Males per 100 Females:	35	43	
Juveniles per 100 Females	40	37	

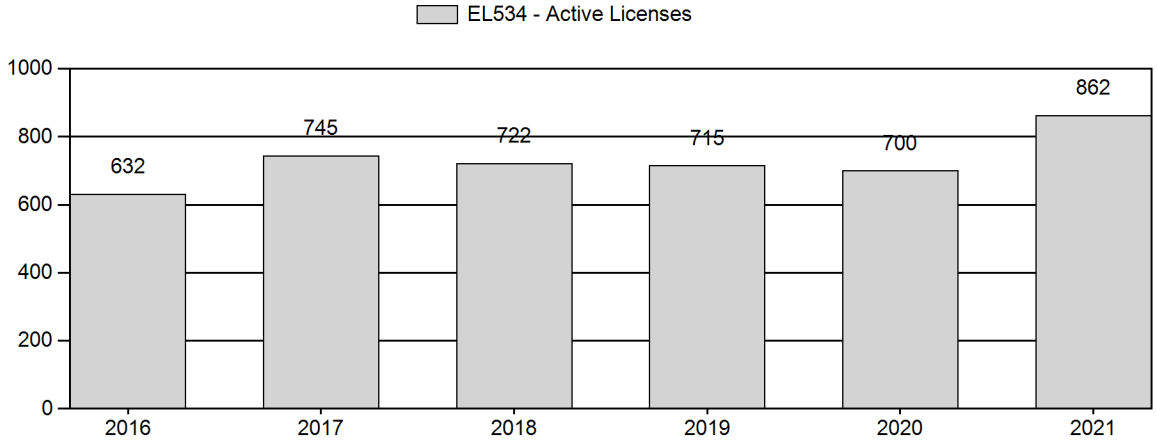
Trend Based Objective (± 20%)	1,200 (960 - 1440)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	41%
Number of years population has been + or - objective in recent trend:	2

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

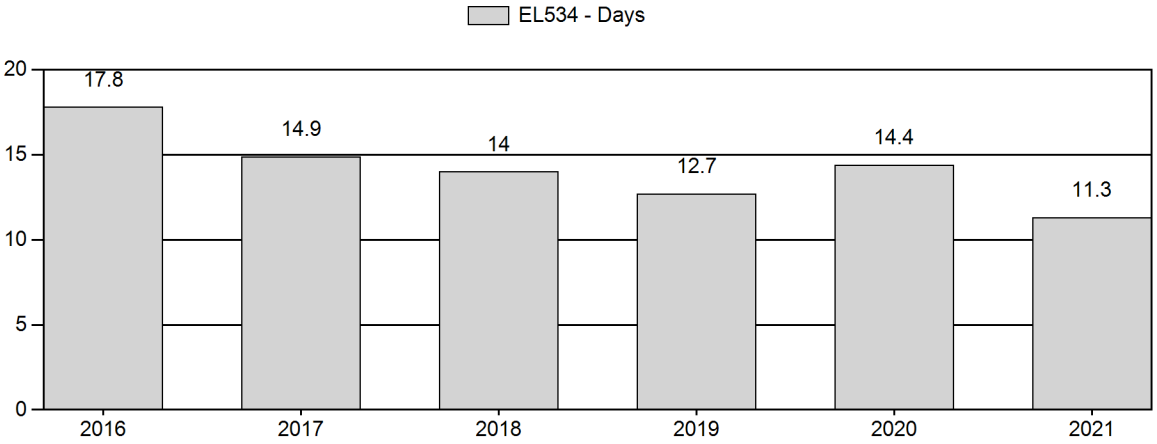
	JCR Year	Proposed
Females ≥ 1 year old:	N/A%	N/A%
Males ≥ 1 year old:	N/A%	N/A%
Juveniles (< 1 year old):	N/A%	N/A%



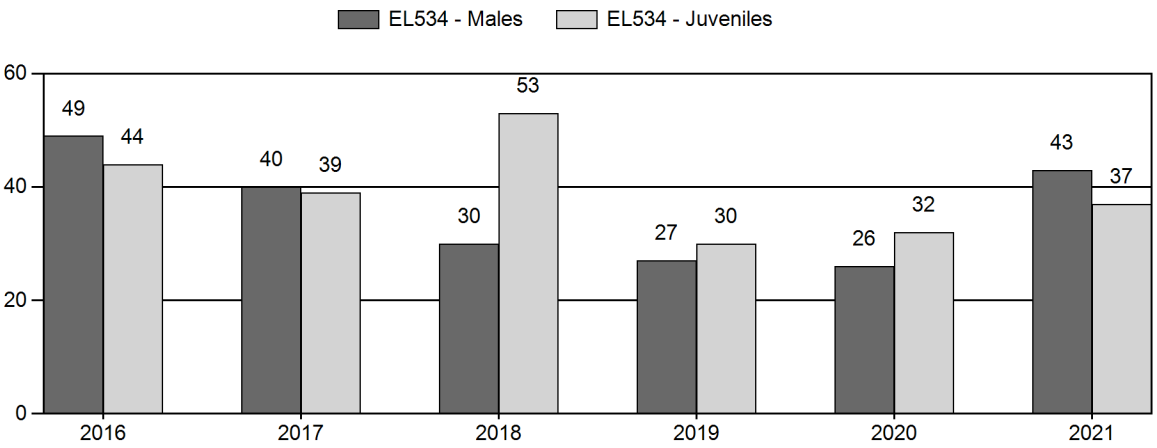
Active Licenses



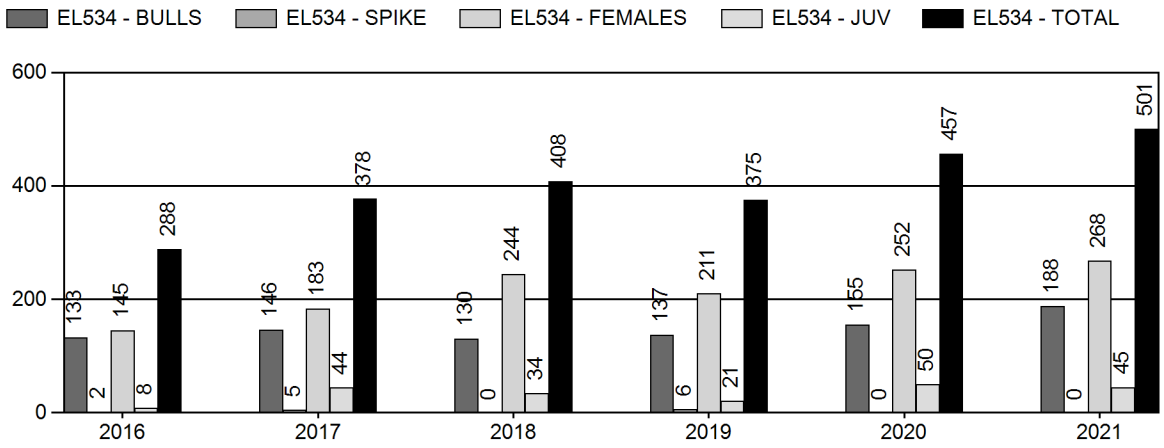
Days per Animal Harvested



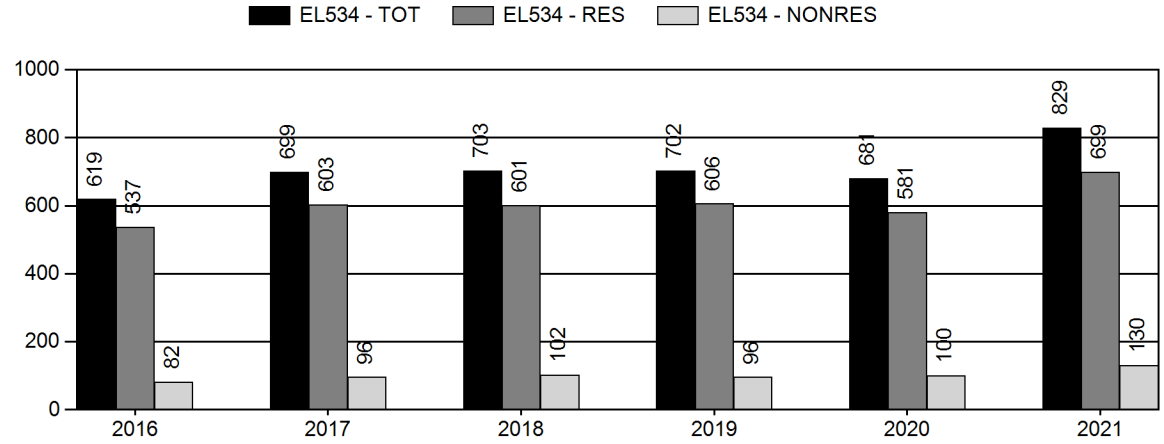
Postseason Animals per 100 Females



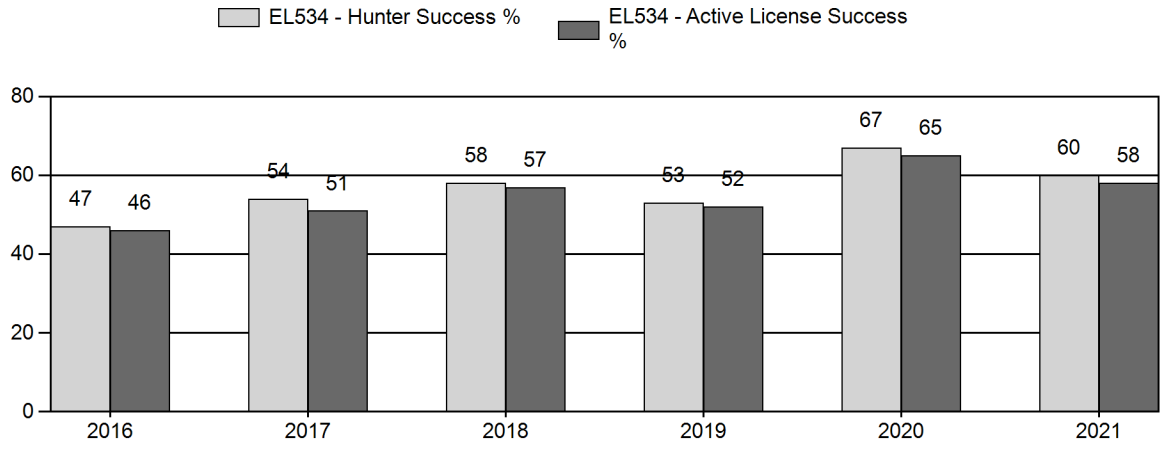
Harvest



Number of Hunters



Harvest Success



2022 Hunting Seasons
Shirley Mountain Elk Herd Unit (EL534)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
16	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	225	Any elk
16	1			Dec. 1	Jan. 31		Antlerless elk
16	2	Sep. 1	Sep. 30	Nov. 1	Nov. 30	75	Any elk
16	2			Dec. 1	Jan. 31		Antlerless elk
16	4			Sep. 1	Sep. 30	300	Antlerless elk valid on private land; also valid on or within one-half (½) mile of irrigated land, and on the Hanna Draw Hunter Management Area (HMA permission slip required)
16	4	Sep. 1	Sep. 30	Oct. 1	Jan. 31		Antlerless elk valid in the entire area
16	6			Aug. 15	Sep. 30	300	Cow or calf valid on private land; also valid on or within one-half (½) mile of irrigated land, and on the Hanna Draw Hunter Management Area (HMA permission slip required)
16	6	Sep. 1	Sep. 30	Oct. 1	Nov. 30		Cow or calf valid in the entire area
16	7			Dec. 1	Jan. 31	200	Cow or calf

2021 Hunter Satisfaction: 83% Satisfied, 12% Neutral, 5% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The harvest survey report indicated 827 hunters harvested 501 elk in 2021, with an overall success of 61%. The percentage of branch-antlered bulls (100%) in the antlered elk harvest and bull ratios (43 bulls/100 cows) observed during the trend survey (Appendix A) met the special management parameters. The mid-winter trend count to estimate the wintering population of elk in the herd unit was conducted in January 2022 and 1,696 elk were counted (Appendix B). The three-year (2019-21) trend count average was 1,667 elk which exceeded the

objective. The 2022 hunting seasons were prescribed with the objective of maintaining bull ratios within the special management parameters and reducing elk numbers.

Type 1 and type 2 license success has exceeded 60% over the last three years. Both the type 1 and type 2 license quotas were increased in 2021. The type 1 license quota was again increased for the 2022 hunting season. Type 1 and type 2 licenses in hunt area 16 are highly coveted licenses and license holders expect a high quality hunt experience. A large portion of this herd unit is unavailable to many hunters due to the checkerboard land ownership pattern and limited private land access so managers prefer to take a conservative approach to increases in the type 1 and type 2 license quotas. The type 2 license quota was not increased because the number of publicly accessible areas is further reduced due to weather and elk movement to winter ranges.

The type 6 and type 4 "within one-half (½) mile of irrigated land" limitation was retained to address elk damage. The type 7 license valid from December- January was retained to increase cow elk harvest, while minimizing hunter crowding concerns during the popular type 1 and type 2 hunting seasons. Given the location of winter ranges elk occupy in December, hunters will likely need private land access in order to be successful on this license.

2.) Management Objective Review: The management objective was reviewed in 2020 and changed from a mid-winter trend count of 800 elk to a mid-winter trend count of 1,200 (±20%) elk. The objective will be reviewed again in 2025.

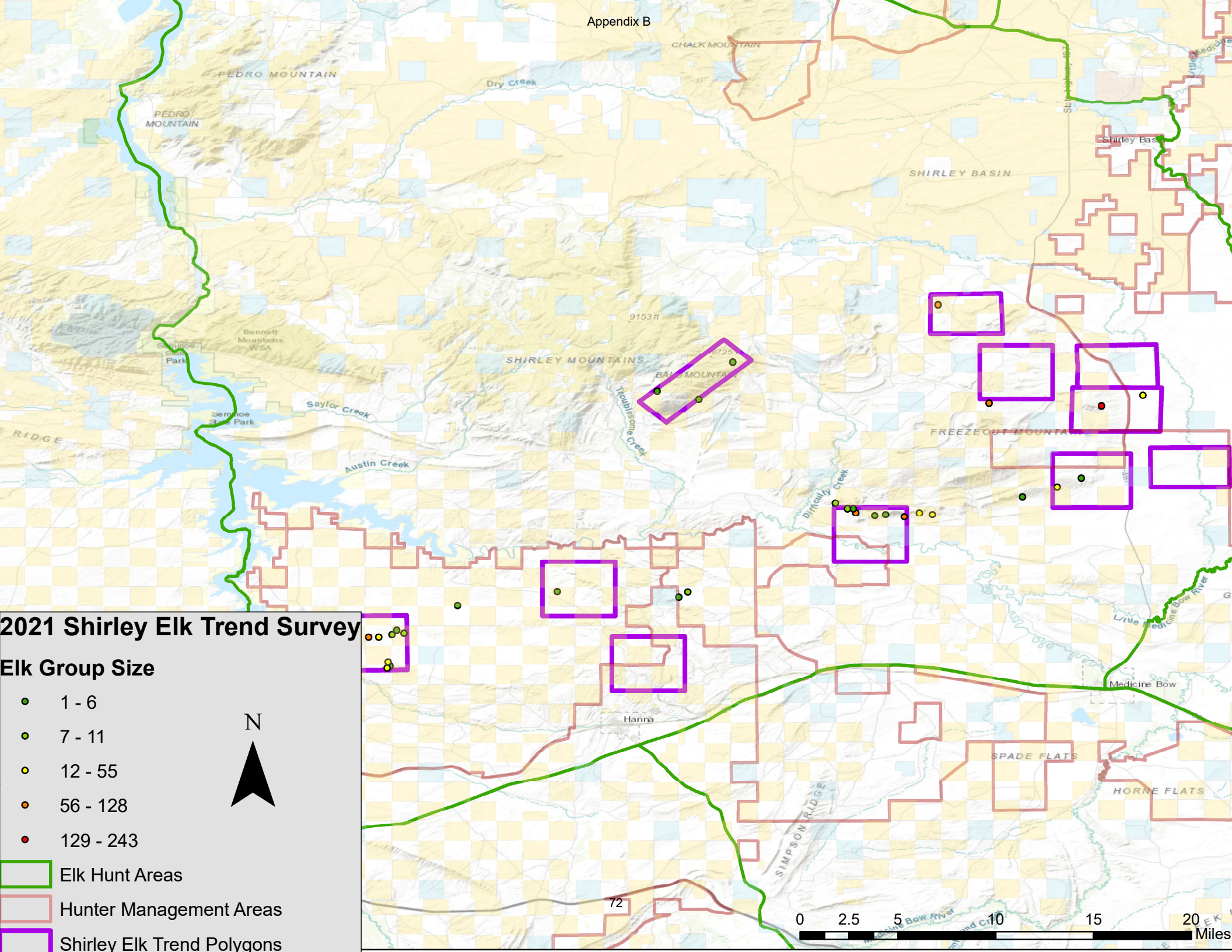
3.) Weather/Habitat: Precipitation levels were below normal for the bio-year 2021. Early spring precipitation occurred during April and May, but quickly diminished in early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather stations in Laramie and Rawlins recorded departures from average annual precipitation of -12% and +6% respectively. Late summer monsoonal moisture patterns benefitted some areas in the southern portion of the herd unit, providing some late summer green-up of forages. Shrub conditions continue to be very poor with the landscape being dominated by late seral shrub plant communities and continued overutilization by big game.

4.) Chronic Wasting Disease Management: Chronic Wasting Disease (CWD) was first detected in this herd unit in 2006. To date, no meaningful CWD prevalence data has been collected within this herd unit and no CWD management actions have occurred. This is not a targeted surveillance herd because of the challenges associated with collecting a statistically valid sample of hunter-harvested elk.

2016 - 2021 Postseason Classification Summary

for Elk Herd EL534 - SHIRLEY MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	0	160	422	582	25%	1,196	52%	523	23%	2,301	634	13	35	49	± 0	44	± 0	29
2017	0	99	301	400	22%	1,012	56%	396	22%	1,808	581	10	30	40	± 0	39	± 0	28
2018	0	127	228	355	17%	1,164	55%	612	29%	2,131	463	11	20	30	± 0	53	± 0	40
2019	0	168	126	294	17%	1,106	64%	327	19%	1,727	0	15	11	27	± 0	30	± 0	23
2020	0	40	223	263	17%	997	63%	317	20%	1,577	390	4	22	26	± 0	32	± 0	25
2021	0	124	164	289	24%	679	56%	252	21%	1,220	0	18	24	43	± 0	37	± 0	26


2021 Shirley Elk Trend Survey
Elk Group Size
1 - 6
7 - 11
12 - 55
56 - 128
129 - 243
Elk Hunt Areas
Hunter Management Areas
Shirley Elk Trend Polygons
N
0
2.5
5
10
15
20
Miles
PEDRO MOUNTAIN
CHALK MOUNTAIN
Dry Creek
SHIRLEY BASIN
SHIRLEY MOUNTAINS
9153ft
Bennett Mountains WSA
Saylor Creek
Austin Creek
Troublesome Creek
Difficulty Creek
FREEZEOUT MOUNTAIN
Medicine Bow
Hanna
SPADE FLATS
HORNE FLATS
SIMPSON RIDGE
72

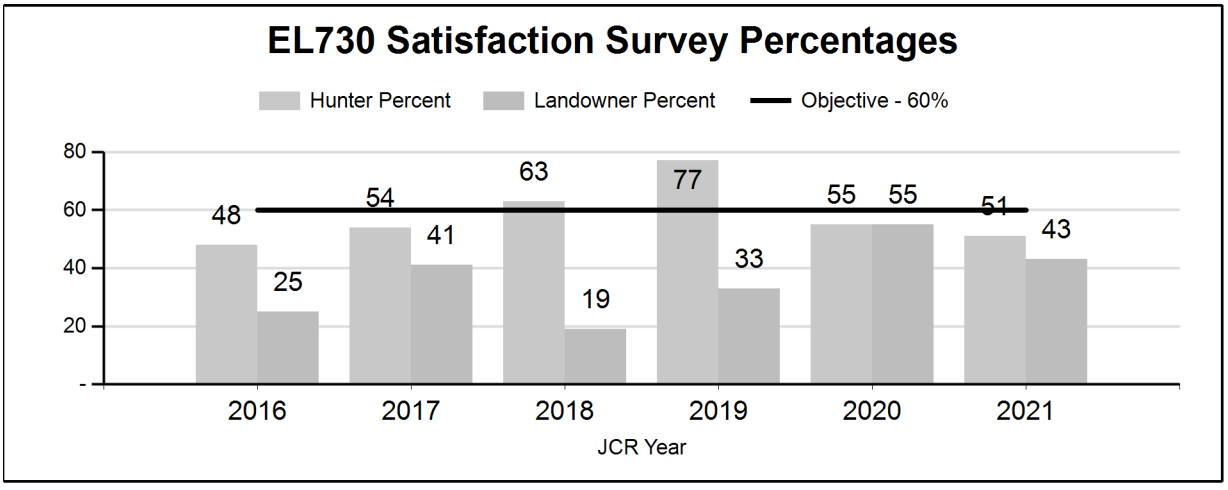
2021 - JCR Evaluation Form

SPECIES: Elk
HERD: EL730 - RAWHIDE
HUNT AREAS: 3

PERIOD: 6/1/2021 - 5/31/2022
PREPARED BY: KEATON WEBER

	2016 - 2020 Average	2021	2022 Proposed
Hunter Satisfaction Percent	60%	51%	55%
Landowner Satisfaction Percent	34%	43%	45%
Harvest:	115	135	141
Hunters:	343	355	379
Hunter Success:	34%	38%	37 %
Active Licenses:	358	374	398
Active License Success:	32%	36%	35 %
Recreation Days:	2,417	2,275	2,675
Days Per Animal:	21.0	16.9	19.0
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	

Satisfaction Based Objective	60%
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-13%
Number of years population has been + or - objective in recent trend:	2



2022 Hunting Seasons
Rawhide Elk Herd Unit (EL730)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
3	Gen	Sept. 1	Sept. 14	Sept. 15	Oct. 14		Any elk
3	Gen			Oct. 15	Jan. 31		Any elk valid south of U.S. Hwy 26
3	6	Sept. 1	Sept. 30	Aug. 15	Nov. 30	200	Cow or calf
3	6			Dec. 1	Jan. 31		Cow or calf valid south of U.S. Hwy 26

2021 Hunter Satisfaction: 55% Satisfied, 23% Neutral, 22% Dissatisfied
2021 Landowner Satisfaction: 18% Above Desired Levels, 45% At Desired Levels, 36% Below Desired Levels

2022 Management Summary

1.) Hunting Season Evaluation: The 2022 season is designed to maximize harvest on a landscape that is dominated by private land to try and keep a growing elk herd at check. However, there are landowner concerns with not enough elk north of U.S. Highway 26 so that will remain a conservative season to try and improve satisfaction levels for that segment of landowners.

2.) Management Objective Review: The Rawhide Elk Herd Unit's landowner and sportsmen satisfaction objective was last reviewed in 2017 and was up for review in 2022. Based on landowner and hunter satisfaction levels, there was no objective change in 2022.

3.) Ongoing Research: During 2017-2019, 42 female elk were captured and fitted with radio collars as part of a study conducted with the Wyoming State Military Department (Camp Guernsey) to look at habitat selection, identify seasonal ranges, document calving area and map movement patterns. Preliminary results released in January 2022 indicated that elk movements within this herd on Camp Guernsey are very nomadic and do not select for seasonal ranges and have a broad range of parturition areas. Further analysis also indicates that elk are frequently displaced due to military training exercises; however, elk return to the displaced areas after disturbances cease. (Report Pending)

4.) Weather and Habitat: Annual precipitation was below normal in the Rawhide herd unit in 2021. NOAA weather stations in Torrington and Douglas showed decreases of 27% and 47% from average. Native rangeland habitats largely remain in late seral stages due to a lack of natural or managed disturbances on this landscape. Due to the close proximity of perennial and annual agricultural crops to security cover provided by steep canyons and timber stands, elk are likely to shift their diets and utilize these forage resources in this intensive agricultural environment, when native rangeland forage resources are lacking in productivity or quality. Cheatgrass remains a large threat in native rangeland plant communities, and also in cropland

environments. Ponderosa pine stands throughout the herd unit, particularly in areas around Guernsey and Hartville, including Camp Guernsey's military training grounds, experienced some mortality in 2020 and 2021. Wyoming State Forestry is currently researching the issue, and believe a combination of drought stress and insect infestations may be the cause. Conservation Reserve Program (CRP) enrolled lands continue their downward spiral and provide very little in the form of hiding, calving, and thermal cover and equally as poor forage production and forage quality for much of the year. Reduced CRP rental rates offered to producers in 2020 resulted in numerous producers leaving the CRP program in Platte, Goshen and Laramie Counties. Many of those tracts returned to annual crop production or livestock grazing.

2021 - JCR Evaluation Form

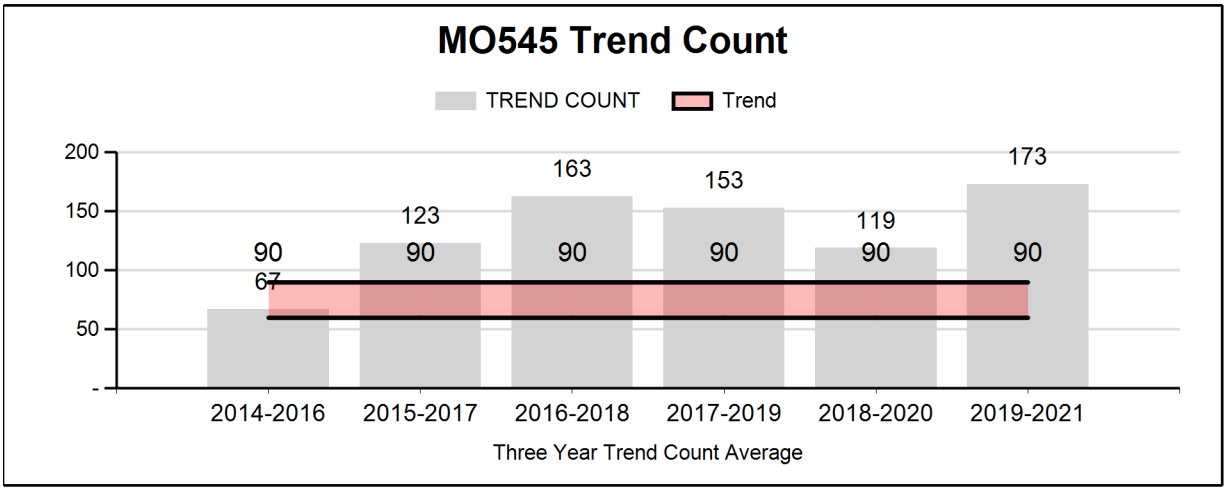
SPECIES: Moose
PERIOD: 6/1/2021 - 5/31/2022
HERD: MO545 - SNOWY RANGE
HUNT AREAS: 38, 41
PREPARED BY: TEAL CUFAUDE

	2016 - 2020 Average	2021	2022 Proposed
Trend Count:	145	284	200
Harvest:	38	46	50
Hunters:	41	48	53
Hunter Success:	93%	96%	94 %
Active Licenses:	41	48	52
Active License Success	93%	96%	96 %
Recreation Days:	353	422	500
Days Per Animal:	9.3	9.2	10
Males per 100 Females:	96	72	
Juveniles per 100 Females	46	41	

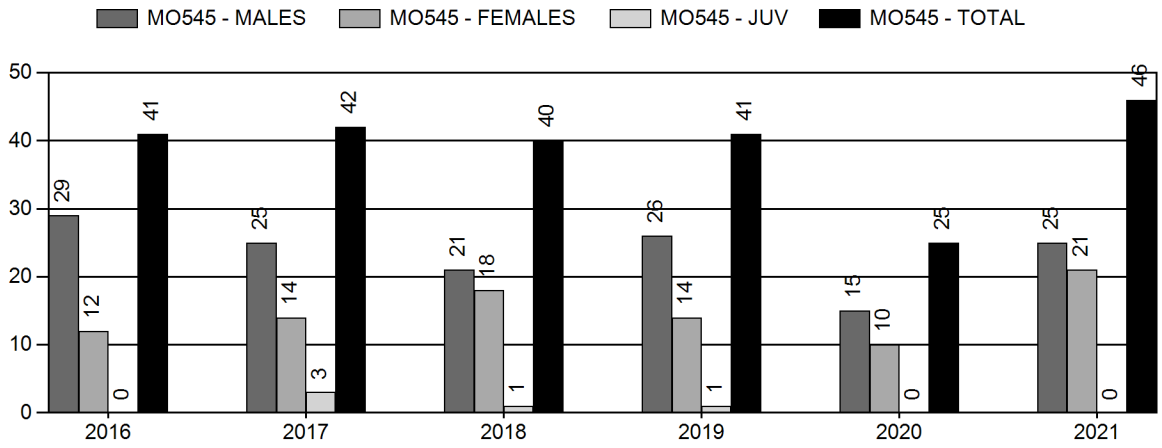
Trend Based Objective (± 20%)	75 (60 - 90)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	279%
Number of years population has been + or - objective in recent trend:	5

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

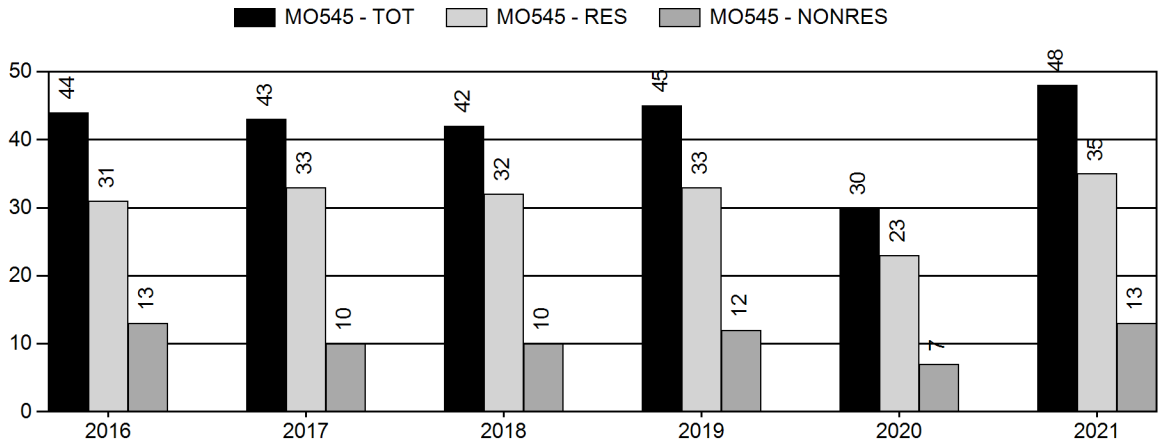
	JCR Year	Proposed
Females ≥ 1 year old:	N/A%	N/A%
Males ≥ 1 year old:	N/A%	N/A%
Juveniles (< 1 year old):	N/A%	N/A%



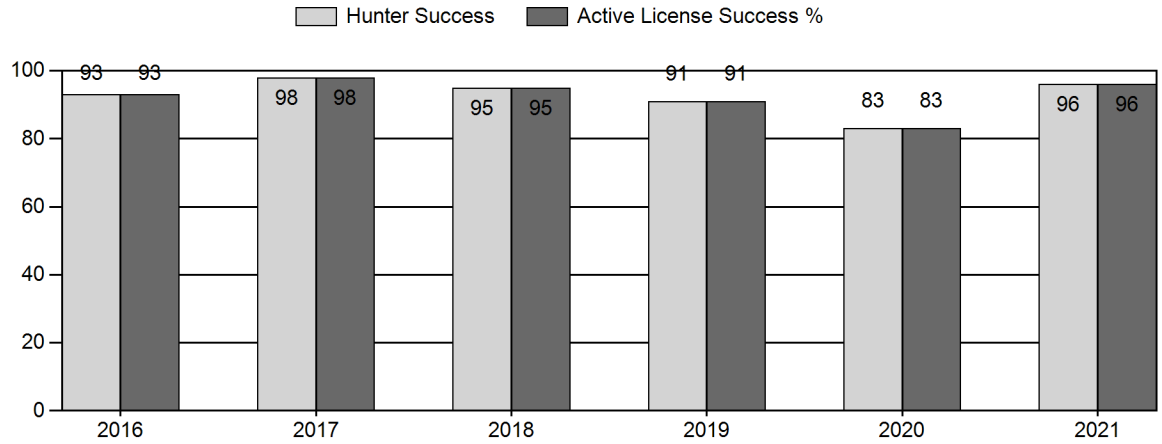
Harvest



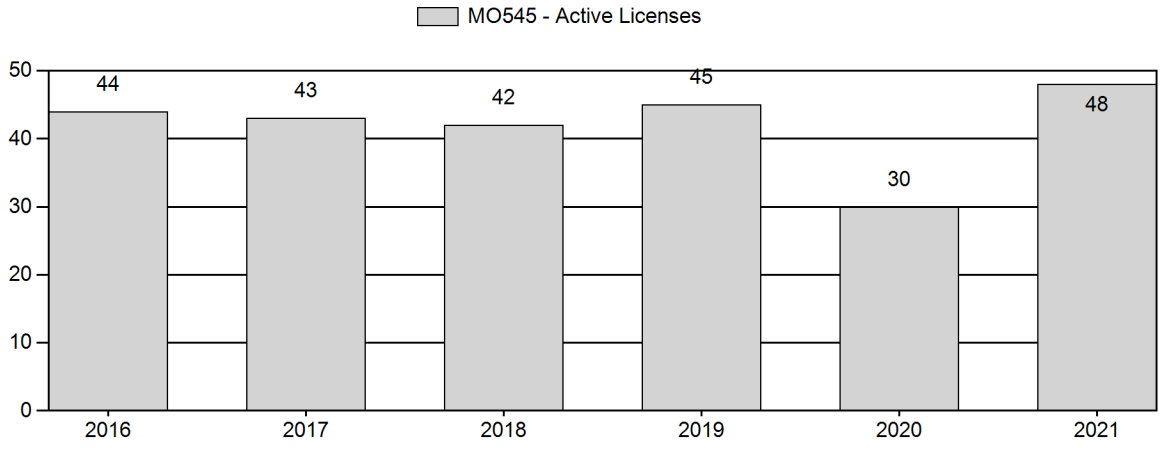
Number of Hunters



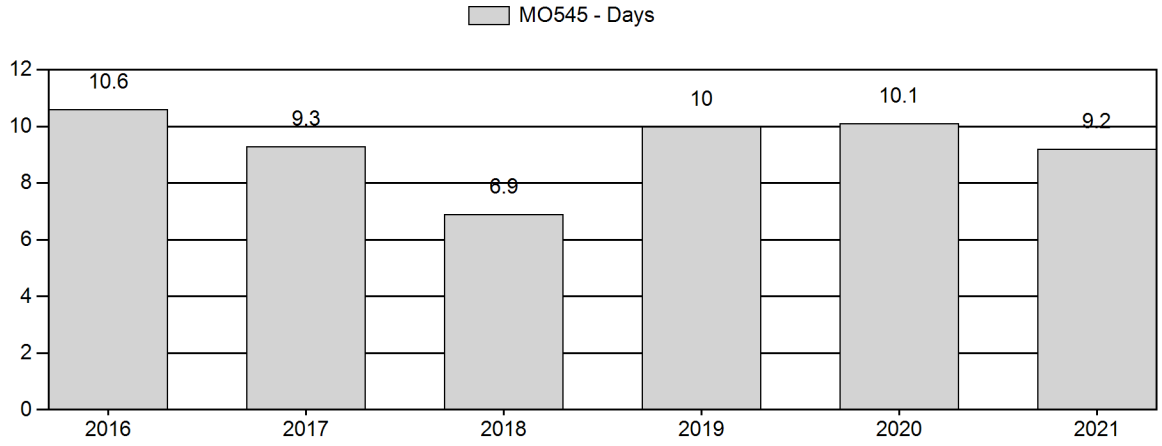
Harvest Success



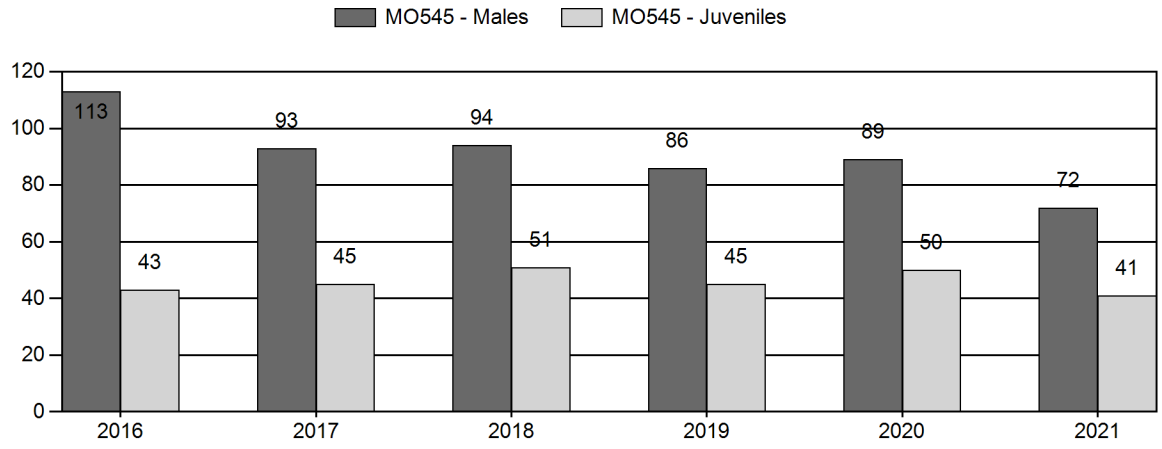
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2022 Hunting Seasons
Snowy Range Moose (MO545)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
38, 41	1	Sep. 1	Sep. 30	Oct. 1	Nov. 14	25	Any moose, except cow moose with calf at side
	4	Sep. 1	Sep. 30	Oct. 1	Nov. 14	25	Antlerless moose, except cow moose with calf at side

Secondary Management Objectives:

1) 3-yr. average of ≥ 4 years of age median for harvested bulls
    - Currently Met: 2019-2021 Median Age for Harvested Bulls- 5.3 years of age
2) 3-yr. average of ≥ 40% of bulls in harvest = ≥ 5 years of age
    - Currently Met: 2019-2021 Percentage of Bulls ≥ 5 years of age- 63%
3) Maintain sustainable communities of willow species preferred by moose
    - Reference Habitat Section

2022 Management Summary

1.) Hunting Season Evaluation: Since biological year 2016, mid-winter trend counts have been conducted to monitor moose in this herd unit. Appendix A illustrates the age and sex ratios observed during these trend counts. The three-year trend count average from 2019-21 was 173 moose, which exceeded the trend count objective. The 2021 trend survey, resulted in the highest moose count (284 moose; Appendix B) since the trend objective was adopted in 2016. The Snowy Range herd unit has a reputation for producing trophy quality bulls. The 2021 bull harvest continued to be within WGFD's parameters for "prime-age bulls" (Appendix C). From 2010-21, 567 total hunters (434 residents, 133 nonresidents) have harvested 515 moose in this herd unit. During this time, 239 antlerless moose (217 cows, 22 juveniles) have been harvested. Only one antlerless moose has been harvested on type 1 licenses since 2010. Moose hunters affected by the 2020 Mullen Creek Fire were given the opportunity to carryover or refund their moose license in 2021. Two type 1 and three type 4 licensed hunters opted to carryover. Three Governor's and one Super Tag were also used in hunt area 38 in 2021. Twenty-three type 4 licenses were issued (22 active) and twenty-six type 1 licenses were issued (26 active). No activity was reported in hunt area 41 in the 2021 harvest survey report, however there was one male moose harvested in the hunt area based on tooth submissions. The average antler spread of field checked antlered moose was 42 inches (n=13).

In 2022, type 1 and type 4 license quotas were increased to 25 licenses each. This license allocation is expected to maintain the population at the current objective and age of harvested bulls within the secondary management objective ranges. Hunter numbers and harvest in hunt area 41 continues to be very low, although opportunity does exist. The moose herd continues to meet the secondary management parameters and exceed the 3-yr trend count objective so we feel confident that the herd can sustain the proposed license quota. We also continue to hear from landowners who are interested in allowing limited moose hunting opportunities in the Elk Mountain area.

2.) Management Objective Review: The management objective review was deferred to 2023. We

plan to conduct a full sightability survey in this herd unit every 3-5 years, starting with January/February 2023. We will also explore transitioning from an annual trend survey to a composition abundance survey design. The results of these surveys will help inform a population management objective for the Snowy Range moose herd unit during a herd objective review in 2023. We will continue to monitor the secondary management objectives to ensure trophy quality moose are available in the herd unit.

3.) Habitat: Snowpack and total annual precipitation were below the 30-year average for the majority of this herd unit in the Snowy Range, Sierra Madre and Pole Mountain areas. BLM rain gauge data for lower elevations in the Platte Valley indicated that precipitation levels were between 85-103% of normal for bio-year 2021. Precipitation levels ranged between 68-123%, with annual precipitation averaging 95% of normal throughout the Sierra Madre portion of the herd unit.

PRISM data collected for the Sheep Mountain and Platte Valley mule deer herd units were analyzed, as moose habitats, particularly at higher elevations overlap the mule deer herd units. Precipitation amounts in April through July were below the 30-year averages, negatively affecting the overall production of forage. Over 35% declines in precipitation were documented in the upper elevations for the period of May through July in western portions of the herd unit, and declines of 24% were seen in the eastern half of the herd unit for the same period. Precipitation events throughout the spring and early summer were sporadic and covered very small geographic areas. Lack of precipitation led to early senescence of grasses and forbs, likely leading to dietary shifts to riparian and upland shrub communities earlier in the year than normal for wild ungulates. Delays in plant response and subsequent regeneration were seen post-wildfire in woody plant communities, including mixed mountain shrub, willow, and aspens. Monsoonal moisture patterns were observed in late-summer in portions of the herd unit, likely aiding in recovery of woody species regenerating post-wildfire in the southern half of the Snowy Range. These late season precipitation events likely had little effect on herbaceous production or green-up.

The Laramie biologist team established a long-term willow monitoring program in 2021 to monitor willow production and utilization within the Snowy Range and surrounding areas of available moose habitat. We completed 15 Live-Dead Index surveys from August to early September, focusing our efforts on planeleaf (*Salix planifolia*), drummond (*S. drummondiana*), and booth willow (*S. boothii*). These willow species were selected based on a combination of moose preference and willow abundance within the Snowy Range. Preliminary analyses suggests all three willow species are being suppressed by browsing pressure (Appendix D). Additionally, we recorded percent browse during our surveys by grabbing five stems and tallying whether they were browsed or unbrowsed. Based on our analyses, we documented an average of 52-63% browse on the three focal willow species. While it's difficult to say where the browsing pressure is coming from, it is likely a mix of both livestock and wild ungulates including deer, elk, and moose.

4.) Research: The Snowy Range moose population has been monitored through several studies over the past 15 years (2005-2006, 2015-2017, 2018-2020), allowing us the unique opportunity to compare moose habitat use, movement, and behavior pre- and post- wildfire. Phase 1 of the Snowy Range Moose Post-Wildfire Monitoring Project began in March 2022; nine female moose were captured via helicopter darting on winter habitats within and surrounding the Mullen Creek Fire perimeter. Moose were fitted with GPS-enabled collars set to collect hourly fixes (locations). The fix-rate is identical to the previous Snowy Range moose studies, which will allow us to compare

movement strategies and resource use of moose prior to and following the fire. These collars will be deployed for a period of three plus years (release in December 2025) during which WGFD managers will gather information on the status of each moose and their response to recently burned habitats. In addition, we will be able to track animals' survival and rate of juvenile recruitment. This research addresses five primary objectives. These objectives include: 1) quantifying movement and distribution of female moose; 2) evaluating the effects of the Mullen Creek fire on habitat selection; 3) assessing changes in habitat quality post-burn; 4) measuring cow moose survival; and 5) opportunistically assessing the health of captured moose.

5.) Disease: In 2021, ten hunter harvested moose were tested for Chronic Wasting Disease (CWD). No sampled moose from this herd unit tested positive for CWD. In 2021, carotid artery worms were detected in five hunter harvested moose in the Snowy Range herd unit.

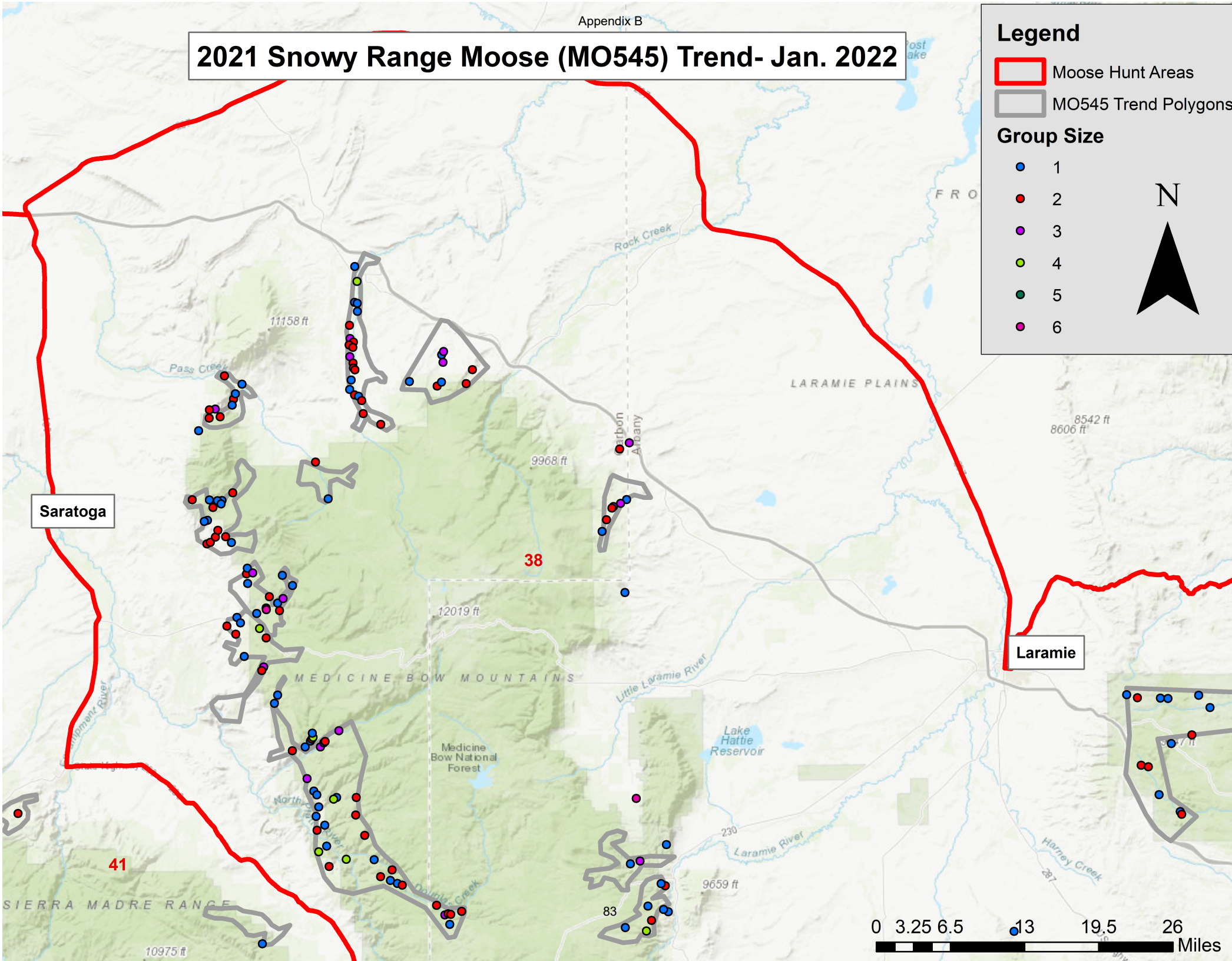
2016 - 2021 Postseason Classification Summary

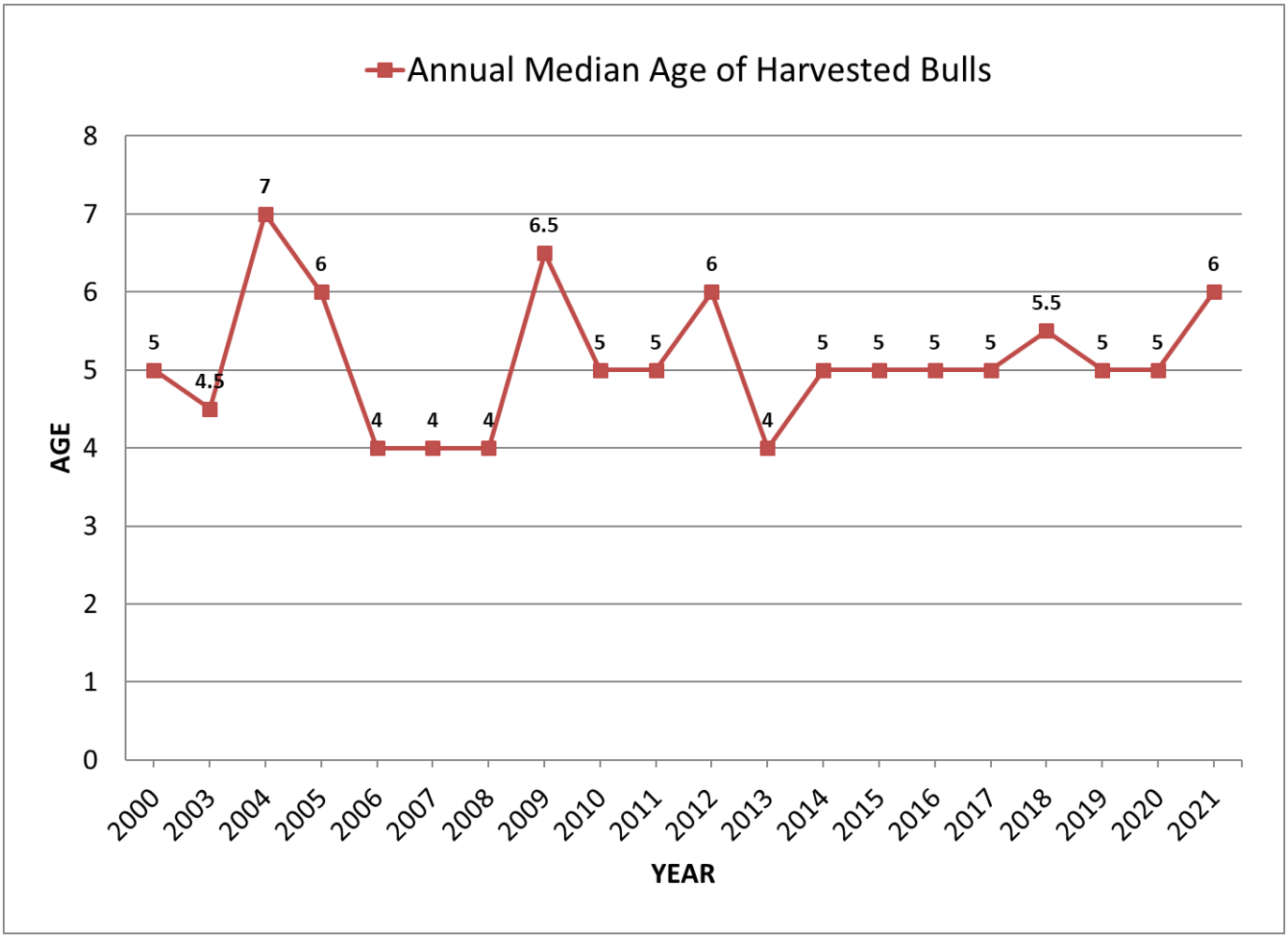
for Moose Herd MO545 - SNOWY RANGE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	0	9	77	86	44%	76	39%	33	17%	195	0	12	101	113	± 0	43	± 0	20
2017	0	17	49	66	39%	71	42%	32	19%	169	0	24	69	93	± 0	45	± 0	23
2018	0	13	33	46	38%	49	41%	25	21%	120	0	27	67	94	± 0	51	± 0	26
2019	0	8	55	63	37%	73	43%	33	20%	169	0	11	75	86	± 0	45	± 0	24
2020	0	7	8	25	37%	28	42%	14	21%	67	0	25	29	89	± 0	50	± 0	26
2021	0	10	72	96	34%	133	47%	54	19%	283	0	8	54	72	± 0	41	± 0	24

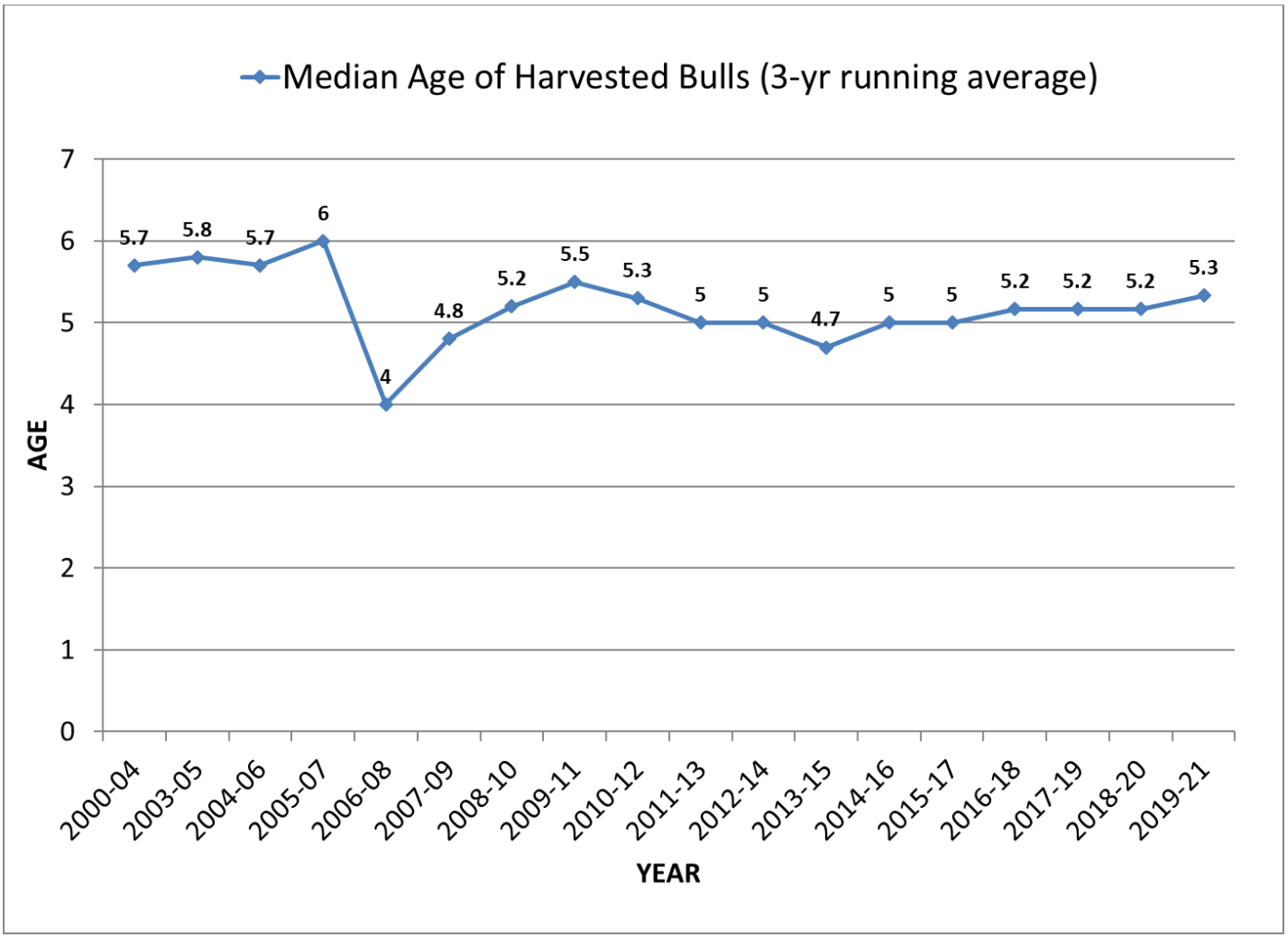
Appendix B

2021 Snowy Range Moose (MO545) Trend- Jan. 2022

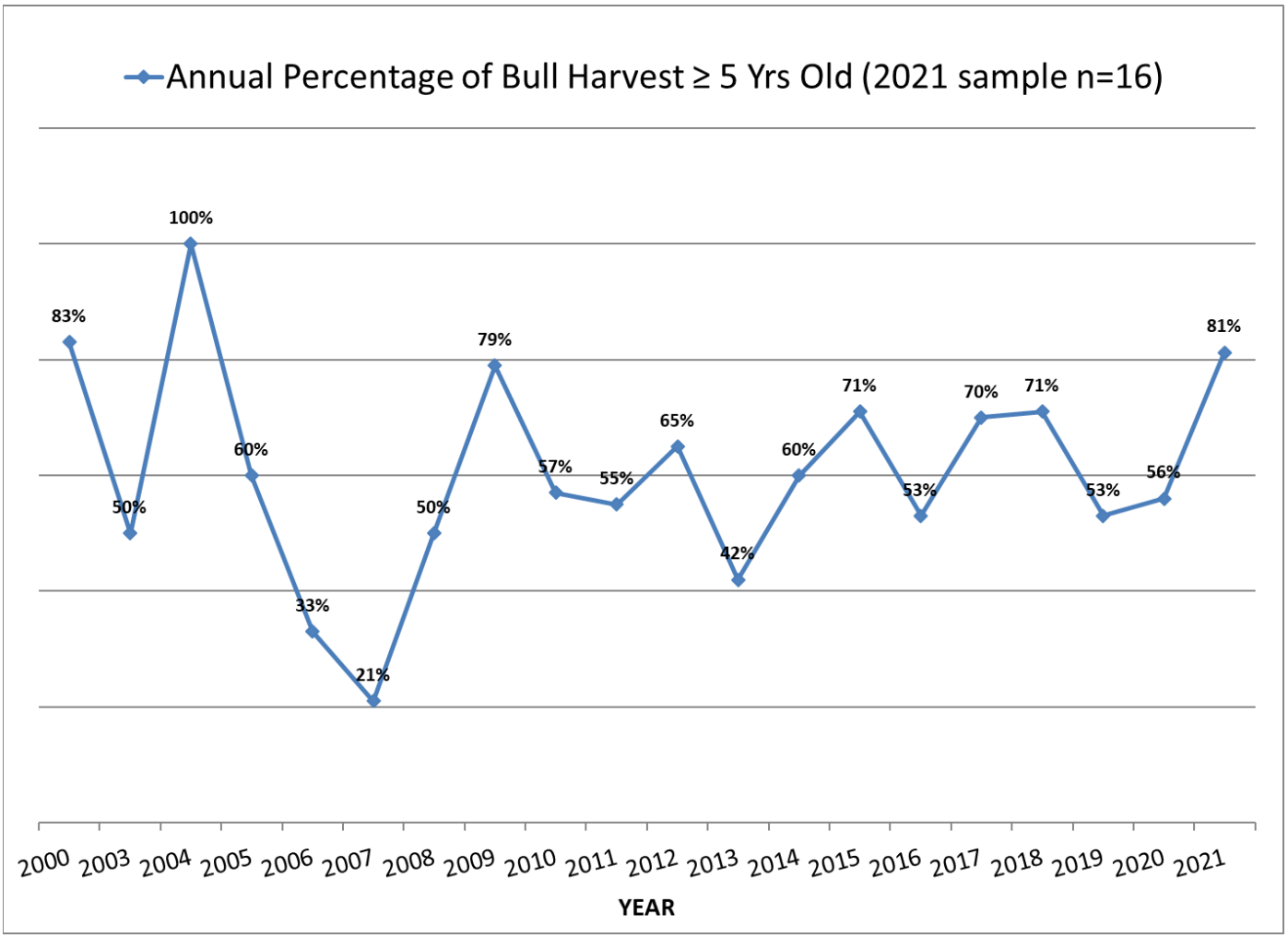




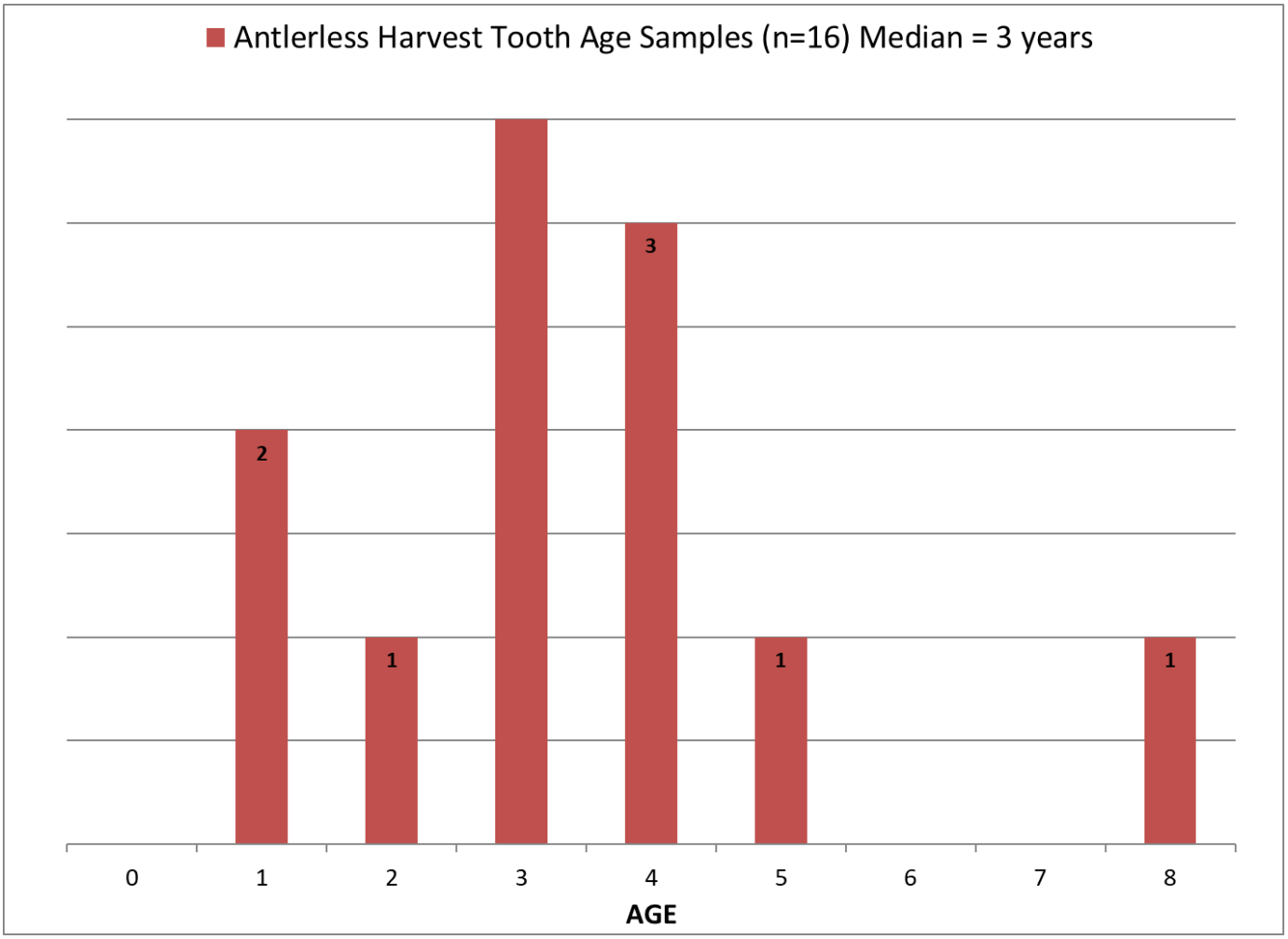
Median age of bulls harvested from the Snowy Range Moose herd unit, from lab aged teeth (n=16) in 2021.



Average (3-year running) median age of bulls harvested from the Snowy Range Moose herd unit, from lab aged teeth.



Annual percentages of the bull harvest ≥ 5-years in age from Snowy Range Moose herd unit, from lab aged teeth.



Age class distribution for antlerless moose harvested from Snowy Range Moose herd unit in 2021.

In September 2020, the Mullen Fire burned approximately 176,800 acres in the Snowy Range on the Medicine Bow National Forest. The burned acreage included a substantial portion of the Snowy Range moose herd unit. Approximately 110,226 acres within the burn scar were identified as moderate to high soil burn severity. Through post-wildfire mapping efforts, an estimated 17,174 acres of native plant communities were identified as high risk for the probability of cheatgrass invasion based on slope, aspect, fire severity, and known infestations. During the summer of 2021, 10,300 acres on the western side of the Snowy Range were aerially treated with indaziflam (Rejuvra) to combat cheatgrass invasion. In 2022, approximately 4,000 acres will be aerially treated on the eastern side of the Snowy Range, focusing in the Albany to Woods Landing area.

A monitoring plan was developed by USFS and partners at Colorado State University (CSU) to better understand the relationship between cheatgrass and the natural environment post-fire and post-cheatgrass treatment. One hundred and fifty monitoring plots were established and visited by field personnel this summer to assess species diversity (native vs. introduced), cheatgrass presence/absence, % composition of cheatgrass, and fire severity. This intensive monitoring could not have been achieved without the cooperative efforts of USFS, WGFD, USGS, and CSU. Relatively low amounts of vegetation and high amounts of bare soil were observed early in the summer of 2021. Species diversity varied across sites, with 17-33 species found at most sites. We anticipate the native plant community will recover given the moderate to high species diversity documented in many of the monitoring plots. A subset of the 150 monitoring plots will be revisited in 2022 and 2023 to evaluate herbicide efficacy post-treatment. Due to high fire severity, some areas containing mixed mountain shrub stands experienced high levels of shrub mortality. Several thousand shrub seedlings were planted west of the North Platte River by USFS, WGFD personnel, and a group of volunteers in the fall of 2021. Additional shrub seeding efforts may be necessary to aid in shrub recovery.

In addition to cheatgrass control efforts in the Mullen fire burn scar, 1,120 acres of important wildlife habitat on the Pennock WHMA were treated via aerial application of Rejuvra to combat cheatgrass invasion. Post-treatment monitoring to assess efficacy will be conducted in 2022. WGFD and Carbon County Weed and Pest also continued to treat leafy spurge in the western portion of hunt area 38.

Other areas recently burned by the Badger Creek (2018) and Squirrel Creek wildfires (2012) are still recovering. The USFS, WGFD, and other partners have completed aerial herbicide treatments to control competitive annuals. Aspen regeneration has been very good within the Squirrel Creek and Badger Creek wildfire areas, so we anticipate similar results following recent wildfire activity. Some overutilization of woody riparian species has been observed, particularly in portions of the Badger Creek wildfire south of Hwy 230. High browse use can be attributed to domestic livestock, moose, and elk. Portions of these wildfire areas will be slated for re-treatment of cheatgrass in 2022-2023.

Disturbances to moose favored habitats in the northern half of the Snowy Range continue to be limited. Shrub mowing treatments were conducted on 150 acres on the Wick WHMA in fall 2020, including true mountain mahogany, bitterbrush, and serviceberry shrub stands. These shrub species are utilized by moose in the fall and winter months. Post-treatment, annual leader production of the shrubs mentioned increased by 3x, 2x, and 5x respectively over untreated areas.

In the eastern portion of moose hunt area 38, Pole Mountain, habitat enhancement work continues on USFS and State of Wyoming lands within mixed conifer, aspen, and shrub stands. Enhancement work has included mastication and some prescribed fire, resulting in the return of plant communities to earlier seral states. These treatments are designed to encourage aspen and mixed mountain shrub regeneration and reduce conifer encroachment, which can result in more mesic conditions and improved herbaceous and woody plant species productivity and diversity. In fall 2020, the WGFD agreed to manage a portion (3,110 acres) of the Pilot Hill area as a WHMA on the western slope of the Laramie Range, just outside of Laramie. Future management of mixed mountain shrubs on this property through mechanical treatments or prescribed fire could be beneficial for wild ungulate populations.

We evaluated willow community conditions using the Keigley Live-Dead Index (LD Index). The LD Index is a quantitative measure of browse intensity calculated by subtracting the height dead (H_D) from the height of the base of current year growth (H_{BCYG}).

$$LD = H_{BCYG} - H_D$$

Positive values indicate the willow is escaping browsing pressure, values near zero indicate the current level of browsing is preventing vertical plant growth, and negative values indicate the willow is being suppressed by browsing.

Of the 15 surveys, 10 surveys were completed on planeleaf willow, 3 surveys on drummond willow, and 2 surveys on booth willow. We removed one drummond survey from the analysis due to errors in data collection. Preliminary analyses suggests all three willow species are being suppressed by browsing pressure (*planeleaf:* $\bar{x}$ = -1.99, 95% CI [-4.79, 0.64]; *drummond:* $\bar{x}$ = -5.03, 95% CI [-8.77,-1.68]; *booth:* $\bar{x}$ = -12.08, 95% CI [-19.48, -4.98]). Average leader length per willow species ranged from 12.06 cm to 22.42 cm.

Past large-scale wildfires within the Sierra Madre Range (Snake fire – 2016, Beaver Creek fire – 2016, and Ryan fire – 2018) are recovering at varying rates. These fires have returned plant communities to earlier seral stages and increased the age class diversity of mixed mountain shrubs and aspens. The resulting productivity and diversity could be beneficial for multiple species of wild ungulates.

2021 - JCR Evaluation Form

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

HERD: MD534 - GOSHEN RIM

HUNT AREAS: 15
PREPARED BY: KEATON WEBER

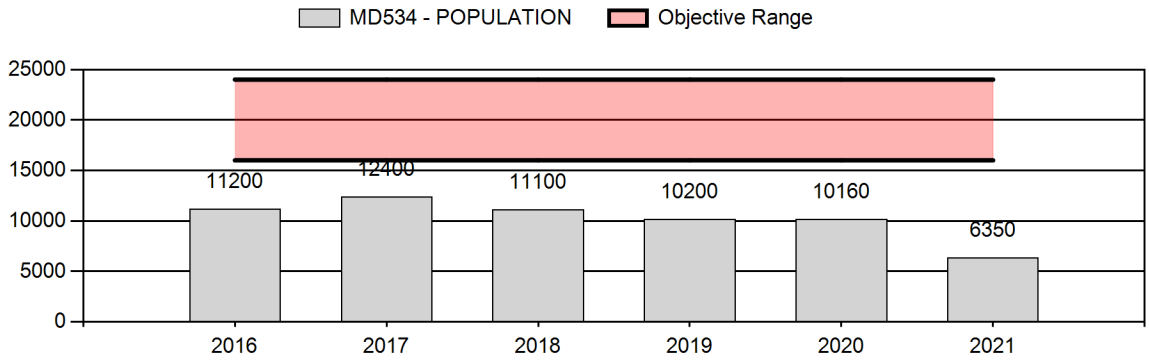
	2016 - 2020 Average	2021	2022 Proposed
Population:	11,012	6,350	6,500
Harvest:	947	640	790
Hunters:	1,792	1,497	1,640
Hunter Success:	53%	43%	48 %
Active Licenses:	1,872	1,559	1,500
Active License Success:	51%	41%	53%
Recreation Days:	7,542	6,384	7,093
Days Per Animal:	8.0	10.0	9.0
Males per 100 Females	35	27	
Juveniles per 100 Females	49	40	

Population Objective (± 20%) :	20000 (16000 - 24000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-68.2%
Number of years population has been + or - objective in recent trend:	11
Model Date:	2/28/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	2%	3%
Males ≥ 1 year old:	50%	53%
Proposed change in post-season population:	-7%	-7%

Population Size - Postseason



2022 Hunting Seasons
Goshen Rim Mule Deer Herd Unit (MD534)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
15	Gen	Sept. 1	Sept. 30	Oct. 1	Oct. 14		Antlered mule deer or any white-tailed deer
15	6	Sept. 1	Sept. 30	Oct. 1	Dec. 31	300	Doe or fawn

2022 Region T nonresident quota: 400 licenses

2021 Hunter Satisfaction: 57% Satisfied, 23% Neutral, 20% Dissatisfied

2022 Management Summary

1.)Hunting Season Evaluation: Goshen Rim Mule Deer Herd Unit has been below the objective of 20,000 mule deer for well over the past 30 years so the season is structured to be as conservative as possible while still addressing minimal damage concerns throughout the herd unit. Allocation of 300 Type 6 licenses appears to be at a level that addresses damage while not compromising the population. Buck ratios are still within the recreational management range of 20-30 bucks:100 does (5 year average = 30 bucks:100 does) but is starting to decrease towards the lower limit. However, since buck ratios are within the guideline limits there does not appear to be a need to reduce public opportunity by decreasing hunting days or Region T licenses. CWD is and will continue to be an issue within this herd unit and will a focus herds for surveillance again in 2025. The decline in population estimate in 2021 is due to the integration of a new population model (see section 5 Population Modeling below). This new model estimate is plausible as it is a more robust model and reflects what managers have seen in the field. Moreover, in 2021, managers classified 400 less mule deer than in 2020. The average amount of mule deer classified the previous 3 years (2018-2020) was 1,508 pronghorn. In 2021, managers classified 1,038 pronghorn.

2.) Management Objective Review: The herd unit's objective was last reviewed in 2018 and is slated to be reviewed again in 2023.

3.) Weather and Habitat: Annual precipitation was below normal in the Goshen Rim herd unit in 2021. NOAA weather station data from Torrington and Cheyenne showed a 27% and 7% decrease from average for the year. A large winter storm event occurred in March 2021, with snow depths over 3' observed throughout the herd unit. Some mortality of fawns and older age class animals likely occurred. Due to the juxtaposition of annual and perennial agricultural croplands intermixed with rangeland habitats, mule deer likely shift diets to crops when native rangeland forage production is compromised by declines in overall precipitation or poorly timed events. Mixed mountain shrub habitats found on the Goshen Rim remain in late seral stages due to a lack of managed disturbance on the landscape. Annual shrub production and shrub nutritive content are both compromised as plants mature. Due to the close proximity of perennial and annual crops, mule deer are likely to shift their diets and utilize these forage resources in this intensive agricultural environment versus depending on decadent shrubs. Cheatgrass remains a large threat in the understory of shrub communities and also in cropland environments.

Conservation Reserve Program (CRP) enrolled lands continue their downward spiral and provide very little in the form of hiding, fawning, and thermal cover and exhibit equally poor forage production and nutritive quality for much of the year. Significant acreage of CRP in southeast Wyoming expired in 2020, with numerous producers opting to not re-enroll in the program due to decreased soil rental rates. Most of the tracts have since returned to annual crop production or livestock grazing. Over the last 35 years of the CRP programs' existence, we've seen multi-species stands convert to single specie grass stands (e.g. smooth brome) in the majority of CRP tracts, resulting in poor habitat for wild ungulates and other wildlife.

4.) Chronic Wasting Disease Management: This is a Tier 1 surveillance herd, and was last prioritized for CWD sampling in 2020. The most current prevalence data is reported in the 2022 JCR. Prevalence estimates and sample sizes are below (Table 1). Most recently, we have sustained a 38% prevalence through 2019-2021. Managers are concerned with this high level of prevalence and plan to take this herd out for public input in 2022 to determine the future management through the guidelines of the Department's CWD Management Plan.

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

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2019	**52% (n=21)**	0%	0%
2020	**31%(n=105)**	6.7%	6.3%
2021	**53% (n=28)**	0%	0%
2019-2021	**38% (22-47%, n=154)**	5% (20)	5%% (20)

5.) Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 9,444 mule deer. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit from the PopR IPM was approximately 6,350 (CL = 5,679-6,974) mule deer. Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022. The 2021 populations estimate in the graph above, reflects the population estimate derived from the PopR IPM model.

2021 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD537 - LARAMIE MOUNTAINS

HUNT AREAS: 59-60, 64

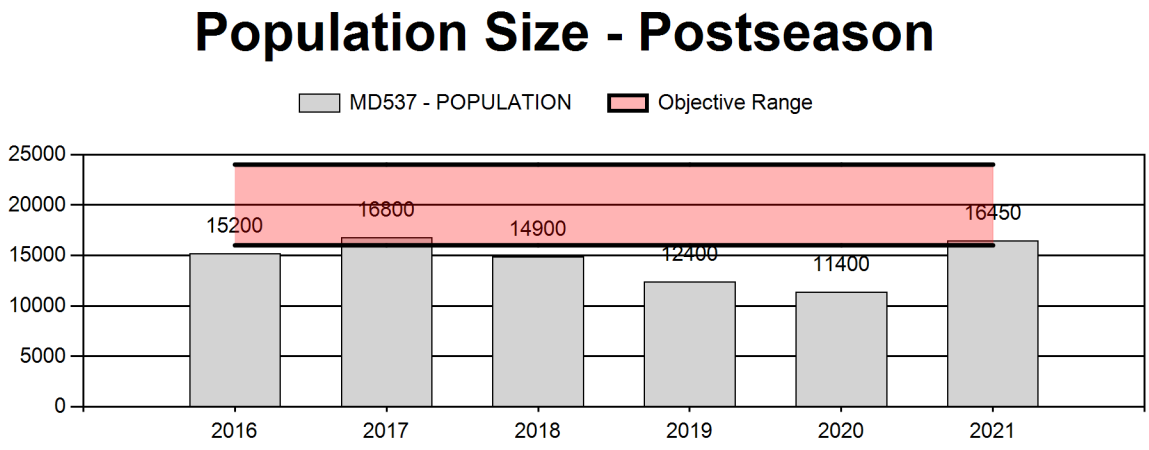
PREPARED BY: KEATON WEBER

	2016 - 2020 Average	2021	2022 Proposed
Population:	14,140	16,450	15,000
Harvest:	1,079	799	900
Hunters:	2,016	1,790	1,850
Hunter Success:	54%	45%	49%
Active Licenses:	2,062	1,846	1,930
Active License Success:	52%	43%	47%
Recreation Days:	9,091	8,368	8,450
Days Per Animal:	8.4	10.5	9.4
Males per 100 Females	45	34	
Juveniles per 100 Females	58	41	

Population Objective (± 20%) :	20000 (16000 - 24000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-17.8%
Number of years population has been + or - objective in recent trend:	4
Model Date:	2/26/2022

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:	19%	20%
Proposed change in post-season population:	14%	-2%



2022 Hunting Seasons
Laramie Mountains Mule Deer Herd Unit (MD537)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
59	Gen	Sept. 1	Sept. 30	Oct. 15	Oct. 31		Antlered mule deer any white-tailed deer
59,64	6	Sept. 1	Sept. 30	Oct. 15	Oct. 31	150	Doe or fawn, valid on private land
59,64	6			Nov. 1	Dec. 31		Doe or fawn white-tailed deer, valid in the entire area
60	1	Sept 1	Sept 30	Oct. 15	Nov. 5	100	Any deer
60	2	Sept 1	Sept 30	Oct. 15	Nov. 5	200	Any deer off national forest
60	6	Sept 1	Sept 30	Oct. 15	Nov. 30	50	Doe or fawn
64	Gen	Sept. 1	Sept. 30				Antlered mule deer or any white-tailed deer valid in the entire area
64	Gen			Oct. 15	Oct. 31		Antlered mule deer or any white-tailed deer except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Habitat Management Area and the Laramie Peak Wildlife Habitat Management Area north of the Tunnel Road (Albany County Road 727) shall be closed
64	2	Sept. 1	Sept. 30	Oct. 15	Oct. 31	100	Antlered mule deer or any white-tailed deer

2022 Region J nonresident quota: 900 licenses

2021 Hunter Satisfaction: 56% Satisfied, 17% Neutral, 27% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The Laramie Mountains Mule Deer Herd Unit is significantly below the population objective of 20,000 mule deer and as a result the 2022 season is conservative in structure. There are a small amount of Type 6 licenses available throughout the herd unit to address damage concerns. Curt Gowdy State Park language has been removed to simplify the regulation language and create a separate White-tailed deer licenses (Type 3 and Type 8). Additionally, Curt Gowdy State Park is now regulating hunting on their own and will outline restrictions within State Park regulations. The general seasons will remain at 16 days to take advantage of buck ratios (34 bucks:100 does) that are above the upper end of the recreational management threshold (20-30 buck:100 does). Hunters will need to keep in mind that the majority of the male deer fall within the Class I and II categories. There are very few Class III males (> 25" in antler width) on the landscape, most likely due to high prevalence of CWD (long-term average of 20%) within this herd unit.

2.) Management Objective Review: The population objective for the Laramie Mountains Herd Unit was last reviewed in 2019 and will be reviewed again in 2024.

3 Weather and Habitat: Annual precipitation in the hunt area was below normal for 2021 based on weather data analyzed from Cheyenne and Laramie weather stations. NOAA weather station data from Laramie and Cheyenne showed a 12% and 7% decrease from average for the year. A significant snowstorm occurred in March 2021, with over 3' of snow falling in the majority of the herd unit. This likely resulted in some mortality of fawns and/or older segments of the herd. Northern portions of Area 64 were impacted by continued summer drought more than southern portions of the Laramie Mountains herd unit. NOAA weather data from the Douglas station showed decreases of 47% from normal annual precipitation. Generally, shrub communities throughout the Laramie Range remain mostly in late seral successional stages, with decreased shrub productivity and nutritive content compared to more early seral shrub communities associated with recent disturbances (e.g. prescribed fire). The USFS and WY State Forestry continue to complete aspen, conifer, and shrub mastication and prescribed fire projects on the Pole Mountain unit of the Medicine Bow National Forest. Results of habitat treatments are varied, based largely on levels of herbivory post-treatment by wild ungulates and domestic livestock and presence/absence of invasive annuals.

Ponderosa pine stands throughout the northern portions of Hunt Area 64 of the herd unit experienced some mortality during the last two years. Wyoming State Forestry is currently researching the issue, and believe a combination of drought stress and insect infestations may be the cause. Mostly found at lower to mid elevation foothills, the mortality is widespread, but does not appear to be infecting all trees within larger timber stands.

Cheatgrass control via herbicide application is on-going following wildfire events in northern half of the Laramie Range. Treatments completed in the Sybille Canyon and Brittania Mountain areas continue to show strong control of cheatgrass two years post-treatment. Large scale

herbicide treatments to control cheatgrass are scheduled for three sites in the Laramie Range in 2022, including the Thorne Williams WHMA and two areas impacted by recent wildfire activities.

Competition with elk for basic habitat requirements is likely a contributing factor for poor mule deer performance within the herd unit. Within deer hunt areas 59, 60, and portions of 64 south of Hwy 34, we continue to see exponential elk herd growth, putting strains on habitats historically and previously occupied mostly by mule deer. Dietary overlap in Spring, Summer, Fall ranges between elk, mule deer, and cattle result in increased competition for resources.

4.) Chronic Wasting Disease Management: This is a Tier 1 surveillance herd that is prioritized for CWD sampling in 2022. Prevalence estimates and sample sizes are presented below (Table 1) for the past three years. Mandatory sampling is requested for 2022. If approved mandatory CWD sampling will be required for all mule deer hunters within hunt areas 59, 60, and 64. Managers do not want to put extra burden on white-tailed deer hunters since any proposed CWD management prescriptions will only affect mule deer; however, we will still take volunteer samples throughout the white-tailed deer seasons. By implementing mandatory CWD sampling we hope to accomplish the goal of collecting 200 samples in one year so managers have a statistically valid sample size if new CWD management actions are implemented the coming years. Managers will take this herd unit out to the public this year for input on CWD management with guidelines from the Department's CWD Management Plan.

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

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2019	**29% (n=55)**	20% (5)	0% (11)
2020	**15% (n=72)**	16% (6)	11% (9)
2021	**19% (n=83)**	0% (6)	25% (4)
2019-2021	**20% (12%-27%, n=210)**	12% (17)	8% (24)

5.) Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 7,491 mule deer. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit from the PopR IPM was approximately 16,450 (CL = 13,532-20,160) mule deer. Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022. The 2021 population estimate in the graph above reflects the population estimate derived from the PopR IPM model. The PopR IPM model did not account for survival data that has been used in recent years in the spreadsheet model. This lack of survival data explains the reflected increase in population estimate within the PopR IPM model.

2021 - JCR Evaluation Form

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

HERD: MD539 - SHEEP MOUNTAIN

HUNT AREAS: 61, 74-77
PREPARED BY: LEE KNOX

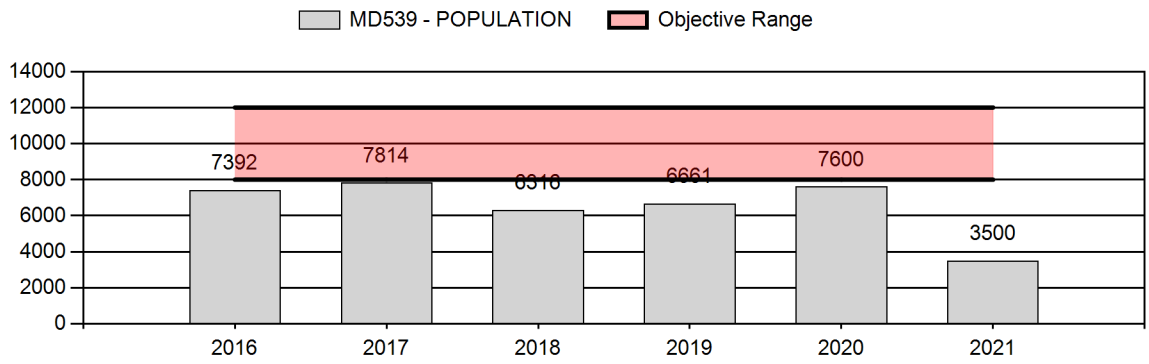
	2016 - 2020 Average	2021	2022 Proposed
Population:	7,157	3,500	3,100
Harvest:	357	481	450
Hunters:	1,372	1,680	1,600
Hunter Success:	26%	29%	28 %
Active Licenses:	1,372	1,680	1,600
Active License Success:	26%	29%	28 %
Recreation Days:	7,213	10,010	10,000
Days Per Animal:	20.2	20.8	22.2
Males per 100 Females	41	27	
Juveniles per 100 Females	60	53	

Population Objective (± 20%) :	10000 (8000 - 12000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-65%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/28/2022

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

	JCR Year	Proposed
Females ≥ 1 year old:	03%	03%
Males ≥ 1 year old:	64%	50%
Proposed change in post-season population:	08%	12%

Population Size - Postseason



2022 Hunting Seasons
Sheep Mountain Mule Deer (MD539)

Hunt Area	Type	Archery Dates Opens	Archery Dates Closes	Season Dates Opens	Season Dates Closes	Quota	Limitations
61	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered mule deer or any white-tailed deer
74	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered mule deer or any white-tailed deer
75	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered mule deer or any white-tailed deer
76	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered mule deer or any white-tailed deer
77	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered mule deer or any white-tailed deer

2022 Region D nonresident quota: 300 licenses

2021 Hunter Satisfaction: 48% Satisfied, 28% Neutral, 23% Dissatisfied

2022Management Summary

1.) Hunting Season Evaluation: The Sheep Mountain Mule Deer Herd Unit remains below the population objective of 10,000. The 2021 post season population estimates was 3,500 mule deer, which is 65% below the objective. This is not a reflection of a significant loss of the population, but rather driven by the 2020 sightability estimate of 3,300. An estimate of 3,500 mule deer is likely a more accurate population estimate than previously estimated and the objective should be revisited. The 2021 season was the first year hunters were able to really use the 14 day season due to the Mullen fire in 2020 closing hunt areas 77 and 76 during the season. Harvest was 481 deer, which was well above the five year average of 349. Maintaining a 14 day season brought the buck ratio down to within recreational management ratios at 27:100 does. The five year average buck ratio was 40:100 does, far exceeding recreational management (Appendix A).

Nonresident region D quota will be decreased by 100 licenses to address population declines in the Shirley Mountain and Bates Hole mule deer herds.

2.) Management Objective: The management objective for the Sheep Mountain Mule Deer Herd is a post season population estimate of 10,000 mule deer. The management objective was last reviewed in 2020, maintaining a recreational management strategy of 20 to 29 bucks:100 does. When the objective is reviewed again in 2025 managers will explore a more realistic objective.

3.) CWD Management: CWD surveillance was shifted in the 2019 season to focus on specific herds instead of the blanket statewide approach. Deer herds statewide will be on a five year

rotation with the goal of increase surveillance to maintain adequate sample with a goal of 200 samples in 3 years. Sheep Mountain Mule Deer was a Tier 2 focal herd and was a priority for CWD sampling from 2019 to 2021. Prevalence estimates and sample sizes are presented below in Table 1.

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

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2019	**14.8% (n=61)**	0%	0%
2020	**10.3% (n=29)**	0%	0%
2021	**16.3% (n=80)**	0%	0%
2019-2021	**14.7% (8.4-20.9%, n=170)**	0% (34)	0% (15)

4.) Sightabilty: A Sightabilty was flown in the Sheep Mountain Herd Unit in March of 2021. Total hours flown were 29, with 1,882 mule deer observed, for an abundance estimate of 3,334 SE 520 LCL 2,304 – UCL 4,345.

5.) Research: To fill in geographical gaps in data from the 2017-2019 movement and habitat use study, 15 does were collared north of Interstate 80 in November of 2020. We collared 15 additional does south of hwy 130 in January of 2021. These collars will collect locations every two hours for two years, falling off in winter of 2023/2024. Survival rate of collared does was 71%. We had nine mortalities, and eight of which were in hunt area 74. Three collars were put back out in March of 2021, and the remaining six were put back out in February 2022, focusing on migration routes near Elk Mountain.

6.) Habitat and Weather: Precipitation received in 2021 was 10% below the long term average. If it were not for a single, large spring snowstorm event, precipitation numbers would have been much farther below average, and likely would have rivaled previous memorable drought years like 2002 and 2012. Within the 5 year review period of 2017 – 2021, annual precipitation exceeded the 30 year average in only 2 of the 5 years. The greatest deficiency in growing season precipitation was observed in 2020, followed by 2021 and 2018.

In addition to a 10% deficit in 2021 overall annual precipitation below the 30 year average, moisture events in the critical growth months for herbaceous and woody vegetation was also below normal. The most significant deficiencies occurred in May – July, in spring, summer, fall ranges for mule deer, where percent departures from normal precipitation falling during this period were 24%. For additional habitat and weather information please see Appendix B.

7.) Population Modeling: The bio-year 2021 postseason population estimate for this herd unit from the WGFD spreadsheet model was approximately 5,000 mule deer. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer and pronghorn. The 2021 postseason population estimate for this herd unit

from the PopR IPM was approximately 3,500 (CL = 3,057 – 3,960) mule deer. Postseason population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The IPM model was used for the 2021 reporting period and there will be discrepancies in the estimate and the five year population graph on page one. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

Appendix A

Classification

2016 - 2021 Postseason Classification Summary

for Mule Deer Herd MD539 - SHEEP MOUNTAIN

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	7,392	99	104	83	23	0	309	23%	633	48%	373	28%	1,315	1,124	16	33	49	± 4	59	± 4	40
2017	7,814	54	88	73	19	0	234	23%	490	49%	277	28%	1,001	1,015	11	37	48	± 5	57	± 5	38
2018	6,316	39	39	38	15	0	131	16%	423	52%	260	32%	814	1,001	9	22	31	± 4	61	± 6	47
2019	6,661	65	60	44	13	0	182	20%	474	51%	268	29%	924	0	14	25	38	± 4	57	± 5	41
2020	7,600	32	43	26	4	0	105	16%	333	50%	230	34%	668	923	10	22	32	± 4	69	± 7	53
2021	3,500	36	27	27	7	0	97	15%	361	56%	192	30%	650	0	10	17	27	± 4	53	± 5	42

Appendix B

RHA and PRISM Data Analysis

SHEEP MOUNTAIN

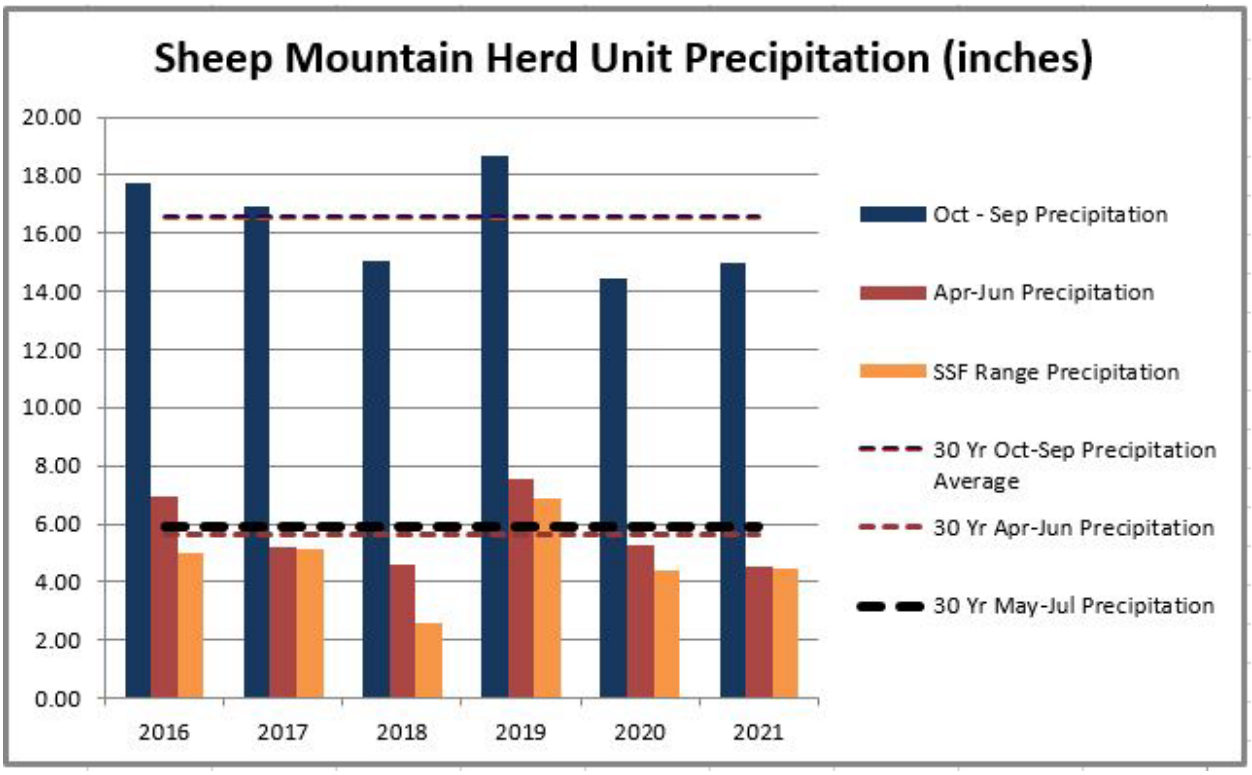


Figure 1. Parameter-Evaluation Relationships on Independent Slopes Model (PRISM) was utilized to estimate precipitation by calculating climate regressions for each Digital Evaluation Model grid cell (4 km resolution) for the Sheep Mountain mule deer herd unit.

Precipitation received in water year 2021 was 10% below the long term average. If it were not for a single, large spring snowstorm event, precipitation numbers would have been much farther below average, and likely would have rivaled previous memorable drought years like 2012 and 2002. Within the 5 year review period of 2017 – 2021, annual precipitation exceeded the 30 year average in only 2 of the 5 years. The greatest deficiency in growing season precipitation was observed in 2020, followed by 2021 and 2018.

One spring storm event occurring in mid-March 2021, blanketed the majority of the herd unit with over 3' of snow. This event was likely stressful for wintering mule deer, and could have caused some mortality of fawns and older age class animals.

In addition to a 10% deficit in 2021 overall annual precipitation below the 30 year average, moisture events in the critical growth months for herbaceous and woody vegetation was also below normal. The most significant deficiencies occurred in May – July in Spring, Summer, Fall ranges for mule deer, where percent departures from normal precipitation falling during this period were

24%. Precipitation falling in this time period, is essential for growth at high elevations in the herd unit. The importance of lush, succulent and nutritious forage availability in summer fawn rearing habitats cannot be overstated. Lack of spring and early summer precipitation led to earlier senescence of herbaceous forages across all seasonal ranges. Precipitation falling in the period of April – June was 24% below average as well. Higher than normal temperatures dominated the area in the early spring, causing an earlier than normal senescence of grasses and forbs. Throughout the herd unit, some late summer monsoonal weather patterns developed, bringing much needed rain to higher elevations. These events aided in the recovery of some woody plant species post-fire, but did little to aid in production or late green-up of herbaceous forages.

In fall 2020, the Mullen Fire burned approximately 176,800 acres in the Snowy Range, with the bulk of acres burned on national forest lands, including two wilderness areas. Over 10,300 acres were sprayed to control cheatgrass within the Platte Valley mule deer herd unit in summer 2021. We can assume that these cheatgrass control efforts may have some positive impact on Sheep Mountain herd unit deer as well. Field reconnaissance and vegetation monitoring efforts completed in 2021 identified significant mortality rates in mixed mountain shrub stands. The USFS completed some shrub planting efforts north of Lake Owen in foothill ranges in fall 2021. Future additional shrub seeding efforts may be necessary depending on mortality observed in the next year. Up to 4,000 acres may be treated for cheatgrass control in summer 2022 on the eastern foothills of the Snowy Range within this herd unit. Areas considered for cheatgrass treatments include portions of the mountain range burned twice in the last 10 years in the Squirrel Creek and Mullen wildfires. Monitoring and field reconnaissance in spring 2022 will aid in identification and finalization of treatment polygons.

Other areas recently burned by the Badger Creek (2018) and Squirrel Creek wildfires (2012) are still recovering. The USFS, WGFD, and other partners have intervened in these areas as well and completed aerial herbicide treatments to control competitive annuals. Aspen regeneration has been very good within the Squirrel Creek and Badger Creek wildfire areas, so we anticipate similar results following recent wildfire activity. Some overutilization of woody riparian species has been observed, particularly in portions of the Badger Creek wildfire south of Hwy 230. Browse use can be attributed to domestic livestock, moose, and elk. No aspen habitats inventoried during Rapid Habitat Assessments (RHA's) were considered to have excessive herbivory, and we expect aspen habitats to continue to largely escape browse pressure of wild ungulates and be recruited as a new established age class in the next two to three years.

Disturbances to habitats in the northern half of the Snowy Range continue to be very limited. Shrub mowing treatments were conducted on the Wick WHMA in fall 2020, including True mountain mahogany, Serviceberry, and Antelope bitterbrush shrub stands, species all utilized by deer in winter months. Forage production measurements in recently treated areas showed substantial increases in annual leader production over untreated areas. Antelope bitterbrush leader lengths doubled, True mountain mahogany lengths tripled, and Serviceberry lengths increased by over fivefold in the first year post-mowing treatment. Prescribed burns in mixed mountain shrub stands are slated for spring 2022 on the Wick WHMA, totaling approximately 1,200 acres. These treatments are located on crucial winter ranges for mule deer.

With less than ideal spring moisture and higher than average temperatures during the growing season period, recovery of native, perennial vegetation within the 176,800 acre Mullen wildfire scar was minimal. Regeneration of shrubs, aspen, and riparian woody plants was delayed in 2021. Late summer monsoonal moisture did result in some recovery of woody plants, after a very slow start in the spring.

With recent approval of the USFS LaVA analysis, plans for treatments in forested habitats totaling over 300,000 acres over the next 15 years were starting to take shape. Logging of live and dead timber, prescribed burning, and other planned and unplanned treatments were anticipated to have positive impacts on plant communities that mule deer rely upon. Within the 176,800 acre Mullen wildfire scar, LaVA treatments that were in early planning phases, have been temporarily put on hold or abandoned. We will shift focus to the northern half of the Snowy Range for future treatments in the near term. The Wick WHMA and associated USFS lands will be targeted for aspen enhancements through removal of encroaching conifers through mastication and hand cutting.

Thirteen (13) Rapid Habitat Assessments (RHA's) were completed in the Sheep Mountain mule deer herd unit in summer 2021, analyzing 2,653 acres total. Significant RHA effort was completed in the Badger Creek wildfire scar and shrub foothill areas near Sheep Mountain. Some of the most significant findings included:

Aspens burned in the 2018 wildfire are regenerating successfully. Herbivory is noticeable by wildlife and livestock, but not considered to be excessive. Some aspen stands will be above the browse line of large wild ungulates in the next two to three years and can be considered as a newly established age class.

In shrub and rangeland environments, most habitats assessed were classified as late seral. Later seral plant communities can often be typified by a reduction in species diversity. Overall herbivory levels in the majority of acres assessed was not considered excessive. Late seral shrub stands often exhibit signs of historic high browse use by wild and/or domestic ungulates at some point, shown in growth form and stature of woody plants. It is important to note that quality of woody forages produced in late seral plant communities may not meet the nutritional demands of mule deer for basic body maintenance in winter months. Wildfires in summer periods are known to cause higher mortality of mixed mountain shrubs than prescribed fires conducted in spring and fall. Summer wildfires occurring in this area will continue to cause concern for invasive annual grass establishment. Prescribed fire projects continue to be planned, but are often limited in size and overall benefit.

2021 - JCR Evaluation Form

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

HERD: MD540 - SHIRLEY MOUNTAIN

HUNT AREAS: 70
PREPARED BY: TEAL CUFAUDE

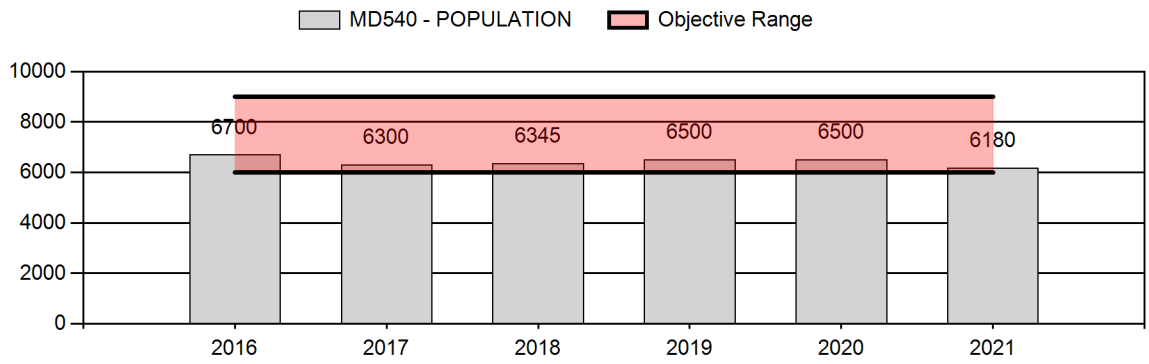
	2016 - 2020 Average	2021	2022 Proposed
Population:	6,469	6,180	6,500
Harvest:	256	128	124
Hunters:	576	511	370
Hunter Success:	44%	25%	34 %
Active Licenses:	581	511	380
Active License Success:	44%	25%	33 %
Recreation Days:	2,381	2,063	1,300
Days Per Animal:	9.3	16.1	10.5
Males per 100 Females	39	33	
Juveniles per 100 Females	56	61	

Population Objective (± 20%) :	7500 (6000 - 9000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-17.6%
Number of years population has been + or - objective in recent trend:	5
Model Date:	2/23/2022

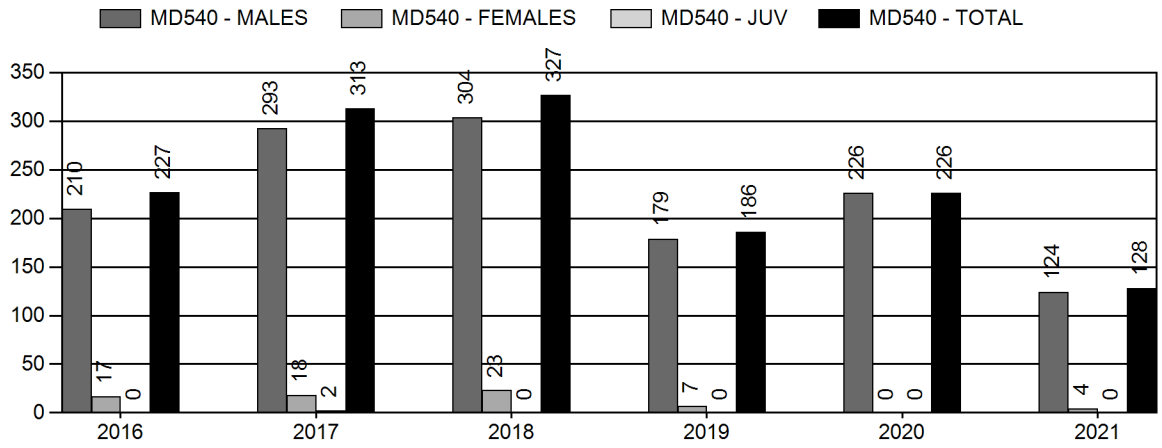
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0.1%	0.1%
Males ≥ 1 year old:	9%	7.7%
Proposed change in post-season population:	7%	4%

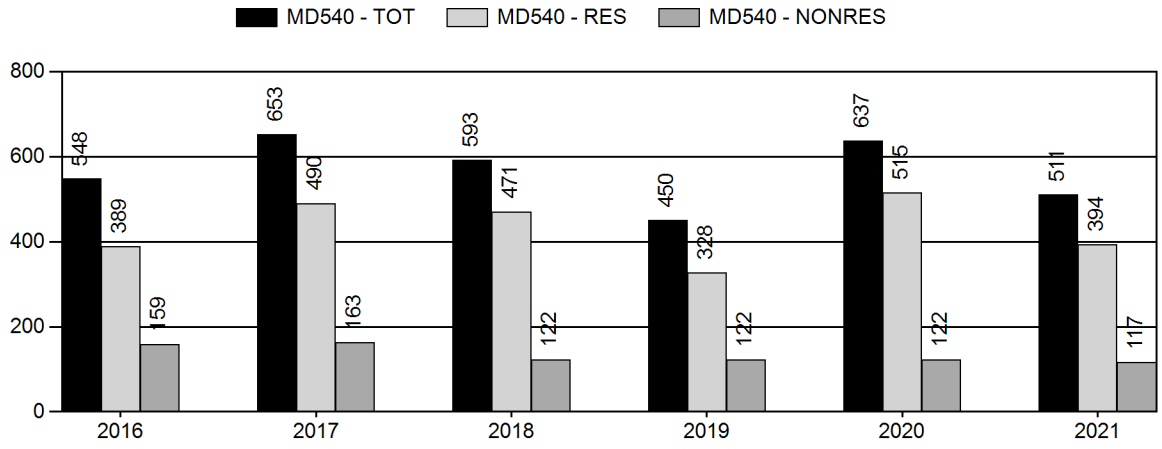
Population Size - Postseason



Harvest



Number of Hunters



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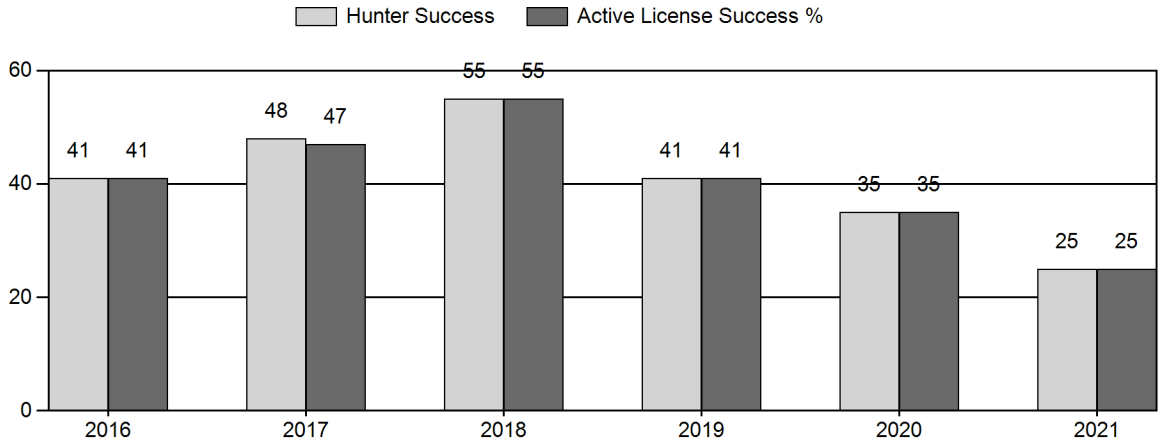
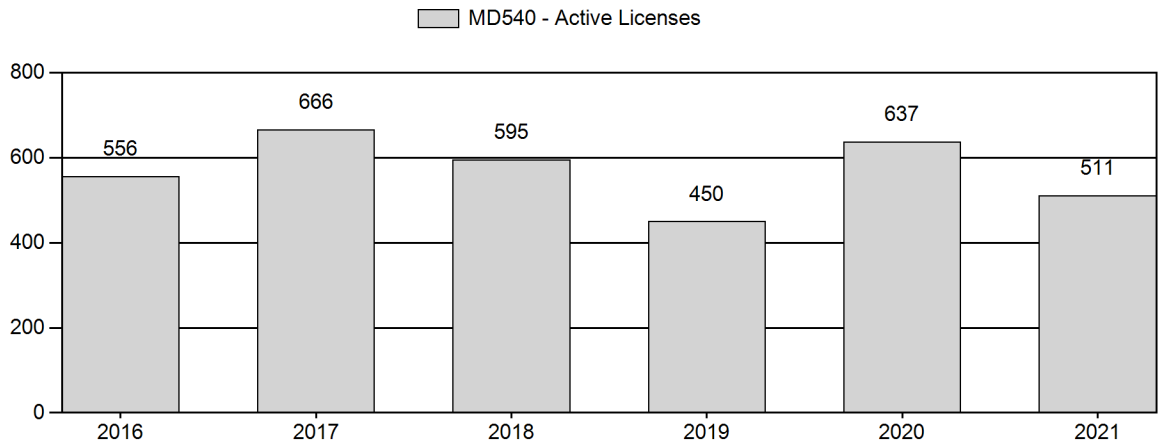
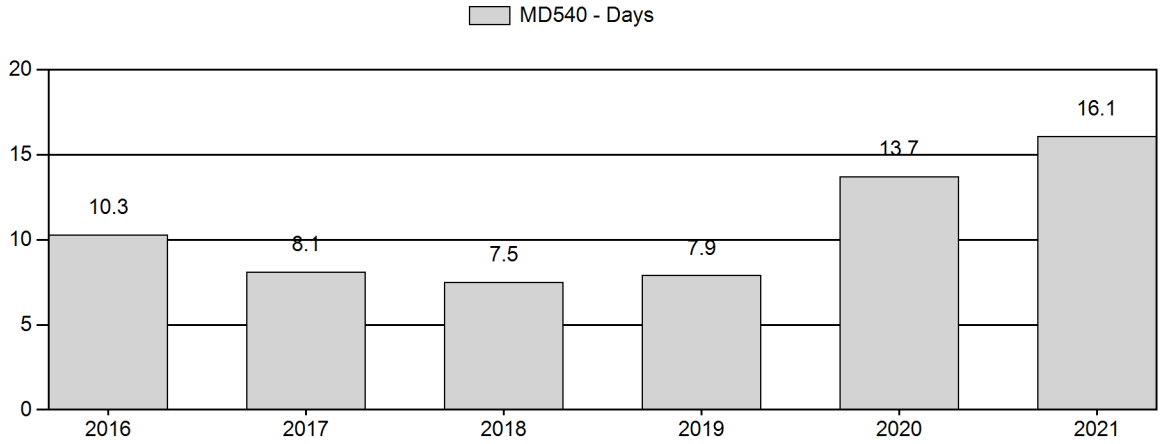


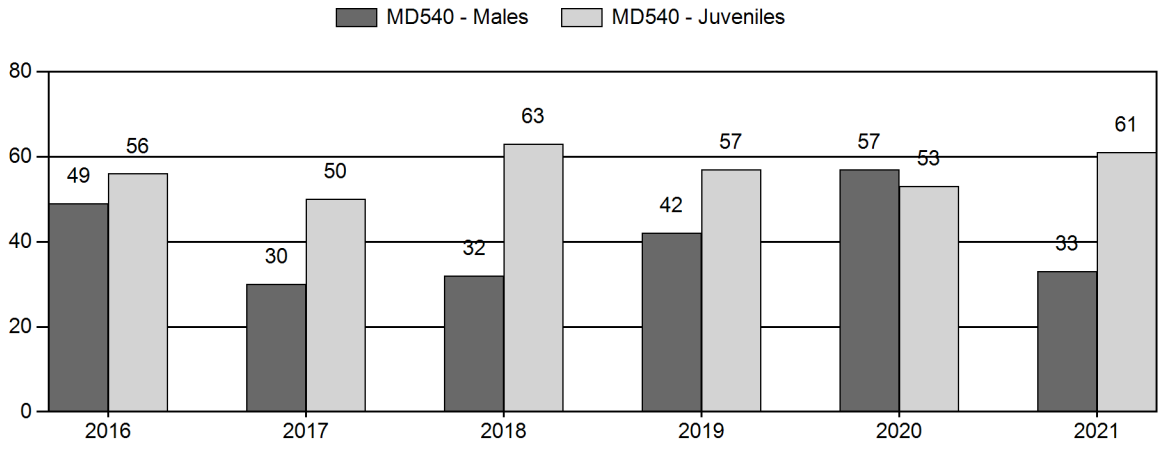
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2022 Hunting Seasons
Shirley Mountain Mule Deer (MD540)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
70	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 21		Antlered mule deer or any white-tailed deer

2022 Region D nonresident quota: 300 licenses

2021 Hunter Satisfaction: 41% Satisfied, 17% Neutral, 42% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: The 2021 harvest survey report indicated 511 hunters harvested 128 mule deer for an overall success of 25%. This was the lowest hunter success in the last ten years. Low hunter success could have been attributed to inaccessibility of popular public hunting lands during the season due to weather. Hunter comments suggest the lack of mature bucks observed during the season to be the largest contributor to poor hunter success. During the 2021 hunting season, antler spread measurements (n=11) were collected from adult bucks (>1.5 years of age) harvested in the herd unit. Class III (>25") bucks represented 9% of the adult bucks measured, Class II (20-25") bucks represented 45% of the adult bucks measured, and Class I (<20") represented 46% of the adult bucks measured. The small sample size of field checked bucks limits the utility of this antler class data when monitoring management and harvest statistics.

The 2021 postseason fawn ratio of 61 fawns/100 does was above the five-year average, however the classification sample size was less than adequate. Adult bucks were assigned to antler classes during post-season classification surveys. The total adult buck classification sample (n=31) resulted in the following: 68% Class I bucks, 26% Class II bucks, and 6% Class III bucks (Appendix A).

A seven-day general season for antlered mule deer or any white-tailed deer was prescribed in 2022. The Region D nonresident quota was reduced from 400 to 300 licenses. On average 24% of hunters in this herd unit have been nonresidents. The reduction in the nonresident quota is expected to reduce the percentage of nonresidents closer to 20%. The 2022 season structure should maximize hunter opportunity and may address hunters' concerns with poor hunt quality. If the projected harvest of 125 mule deer bucks and normal fawn production is attained in 2022 the predicted post-season population of mule deer will be within the objective range of 7,500 ±20% mule deer.

2.) Management Objective Review: The management objective was evaluated in 2020 and will be reviewed again in 2025.

3.) Weather/Habitat: Precipitation levels were below normal for bio-year 2021. Early spring precipitation occurred during April and May, but quickly diminished in early June. Precipitation events throughout the remainder of the summer were sporadic and covered very small geographic areas. NOAA weather stations in Laramie and Rawlins recorded departures from average annual precipitation of -12% and +6% respectively. Late summer monsoonal moisture patterns benefitted some areas in the southern portion of the herd unit, providing some late summer green-up of forages, which should have aided does with fawn rearing nutritional demands. Shrub conditions continue to be very poor with the landscape being dominated by late seral shrub plant communities

and continued overutilization by big game.

4.) Chronic Wasting Disease Management: Chronic Wasting Disease (CWD) was first detected in the Shirley Mountain mule deer herd unit in 2006. To date, no meaningful CWD prevalence data has been collected within this herd unit and no CWD management actions have occurred. The challenges associated with collecting a statistically valid sample of hunter-harvested deer has been the primary reason that this herd unit has not been identified as a priority sampling area. Given its close proximity to mule deer herds with high CWD prevalence, we would like to get a better estimate of CWD prevalence in Shirley Mountain mule deer herd unit. Managers will continue to evaluate ways to work this herd unit into the priority CWD sampling rotation in the future.

5.) Population Modeling: The bio-year 2021 post-season population estimate for this herd unit from the WGFD spreadsheet model was approximately 6,675 mule deer. Although population trends produced by the spreadsheet model seem reasonable, the post-season population estimates appear to be greater than the mule deer numbers field managers consider plausible for this herd unit. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for mule deer. The 2021 post-season population estimate for this herd unit from the PopR IPM was approximately 2,918 (CL = 2,452-3,381) mule deer. Although the PopR IPM estimates seem more plausible we may be unable to develop more accurate population estimates for this herd unit without conducting an independent abundance survey. Post-season population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

2016 - 2021 Postseason Classification Summary for Mule Deer Herd MD540 - SHIRLEY MOUNTAIN

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	6,700	19	26	22	2	0	69	24%	142	49%	80	27%	291	863	13	35	49	± 9	56	± 10	38
2017	6,300	13	23	18	3	0	57	17%	191	56%	96	28%	344	870	7	23	30	± 6	50	± 8	39
2018	6,345	27	20	15	1	0	63	16%	198	51%	125	32%	386	1,011	14	18	32	± 6	63	± 9	48
2019	6,500	19	29	16	1	0	65	21%	155	50%	89	29%	309	965	12	30	42	± 8	57	± 10	40
2020	6,500	9	26	14	2	0	51	27%	90	48%	48	25%	189	1,024	10	47	57	± 13	53	± 12	34
2021	6,675	8	21	8	2	0	39	17%	117	52%	71	31%	227	894	7	26	33	± 8	61	± 12	46

2021 - JCR Evaluation Form

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

HERD: MD541 - PLATTE VALLEY

HUNT AREAS: 78-81
PREPARED BY: TEAL CUFAUDE

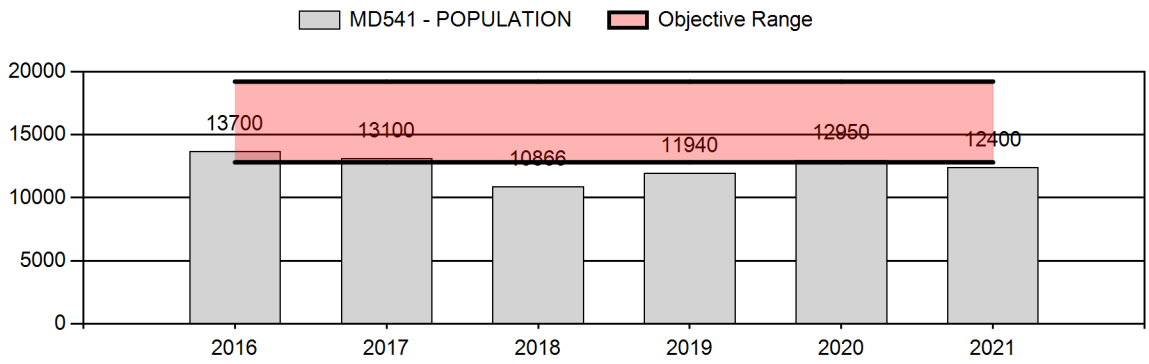
	2016 - 2020 Average	2021	2022 Proposed
Population:	12,511	12,400	13,000
Harvest:	552	586	570
Hunters:	958	1,176	1,000
Hunter Success:	58%	50%	57 %
Active Licenses:	958	1,176	1,000
Active License Success:	58%	50%	57 %
Recreation Days:	5,694	7,535	6,500
Days Per Animal:	10.3	12.9	11.4
Males per 100 Females	42	42	
Juveniles per 100 Females	61	71	

Population Objective (± 20%) :	16000 (12800 - 19200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-22.5%
Number of years population has been + or - objective in recent trend:	8
Model Date:	03/1/2022

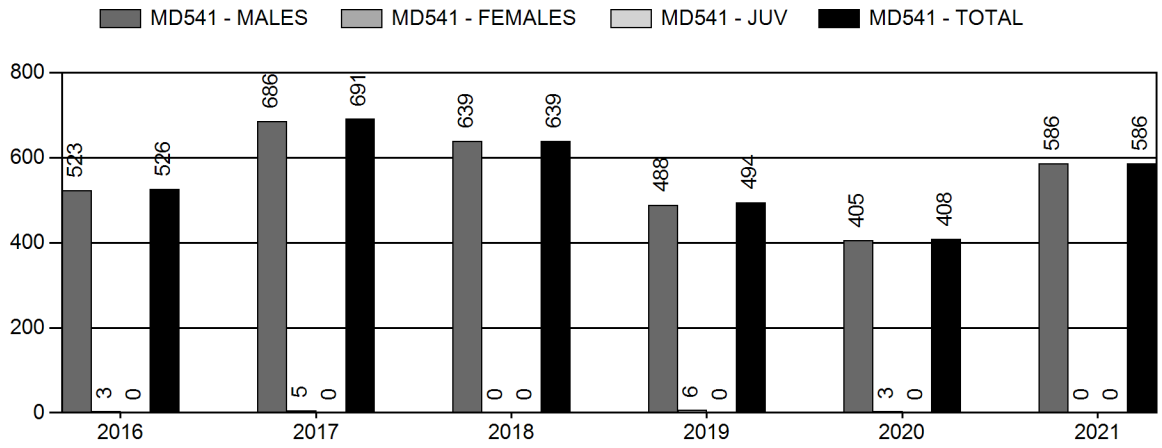
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	20.2%	0%
Proposed change in post-season population:	5.8%	4.8%

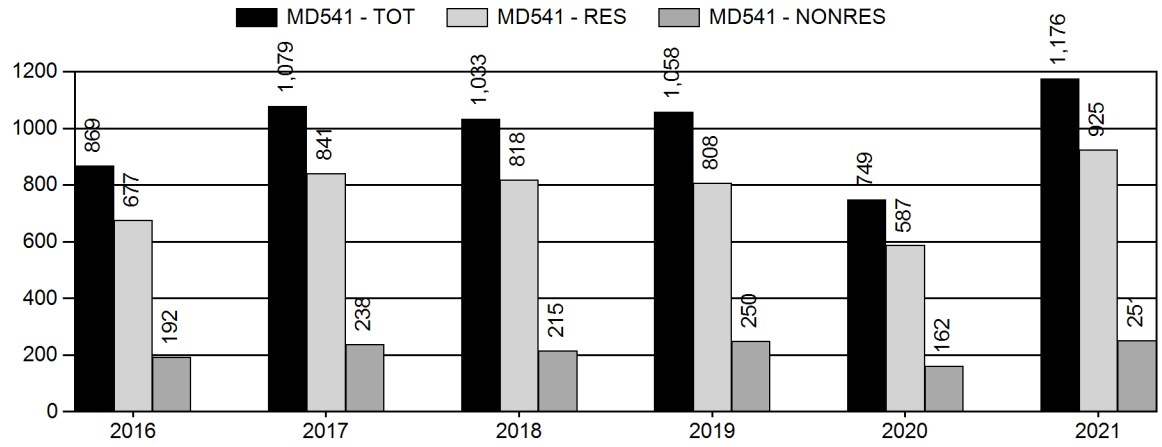
Population Size - Postseason



Harvest



Number of Hunters



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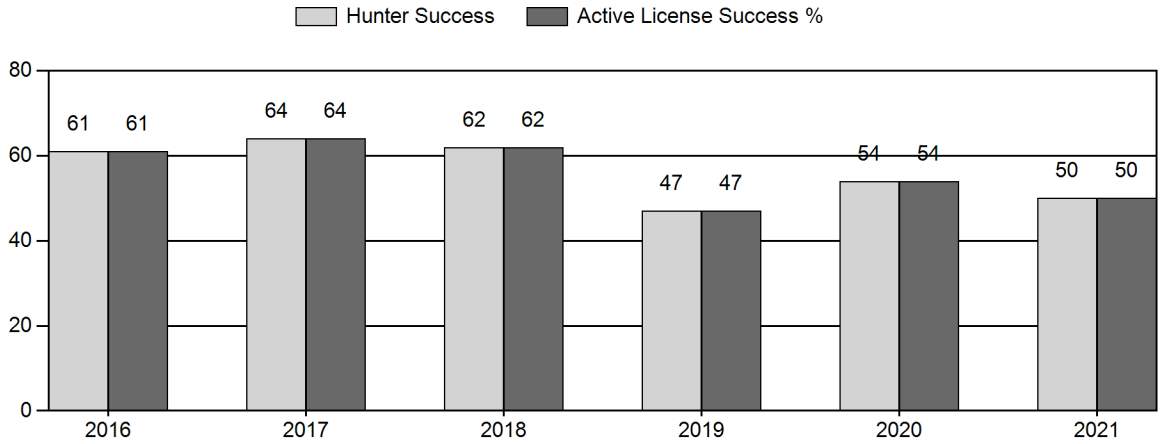
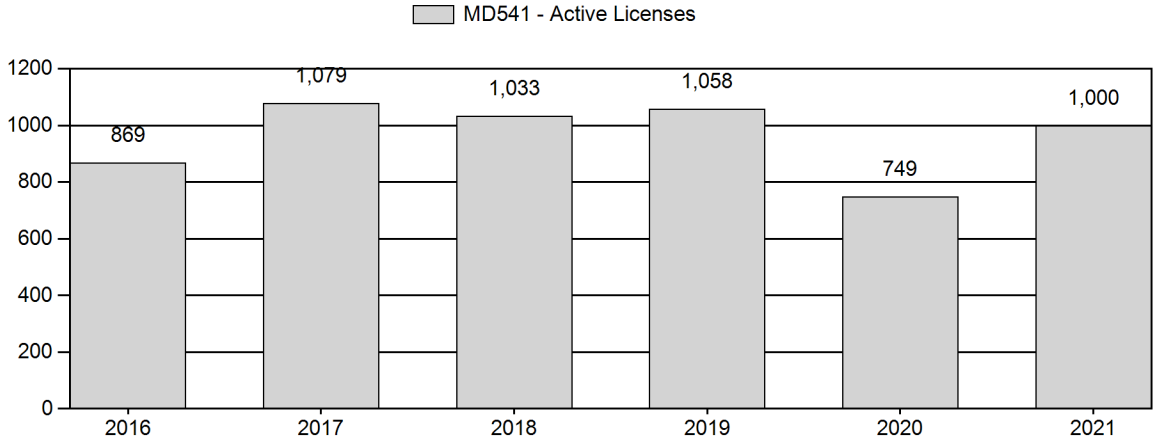
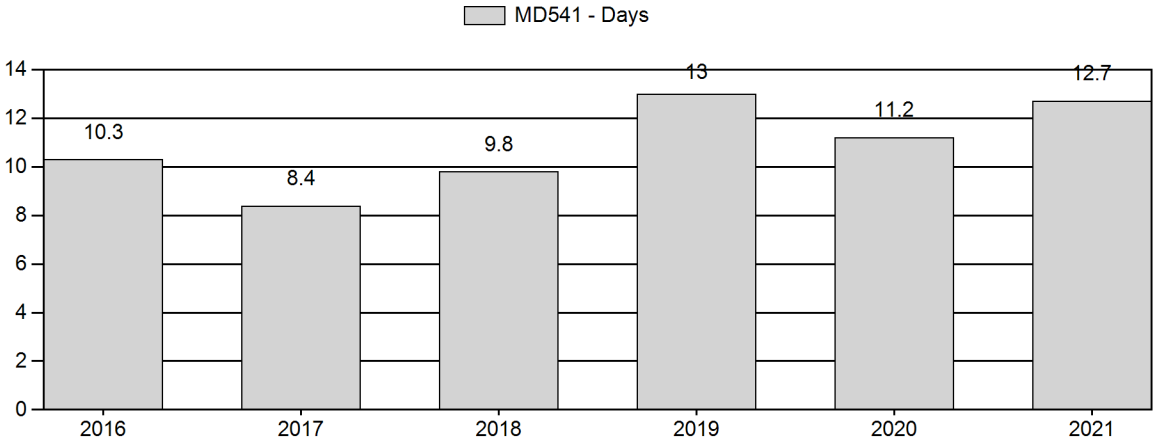


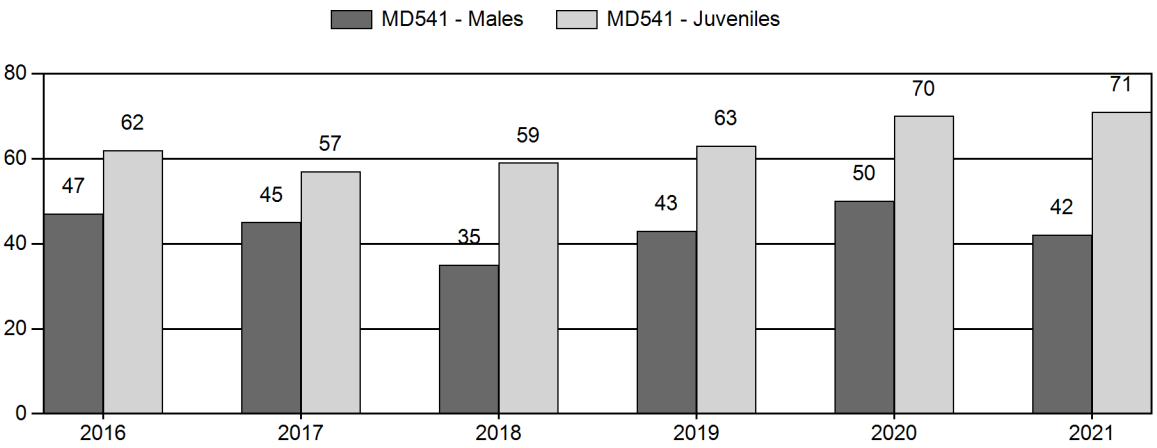
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2022 Hunting Seasons
Platte Valley Mule Deer (MD541)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
78	1	Sep. 1	Sep. 30	Oct. 1	Oct. 14	350	Antlered mule deer or any white-tailed deer
79	1	Sep. 1	Sep. 30	Oct. 1	Oct. 14	350	Antlered mule deer or any white-tailed deer
80	1	Sep. 1	Sep. 30	Oct. 1	Oct. 14	250	Antlered mule deer or any white-tailed deer
81	1	Sep. 1	Sep. 30	Oct. 1	Oct. 14	250	Antlered mule deer or any white-tailed deer

2021 Hunter Satisfaction: 55% Satisfied, 21% Neutral, 24% Dissatisfied

2022 Management Summary

1.) Hunting Season Evaluation: According to the 2021 harvest survey report a total of 1,176 hunters harvested 586 buck mule deer in 2021. Hunter success (50%) and satisfaction decreased and days to harvest (12.7) increased compared to 2020, indicating hunters had a more difficult time finding deer in 2021. In 2020, hunt area 78 hunters were offered an opportunity to carry their licenses over to the 2021 season due to the Mullen Creek Fire.

The 2021 post-season fawn ratio of 71 fawns/100 does exceeded the five-year average. The buck ratio of 42 bucks/100 does was above the recreational management strategy parameters of 20-29 bucks/100 does. Adult (>1.5 years of age) bucks were assigned to antler classes during postseason classification surveys. The total adult buck classification sample (n=142) resulted in the following: 60% Class I (<20”wide) bucks, 35% Class II (20-25”wide) bucks, and 5% Class III (>26” wide) bucks (Appendix A).

The 14-day limited quota season for all Platte Valley hunt areas was retained for 2021. The license quota for hunt area 78 was increased to 350 type 1 licenses, as there were no carryover licenses expected in 2022. Post-season buck and fawn ratios indicated a higher license quota would have been appropriate, however the quality of hunt metrics that are evaluated annually and on a three-year average indicated that 350 licenses in hunt area 78 would be appropriate. The hunt area 79 type 1 license quota was reduced to 350 licenses. Similarly to hunt area 78, post-season buck ratios and fawn ratios in hunt area 79 indicated that maintaining 400 type 1 license quota would have been appropriate, however the quality of hunt metrics have decreased since 2019. Hunters and landowners have attributed the decrease in quality of hunt to an overall lack of mature bucks and hunter crowding concerns.

Managers will continue to monitor the quality of hunt metrics, however consideration will also need to be given to disease prevalence and reduced carrying capacities of deer habitats in the herd unit, especially those areas that have been recently impacted by wildfires. Hunt areas in the Platte Valley herd unit are limited quota, but managers will continue to structure hunting seasons in a way that maximizes recreational opportunity.

If the projected harvest of 570 mule deer bucks and normal fawn production are attained in 2022 the predicted postseason population of 13,000 mule deer will be below the objective of 16,000.

2.) Management Objective Review: The objective was last reviewed in 2018 and will be reviewed again in 2023.

3.) Platte Valley Mule Deer Initiative Secondary Management Objectives: In 2012, Wyoming Game and Fish Department collaboratively developed the Platte Valley Mule Deer Plan and began to implement strategies identified to improve the quality of the hunting experience in this herd unit. These strategies included: 1.) change hunting season structure from traditional general seasons to limited quota seasons; 2.) achieve a buck harvest success rate of 40%; 3.) set a goal of at least 20% of field-checked harvested bucks meeting an antler spread of 24" or more; and 4.) 60% of the harvest survey respondents replying they were "satisfied" or "very satisfied" with their hunting experience. During the development of these harvest parameters it was recognized that each could be affected by annual events unrelated to management decisions, such as weather during hunting seasons. To lessen the effect of these variables, these management objectives were based on a three-year running average. In 2021, the buck harvest success rate was 50%, and the three-year average was 50%. In 2021, 17% of field-checked bucks (including yearlings) were ≥24". Yearling bucks made up 14% (n = 18) of the field-checked bucks. The 2019-21 average percentage of field-checked bucks ≥24" was 17%. Fifty-five percent of harvest survey respondents were satisfied or very satisfied with their 2021 hunting experience, and the three-year average satisfaction was 57%.

4.) Weather/Habitat: We used Parameter-Elevation Relationships on Independent Slopes Model (PRISM) to estimate annual, growing season, and high elevation (spring/summer/fall; SSF) precipitation (PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu, created 4 Feb 2004). Using PRISM, we calculated climate-elevation regressions for each Digital Elevation Model grid cell (4 km resolution) for the Platte Valley mule deer herd unit. Within the 6-year review period of 2016-2021, annual precipitation exceeded the 30-year average in 3 of the 6 years (Fig.1). The largest deficit in annual and growing season precipitation occurred in 2018, followed by 2021. Across the entire herd unit, precipitation from October 2020 through September 2021 (water year) was below the 30-year average. Snowpack in high elevations plays a significant role in the annual precipitation recorded in this herd unit.

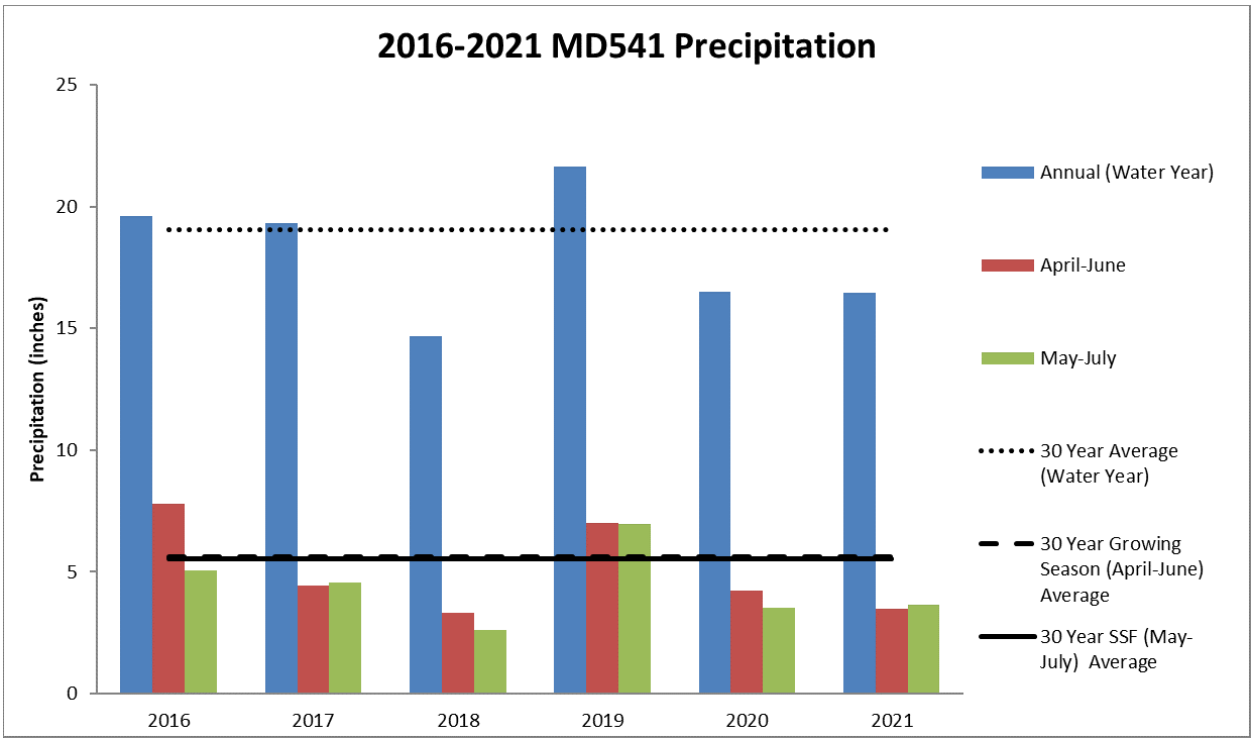


Figure 1. Parameter-Elevation Relationships on Independent Slopes Model (PRISM) estimate of annual, growing season, and spring/summer/fall (SSF) precipitation from 2016-2021 for the Platte Valley mule deer herd unit in Carbon County, Wyoming.

In addition to a ~14% deficit in annual precipitation in 2021, moisture events in the critical growing months for herbaceous and woody vegetation were also below normal. The most significant deficits occurred during the growing season (April – June). In four of the last six years, moisture during this period was below normal. High elevation SSF seasonal range (May – July) precipitation was slightly higher than growing season precipitation, however, it was still below normal. Precipitation falling during these months is essential for growth at high elevations in the herd unit. Lack of summer precipitation in 2021 led to earlier senescence of herbaceous forages across all seasonal ranges. This became evident during Rapid Habitat Assessment (RHA) data collection efforts, as plant identification became quite difficult by late June. Late summer monsoonal moisture at higher elevations provided some late summer green-up of forage.

The 2020-2021 winter remained mild, with no persistent snow accumulations through fall and early winter. SNOTEL sites on the west side of the Snowy Range and the east side of the Sierra Madres reported below-average to average snowpack during the winter of 2020-2021. Currently, SNOTEL sites at higher elevations on the west side of the Snowy Range report snow water equivalent (SWE) values ranging from 78-93% of average, while sites on the east side of the Sierra Madres report SWE values ranging from 78-101% of average.

In fall 2020, the Mullen Fire burned approximately 176,800 acres in the Snowy Range, with the bulk of acres burned on national forest lands, including two wilderness areas. To combat cheatgrass infestations, over 10,300 acres in the Medicine Bow National Forest were aerially treated with Rejuvra during the summer of 2021. This includes acreages within the Platte Valley and Sheep Mountain mule deer herds (hunt areas 78 and 76). Due to the high fire severity, some areas

containing mixed mountain shrubs experienced high levels of shrub mortality. After the abnormally hot and dry spring, late summer monsoonal moisture patterns provided some much-needed moisture for recovering shrubs and aspen. Daytime temperatures at elevations up to 10,000' were in the upper 90's in early June. Heat, in combination with lack of growing season precipitation, did not provide ideal conditions necessary for grass and forb recovery. Several thousand shrub seedlings were planted west of the North Platte River in the fall of 2021 by USFS, WGFD personnel, and volunteers. Additional shrub seeding efforts may be necessary to aid in shrub recovery. A large-scale monitoring effort by USFS, USGS, and WGFD will be completed in 2022 to evaluate herbicide efficacy in year 1 post-treatment.

Appendix B describes significant events and habitat monitoring efforts in the herd unit during bio-year 2021.

5.) Chronic Wasting Disease Management: Chronic Wasting Disease (CWD) was first observed in the Platte Valley herd unit in 2002. This is a Tier 1 surveillance herd and is scheduled to be intensely sampled, with the goal of sampling 200 hunter-harvested mule deer, in 2023. The three-year (2019-21) prevalence in the herd unit was 6.9%. Managers are concerned with this prevalence and plan to start gathering public input in 2022 and 2023 to determine feasible management strategies through the guidelines of the WGFD CWD Management Plan.

6.) Research: In 2018, The Platte Valley Mule Deer Migration Corridor was designated. The Platte Valley Mule Deer Migration Corridor represents high use seasonal migration corridors documented through GPS collar technology and delineated using a Brownian Bridge Movement Model. In February 2020, 45 additional mule deer does were fitted with GPS collars in an effort to better understand mule movement in this herd. Managers can also use collar studies to estimate survival based on the number of marked animals that survive month to month. During bio-year 2021, adult doe survival was 90% (95% CI 81%-99%).

7.) Population Modeling: The bio-year 2021 post-season population estimate for this herd unit from the WGFD spreadsheet model was approximately 12,450 mule deer. In 2021, WGFD managers also began using PopR integrated population models (IPM) to estimate population indices for pronghorn. The 2021 post-season population estimate for this herd unit from the PopR IPM was approximately 11,500 (CL = 9, 726-13,173) mule deer. Post-season population estimates from both models for 2021 were reported here to allow for comparison during this transitional year. The Department intends to replace the WGFD spreadsheet model with the PopR IPM in bio-year 2022.

2016 - 2021 Postseason Classification Summary

for Mule Deer Herd MD541 - PLATTE VALLEY

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2016	13,700	96	206	250	7	0	559	23%	1,188	48%	731	29%	2,478	1,159	8	39	47	± 3	62	± 3	42
2017	13,100	64	125	114	29	0	332	22%	738	50%	419	28%	1,489	1,165	9	36	45	± 4	57	± 4	39
2018	10,866	147	200	188	33	0	568	18%	1,638	52%	971	31%	3,177	1,123	9	26	35	± 2	59	± 3	44
2019	11,940	229	308	246	40	0	823	21%	1,918	49%	1,209	31%	3,950	1,092	12	31	43	± 2	63	± 2	44
2020	12,950	57	104	67	15	0	243	23%	487	46%	340	32%	1,070	1,168	12	38	50	± 5	70	± 6	47
2021	12,400	43	85	50	7	0	185	20%	441	47%	315	33%	941	1,150	10	32	42	± 5	71	± 6	50

Significant Events

The Platte Valley Habitat Partnership continued to implement habitat projects across the Platte Valley herd unit. These projects included 1,120 acres of aerial cheatgrass treatments, continued leafy spurge treatments throughout the Platte Valley, and 7 miles of fence conversions.

The Landscape Vegetation Analysis (LaVA) Project was developed in response to changed forest vegetation conditions caused by the bark beetle epidemic and other forest health issues. In August 2020, the Final Record of Decision was signed, authorizing the start of project implementation. Under the Final Record of Decision, the LaVA Project allows for up to 288,000 acres to be treated over the next 15 years. Project implementation was paused while USFS personnel completed a supplemental information report (SIR) to assess the Mullen Fire burn area, which burned portions of 6 of the 14 accounting units that make up the LaVA project area. The SIR was finalized in August 2021 and it was determined that project implementation may continue in the Mullen Fire area. WGFD continues to work with the USFS and other federal, state, and local cooperators to plan and begin project implementation.

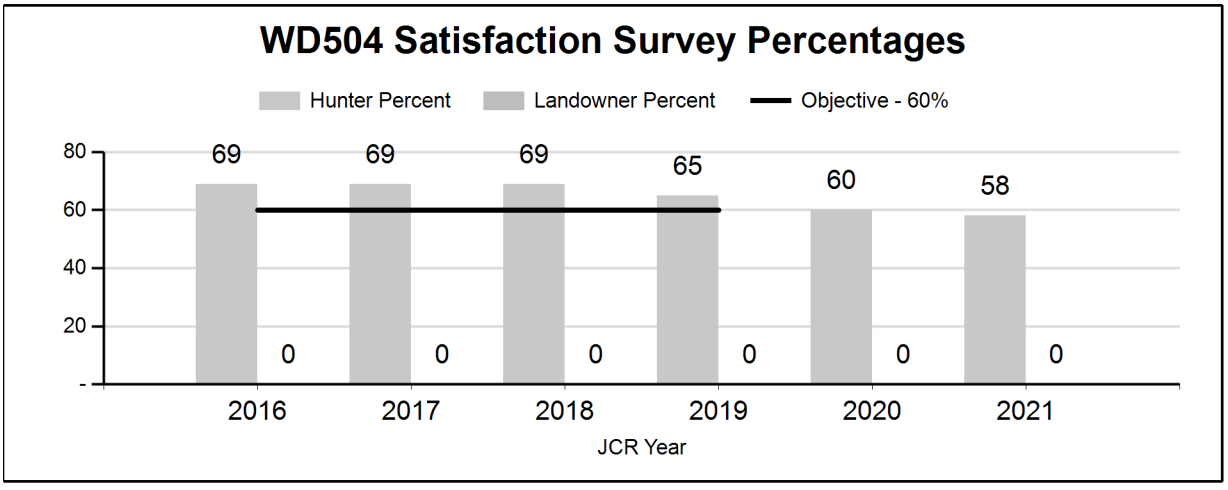
Habitat Monitoring

In 2015, Department personnel initiated the Rapid Habitat Assessment (RHA) methodology to survey important mule deer habitats. This method strives to capture large-scale habitat quality metrics to better understand how the habitat is providing for the current population of mule deer. The overall result of this effort is to provide a standardized habitat component for discussions about how mule deer objectives should or should not be adjusted based on the general concept of carrying capacity. In 2021, WGFD personnel surveyed nine RHAs in the Platte Valley herd unit, totaling 231.1 acres. Fewer RHAs were done this year as personnel were focused on cheatgrass monitoring in the Mullen Fire during the optimal RHA timeframe. For the Platte Valley mule deer herd unit, WGFD personnel completed four aspen assessments (144.9 acres) and five riparian assessments (86.2 acres). These data will provide population managers and the public with documentation of the current state of mule deer habitat conditions in the Platte Valley.

2021 - JCR Evaluation Form

SPECIES: White tailed Deer
PERIOD: 6/1/2021 - 5/31/2022
HERD: WD504 - SOUTHEAST WYOMING
HUNT AREAS: 15, 59-64, 70, 73-81, 83, 161
PREPARED BY: KEATON WEBER

	2016 - 2020 Average	2021	2022 Proposed
Hunter Satisfaction Percent	66%	58%	59%
Landowner Satisfaction Percent	0%	0%	0%
Harvest:	1,085	923	1,000
Hunters:	2,496	2,463	2,400
Hunter Success:	43%	37%	42%
Active Licenses:	2,816	2,893	2,800
Active License Success:	39%	32%	36%
Recreation Days:	11,746	13,549	12,000
Days Per Animal:	10.8	14.7	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:			7



2022 Hunting Seasons
Southeast Wyoming White-tailed Deer Herd Unit (WD504)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
15	3	Sept. 1	Sept. 30	Oct. 1	Nov. 30	500	Any white-tailed deer
15	3			Dec. 1	Dec. 31		Doe or fawn white-tailed deer
15	8	Sept. 1	Sept. 30	Oct. 1	Dec. 31	450	Doe or fawn white-tailed deer
59, 64	3	Sept 1	Sept 30	Oct. 1	Nov. 30	250	Any white-tailed deer
59, 64	3			Dec. 1	Dec. 31		Doe or fawn white-tailed deer
60	3	Sept 1	Sept 30	Oct 1	Dec. 31	100	Any White-tailed deer
59, 64	8	Sept 1	Sept 30	Nov. 1	Dec. 31	350	Doe or fawn white-tailed deer
60	8	Sept 1	Sept 30	Oct 1	Dec. 31	100	Doe or Fawn white-tailed deer
70,74	3	Sept. 1	Sept. 30	Oct. 1	Dec. 31	50	Any white-tailed deer
70,74	8	Sept. 1	Sept. 30	Oct. 1	Dec. 31	75	Doe or fawn white-tailed deer
75,76,77	3	Sept. 1	Sept. 30	Oct. 1	Dec. 31	75	Any white-tailed deer
75,76,77	8	Sept. 1	Sept. 30	Oct. 1	Dec. 31	100	Doe or fawn white-tailed deer
78,79,80,81	3	Sept. 1	Sept. 30	Oct. 1	Dec. 31	50	Any white-tailed deer
78,79,80,81	8			Sept. 1	Dec. 31	75	Doe or fawn white-tailed deer

2021 Hunter Satisfaction: 59% Satisfied, 20% Neutral, 21% Dissatisfied

2021 Management Summary
1). Hunting Season Evaluation: The season is designed to take advantage of high densities of white-tailed deer throughout southeast Wyoming as access allows. Curt Gowdy State Park language has been removed to simplify the regulation language. Due to the Curt Gowdy language being removed, separate White-tailed deer licenses (Type 3 and Type 8) were created to reduce confusion within license types and dates within hunt area 60. Additionally, Curt Gowdy State Park is now regulating hunting on their own and will outline hunting restrictions within their State Park

regulations. The majority of white-tailed deer are located on private land so the Department is limited in management of this herd unit.

2.) Management Objective Review: The Southeast WY White-tailed Deer Herd Unit's objective was last reviewed in 2019 and will be up for review again in 2024.

3.) Weather and Habitat: Annual precipitation across southeast Wyoming in areas occupied by white-tailed deer was less than normal. Based on NOAA weather station data from Cheyenne, Torrington, Laramie, and Douglas, precipitation was 7% - 47% below average for the year. Precipitation decreased more significantly in the northern latitudes of the herd unit. A large spring storm event occurred in March 2021, resulting in over 3' of snow falling throughout the herd unit. Some mortalities were likely caused by this event. White-tailed deer are typically associated with riparian habitats and irrigated cropland areas. Declines in annual precipitation may have some impact on fawning and fawn rearing habitats, through decreases in forage production and associated cover heights in riparian areas. Because of their strong dependence on agricultural crops, noticeable declines in white-tail deer populations are not as likely in a given year unless EHD events take place.

4.) Chronic Wasting Disease: CWD samples are collected on white-tailed deer opportunistically. Results from the Southeast Wyoming White-tailed Deer Herd Unit are located below (Table 1.). The majority of deer tested and that are positive come from Hunt Areas: 15, 59, 60 and 64.

Table 1. CWD prevalence for hunter-harvested white-tailed deer in the Southeast Wyoming White-tailed Deer Herd, 2019-2021.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males	Yearling Males	Adult Females
2019-2021	**21%, n=105**	0% (2)	20% (65)