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ACKNOWLEDGMENT

The field data contained in these reports are the result of the combined efforts of Sheridan Region Wildlife Division personnel, including District Wildlife Biologists, District Game Wardens, the Regional Game Warden, the Habitat Biologist, the Wildlife Technician, the Wildlife Management Coordinator, the Regional Supervisor, the Cody Disease Biologist, and other Department personnel. The authors appreciate all those who assisted with data collection.

PRONGHORN

2020 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2020 - 5/31/2021

HERD: PR309 - PUMPKIN BUTTES

HUNT AREAS: 23
PREPARED BY: ERIKA PECKHAM

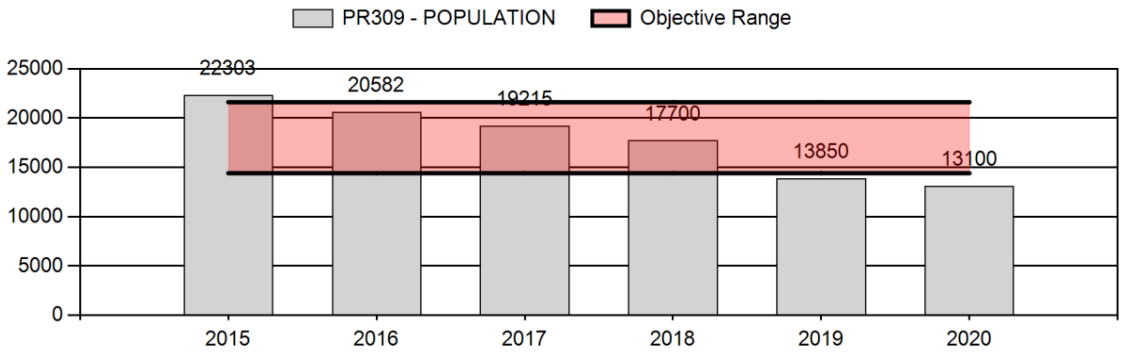
	2015 - 2019 Average	2020	2021 Proposed
Population:	18,730	13,100	13,200
Harvest:	2,460	2,802	2,110
Hunters:	2,576	3,045	2,550
Hunter Success:	95%	92%	83 %
Active Licenses:	2,751	3,208	2,500
Active License Success:	89%	87%	84 %
Recreation Days:	8,141	8,434	8,000
Days Per Animal:	3.3	3.0	3.8
Males per 100 Females	49	49	
Juveniles per 100 Females	75	85	

Population Objective (± 20%) :	18000 (14400 - 21600)
Management Strategy:	Private Land
Percent population is above (+) or below (-) objective:	-27.2%
Number of years population has been + or - objective in recent trend:	6
Model Date:	3/12/2021

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

	JCR Year	Proposed
Females ;: 1 year old:	15.6%	10.3%
Males ;: 1 year old:	50.9%	55.4%
Total:	-16.8%	-8.5%
Proposed change in post-season population:	-7.8%	.9%

Population Size - Postseason



2021 HUNTING SEASONS
PUMPKIN BUTTES PRONGHORN HERD (PR309)

Hunt Area	Type	Archery Dates Opens	Archery Dates Closes	Season Dates Opens	Season Dates Closes	Quota	Limitations
23	1	Aug. 15	Sept. 30	Oct. 1	Oct. 31	550	Any antelope
23	2	Aug. 15	Sept. 30	Oct. 1	Oct. 31	1,300	Any antelope valid on private land
23	6	Aug. 15	Sept. 30	Oct. 1	Oct. 31	400	Doe or fawn
23	7	Aug. 15	Sept. 30	Oct. 1	Oct. 31	800	Doe of fawn valid on private land

2020 Hunter Satisfaction: 86% Satisfied, 4% Neutral, 10% Dissatisfied

2021 Management Summary

1.) **Hunting Season Evaluation**: The 2021 license issuance was designed to address a declining population. This herd last peaked in 2006 and since that time, it has been on a steady decline. It was not until 2018 that it dipped below the objective and has since continued downward. This decline can be explained by the relatively harsh winter of 2018-2019 and drought conditions that were experienced in 2020. These conditions likely have had an effect on survival and recruitment.

There was a substantial reduction of both Type 2 and Type 7 licenses to address this population decline. Leftover licenses were available for purchase through the first week of the season. It is suspected that leftover licenses are purchased because they are some of the only available licenses in the state at that time. This has resulted in a high number of these Type 2 and Type 7 licenses being utilized on one Access Yes property in this herd unit. This is the only private land that is accessible to the public without going through an outfitter, or having made previous arrangements on private land. This license reduction aims to address both the population decline and the increased pressure on the Access Yes property. It is estimated that the percentage of buck harvest over the preceding three-year period is 38% of the total bucks. With this license issuance, the herd is predicted to be 27% below objective, with 51% of the mature bucks being harvested.

2.) Concerns with this population: The 2020 post-season population estimate is around 13,100 pronghorn. This estimate is derived from a spreadsheet model that is considered a fair model, given there are no survival estimates for the herd. Currently the model shows that this herd is 27% below objective and is therefore not within the management objective range. Line transect surveys conducted in 2009, 2013 and 2016 illustrate a population that is lower than what the model predicts, but more importantly is showing a downward trend as well. Total number of pronghorn observed during the classification survey was markedly lower in both 2019 and 2020 as compared to previous years. Additionally, phone calls were received from numerous hunters who had prior access lined up on private land that was cancelled due to private landowner concern over disease and lack of pronghorn. In both the spring and summers of 2019 and 2020, reports of sickly pronghorn were received. Action was taken to ascertain the cause of the sickness and resultant

mortalities. These incidents were reported to the Wyoming State Veterinary Lab. Lab personnel traveled to Gillette in 2019 to attempt to determine the cause, results were inconclusive. Due to Covid, lab personnel were not permitted to travel to Gillette to procure samples in 2020. Samples were obtained by local personnel when possible, with inconclusive results. Although numerous comments have been received from some landowners expressing concern over the sickly pronghorn and lower numbers, the formal landowner survey indicated that the majority of respondents wanted a similar season in 2021.

3.) Line Transect Results: The last line transect was flown in 2020 and estimated there to be around 22,000 pronghorn. This was much higher than what was projected in the spreadsheet model at this time (10,400). One factor that likely contributed to this was not detecting individuals in the "A Band". It is assumed that all animals are detected in both the "A" and "B" bands. The histogram indicated that pronghorn were being missed in the "A" band. This has been discussed internally, and seems to be a potential issue with other observers at times. This is in part due to the configuration of the aircraft and also due to the need to focus very closely on the two closest bands to avoid missing any detections. Based on ground observations, hunter and landowner reports and observed mortalities, this Line Transect estimate appears to be inflated.

4.) Additional Hunter Harvest Survey Question: Numerous hunter calls are fielded in which information is requested regarding success, specifically in relation to public land hunts. In many of these predominantly private Hunt Areas, the success is quite high, but there has been no ability to ascertain success on "public" vs "private" land hunts. To better understand how harvest metrics (success) and pressure on limited public lands are related, hunters from this Herd Unit were asked additional questions during the 2020 harvest survey. Results indicate that the majority of harvest (60% total) occurs on private land. This stands to reason, due to the fact that the bulk of the licenses for this Herd Unit are valid on private land only. The majority of successful hunts are unguided (83%). This, coupled with the majority of harvest occurring on private land indicates that hunters that are likely finding places to hunt with trespass fees. This is in line with what ranchers and hunters report, with landowners often taking the same groups of people in consecutive years.

Success rates were higher for guided license holders (96%) as compared to non-guided license holders (88%) for total unweighted licenses. Success rates for license holders hunting on mostly or all on private land was also higher (91%) as compared to those that hunted on mostly or all public land (85%). Although we have anticipated the success to be lower on public land hunts, the data indicates that public land hunters in this Herd Unit are still realizing a reasonably high success rate.

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	Success Guide	Success No Guide
23. Pumpkin Buttes	Limited 1	33	100%	88%
	Limited 2	46	94%	97%
	Limited 6	46	N/A	90%
	Limited 7	33	100%	77%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
23. Pumpkin Buttes	Limited 1	33	92%	88%	100%
	Limited 2	46	95%	100%	100%
	Limited 6	46	100%	86%	100%
	Limited 7	33	83%	50%	100%

2020 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2020 - 5/31/2021

HERD: PR318 - CRAZY WOMAN

HUNT AREAS: 22, 113

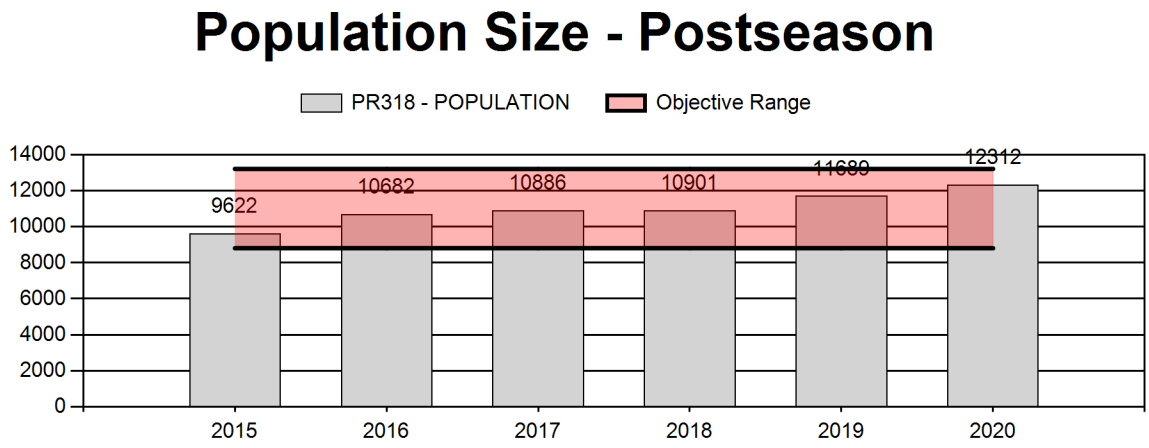
PREPARED BY: CHEYENNE STEWART

	2015 - 2019 Average	2020	2021 Proposed
Population:	10,756	12,312	13,030
Harvest:	1,693	1,483	1,630
Hunters:	1,861	1,703	1,850
Hunter Success:	91%	87%	88 %
Active Licenses:	2,011	1,837	2,000
Active License Success:	84%	81%	82 %
Recreation Days:	6,248	6,141	6,200
Days Per Animal:	3.7	4.1	3.8
Males per 100 Females	50	46	
Juveniles per 100 Females	77	66	

Population Objective (± 20%) :	11000 (8800 - 13200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	12%
Number of years population has been + or - objective in recent trend:	0
Model Date:	2/14/2021

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

	JCR Year	Proposed
Females ≥ 1 year old:	7%	8%
Males ≥ 1 year old:	28%	30%
Total:	11%	11%
Proposed change in post-season population:	-13%	-14%



2021 Hunting Seasons
Crazy Woman Pronghorn Herd Unit (PR318)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
22	1	Aug. 15	Sep. 30	Oct. 1	Oct. 31	1000	Any antelope
22	6			Sep. 1	Sep. 30	600	Doe or fawn valid on private land north of Crazy Woman Creek
22	6	Aug. 15	Sep. 30	Oct. 1	Oct. 31		Doe or fawn valid in the entire area
113	1	Aug. 15	Sep. 30	Oct. 1	Oct. 31	175	Any antelope
113	2	Aug. 15	Sep. 30	Oct. 11	Oct. 31	175	Any antelope
113	6	Aug. 15	Sep. 30	Oct. 1	Oct. 31	200	Doe or fawn

2020 Hunter Satisfaction: 78% Satisfied, 11% Neutral, 11% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: The current season structure has resulted in very stable annual population and harvest metrics over the last decade. This trend continued in 2020 with slightly lower hunter satisfaction as compared to recent years (84% average from 2016-2019). The fawn ratios have been lower in the last four years (66-70:100 does) as compared to the 2010-2016 average (86:100 does). The population model supports the field data, estimating the population at objective with stability in recent years. Some hunter crowding on public lands is status quo. All licenses sold out in the first draw for the second consecutive year. A late but wet 2019 spring was followed by severe drought conditions in 2020 and a persistent cold snap in February 2021. These weather patterns appear to have affected distribution during the hunting season and could impact this years' recruitment and survival. Landowners provided mixed responses to the population, with 12 of 25 respondents satisfied, five concerned about high numbers, and eight concerned about low numbers.

2.) Management Objective Review: Scheduled for 2023.

3.) Line Transect Survey: In May 2020 we conducted a line transect (LT) survey. The survey was completed in nine hours over one day using a Husky Aviat supplied by Flightline LFS, Inc and one observer. We repeated the 2019 LT, because it resulted in an extremely high population estimate (18,865 ± 2,338) and did poorly meeting model assumptions. The 2020 survey met model assumptions with the negative exponential cosine model selected for lowest AIC. The resulting population estimate (24,412 ± 3,646) still seems like a gross over-estimation of the population and we have not been able to corroborate the results from these recent line transect surveys with any of the other population or harvest metrics. We will continue to assess our methods for accuracy. It is possible that the LT surveys are a more accurate reflection of the population, in which case we would consider adjusting our herd unit objectives to better align with the best data available.

4.) Additional hunter harvest survey question: In an effort to better understand how harvest metrics (success) and pressure on limited public lands are related, hunters were asked additional questions during the harvest survey. Results indicate that the majority of harvest in area 22 is occurring on private lands through outfitted hunting. Conversely, the majority of harvest in area 113 is occurring on public lands on non-guided hunts. Success rates were higher for guided license holders (86-100%) as compared to non-guided license holders (71-85%) for all license types. In area 22, success rates for license holders hunting on mostly or all on private land was higher in both areas on all license types (80-97%) as compared to those that hunted on mostly or all public land (73-76%), while success was 100% for those hunting on an even mix of public and private lands. Conversely, in area 113 success was higher for type 1 license holders on public land (83%) as compared to those on private land (73%) or an even mix between public and private land (67%; Tables 1 and 2).

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	% Success Guide	% Success No Guide
22. Crazy Woman	Limited 1	51	100%	85%
	D/F 6	55	100%	69%
113. Salt Creek	Limited 1	48	86%	78%
	Limited 2	48	100%	80%
	D/F 6	42	NA	71%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

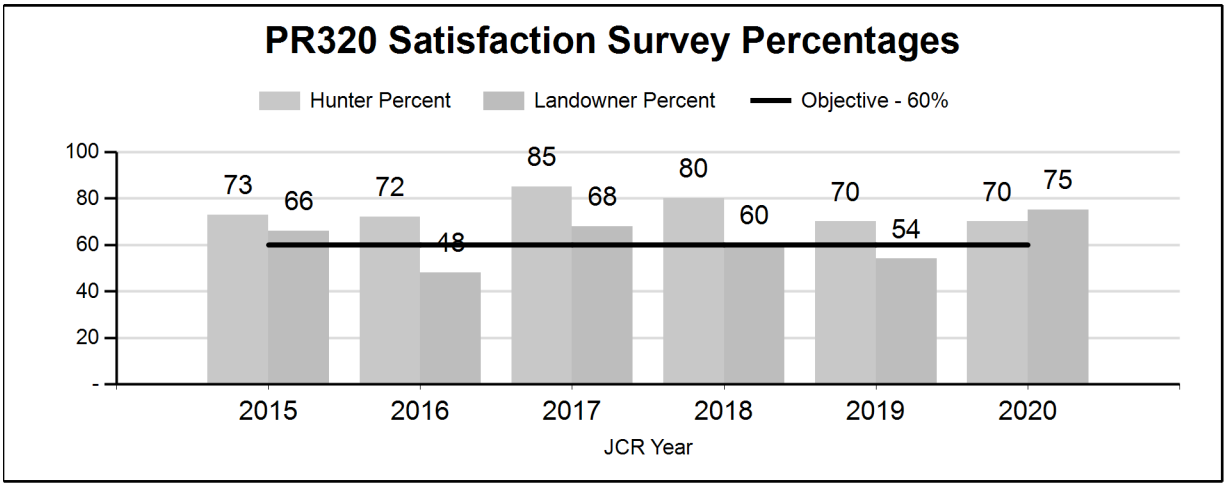
Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
22. Crazy Woman	Limited 1	51	97%	76%	100%
	D/F 6	54	80%	73%	100%
113. Salt Creek	Limited 1	48	73%	83%	67%
	Limited 2	48	100%	76%	86%
	D/F 6	42	100%	52%	83%

2020 - JCR Evaluation Form

SPECIES: Pronghorn
HERD: PR320 - HAZELTON
HUNT AREAS: 20, 102

PERIOD: 6/1/2020 - 5/31/2021
PREPARED BY: CHEYENNE STEWART

	2015 - 2019 Average	2020	2021 Proposed
Hunter Satisfaction Percent	76%	70%	70%
Landowner Satisfaction Percent	59%	75%	70%
Harvest:	1,172	1,011	1,100
Hunters:	1,388	1,358	1,360
Hunter Success:	84%	74%	81 %
Active Licenses:	1,546	1,492	1,500
Active License Success:	76%	68%	73 %
Recreation Days:	5,437	5,695	5,500
Days Per Animal:	4.6	5.6	5
Males per 100 Females:	78	63	
Juveniles per 100 Females	80	71	
Satisfaction Based Objective			60%
Management Strategy:			Private Land
Percent population is above (+) or (-) objective:			12%
Number of years population has been + or - objective in recent trend:			0



2021 Hunting Seasons
Hazelton Pronghorn Herd Unit (PR320)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
20	1	Aug. 15	Oct. 14	Oct. 15	Nov. 15	500	Any antelope
20	6	Aug. 15	Oct. 14	Oct. 15	Nov. 15	500	Doe or fawn
102	1	Aug. 15	Oct. 14	Oct. 15	Nov. 15	400	Any antelope
102	6			Sep. 1	Sep. 30	400	Doe or fawn valid on private land
102	6	Aug. 15	Oct. 14	Oct. 15	Nov. 15		Doe or fawn valid in the entire area

2020 Hunter Satisfaction: 70% Satisfied, 15% Neutral, 15% Dissatisfied
2020 Landowner Satisfaction: 18% Above, 71% At, 12% Below Desired Levels

2021 Management Summary
1.) Hunting Season Evaluation: The current season structure and quota appears to be working to mitigate unacceptable levels of crowding on public land while providing landowners with appropriate opportunity to manage damage concerns. We do not know how hunter success and satisfaction rates differ between primarily public and private land hunters. Our long-term population model is unreliable, however when truncated to begin in 2014 when a line transect survey was completed, the model appears to perform better. The population model estimate suggests a stable population trend with good adult (95%) and fawn (73.5%) survival. This corroborates field observations and harvest statistics. Changes in pronghorn movement and behavior due to annual weather variation likely explains a lot of the annual variability in landowner comments and appears to be a major driver in annual hunter and landowner satisfaction.

2.) Management Objective Review: Scheduled for 2023.

3.) Landowner Survey: The annual landowner survey was mailed out January 11, 2020 with a February 1 deadline for return. Thirty-four landowners from hunt areas 20 and 102 responded, which is more than the previous three years (n=29-31). Landowner satisfaction was good, with 71% reporting populations at desired levels and 74% reporting a preference for a similar season structure. Per normal, there are landowners who prefer seasons be either liberalized (n=5) or more conservative (n=4). A comment did note concern for the ability of hunters to properly care for harvested meat during warm temperatures occurring during August.

4.) Additional hunter harvest survey question: In an effort to better understand how harvest metrics (success) and pressure on limited public lands are related, hunters were asked additional questions during the harvest survey. In hunt area 20, success rates were much higher for guided license holders (100%) as compared to non-guided license holders (57 to 82%) for all license types. Conversely, the success rates for area 102 type 1 licenses were essentially the same for guided and

non-guided license holders. Success rates for license holders hunting on mostly or all on private land was higher in both areas on all license types (64% to 100%) as compared to those that hunted on mostly or all public land (44% to 71%; Tables 1 & 2).

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	% Success Guide	% Success No Guide
20. Upper Powder River	Limited 1	47	100%	82%
	D/F 6	40	100%	57%
102. Buffalo	Limited 1	35	75%	74%
	D/F 6	30	NA	53%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

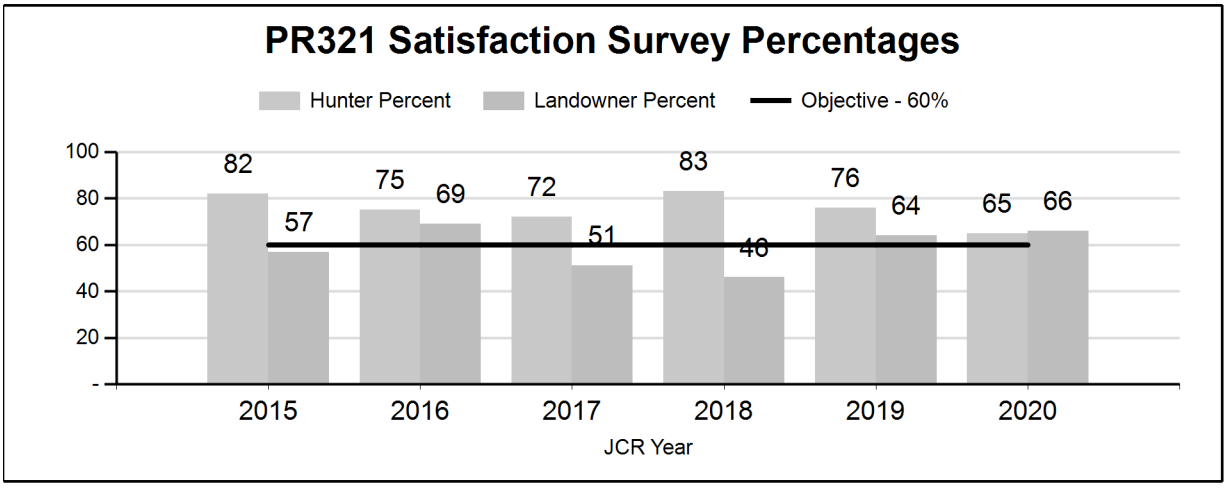
Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
20. Upper Powder River	Limited 1	47	100%	71%	100%
	D/F 6	40	82%	46%	80%
102. Buffalo	Limited 1	35	85%	67%	100%
	D/F 6	30	64%	44%	67%

2020 - JCR Evaluation Form

SPECIES: Pronghorn
HERD: PR321 - LEITER
HUNT AREAS: 10, 15-16

PERIOD: 6/1/2020 - 5/31/2021
PREPARED BY: TIM THOMAS

	2015 - 2019 Average	2020	2021 Proposed
Hunter Satisfaction Percent	78%	65%	70%
Landowner Satisfaction Percent	57%	66%	60%
Harvest:	1,837	1,519	1,600
Hunters:	2,284	2,253	2,250
Hunter Success:	80%	67%	71%
Active Licenses:	2,499	2,381	2,400
Active License Success:	74%	64%	67%
Recreation Days:	7,684	8,144	8,000
Days Per Animal:	4.2	5.4	5
Males per 100 Females:	52	41	
Juveniles per 100 Females	67	58	
Satisfaction Based Objective			60%
Management Strategy:			Private Land
Percent population is above (+) or (-) objective:			6%
Number of years population has been + or - objective in recent trend:			2



2021 HUNTING SEASONS
LEITER PRONGHORN HERD (PR321)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
10	1	Aug. 15	Sep. 30	Oct. 1	Oct. 14	300	Any antelope
	6	Aug. 15	Sep. 30	Oct. 1	Oct. 31	400	Doe or fawn
15	1	Aug. 15	Sep. 30	Oct. 1	Oct. 14	600	Any antelope
	6	Aug. 15	Sep. 30	Oct. 1	Nov. 30	800	Doe or fawn
16	1	Aug. 15	Sep. 30	Oct. 1	Oct. 14	400	Any antelope
	6	Aug. 15	Sep. 30	Oct. 1	Oct. 31	200	Doe or fawn

Management Evaluation
Hunter / Landowner Management Objective: 60% Satisfaction
Secondary Management Objective: Observed ratio of 30 bucks:100 does minimum
Management Strategy: Private Land

2020 Hunter Satisfaction Estimate: 65%
2020 Landowner Satisfaction Estimate: 66%

2021 Management Summary

1.) Hunting Season Evaluation: This herd unit is predominantly private land, with very limited public land access. Private land concerns drive hunting season strategies. Based on responses from an annual survey, most landowners (n=20; 62%) felt they were at desired levels of pronghorn on their property. The rest of the landowners felt there were either too few (n=7; 22%) or too many (n=5; 16%) pronghorn. This is down from recent years when 30% or more of landowners felt there were too many pronghorn. Hunter satisfaction was down to 65%, the lowest since 2012, when we started collecting this parameter.

Managers received comments from hunters, landowners and outfitters in Hunt Area 16 that pronghorn numbers seemed lower in 2020. Overall, harvest and hunter success have trended down and effort, as measured by number of days hunted per animal harvested, has trended up over the past 2-3 years. This has been most dramatic in Area 16, where buck harvest decreased 30% since 2018 with the same number of licenses sold. Over the same period, hunter effort increased 2.4 days/animal, a 68% increase. In response to this apparent decline in population, we reduced Area 16 Type 1 licenses from 600 to 400 and Type 6 licenses from 300 to 200.

We observed 41 bucks:100 does during August classification surveys. This satisfies the secondary management objective and supports the proposed level of buck harvest. In Area 16, we observed 30 bucks:100 does, right at the minimum desired level, further supporting a decrease in buck harvest for this hunt area.

2.) Management Objective Review: This herd is scheduled for the next 5-year herd unit review in 2023.

2020 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2020 - 5/31/2021

HERD: PR339 - NORTH BLACK HILLS

HUNT AREAS: 1-3, 18-19

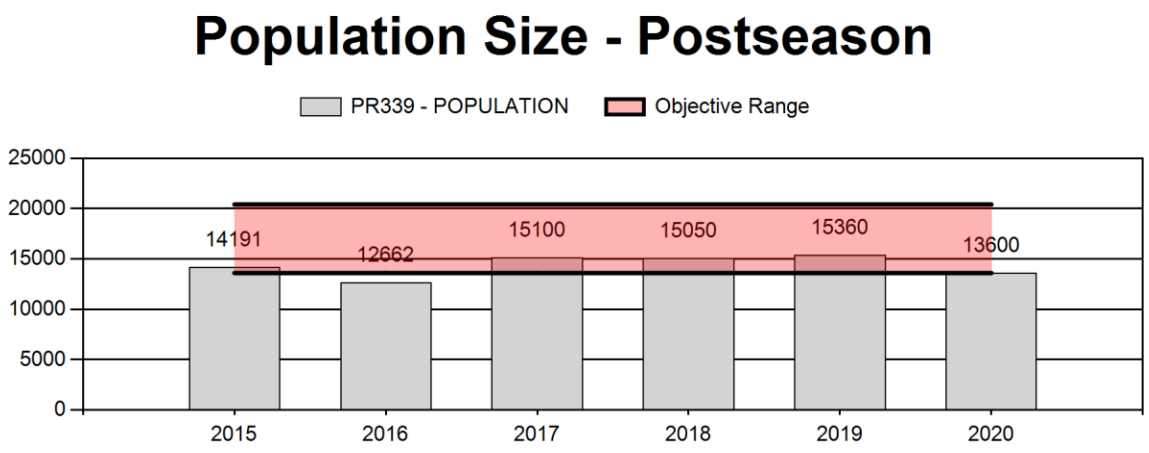
PREPARED BY: ERIKA PECKHAM

	2015 - 2019 Average	2020	2021 Proposed
Population:	14,473	13,600	14,500
Harvest:	1,316	1,221	932
Hunters:	1,460	1,354	1,035
Hunter Success:	90%	90%	90%
Active Licenses:	1,655	1,536	1,150
Active License Success:	80%	79%	81%
Recreation Days:	5,015	4,313	4,000
Days Per Animal:	3.8	3.5	4.3
Males per 100 Females	46	39	
Juveniles per 100 Females	76	66	

Population Objective (± 20%) :	17000 (13600 - 20400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-20%
Number of years population has been + or - objective in recent trend:	1
Model Date:	02/12/2021

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

	JCR Year	Proposed
Females ;: 1 year old:	5.6%	2%
Males ;: 1 year old:	25.3%	29.4%
Total:	-8.0%	-6.5%
Proposed change in post-season population:	8.1%	6.9%



2021 HUNTING SEASONS
NORTH BLACK HILLS PRONGHORN HERD (PR339)

Hunt Area	Type	Archery Dates Opens	Archery Dates Closes	Season Dates Opens	Season Dates Closes	Quota	Limitations
1	1	Aug. 15	Sept. 30	Oct. 1	Nov.20	250	Any antelope
1	6	Aug. 15	Sept. 30	Oct. 1	Nov.20	100	Doe or fawn
2	1	Aug. 15	Sept. 30	Oct. 1	Nov.20	200	Any antelope
2	6	Aug. 15	Sept. 30	Oct. 1	Nov.20	200	Doe of fawn
3	1	Aug. 15	Sept. 30	Oct. 1	Nov.20	200	Any antelope
3	6	Aug. 15	Sept. 30	Oct. 1	Nov.20	50	Doe or fawn
18	1	Aug. 15	Sept. 30	Oct. 1	Oct. 20	200	Any antelope
18	6	Aug. 15	Sept. 30	Oct. 1	Oct. 20	50	Doe or fawn
19	1	Aug. 15	Sept. 30	Oct. 1	Oct. 20	300	Any antelope
19	7	Aug. 15	Sept. 30	Oct. 1	Oct. 20	150	Doe or fawn valid private land

2020 Hunter Satisfaction: 81% Satisfied, 10% Neutral, 10% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: License numbers were reduced in Hunt Areas 1 and 3. The late winter of 2018/2019 in this area was extreme and resulted in exceptionally high levels of winterkill. This, factored in with drought conditions in 2020 likely led to poor recruitment. Hunter satisfaction was low in these hunt areas (63% and 75% respectively) and numerous comments from both hunters and landowners echo what the data illustrates. As this is a predominantly private land herd, landowner surveys are also considered. 49% of respondents feel that the pronghorn numbers are where they would like to see them (n=45) in this herd. The remaining respondents were evenly split on believing that there were too few or too many. Other hunt areas did not experience the severity in snow depth and winter conditions and consequently pronghorn numbers did not seem to be as adversely affected. It is estimated that the percentage of buck harvest over the preceding three-year period is 27% of the total bucks. With this license issuance, the herd is predicted to increase by 7% and should climb back to within the objective range.

2.) Additional Hunter Harvest Survey Question: Numerous hunter calls are fielded in which information is requested regarding success, specifically in relation to public land hunts. In many of these predominantly private Hunt Areas, the success is high, but there has been no ability to ascertain success on "public" vs "private" land hunts. To better understand how harvest metrics (success) and pressure on limited public lands are related, hunters from Hunt Areas 1, 3 and 19 were asked

additional questions during the 2020 harvest survey. Results indicate that the majority of harvest in Hunt Areas 1, 3 and 19 (52%, 53% and 71% respectively) occurs on private land. In these three Hunt Areas, those who had guided hunts experienced a greater harvest success. See Table 1 and Table 2.

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	Success Guide	Success No Guide
1. Crook	Limited 1	43	100%	90%
	Limited 6	22	100%	75%
3. Keyhole	Limited 1	30	88%	72%
	Limited 6	17	100%	64%
19. Rozet	Limited 1	43	100%	70%
	Limited 6	28	100%	81%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
1. Crook	Limited 1	33	96%	89%	N/A
	Limited 6	46	91%	65%	N/A
3. Keyhole	Limited 1	46	82%	77%	100%
	Limited 6	33	88%	39%	100%
19. Rozet	Limited 1	43	88%	59%	0%
	Limited 7	28	91%	78%	0%

2020 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2020 - 5/31/2021

HERD: PR351 - GILLETTE

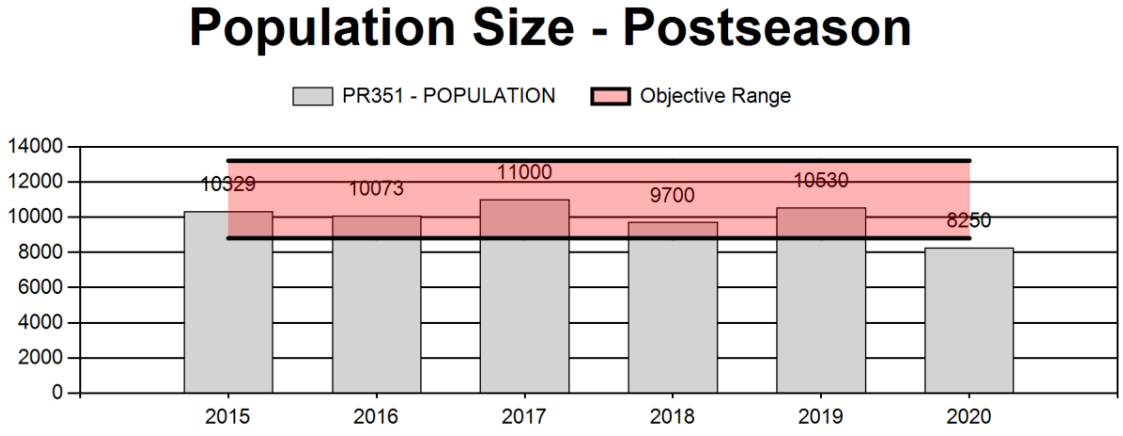
HUNT AREAS: 17
PREPARED BY: ERIKA PECKHAM

	2015 - 2019 Average	2020	2021 Proposed
Population:	10,326	8,250	8,760
Harvest:	1,090	775	585
Hunters:	1,263	1,033	850
Hunter Success:	86%	75%	69%
Active Licenses:	1,327	1,065	875
Active License Success:	82%	73%	67%
Recreation Days:	4,360	3,262	2,800
Days Per Animal:	4	4.2	4.8
Males per 100 Females	48	45	
Juveniles per 100 Females	56	43	

Population Objective (± 20%) :	11000 (8800 - 13200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-25%
Number of years population has been + or - objective in recent trend:	1
Model Date:	3/11/2021

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

	JCR Year	Proposed
Females ;: 1 year old:	5.0%	1.8%
Males ;: 1 year old:	40%	30%
Total:	11.1%	6.2%
Proposed change in post-season population:	-3.3%	6.2%



2021 HUNTING SEASONS
GILLETTE PRONGHORN HERD (PR351)

Hunt Area	Type	Archery Dates Opens	Archery Dates Closes	Dates of Seasons Opens	Dates of Seasons Closes	Quota	License	Limitations
17	1	Aug.15	Sep. 30	Oct. 1	Oct. 31	900	Limited quota	Any antelope
17	6	Aug.15	Sep. 30	Oct. 1	Oct. 31	150	Limited quota	Doe or fawn

2020 Hunter Satisfaction: 63% Satisfied, 12% Neutral, 25% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: The 2020 season exhibited low success for pronghorn harvest (75%) with markedly lower hunter satisfaction than is typical in this herd. As this is a predominantly private land herd, landowner surveys are considered. Forty-four percent of respondents (n=43) feel that the antelope are at levels below where they would like them to be. It is estimated that the percentage of buck harvest over the preceding three-year period is 38% of the total bucks. With this license issuance, the herd is predicted to be 25% below objective, with 30% of the mature bucks being harvested.

2.) Concerns with this population: The 2020 post-season population estimate is about 8,250 pronghorn. This estimate is derived from a spreadsheet model that is considered a fair model given there are no survival estimates for the herd. Annual population estimates for the preceding several years have hovered around the 11,000 mark, which is the current objective. Currently, the model predicts the population at 25% below the objective. For unknown reasons, the observed fawn ratio has been low the last several years (43-73 from 2015-2020). The potential for both past and continued disease issues (See Section 3), coupled with poor hunter success, field observations, and landowner input, warranted the reduction of licenses in this Herd Unit.

3.) ***Mycoplasma bovis*****:** In 2019 and 2020, there has been a *Mycoplasma bovis* outbreak in this herd unit. To address this concern, both Type 1 and Type 6 licenses were reduced. Although this disease was not documented herd-wide, there was a large geographic area that experienced significant mortality. The area which was affected coincides with some of the highest densities of pronghorn in this Herd Unit. An aerial survey, in conjunction with on the ground documentation, revealed an estimated 500 pronghorn that were lost due to this disease outbreak in 2020. Mortalities attributed to this disease have been found in the spring (March-May) and as of June 1, 2021, we did not detect a 2021 outbreak. Currently, there is research occurring on this disease and it is unknown whether it will again resurface.

4.) **Line Transect**: The last line transect was flown in 2020 and estimated there to be around 3,300 pronghorn. This was much lower than what was projected in the spreadsheet model at this time (8,200, CJ, CA model). Although the estimate may be lower than what is actually on the ground, it does indicate a downward trend in this herd. For reference, the prior LT was flown in 2016 utilizing the same methodology and the estimate was 6,600 pronghorn. Transects are created

in ArcMap and are downloaded to the pilot's GPS. The transects were carefully created to ensure a statistically meaningful coverage of the Herd Unit is achieved. These transects are saved and each year a line transect survey is conducted, the identical surveys are flown. For reference, the prior LT was flown in 2016 utilizing the same methodology and transects and the estimate was 6,600 pronghorn.

5.) Additional Hunter Harvest Survey Question: Numerous hunter calls are fielded in which information is requested regarding success, specifically in relation to public land hunts. In many of these predominantly private Hunt Areas, the success is quite high, but there has been no ability to ascertain success on "public" vs "private" land hunts. To better understand how harvest metrics (success) and pressure on limited public lands are related, hunters from this Herd Unit were asked additional questions during the 2020 harvest survey. Results indicate that the majority of harvest (58% total) occurs on private land. Success rates were higher for guided license holders (89%) as compared to non-guided license holders (67%) for total unweighted licenses. Success rates for total license holders hunting on mostly or all on private land was also higher (89%) as compared to those that hunted on mostly or all public land (49%).

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	Success Guide	Success No Guide
17. Gillette	Limited 1	41	88%	72%
	Limited 6	32	100%	64%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
17. Gillette	Limited 1	41	92%	57%	86%
	Limited 6	32	87%	42%	100%

2020 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2020 - 5/31/2021

HERD: PR352 - MIDDLE FORK

HUNT AREAS: 21

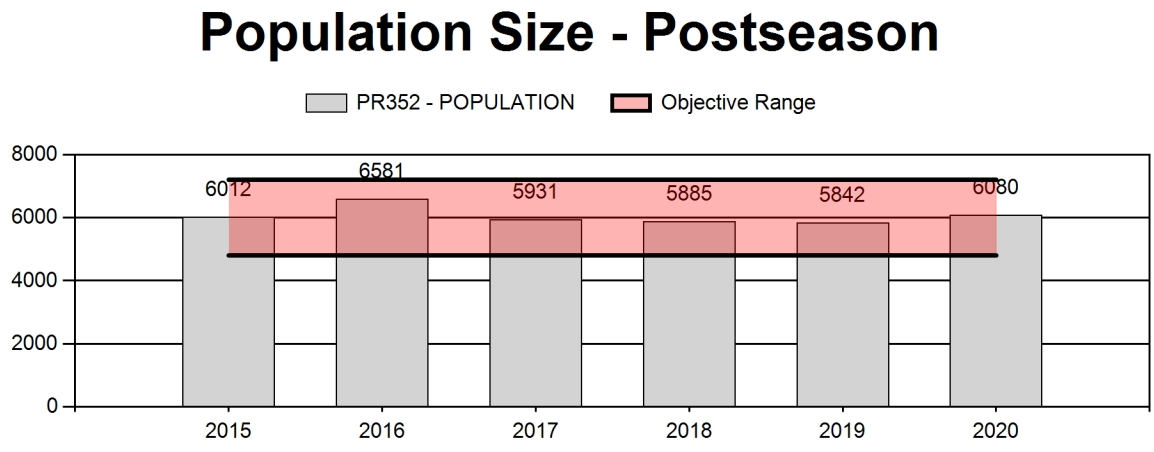
PREPARED BY: CHEYENNE STEWART

	2015 - 2019 Average	2020	2021 Proposed
Population:	6,050	6,080	5,797
Harvest:	578	493	528
Hunters:	662	731	650
Hunter Success:	87%	67%	81%
Active Licenses:	733	791	715
Active License Success:	79%	62%	74 %
Recreation Days:	2,288	2,763	2,300
Days Per Animal:	4.0	5.6	4.4
Males per 100 Females	54	45	
Juveniles per 100 Females	78	68	

Population Objective (± 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	1%
Number of years population has been + or - objective in recent trend:	0
Model Date:	2/15/2021

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

	JCR Year	Proposed
Females ≥ 1 year old:	7%	4%
Males ≥ 1 year old:	17%	27%
Total:	7%	8%
Proposed change in post-season population:	-8%	-9%



2021 Hunting Seasons
Middle Fork Pronghorn Herd Unit (PR352)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
21	1	Aug. 15	Oct. 14	Oct. 15	Oct. 31	500	Any antelope
21	6	Aug. 15	Oct. 14	Oct. 15	Oct. 31	300	Doe or fawn

2020 Hunter Satisfaction: 66% Satisfied, 16% Neutral, 18% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: The goal of the current season structure is maintaining the population at objective while aiming to reduce damage on private land and hunter crowding on public land. Our population model aligns well with line transect survey results and estimates that the population is currently within objective. Some hunter crowding on public lands is status quo however, a few concerning patterns are beginning to emerge following quota increases implemented in 2018. On average, the number of hunters and active licenses in the last three years has increased by approximately 150 each, as compared with the previous three years. While increased opportunity is desirable, it may be having negative impacts on total harvest (no change between 2015-2017 and 2019-2020), hunter harvest success (85-95% from 2015-2018, 75% in 2019, and 67% in 2020), Type 1 license success (59%) and hunter satisfaction (18% dissatisfied). It is challenging to determine how much of these diminishing returns are due to overcrowding as opposed to unseasonably wet conditions in 2019 followed by severe drought conditions in 2020. Fawn ratios in the last two years (64-68:100 does) were notably lower than those observed over the last decade (2010-2018 average was 81 fawns:100 does), providing further support for moderate quota reductions. Six of eight landowner survey respondents support maintaining the same season structure as last year, with mixed results regarding the population status.

2.) Management Objective Review: Scheduled for 2023.

3.) Additional hunter harvest survey question: In an effort to better understand how harvest metrics (success) and pressure on limited public lands are related, hunters were asked additional questions during the harvest survey. Based on the results, it appears the majority of pronghorn harvest and pressure in the unit occurs on public lands on non-guided hunts. Success rates were higher for guided license holders (75-100%) as compared to non-guided license holders (63-66%) for all license types. Success rates for license holders hunting on mostly or all on private land was also higher in both areas on all license types (70-100%) as compared to those that hunted on mostly or all public land (62-64%; Tables 1 & 2).

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	% Success Guide	% Success No Guide
21. Middle Fork	Limited 1	55	75%	63%
	D/F 6	49	100%	66%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
21. Middle Fork	Limited 1	55	70%	62%	67%
	D/F 6	49	100%	64%	50%

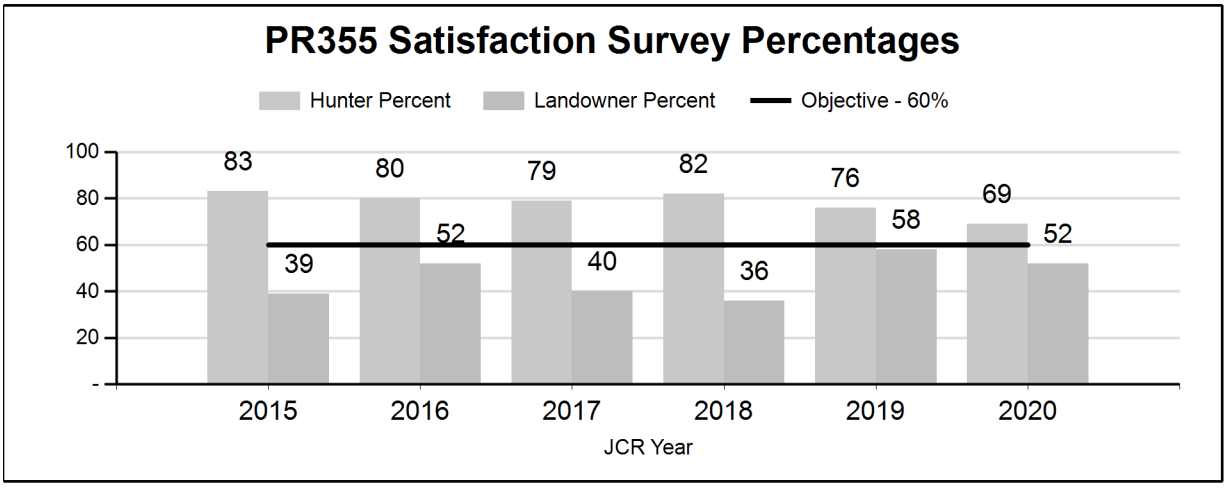
2020 - JCR Evaluation Form

SPECIES: Pronghorn
HERD: PR355 - BECKTON
HUNT AREAS: 109

PERIOD: 6/1/2020 - 5/31/2021
PREPARED BY: TIM THOMAS

	2015 - 2019 Average	2020	2021 Proposed
Hunter Satisfaction Percent	80%	69%	70%
Landowner Satisfaction Percent	45%	52%	60%
Harvest:	384	379	380
Hunters:	499	509	500
Hunter Success:	77%	74%	76%
Active Licenses:	566	586	575
Active License Success:	68%	65%	66%
Recreation Days:	1,897	2,209	2,000
Days Per Animal:	4.9	5.8	5.3
Males per 100 Females:	28	31	
Juveniles per 100 Females	63	64	

Satisfaction Based Objective	60%
Management Strategy:	Private Land
Percent population is above (+) or (-) objective:	0%
Number of years population has been + or - objective in recent trend:	6



2021 HUNTING SEASONS
BECKTON PRONGHORN HERD (PR 355)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
109	1	Aug. 15	Sep. 14	Sep. 15	Nov. 30	350	Any antelope
	6	Aug. 15	Sep. 14	Sep. 15	Nov. 30	400	Doe or fawn

Management Evaluation
Hunter / Landowner Management Objective: 60% Satisfaction
Secondary Management Objective: Observed ratio of 30 bucks:100 does minimum
Management Strategy: Private Land

2020 Hunter Satisfaction Estimate: 69%
2020 Landowner Satisfaction Estimate: 52%

2021 Management Summary

1.) Hunting Season Evaluation: This herd unit is predominantly private land, with very limited public land access to areas that support pronghorn. Private land concerns drive hunting season strategies. Based on responses from an annual survey, all but one landowner felt pronghorn were at (n=11; 52%) or above (n=9; 43%) desired levels on their property.

Hunter participation on the Type 6 license was only 80% and success was 50%. Issuing additional licenses with the restrictive access will not appreciably increase harvest. As such, we proposed maintaining licenses at the 2020 level. Even with all of the difficulties facing hunters (e.g. limited access to private lands, limited public lands) and low success rate, hunter satisfaction (69%) remained above the desired level of 60%.

We observed 31 bucks:100 does during August classification surveys, slightly above the secondary management objective. Even though we are near the minimum desired buck to doe ratio, we maintained Type 1 licenses to address desires of landowners to reduce pronghorn numbers.

2.) Management Objective Review: This herd is scheduled for the next 5-year herd unit review in 2023.

MULE DEER

2020 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2020 - 5/31/2021

HERD: MD319 - POWDER RIVER

HUNT AREAS: 17-18, 23, 26

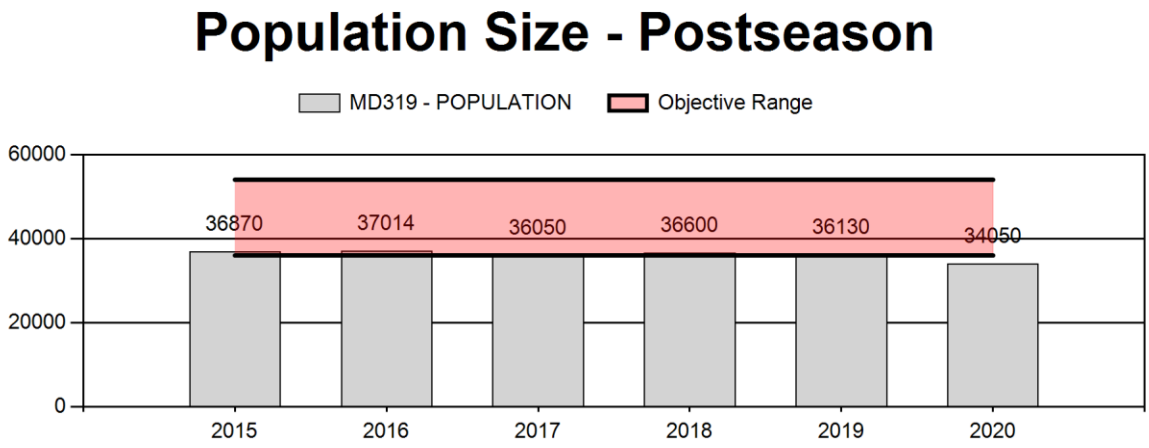
PREPARED BY: ERIKA PECKHAM

	2015 - 2019 Average	2020	2021 Proposed
Population:	36,533	34,050	33,940
Harvest:	2,937	2,618	2,750
Hunters:	4,156	4,354	4,300
Hunter Success:	71%	60%	64 %
Active Licenses:	4,292	4,555	4,500
Active License Success:	68%	57%	61 %
Recreation Days:	15,345	16,875	16,900
Days Per Animal:	5.2	6.4	6.1
Males per 100 Females	45	45	
Juveniles per 100 Females	65	66	

Population Objective (± 20%) :	45000 (36000 - 54000)
Management Strategy:	Private Land
Percent population is above (+) or below (-) objective:	-24.3%
Number of years population has been + or - objective in recent trend:	14
Model Date:	3/2/2021

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

	JCR Year	Proposed
Females ;: 1 year old:	3.9%	3.8%
Males ;: 1 year old:	24.9%	25.2%
Total:	-9.2%	7.4%
Proposed change in post-season population:	.4%	-3.1%



2021 HUNTING SEASONS
POWDER RIVER MULE DEER HERD (MD319)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
17	Gen	Sep.1	Sept. 30	Oct. 1	Oct. 20		Antlered mule deer or any white-tailed deer
17	7	Sep. 1	Sept. 30	Oct. 1	Oct. 20	50	Doe or fawn valid on private land
18	Gen	Sep. 1	Sept. 30	Oct. 1	Oct. 20		Antlered mule deer or any white-tailed deer
18	7	Sep. 1	Sept. 30	Oct. 1	Oct. 20	100	Doe of fawn valid on private land
23	Gen	Sep. 1	Sept. 30	Oct. 1	Oct. 14		Antlered deer off private land, any deer on private land
26	Gen	Sep. 1	Sept. 30	Oct. 1	Oct. 14		Antlered deer off private land, any deer on private land
23, 26	7			Sep.1	Dec. 15	2,000	Doe or fawn valid on private land

2021 Region C nonresident quota: 2,500

2020 Hunter Satisfaction: 68% Satisfied, 17% Neutral, 15% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: All Hunt Areas within this Herd Unit are general season areas. License issuance remained the same for the 2021 hunting season in regards to the Type 7 licenses. These licenses are available to address depredation concerns although the population is below objective. It is estimated that less than 500 of those licenses valid in Hunt Area 23 and 26 were utilized to harvest Mule Deer and around 1,000 were used on White-tailed deer. This herd has been well below objective for many years. It is likely a combination of land use change and climatic conditions in the last five years that have resulted in fawn production in the 50's and 60's. Since 2015 the productivity and survival have declined. The population is predicted to remain 20% below objective with current license issuance.

As this herd unit is comprised of primarily private land, a landowner survey is mailed out annually to gauge sentiments on the number of deer. Herd wide responses (n=90) indicate that 48% of respondents feel deer numbers are where they would like, while 38% feel that the deer numbers are too low. In years past, there has been a disparity in responses depending on which side of the Powder River the response came from. The responses in 2020 indicated that most landowners felt similarly throughout the herd unit.

2.) Management Objective Review: This herd will be up for objective review in 2025.

3.) Chronic Wasting Disease Monitoring & Management: This is a Tier 1 surveillance herd, and was a priority for CWD sampling in 2019. Prevalence estimates and sample sizes are presented below (Table 1). This herd is scheduled for targeted surveillance again in 2024. The prevalence of 11% is a low enough rate that changes could be implemented to assist in preventing the increase of CWD. We are currently maintaining harvest levels for both bucks and does with a declining population in mind. It is predicted that we will harvest 25% of the pre-season buck estimate, which is under the 30% minimum threshold recommended by the WAFWA Recommendations for the Adaptive Management of Chronic Wasting Disease in the West. As this is a predominantly private land area, harvest is mostly dictated by desires of landowners and outfitters. Making changes to this season structure would require significant outreach and cooperation from landowners.

Table 1. CWD prevalence for hunter-harvested mule deer in the Powder River Mule Deer Herd in 2019.

Year	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*		
	Adult Males (CI = 95%)	Yearling Males	Adult Females
2019	**11% (7-14%, n=293)**	14% (7)	3% (35)

4.) Additional Hunter Harvest Survey Question: Numerous hunter calls are fielded in which information is requested regarding success, specifically in relation to public land hunts. In many of these predominantly private Hunt Areas, the success is quite high, but there has been no ability to ascertain success on "public" vs "private" land hunts. To better understand how harvest metrics (success) and pressure on limited public lands are related, hunters from hunt areas 17 and 18 were asked additional questions during the 2020 harvest survey. Results indicate that both public and private lands receive a fairly even amount of hunting pressure and that the majority of hunts are unguided (74% unguided in Area 17 and 84% unguided in Area 18). Success rates were higher for guided license holders (85% to 100%) as compared to non-guided license holders (55% to 82%) for all license types in both hunt areas. Success rates for license holders hunting on mostly or all on private land was also higher (74% to 89%) as compared to those that hunted on mostly or all public land (0% to 67%). We have assumed in the past, based on hunter comments and field checks, that success was likely higher on private land hunts vs. public land hunts, but this is the first time we have had data that does indicate that this is a valid statement.

Table 2. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	Success Guide	Success No Guide
17. Northwest Gillette	D/F 7	19	100%	82%
	General	135	85%	55%
18. Campbell	D/F 7	23	N/A	82%
	General	97	95%	57%

Table 3. Success rates based on if hunt was primarily on public, private land, or an even mix.

Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
17. Northwest Gillette	D/F 7	19	89%	67%	0%
	General	135	74%	51%	44%
18. Campbell	D/F 7	23	85%	0%	0%
	General	97	86%	48%	50%

2020 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2020 - 5/31/2021

HERD: MD320 - PUMPKIN BUTTES

HUNT AREAS: 19, 29, 31

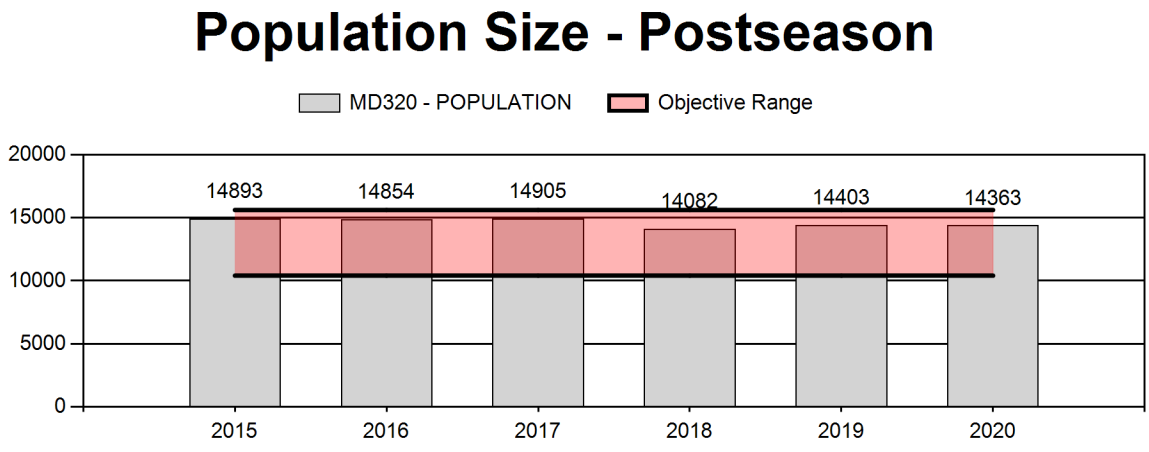
PREPARED BY: CHEYENNE STEWART

	2015 - 2019 Average	2020	2021 Proposed
Population:	14,627	14,363	14,295
Harvest:	657	554	644
Hunters:	1,019	1,041	1,020
Hunter Success:	64%	53%	63 %
Active Licenses:	1,034	1,057	1,040
Active License Success:	64%	52%	62 %
Recreation Days:	3,765	4,556	4,000
Days Per Animal:	5.7	8.2	6.2
Males per 100 Females	43	46	
Juveniles per 100 Females	64	62	

Population Objective (± 20%) :	13000 (10400 - 15600)
Management Strategy:	Private Land
Percent population is above (+) or below (-) objective:	10%
Number of years population has been + or - objective in recent trend:	0
Model Date:	3/4/2021

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:	14%	16%
Total:	4%	4%
Proposed change in post-season population:	-4%	-5%



2021 Hunting Seasons
Pumpkin Buttes Mule Deer Herd Unit (MD320)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
19	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 20		Antlered mule deer or any white-tailed deer
19	7	Sep. 1	Sep. 30	Oct. 1	Oct. 20	50	Doe or fawn valid on private land
29	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered deer off private land; any deer on private land
31	Gen	Sep. 1	Sep. 30	Oct. 1	Oct. 10		Antlered deer

2021 Region C nonresident quota: 2,500

2020 Hunter Satisfaction: 59% Satisfied, 19% Neutral, 22% Dissatisfied

2020 Management Summary

1.) Hunting Season Evaluation: The current season structure has resulted in very stable annual population and harvest metrics over the previous five years. The 2020 season had lower total harvest, harvest success, and hunter satisfaction with greater effort (number of days hunted per animal harvested); which we attribute to the severe drought conditions. Fawn ratios in hunt areas 29 (40 fawns:100 does) and 31 (29 fawns:100 does) are concerning and likely due to the extreme drought, localized Epizootic Hemorrhagic Disease (EHD) detections, and difficult classification conditions. Drought conditions resulted in noticeable deer distribution changes which likely impacted hunter success as well as observer effectiveness during classifications. We do not have a reliable population estimate, however the population model corroborates the field data, estimating the population at objective with stability in recent years. We propose no changes in order to maintain current population and harvest rates while anticipating that the extreme drought conditions will subside. Some hunter crowding on public lands is status quo and mitigated by managing the nonresident quota.

2.) Management Objective Review: Scheduled for 2023.

3.) Chronic Wasting Disease Management: This is a Tier 2 surveillance herd, and was prioritized for CWD sampling beginning in 2020 and will continue through 2021. To date, we have collected 87 samples during this focal period. Prevalence data will be reported in the 2021 JCR when this focal surveillance period is complete

4.) Research: The research in the Pumpkin Buttes and Powder River herd units is on-going. Hall Sawyer (West Inc., Laramie) is managing the study. The goals are to document movement in relation to sections of roadways with high rates of deer-vehicle collisions as well as to document adult doe survival.

5.) Additional hunter harvest survey question: In an effort to better understand how harvest

metrics (success) and pressure on limited public lands are related, hunters were asked additional questions during the harvest survey. Results indicate pressure is nearly split between private and public lands. Success rates were much higher for guided license holders (86-100%) as compared to non-guided license holders (55-58%) in all hunt areas. Similarly, success was higher in all hunt areas for primarily private land hunters (67-85%) as compared to public land hunters (50-60%; Tables 1 and 2).

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	% Success Guide	% Success No Guide
19. Pumpkin Buttes	General	87	89%	55%
29. Johnson	General	67	86%	58%
31. Salt Creek	General	8	100%	57%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
19. Pumpkin Buttes	General	87	82%	53%	20%
29. Johnson	General	64	85%	50%	100%
31. Salt Creek	General	8	67%	60%	NA

2020 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2020 - 5/31/2021

HERD: MD321 - NORTH BIGHORN

HUNT AREAS: 24-25, 27-28, 50-53
PREPARED BY: TIM THOMAS

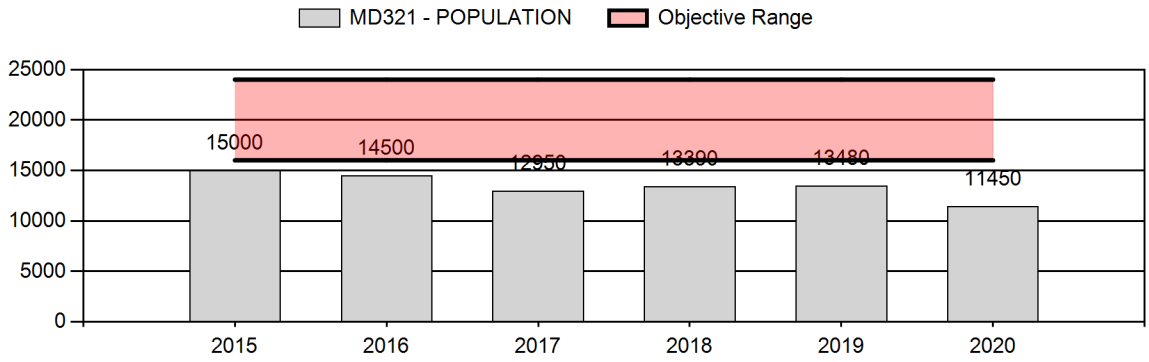
	2015 - 2019 Average	2020	2021 Proposed
Population:	13,864	11,450	11,300
Harvest:	1,308	891	840
Hunters:	3,201	2,800	2,500
Hunter Success:	41%	32%	34 %
Active Licenses:	3,317	2,881	2,750
Active License Success:	39%	31%	31 %
Recreation Days:	15,627	14,053	12,500
Days Per Animal:	11.9	15.8	14.9
Males per 100 Females	31	27	
Juveniles per 100 Females	69	68	

Population Objective (± 20%) :	20000 (16000 - 24000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-42.8%
Number of years population has been + or - objective in recent trend:	15
Model Date:	3/1/2021

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

	JCR Year	Proposed
Females ≥ 1 year old:	3%	3%
Males ≥ 1 year old:	31%	28%
Total:	7%	7%
Proposed change in post-season population:	-9%	-10%

Population Size - Postseason



2021 HUNTING SEASONS
NORTH BIGHORN MULE DEER HERD (MD321)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
24	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered mule deer or any white-tailed deer
24	7			Sep. 1	Dec. 15	250	Doe or fawn valid on private land
25	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer three (3) points or more on either antler or any white-tailed deer
27	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered mule deer or any white-tailed deer
28	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
50	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
51	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
51	6	Sep. 1	Sep. 30	Oct. 15	Nov. 15	150	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
52	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
52	6	Sep.1	Sep. 30	Oct. 15	Nov. 30	25	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
53	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer

Nonresident Region R Quota: 600
Nonresident Region Y Quota: 1,800

Management Evaluation
Postseason Population Management Objective: 20,000
Management Strategy: Recreational

2020 Proposed Postseason Population Estimate: ~ 11,450
2020 Hunter Satisfaction: 58% Satisfied; 19% Neutral; 23% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: This herd continues to be below the postseason population objective based on simulation population modeling. We selected the Time Specific Juvenile – Constant Adult Survival spreadsheet model since it had the best fit, the lowest AIC value and reasonably modeled the perceived population dynamics of this herd.

For some time we have generally utilized conservative season strategies (e.g. 10 days, antlered mule deer only) on predominantly public land hunt areas, while having more liberal seasons in predominately private lands hunt areas. We continued with similar season strategies for 2021. General license hunters, except youths, are restricted to antlered mule deer in all hunt areas. Limited doe harvest is restricted to primarily private lands at lower elevations.

Some hunters have commented on perceived low quality and quantity of mule deer, especially on public lands. Due to public demand, we instituted a 3-point antler point restriction in Area 25 in 2020. This harvest restriction was at least partially responsible for a decrease in buck harvest to the lowest level since 2013. We maintained this harvest restriction for 2021. We plan to return to simply antlered mule deer for the 2022 season.

Hunter satisfaction, determined by responses on the harvest survey, decreased from 64% to 58% at the herd level (n=819). Hunter satisfaction decreased in six hunt areas (Areas 25, 27, 28, 50, 51 and 52), remained stable in one hunt area (Area 24) and increased in one hunt area (Area 53). We observed a similar decrease in hunt satisfaction in overlapping elk hunt areas in the northern Bighorns.

2.) Management Objective Review: This herd is scheduled for the next 5-year herd unit review in 2024.

3.) Chronic Wasting Disease Monitoring & Management: This is a Tier 2 surveillance herd scheduled for priority CWD sampling starting in 2021. Of note, we documented the first CWD positive mule deer in Hunt Area 25 in August 2020.

4.) Research: The WGFD, in collaboration with the Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Wyoming Migration Initiative, Sheridan County Land Trust, The Nature Conservancy, and the US Forest Service, initiated a study of mule deer movement and habitat use of migratory deer. The objectives are to: 1) Identify mule deer movements; 2) Identify season ranges and habitat use; 3) Identify potential habitat improvements and conservation opportunities; and 4) Document crude vital rates. The University of Wyoming's Sheridan Research and Extension Center has recently partnered on this project to look at mule deer use in conjunction with treatments for invasive annual grasses.

Initial project planning began in the summer of 2019. Sufficient funding was secured, and a graduate student was accepted by January 2020. During four captures events – March, August and December 2020 and March 2021 – we deployed 130 collars on adult female mule deer. This project is scheduled for completion in 2023.

2020 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2020 - 5/31/2021

HERD: MD322 - UPPER POWDER RIVER

HUNT AREAS: 30, 32-33, 163, 169

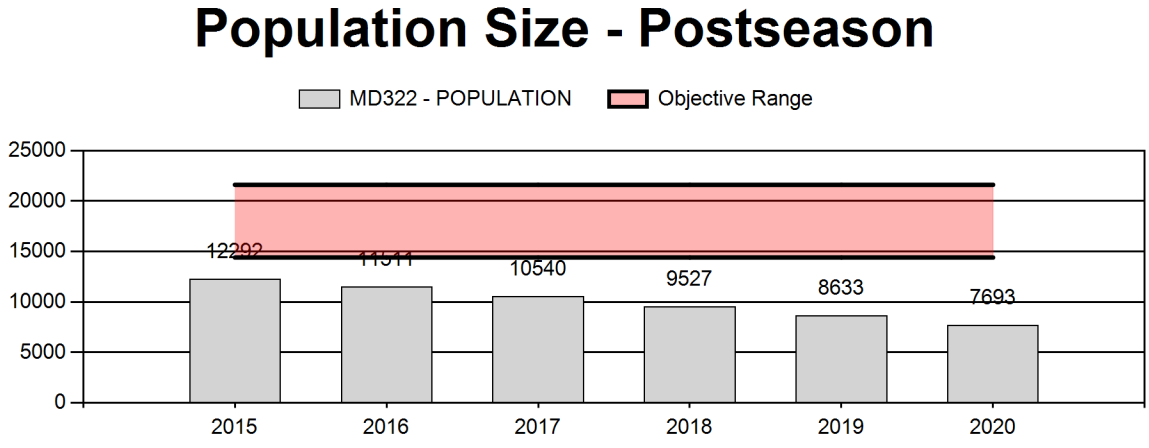
PREPARED BY: CHEYENNE STEWART

	2015 - 2019 Average	2020	2021 Proposed
Population:	10,501	7,693	6,942
Harvest:	781	561	650
Hunters:	1,324	1,315	1,325
Hunter Success:	59%	43%	49 %
Active Licenses:	1,336	1,315	1,330
Active License Success:	58%	43%	49 %
Recreation Days:	5,413	5,864	5,600
Days Per Animal:	6.9	10.5	8.6
Males per 100 Females	42	23	
Juveniles per 100 Females	67	57	

Population Objective (± 20%) :	18000 (14400 - 21600)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-57.3%
Number of years population has been + or - objective in recent trend:	10
Model Date:	3/4/2021

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

	JCR Year	Proposed
Females ≥ 1 year old:	2%	1%
Males ≥ 1 year old:	25%	35%
Total:	7%	9%
Proposed change in post-season population:	-7%	-9%



2021 Hunting Seasons
Upper Powder River Mule Deer Herd Unit (MD322)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
30	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered deer off private land; any deer on private land
32	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered mule deer or any white-tailed deer
33	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered deer off private land; any deer on private land
163	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 21		Antlered mule deer or any white-tailed deer
169	Gen	Sep. 1	Sep. 30	Oct. 15	Oct. 21		Antlered mule deer or any white-tailed deer

2021 Region Y nonresident quota: 1800 licenses

2020 Hunter Satisfaction: 51% Satisfied, 23% Neutral, 26% Dissatisfied

2020 Management Summary

1.) Hunting Season Evaluation: This herd has been below the population objective for more than a decade. In that time, this is the first year that the buck/doe ratio (23 bucks:100 does) was below the 30-45 bucks per 100 does special management strategy target. In an attempt to increase deer numbers, we have maintained a conservative season structure, with short seasons and limited doe/fawn harvest opportunity. Conversely, we have very liberal seasons for species that compete with or prey on mule deer. The trends in this herd are concerning, with the 2020 population and harvest metrics the lowest observed during the previous decade, including the postseason population estimate (7,693), harvest (561; 640-1,081 since 2010), and hunter success (43%; 54-67% since 2010). Hunter satisfaction and success were the lowest in hunt area 32 this year, with 43% satisfaction and 13% success. We attribute the negative population trend to low adult doe survival and fawn recruitment (see section 4) and not to harvest, however harvest success is dependent on the population metrics. Our proposed season structure and quota is notwithstanding continued landowner requests for further reductions of mule deer harvest and some requests for closing the season entirely. We believe that maintaining harvest will provide additional resource availability to non-harvested deer as well as mitigate the spread of CWD.

2.) Management Objective Review: Scheduled for 2023. Mule Deer Initiative Herd.

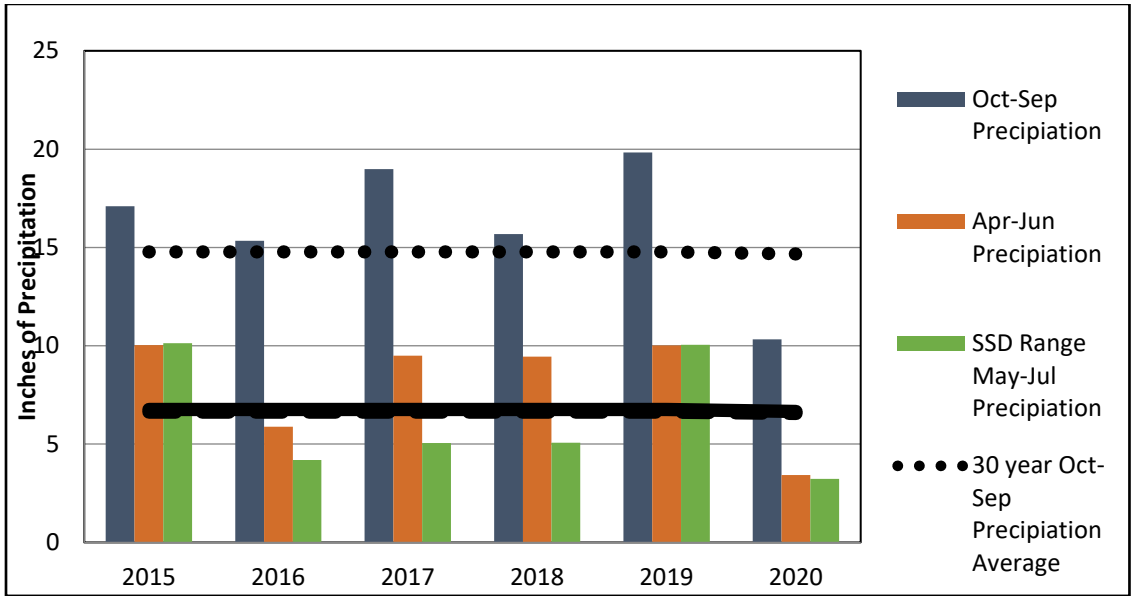
3.) Chronic Wasting Disease Management: This is a Tier 2 surveillance herd, and was prioritized for CWD sampling beginning in 2020 and will continue through 2021. To date, we have collected 131 samples during this focal period. Prevalence data will be reported in the 2021 JCR when this focal surveillance period is complete.

4.) Research: We are in the third and final year for field data collection in the on-going ecology research project. We have not completed any analysis to date. Some notable yet anecdotal

observations include poor pre-winter nutritional condition over three years, low adult doe survival (~35% annual mortality), and high numbers of CWD detections (19/43 mortalities where samples were available). The majority of mortalities have occurred from CWD (16/54) and predation (14/54), with 49% of all dead deer showing clinical signs of being nutritionally stressed.

5.) Habitat & Weather: A number of mule deer habitat improvement projects have been completed with WGFD. Invasive annual grass treatments have occurred on high priority mule deer habitats in Outlaw Cave (702 acres, 2016) and lower Middle and North Fork of Crazy Woman Creek (4,133 acres, 2020). Also, 40 curl-leaf mountain mahogany plants were planted east of Outlaw Cave as part of a test to see if nursery grown curl-leaf mountain mahogany plants can become successfully established in the Middle Fork Powder River area. An additional 30 curl-leaf mahogany plants were planted on the Buckingham Ranch in crucial mule deer winter range just north of the Middle Fork Powder River. Another project took place on the Schiermiester Ranch. Antelope Draw is a mesic draw that is being choked out by decadent Silver sagebrush stands. During the winter of 2015, 14 acres of thick decadent Silver sagebrush stands were Dixie harrowed. Following harrowing, the area was planted with a mixture of native grasses and forbs. The Schiermiester Ranch also planted a total of ten deciduous browse trees in mesic draws in different locations on the ranch. Since 2016, a total of 1,886 acres of Curl-leaf mountain mahogany have been treated for conifer encroachment to reduce fuel loading to protect crucial mule deer winter range in these important deer habitat stands in Poker Creek, Slip Road, and Gardner Mountain. In 2020, conifer removal occurred on another 161 acres of Curl-leaf mountain mahogany on Gardner Mountain. Since 2018, 214 acres of conifer removal took place in aspen stands in the upper Middle Fork Crazy Woman drainage. In 2020 and addition 49 acres of conifer removal took place in aspen stands in the upper Poison Creek drainage. WGFD installed 10 Beaver Dam Analog (BDA) complexes on the upper portions of Middle Fork Crazy Woman Creek improve riparian habitat and restore hydrological function. For more detailed information about these projects, please refer to the WGFD's Strategic Habitat Plan annual reports.

Figure 1. Seasonal precipitation from 2015 – 2020 in the Upper Powder River mule deer herd unit.



6.) Additional hunter harvest survey question: In an effort to better understand how harvest metrics (success) and pressure on limited public lands are related, hunters were asked additional questions during the harvest survey. Results indicate most pressure in this herd unit occurs on non-guided public land hunts. Success rates within the hunt areas varied widely depending on landownership patterns. Areas 30, 32, and 33 offer primarily private land opportunity, which was reflected with high success for guided license holders (73-100%) as compared to non-guided license holders (17-83%). Success was greater on private lands in all hunt areas (50-100%) as compared to success on public lands (31-79%), with the exception of area 163 where success was similar regardless of landownership (50-52%; Tables 1 and 2).

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	% Success Guide	% Success No Guide
30. Upper Powder River	General	25	100%	83%
32. Beartrap Creek	General	7	0%	17%
33. Red Fork	General	122	73%	48%
163. Middle Fork	General	27	NA	48%
169. Tisdale Mountain	General	39	NA	36%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

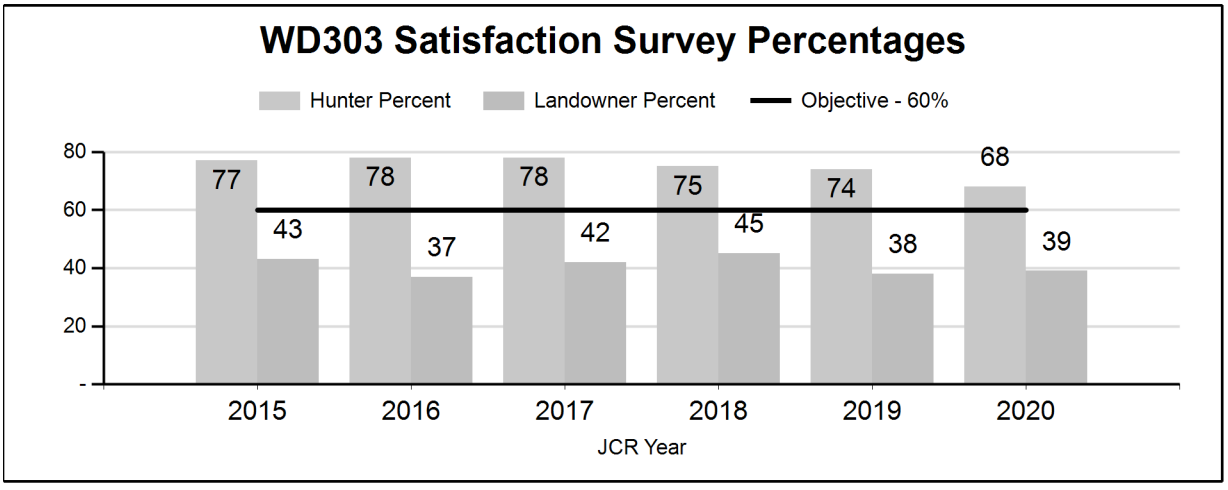
Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
30. Upper Powder River	General	25	100%	79%	0%
32. Beartrap Creek	General	7	50%	0%	0%
33. Red Fork	General	121	76%	41%	60%
163. Middle Fork	General	27	50%	52%	0%
169. Tisdale Mountain	General	39	100%	31%	40%

WHITE-TAILED DEER

2020 - JCR Evaluation Form

SPECIES: White tailed Deer
PERIOD: 6/1/2020 - 5/31/2021
HERD: WD303 - POWDER RIVER
HUNT AREAS: 17-20, 23-33, 163, 169
PREPARED BY: TIM THOMAS

	2015 - 2019 Average	2020	2021 Proposed
Hunter Satisfaction Percent	76%	68%	70%
Landowner Satisfaction Percent	41%	39%	50%
Harvest:	6,115	6,730	6,800
Hunters:	8,168	9,160	9,200
Hunter Success:	75%	73%	74%
Active Licenses:	9,440	10,518	10,500
Active License Success:	65%	64%	65%
Recreation Days:	36,675	42,528	42,000
Days Per Animal:	6.0	6.3	6.2
Males per 100 Females:	39	36	
Juveniles per 100 Females	71	64	
Satisfaction Based Objective			60%
Management Strategy:			Private Land
Percent population is above (+) or (-) objective:			-6%
Number of years population has been + or - objective in recent trend:			15



2021 HUNTING SEASONS
POWDER RIVER WHITE-TAILED DEER HERD (WD303)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
17	GEN	Sep. 1	Sep. 30	Oct. 1	Oct. 20		Antlered mule deer or any white-tailed deer
17	GEN			Nov. 1	Nov. 30		Any white-tailed deer
17	7	Sep. 1	Sep. 30	Oct. 1	Oct. 20	50	Doe or fawn valid on private land
17	8	Sep. 1	Sep. 30	Oct. 1	Nov. 30	250	Doe or fawn white-tailed deer
18	GEN	Sep. 1	Sep. 30	Oct. 1	Oct. 20		Antlered mule deer or any white-tailed deer
18	7	Sep. 1	Sep. 30	Oct. 1	Oct. 20	100	Doe or fawn valid on private land
18	8	Sep. 1	Sep. 30	Oct. 1	Oct. 31	200	Doe or fawn white-tailed deer valid on private land
19	GEN	Sep. 1	Sep. 30	Oct. 1	Oct. 20		Antlered mule deer or any white-tailed deer
19	GEN			Nov. 1	Nov. 15		Any white-tailed deer
19	7	Sep. 1	Sep. 30	Oct. 1	Oct. 20	50	Doe or fawn valid on private land
19	8	Sep. 1	Sep. 30	Oct. 1	Nov. 15	75	Doe or fawn white-tailed deer
23	GEN	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered deer off private land; any deer on private land
23	GEN			Nov. 1	Nov. 30		Any white-tailed deer
23, 26	3	Sep. 1	Sep. 30	Nov. 1	Nov. 30	500	Any white-tailed deer
23, 26	7			Sep. 1	Dec. 15	2,000	Doe or fawn valid on private land
24	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered mule deer or any white-tailed deer
24	GEN			Nov. 1	Nov. 30		Any white-tailed deer
24	3	Sep. 1	Sep. 30	Nov. 1	Nov. 30	500	Any white-tailed deer
24	7			Sep. 1	Dec. 15	250	Doe or fawn valid on private land
24	8			Sep. 1	Dec. 15	3,000	Doe or fawn white-tailed deer

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
25	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer three (3) points or more on either antler or any white-tailed deer
26	GEN	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered deer off private land; any deer on private land
26	GEN			Nov. 1	Nov. 30		Any white-tailed deer
27	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered mule deer or any white-tailed deer
27	GEN			Nov. 1	Nov. 30		Any white-tailed deer
27	8			Sep. 1	Sep. 30	1,200	Doe or fawn white-tailed deer valid on private land
27	8	Sep. 1	Sep. 30	Oct. 15	Dec. 15		Doe or fawn white-tailed deer valid in the entire area
28	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 24		Antlered mule deer or any white-tailed deer
28	GEN			Oct. 25	Nov. 30		Any white-tailed deer
29	GEN	Sep. 1	Sep. 30	Oct. 1	Oct. 14		Antlered deer off private land; any deer on private land
29	GEN			Nov. 1	Nov. 30		Any white-tailed deer
29	GEN			Dec. 1	Dec. 31		Antlerless white-tailed deer
29	8			Sep. 1	Sep. 30	700	Doe or fawn white-tailed deer valid on private land
29	8	Sep. 1	Sep. 30	Oct. 1	Dec. 31		Doe or fawn white-tailed deer valid in the entire area
30	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered deer off private land; any deer on private land
30	GEN			Nov. 1	Nov. 30		Any white-tailed deer

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
30	GEN			Dec. 1	Dec. 31		Antlerless white-tailed deer
30	8			Sep. 1	Sep. 30	500	Doe or fawn white-tailed deer valid on private land
30	8	Sep. 1	Sep. 30	Oct. 15	Dec. 31		Doe or fawn white-tailed deer valid in the entire area
31	GEN	Sep. 1	Sep. 30	Oct. 1	Oct. 10		Antlered deer
32	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered mule deer or any white-tailed deer
32	GEN			Nov. 1	Nov. 15		Any white-tailed deer
32, 163	8	Sep. 1	Sep. 30	Oct. 15	Nov. 15	100	Doe or fawn white-tailed deer
33	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 31		Antlered deer off private land; any deer on private land
33	GEN			Nov. 1	Nov. 15		Any white-tailed deer
33	GEN			Nov. 16	Dec. 15		Antlerless white-tailed deer
33	8			Sep. 1	Sep. 30	500	Doe or fawn white-tailed deer valid on private land
33	8	Sep. 1	Sep. 30	Oct. 15	Dec. 15		Doe or fawn white-tailed deer valid in the entire area
163	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 21		Antlered mule deer or any white-tailed deer
163	GEN			Nov. 1	Nov. 15		Any white-tailed deer
169	GEN	Sep. 1	Sep. 30	Oct. 15	Oct. 21		Antlered mule deer or any white-tailed deer
169	GEN			Nov. 1	Nov. 15		Any white-tailed deer

Nonresident Region C Quota: 2,500
Nonresident Region Y Quota: 1,800

Management Evaluation
Hunter / Landowner Management Objective: 60% Landowner / Hunter Satisfaction
Secondary Management Objective: 20 bucks:100 does observed minimum
Management Strategy: Private Land

2020 Hunter Satisfaction: 69% Satisfied; 17% Neutral; 14% Dissatisfied
2020 Landowner Satisfaction: 39% Satisfied; 46% Above Desired; 14% Below Desired

2021 Management Summary

1.) Hunting Season Evaluation: We manage this white-tailed deer herd based on hunter and landowner satisfaction. Hunter satisfaction has consistently been high, averaging 76% from 2015-2020. Hunter satisfaction declined to 69% in 2020 which is surprising as we saw a 13% increase in harvest. We saw similar declines in hunter satisfaction for mule deer, pronghorn antelope and elk, suggesting hunting conditions in 2020 were less than desirable. There are liberal season strategies in most hunt areas, providing ample hunter opportunity. Hunters can hunt up to 106 days depending on the specific hunt area and license type.

We received 155 responses from landowners on their perception of white-tailed deer numbers on their property. Most landowner dissatisfaction resulted from too many deer (n=72; 46%). Twenty-two (14%) of landowners felt they had too few deer. Due to the varying degrees of access to private land, where most white-tailed deer reside, and refuges provided by rural subdivisions, we are not confident we will ever reach white-tailed deer densities to satisfy some landowners.

We increased Area 23,26 and Area 24 Type 3 licenses to take advantage of high buck numbers. We observed 36 bucks:100 does, which represents a minimum buck:doe ratio, as male white-tailed deer are generally more secretive than females, and thus harder to detect during surveys. In 2020, we eliminated the "Unlimited" Type 8 licenses in Area 24 and returned to a numeric quota (i.e. 3,000). For 2020, we sold 2,490 of these licenses. We feel the quota of 3,000 remains sufficient to meet the current demand.

We adjusted the starting date for Hunt Area 19 Type 8 licenses to provide additional opportunity. We extended the December season to the end of the month in Hunt Areas 29 and 30 to provide additional opportunity and address damage concerns. We increased Areas 32,163 Type 8 licenses to provide additional opportunity in response to increasing deer numbers in these areas.

During the 2020 harvest survey, we asked hunters from select hunt areas questions about where they hunted, specifically private, mix private/public or public lands, and if they were guided or unguided hunts. A total of 499 white-tailed deer hunters from Hunt Areas 17-19, 27, 29-33, 163 and 169 responded to these questions. As expected, successful hunters (n=295) were significantly more successful on private lands (80%) compared to public lands (35%). Hunters on a mix of public and private lands were 51% successful. Guided hunters (n=26) were more successful (73% success rate) than unguided hunters (n=473; 58% success rate). While we have long believed hunters on private lands and guided hunters were more successful than public land and unguided hunters, we have not quantified it until now.

2.) Management Objective Review: This herd is scheduled for the next 5-year herd unit review in 2023.

3.) Chronic Wasting Disease Monitoring & Management: This is a Tier 3 surveillance herd, meaning we will not prioritize CWD sampling at the herd unit level. Sampling will be prioritized at the hunt area level in conjunction with corresponding focal mule deer hunt areas. For 2021, that will include Hunt Areas 19, 24, 25, 27, 28, 29, 30, 31, 32, 33, 163 and 169 of the North Bighorn, Upper Powder River and Pumpkin Buttes mule deer herd units.

For 2020, Pumpkin Buttes and Upper Powder River Mule Deer were the Sheridan Region's focal herd units for priority sampling. This consisted of Hunt Areas 19, 29 30, 31, 32, 33, 163 and 169 (Table 1). The Pumpkin Buttes and Upper Powder River herd units will require additional sampling efforts to achieve the desired sample of 200 adult male mule deer so we will also prioritize white-tailed deer sampling in these same hunt areas for 2021.

Sampling effort has not been uniform across hunt areas for white-tailed deer (Tables 1 and 2). The majority of samples (n=99 of 107; 92.5%) were collected in only three of the eight sampled hunt areas. As we move forward and better coordinate sampling effort between the deer species, we should get better sample distribution across hunt areas.

While we have not implemented specific management actions to address CWD, we continue to encourage landowners to reduce deer densities primarily through increased harvest. While these recommendations have primarily been to control deer numbers, address complaints and reduce browsing pressure on shrub communities, reducing deer density may aid in limiting CWD prevalence and spread.

Table 1. Chronic wasting disease sampling results from hunter-harvested deer in select hunt areas in the Powder River White-tailed Deer Herd Unit, 2018-2020, corresponding with the Pumpkin Buttes Mule Deer Herd Unit.

		2018		2019		2020		2018-2020 Total	
HA/HU	Species	Tested	# Pos	Tested	# Pos	Tested	# Pos	Tested	# Pos
19	Ad M WTD	0	0	0	0	1	1	1	1
	Ad F WTD	0	0	0	0	0	0	0	0
	Yrlg M WTD	0	0	0	0	0	0	0	0
29	Ad M WTD	0	0	11	4	9	1	20	5
	Ad F WTD	2	1	13	4	9	1	24	6
	Yrlg M WTD	0	0	0	0	4	1	4	1
31	Ad M WTD	0	0	0	0	0	0	0	0
	Ad F WTD	0	0	0	0	0	0	0	0
	Yrlg M WTD	0	0	0	0	0	0	0	0
Total	Ad M WTD	0	0	11	4	10	2	21	6
	Ad F WTD	2	1	13	4	9	1	24	6
	Yrlg M WTD	0	0	0	0	4	1	4	1

Table 2. Chronic wasting disease sampling results from hunter-harvested deer in select hunt areas in the Powder River White-tailed Deer Herd Unit, 2018-2020, corresponding with the Upper Powder River Mule Deer Herd Unit.

		2018		2019		2020		2018-2020 Total	
HA/HU	Species	Tested	# Pos	Tested	# Pos	Tested	# Pos	Tested	# Pos
30	Ad M WTD	1	0	5	3	13	5	19	8
	Ad F WTD	1	0	1	1	2	0	4	1
	Yrlg M WTD	0	0	0	0	2	0	2	0
32	Ad M WTD	1	1	0	0	2	1	3	2
	Ad F WTD	0	0	0	0	1	0	1	0
	Yrlg M WTD	0	0	0	0	1	0	1	0
33	Ad M WTD	7	2	6	4	4	3	17	9
	Ad F WTD	5	1	3	0	1	0	9	1
	Yrlg M WTD	0	0	0	0	0	0	0	0
163	Ad M WTD	0	0	0	0	1	0	1	0
	Ad F WTD	0	0	0	0	0	0	0	0
	Yrlg M WTD	0	0	0	0	0	0	0	0
169	Ad M WTD	0	0	0	0	0	0	0	0
	Ad F WTD	0	0	1	0	0	0	1	0
	Yrlg M WTD	0	0	0	0	0	0	0	0
Total	Ad M WTD	9	3	11	7	20	9	40	19
	Ad F WTD	6	1	5	1	4	0	15	2
	Yrlg M WTD	0	0	0	0	3	0	3	0

ELK

2020 - JCR Evaluation Form

SPECIES: Elk
HERD: EL320 - FORTIFICATION
HUNT AREAS: 2

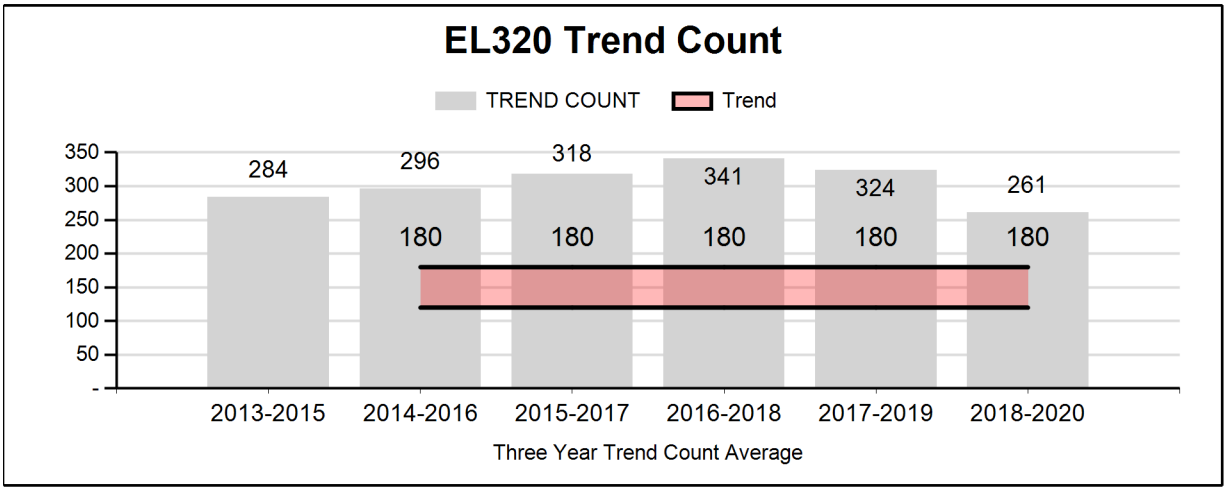
PERIOD: 6/1/2020 - 5/31/2021
PREPARED BY: ERIKA PECKHAM

	2015 - 2019 Average	2020	2021 Proposed
Trend Count:	318	144	250
Harvest:	81	107	128
Hunters:	112	155	155
Hunter Success:	72%	69%	83%
Active Licenses:	117	155	172
Active License Success	69%	69%	74%
Recreation Days:	386	604	625
Days Per Animal:	4.8	5.6	4.9
Males per 100 Females:	37	37	
Juveniles per 100 Females	60	41	

Trend Based Objective (± 20%)	150 (120 - 180)
Management Strategy:	Private Land
Percent population is above (+) or (-) objective:	-4%
Number of years population has been + or - objective in recent trend:	10

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

	JCR Year	Proposed
Females ≥ 1 year old:	16.5%	26.1%
Males ≥ 1 year old:	10%	7.9%
Juveniles (< 1 year old):	1%	1%



2021 HUNTING SEASONS
FORTIFICATION ELK HERD (EL320)

Hunt Area	Hunt Type	Archery Dates Opens	Archery Dates Closes	Season Dates Opens	Season Dates Closes	Quota	Limitations
2	1			Oct. 21	Nov. 1	60	Any Elk
2	4			Sep. 18 Oct. 21	Sep. 27 Nov. 1	80	Antlerless elk
2	6			Sep. 18 Oct. 21	Sep. 27 Nov. 1	40	Cow or calf

2020 Hunter Satisfaction: 82% Satisfied, 9% Neutral, 9% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: License quotas and hunting seasons remained mostly the same as the 2020 season, with a slight increase in the Type 6 licenses. This was in part to having implemented a September season in 2020 and wanting to give this new season structure at least two years to ascertain its effectiveness at generating more cow harvest. Additionally, the annual landowner meeting was not conducted due to covid concerns, so keeping essentially the same seasons in the absence of in-person discussions seemed the most palatable.

The three-year average of hunter success on type 1 licenses was 67%. Although this falls above the 60% harvest success guideline for increasing opportunity, the access, and therefore license issuance, is dictated by obtaining private land access. The number of licenses issued is in line with what this area can accommodate and what landowners who are enrolled in the HMA are willing to take. This same logic applies to the herd being consistently over objective. This herd has a trend count objective of 150 elk. The 3-year average is 261 elk classified, well above the objective. License quotas are inadequate to begin reducing this herd to objective, however, unless more access can be gained or the season structure changed, license issuance will not be increased.

2.) Public Access: In 2019 and 2020, portions of this hunt area were enrolled in the Access Yes program. The program seemed to be well received by hunters and landowners alike. Hunting access to the primary ranch that allows hunter access will again be administered through the Access Yes program in 2021. HMA permits will be limited to hunters holding Type 4 and Type 6 licenses. The ranch will charge Type 1 hunters a trespass fee.

2020 - JCR Evaluation Form

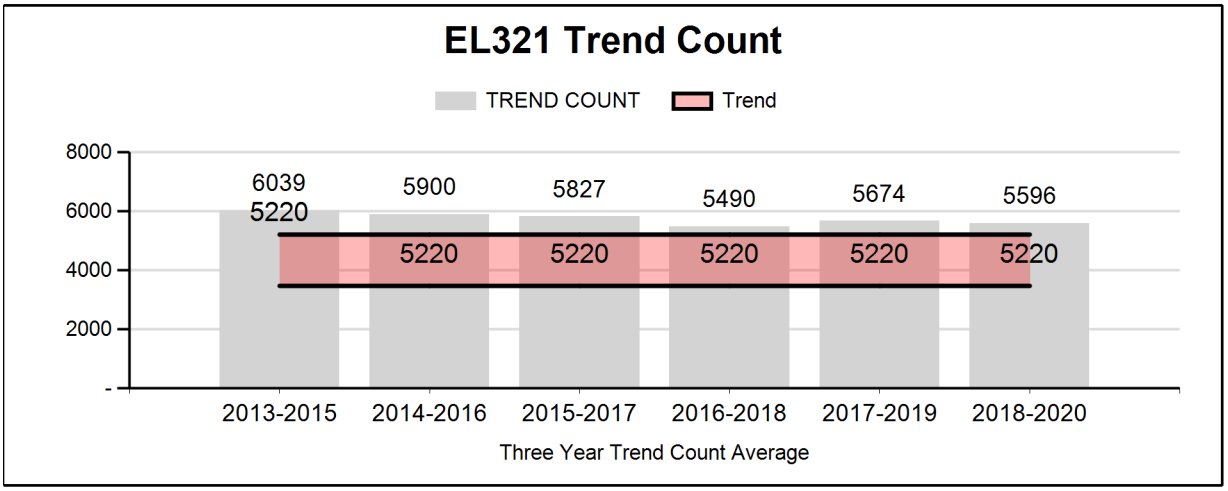
SPECIES: Elk
PERIOD: 6/1/2020 - 5/31/2021
HERD: EL321 - NORTH BIGHORN
HUNT AREAS: 35-40
PREPARED BY: TIM THOMAS

	2015 - 2019 Average	2020	2021 Proposed
Trend Count:	5,731	5,615	5,500
Harvest:	1,609	1,430	1,600
Hunters:	4,703	5,234	5,200
Hunter Success:	34%	27%	31 %
Active Licenses:	4,937	5,450	5,500
Active License Success	33%	26%	29 %
Recreation Days:	35,114	39,092	38,000
Days Per Animal:	21.8	27.3	23.8
Males per 100 Females:	26	25	
Juveniles per 100 Females	39	26	

Trend Based Objective (± 20%)	4,350 (3480 - 5220)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	29%
Number of years population has been + or - objective in recent trend:	10

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

	JCR Year	Proposed
Females ≥ 1 year old:	22%	22%
Males ≥ 1 year old:	32%	30%
Juveniles (< 1 year old):	5%	5%



2021 HUNTING SEASONS
NORTH BIGHORN ELK HERD (EL321)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
35	1	Sep. 15	Sep. 30	Oct. 15	Nov. 5	150	Any elk
35	4	Sep. 15	Sep. 30	Oct. 15	Dec. 31	250	Antlerless elk
35	6			Aug. 15	Oct. 14	350	Cow or calf elk valid on private land
35	6	Sep. 15	Sep. 30	Oct. 15	Dec. 31		Cow or calf elk valid off national forest
35	9			Sep. 1	Sep. 30	75	Any elk, archery only
36	GEN	Sep. 15	Sep. 30	Oct. 15	Nov. 5		Antlered elk
36	4	Sep. 15	Sep. 30	Oct. 15	Dec. 31	300	Antlerless elk
36	6			Oct. 1	Oct. 14	250	Cow or calf valid off national forest north of Rock Creek
36	6	Sep. 15	Sep. 30	Oct. 15	Nov. 5		Cow or calf valid in the entire area
36	9			Sep. 1	Sep. 30	50	Any elk, archery only
37	GEN	Sep. 15	Sep. 30	Oct. 15	Nov. 5		Any elk
37	6			Sep. 15	Sep. 30	700	Cow or calf valid off national forest
37	6	Sep. 15	Sep. 30	Oct. 1	Dec. 31		Cow or calf valid in the entire area
37	9			Sep. 1	Sep. 30	150	Any elk, archery only
38	1			Oct. 15	Nov. 5	400	Any elk
38	1			Nov. 6	Nov. 15		Antlerless elk
38	4			Oct. 1	Oct. 10	550	Antlerless elk
38	4			Oct. 15	Nov. 15		Antlerless elk
38	9			Sep. 1	Sep. 30	250	Any elk, archery only
39	1			Oct. 15	Nov. 4	200	Any elk
39	1			Nov. 5	Nov. 30		Antlerless elk
39	4			Oct. 1	Oct. 10	150	Antlerless elk
39	4			Oct. 15	Nov. 30		Antlerless elk
39	6			Oct. 1	Nov. 4	50	Cow or calf valid off national forest

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
39	6			Nov. 5	Nov. 30		Cow or calf valid in the entire area
39	9			Sep. 1	Sep. 30	75	Any elk, archery only
40	1			Oct. 15	Nov. 4	225	Any elk
40	1			Nov. 5	Nov. 30		Antlerless elk
40	4			Oct. 15	Nov. 30	125	Antlerless elk
40	5			Oct. 1	Oct. 10	125	Antlerless elk
40	5			Oct. 15	Nov. 30		Antlerless elk
40	6			Sep. 1	Nov. 4	100	Cow or calf valid off national forest
40	6			Nov. 5	Nov. 30		Cow or calf valid in the entire area
40	9			Sep. 1	Sep. 30	100	Any elk, archery only

Management Evaluation

Mid-Winter Trend Management Objective: 4,350

Hunt Area Sub-objectives: Area 35 - 400; Area 36 - 800; Area 37 - 800; Area 38 - 1,000; Area 39 - 500; Area 40 - 850

Management Strategy: Special (Areas 35, 38, 39, 40); Recreational (Areas 36, 37)

2020 Mid-Winter Trend Count: 5,615

Area 35 = 130; Area 36 = 553; Area 37 = 1,769; Area 38 = 1,460; Area 39 = 949; Area 40 = 754

2018-2020 3-year Running Average Mid-Winter Trend Count: 5,596

2020 Hunter Satisfaction: 53% Satisfied; 24% Neutral; 23% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: We are currently ~29% over the established mid-winter trend count objective of 4,350 (± 870) elk. Winter trend counts have been stable over the past three years near ~5,600 elk (range=5,575-5,615). Managers have implemented a variety of season strategies designed to increase elk harvest over the past two decades. The current season strategy has basically been the same since 2018, when we saw record elk harvest. Harvest, under basically the same seasons, declined in 2019 and again in 2020, to the lowest level since 2013. This suggests other factors such as weather and access likely play as important a role in harvest as does license quotas and/or season lengths.

Managers are working with a variety of landowners to develop strategies to increase elk harvest on private lands, especially on the eastern side of the Bighorns. At this time, we do not feel an increase in license quotas will result in a corresponding meaningful increase in harvest.

We eliminated the Area 38 Type 6 license for 2021. We instituted this license type to address specific damage situations that have been mitigated. The landowners who take most of the harvest on this license no longer feel this license type is necessary.

All license types, except Type 9 licenses, in Areas 39 and 40 were extended to November 30, allowing opportunity to harvest antlerless elk through the entire month. We implemented a Type 6 license (cow or calf elk) in Area 39 to permit antlerless harvest on private property and BLM administered lands early, as well as increase harvest later in the season. The early October season (i.e. Oct. 1-10) has become very popular. We rebalanced license allocation between Area 40 Type 4 and 5 licenses, decreasing Type 4 and increasing Type 5 licenses, with the intent to reduce hunter crowding and increase harvest during early October. Success on the Type 5 license exceeded 60% for the first time in 2020.

2.) Management Objective Review: This herd is scheduled for its next 5-year herd unit review in 2022.

3.) Chronic Wasting Disease Monitoring & Management: This is a Tier 2 surveillance herd originally scheduled for priority CWD sampling in 2021. Through passive sampling during the 2018-2020 seasons, we were able to obtain an adequate sample size (n=206).

We documented seven positive elk in two hunt areas, Areas 35 and 37, for a prevalence rate of 3.4% (Table 1). These findings aren't surprising as both elk hunt areas overlap deer hunt areas with documented CWD in both mule and white-tailed deer.

Distribution of sampling was not uniform between hunt areas. Hunt Area 37 accounted for ~52% of the sampling effort. We collected only five samples in Area 39. We plan to prioritize this herd for sampling again in 2027. At that time, we will implement protocols to improve sampling across all hunt areas.

We have not implemented any CWD management actions for this herd.

Table 1. CWD prevalence from hunter harvested elk in the North Bighorn Herd Unit, 2018-2020.

Year(s)	Percent CWD-Positive and (*n*) – *Hunter Harvest Only*
	All Adult Elk (CI = 95%)
2018-2020	**3.4% (1.3-6.9%; n=206)**

4.) Enhanced Brucellosis Surveillance: We implemented enhanced brucellosis surveillance in this herd unit after a hunter harvested elk tested sero-positive for *Brucella abortus* in 2012. In 2020, we collected 209 usable blood samples from hunter harvested elk to test for brucellosis, with zero positives (Table 2). We have not detected a brucellosis sero-positive elk in the Bighorn Mountains since 2016.

Table 2. Blood samples collected in the North Bighorn Elk Herd Unit from 2016-2020. Most samples from hunter harvested elk.

		2020			Total Samples 2016-2020			95% Confidence (2016-2020)	
Elk Hunt Area / Herd Unit (HU)	**Age/Sex**	**Samples**	**Positive**	**Prevalence**	**Samples**	**Positive**	**Prevalence**	**Lower**	**Upper**
35	All	9	0	0	116	0	0.0%	0.0%	3.1%
36	All	9	0	0	75	0	0.0%	0.0%	4.8%
37	All	12	0	0	159	0	0.0%	0.0%	2.3%
38	All	71	0	0	482	0	0.0%	0.0%	0.8%
39	All	61	0	0	237	0	0.0%	0.0%	1.5%
	Cows	36	0	0	123	0	0.0%	0.0%	3.0%
40	All	47	0	0	352	3	0.9%	0.2%	2.5%
	Cows	18	0	0	154	3	1.9%	0.4%	5.6%
Total North Bighorn HU	All	209	0	0.0	1421	3	0.2%	0.0%	0.6%
	Cows	129	0	0.0	824	3	0.4%	0.1%	1.1%

2020 - JCR Evaluation Form

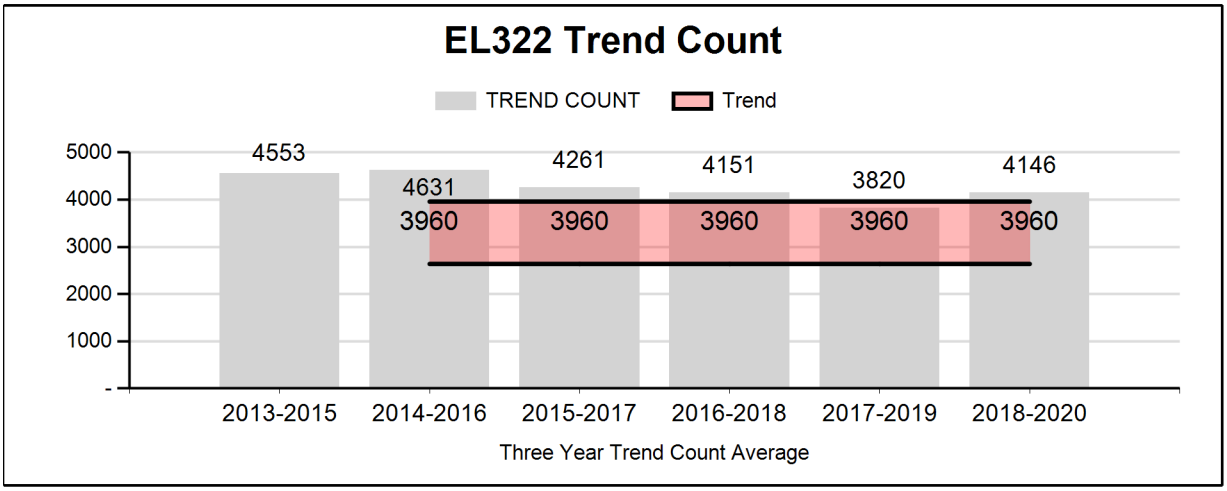
SPECIES: Elk
PERIOD: 6/1/2020 - 5/31/2021
HERD: EL322 - SOUTH BIGHORN
HUNT AREAS: 33-34, 47-49, 120
PREPARED BY: CHEYENNE STEWART

	2015 - 2019 Average	2020	2021 Proposed
Trend Count:	4,261	3,912	4,000
Harvest:	1,853	1,963	1,875
Hunters:	3,833	4,125	3,900
Hunter Success:	48%	48%	48%
Active Licenses:	3,969	4,243	4,000
Active License Success	47%	46%	47%
Recreation Days:	26,563	30,016	28,000
Days Per Animal:	14.3	15.3	14.9
Males per 100 Females:	28	27	
Juveniles per 100 Females	29	38	

Trend Based Objective (± 20%)	3,300 (2640 - 3960)
Management Strategy:	Private Land
Percent population is above (+) or (-) objective:	19%
Number of years population has been + or - objective in recent trend:	3

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

	JCR Year	Proposed
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%



2021 Hunting Seasons
South Bighorn Elk Herd Unit (EL322)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
33	1	Sep. 1	Sep. 30	Oct. 9	Oct. 31	200	Any elk
33	1			Nov. 1	Dec. 31		Antlerless elk
33	4			Aug. 15	Sep. 30	150	Antlerless elk valid on private land east of Buffalo Creek and the Bar C Road (B.L.M. Road 6214)
33	4	Sep. 1	Sep. 30	Oct. 9	Dec. 31		Antlerless elk valid in the entire area
33	6	Sep. 1	Sep. 30	Nov. 1	Dec. 31	300	Cow or calf
34	1	Sep. 1	Sep. 30	Oct. 15	Nov. 15	800	Any elk
34	1			Nov. 16	Dec. 31		Antlerless elk
34	6			Aug. 15	Oct. 14	700	Cow or calf valid on private land north of the North Fork Powder River
34	6	Sep. 1	Sep. 30	Oct. 15	Dec. 31		Cow or calf valid off national forest
47	1	Sep. 1	Sep. 30	Oct. 9	Oct. 31	150	Any elk
47	1			Nov. 1	Nov. 30		Antlerless elk
47	6	Sep. 1	Sep. 30	Oct. 9	Nov. 30	100	Cow or calf
48	1	Sep. 1	Sep. 30	Oct. 9	Oct. 31	400	Any elk
48	1			Nov. 7	Dec. 15		Antlerless elk
48	4	Sep. 1	Sep. 30	Oct. 9	Oct. 31	100	Antlerless elk
48	4			Nov. 7	Dec. 15		Antlerless elk
48	6	Sep. 1	Sep. 30	Oct. 9	Oct. 31	650	Cow or calf

48	6			Nov. 7	Dec. 15		Cow or calf
49	1	Sep. 1	Sep. 30	Oct. 9	Oct. 31	350	Any elk
49	1			Nov. 7	Dec. 21		Antlerless elk
49	4	Sep. 1	Sep. 30	Oct. 9	Oct. 31	100	Antlerless elk
49	4			Nov. 7	Dec. 21		Antlerless elk
49	6	Sep. 1	Sep. 14	Sep. 15	Oct. 31	850	Cow or calf
49	6			Nov. 7	Dec. 21		Cow or calf
120	1	Sep. 1	Sep. 30	Oct. 9	Oct. 31	125	Any elk
120	1			Nov. 1	Dec. 15		Antlerless elk
120	4	Sep. 1	Sep. 30	Oct. 9	Dec. 15	75	Antlerless elk
120	6	Sep. 1	Sep. 30	Oct. 9	Dec. 15	75	Cow or calf

2020 Hunter Satisfaction: 60% Satisfied, 21% Neutral, 19% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: This herd remained above the trend count objective, even with variable trend count results, due to the high interchange between hunt areas and low fidelity to winter ranges. Elk were over the sub-objectives in hunt areas 33 (1,190; 1,100 sub-objective), 34 (1,057; 1,000 sub-objective), 48 (1369; 400 sub-objective), under in hunt areas 47 (33; 200 sub-objective) and 49 (263; 300 sub-objective). A post-2020 hunting season trend count flight was not conducted in hunt area 120, but it has been below the 300 sub-objective in three of the previous five years. Harvest statistics including hunter satisfaction, hunter success and active license success were similar to the previous five years. While effort was high (15.3 days per animal harvested), the increased total number of hunters resulted in the second highest total harvest since 2016. This was surprising given the drought conditions which appeared to result in difficult early season hunting opportunity due to elk distributions outside of normal hunt areas and in areas with limited public accessible public land. The Area 48 changes were mainly suggested by an outfitter and landowner who felt they could accommodate a few of these license holders. This later opening date for the 49 Type 6 season was in response to several landowners who felt the early cow opener (Aug 15 in 2019 and Sep 1 in 2020) was forcing elk onto private lands early, where hunter access is nonexistent, thus reducing hunter opportunity when the regular seasons opened on October 9. This later opening date should also alleviate some archery hunter concerns with rifle seasons going on

at the same time. With this change, archery hunters will now have at least the first 15 days of September to hunt without rifle hunters in the same area. While the hunter success rate for hunt area 120 Type 1 license holders was 64%, we did not propose increasing the quota. Higher quotas in previous years (150 in 2014) coincided with decreased hunter success (45%), increased hunter crowding, and decreased overall hunter satisfaction. The proposed 125 Type 1 licenses best addresses hunter satisfaction and opportunity.

In 2020 we tested 127 blood samples from hunter harvested elk in this herd unit for exposure to the bacterium *Brucella abortus.* No new seropositive elk have been detected in this unit in the last four years. More information is available on the Brucellosis in Wyoming Wildlife page of the WGFD website.

2.) Management Objective Review: We do not propose any changes to the herd unit objectives at this time. In the majority of the herd unit, we have not identified any need to change herd unit objectives. We continue to look for harvest opportunities in an area with complicated land ownership boundaries and changing elk behavior while working to improve our trend count methods. However, we have identified a concerning trend in the northeast corner of the herd unit. There is considerable interchange between wintering groups of elk in the northern portion of hunt area 34 and the southern portion of hunt area 35. Hunt area 35 is in the North Bighorns elk herd unit, which has complicated the annual counting and reporting of our mid-winter trend counts since 2017. We have initiated structured meetings with landowners in the area of concern to discuss potential management solutions. We do not feel it is appropriate to initiate any herd unit objective changes until we complete this effort. We have identified some potential options that should be considered and we expect this list to expand as a result of our forthcoming landowner meetings:

1. Move hunt area 35 from the North Bighorn herd unit to the South Bighorn herd unit
2. Move the hunt area 34/35 boundary to the south
3. Assess merits of Limited Quota vs. General license types

3.) Chronic Wasting Disease Management: This is a Tier 2 surveillance herd and will be targeted for CWD sampling beginning in 2022.

4.) Additional hunter harvest survey question: In an effort to better understand how harvest metrics (success) and pressure on limited public lands are related, hunters from hunt areas 33 and 34 were asked additional questions during the harvest survey. Results indicate that pressure is widely distributed through land ownership status (public/private) and hunt types (outfitted/non-outfitted). Success rates were much higher for guided license holders (67% to 100%) as compared to non-guided license holders (6% to 43%) for all license types in both hunt areas. Success rates for license holders hunting on mostly or all on private land was also higher (63% to 90%) as compared to those that hunted on mostly or all public land (19% to 50%), with the exception of the area 34 type 6 license holders, with success rates of 44%, 56%, and 25% on mostly private land, mostly public land, and an even mix, respectively (Tables 1 & 2).

Table 1. Success rates based on if an outfitter or guide was used.

Hunt Area	License Type	Sample Size	Success Guide	Success No Guide
33. Middle Fork	Limited 1	28	80%	43%
	Limited 4	24	100%	6%
	Limited 6	23	100%	20%
34. Upper Powder River	Limited 1	39	100%	42%
	Limited 6	36	67%	43%

Table 2. Success rates based on if hunt was primarily on public, private land, or an even mix.

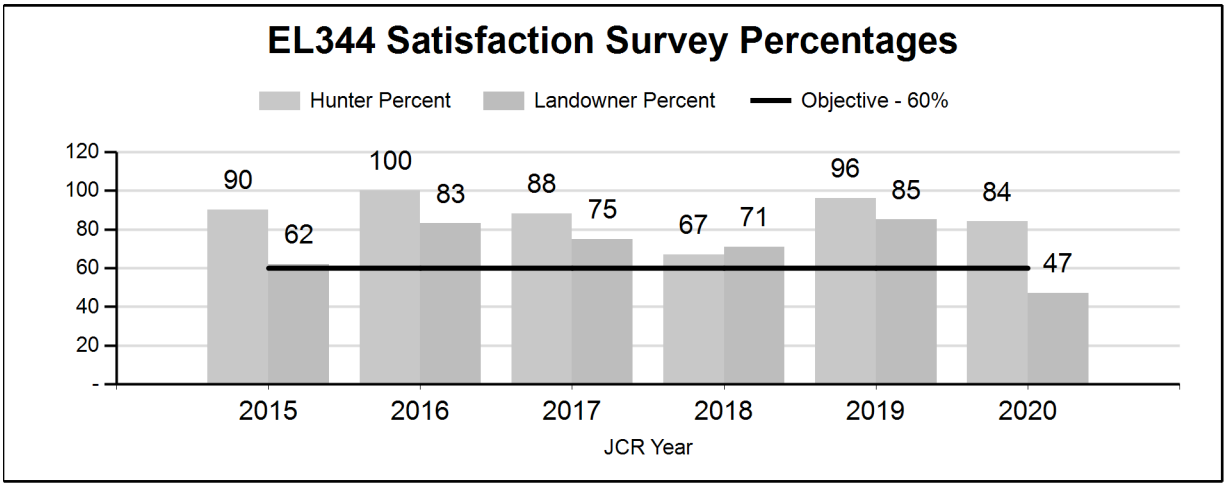
Hunt Area	License Type	Sample Size	Success Private	Success Public	Success Even Mix
33. Middle Fork	Limited 1	27	63%	50%	20%
	Limited 4	24	90%	0%	0%
	Limited 6	23	67%	19%	0%
34. Upper Powder River	Limited 1	39	85%	35%	33%
	Limited 6	36	44%	56%	25%

2020 - JCR Evaluation Form

SPECIES: Elk
PERIOD: 6/1/2020 - 5/31/2021
HERD: EL344 - ROCHELLE HILLS
HUNT AREAS: 113, 123
PREPARED BY: ERIKA PECKHAM

	2015 - 2019 Average	2020	2021 Proposed
Hunter Satisfaction Percent	88%	84%	60%
Landowner Satisfaction Percent	74%	47%	60%
Harvest:	105	165	150
Hunters:	117	210	300
Hunter Success:	90%	79%	50%
Active Licenses:	124	221	275
Active License Success:	85%	75%	55%
Recreation Days:	476	1,008	900
Days Per Animal:	4.5	6.1	6
Males per 100 Females:	51	0	
Juveniles per 100 Females	43	0	

Satisfaction Based Objective	60%
Management Strategy:	Private Land
Percent population is above (+) or (-) objective:	6%
Number of years population has been + or - objective in recent trend:	7



2021 HUNTING SEASONS
ROCHELLE HILLS ELK HERD (EL344)

Hunt Area	Hunt Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
113	1	Sept. 1	Sept. 30	Nov. 5	Nov. 30	75	Any elk
113	4	Sept. 1	Sept. 30	Nov. 5	Nov. 30	75	Antlerless elk
123	4	Sept. 1	Sept. 9	Oct. 20	Nov. 30	75	Antlerless elk
123	6	Sept. 1	Sept. 9	Oct. 20	Nov. 30	75	Cow or calf

2020 Hunter Satisfaction: 84% Satisfied, 9% Neutral, 7% Dissatisfied

2021 Management Summary

1.) Hunting Season Evaluation: License issuance was modified from the 2020 hunting season in both hunt areas, which is typical for this herd. Hunt Area 123 is a predominantly private access hunt. The season structure is coordinated on an annual basis with participating landowners. Although elk numbers in this hunt area remain high, and are increasing, landowner satisfaction is also high, with the 6 out of the 7 respondents satisfied with the number of elk. The license issuance and hunting season structure for 2021 was designed to work with landowners allowing hunting and to ensure a quality hunting experience in a limited public land hunt area.

The majority of dissatisfied landowners reside within Hunt Area 113 and there is overall concern that there are too many elk in this hunt area. This has been a concern that has grown gradually over the last few years. Eight out of 10 respondents in Hunt Area 113 feel that there are too many elk. The last time this season structure was implemented in 2019, there were only 40 Type 1 and 40 Type 4 licenses available. The increase in both Type 1 and Type 4 licenses will aim to address the elk density issue. Hunt Area 113 has a fair amount of public land and has historically rotated with no hunting, cows only, and cows and bulls in a given year.

This herd has a satisfaction objective, with the goal of having at least 60% hunter and 60% landowner satisfaction. The 2020 harvest data illustrates an 84% hunter satisfaction, well above the requisite 60%. Conversely, this is the first year that the landowner satisfaction has not met the 60% threshold, coming in at 47%. As outlined above, the current season structure will address the concerns of each hunt area.

Although Hunt Area 123 has a three-year average success rate of 81%, this area is predominantly private land access. To issue more licenses would lead to an abundance of licenses with next to nowhere for hunters to go.

MOOSE

2020 - JCR Evaluation Form

SPECIES: Moose
HERD: MO313 - BIGHORN
HUNT AREAS: 1, 34, 42

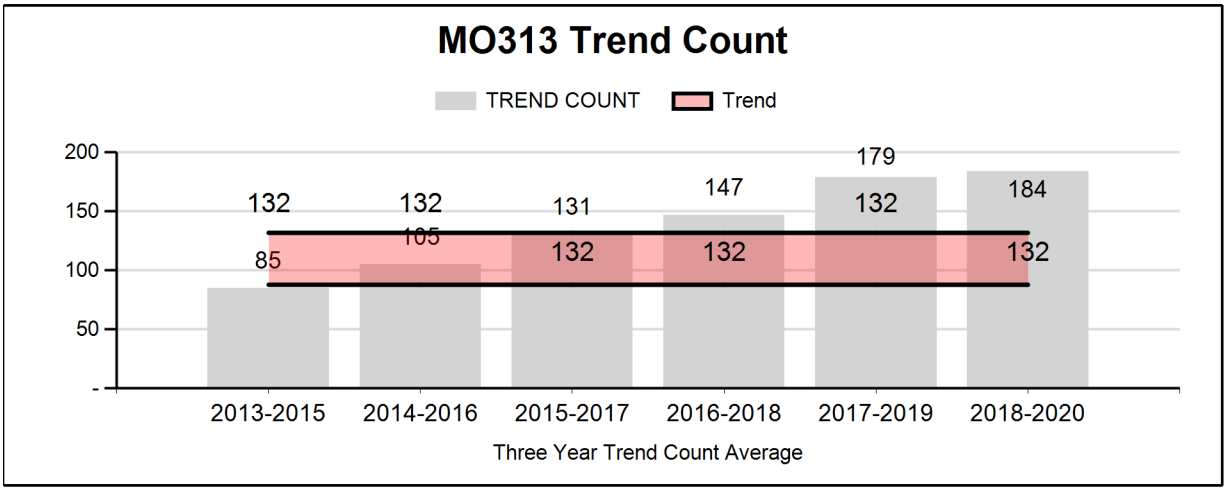
PERIOD: 6/1/2020 - 5/31/2021
PREPARED BY: TIM THOMAS

	2015 - 2019 Average	2020	2021 Proposed
Trend Count:	156	163	150
Harvest:	20	30	42
Hunters:	22	30	45
Hunter Success:	91%	100%	93%
Active Licenses:	22	30	45
Active License Success	91%	100%	93%
Recreation Days:	209	353	450
Days Per Animal:	10.4	11.8	10.7
Males per 100 Females:	83	58	
Juveniles per 100 Females	46	32	

Trend Based Objective (± 20%)	110 (88 - 132)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	48%
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:	0%	5%
Males ≥ 1 year old:	25%	20%
Juveniles (< 1 year old):	0%	1%



2020 HUNTING SEASONS
BIGHORN MOOSE HERD (MO313)

Hunt Area	Type	Archery Dates		Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
1	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	10	Any moose, except cow moose with calf at side
	4	Sep. 1	Sep. 30	Oct. 1	Oct. 31	5	Antlerless moose, except cow moose with calf at side
34	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	10	Any moose, except cow moose with calf at side
	4	Sep. 1	Sep. 30	Oct. 1	Oct. 31	5	Antlerless moose, except cow moose with calf at side
42	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	10	Any moose, except cow moose with calf at side
	4	Sep. 1	Sep. 30	Oct. 1	Oct. 31	5	Antlerless moose, except cow moose with calf at side

Management Evaluation
Trend Count Management Objective: 110 ± 20% (88-132)
Hunt Area Sub-Objectives: Area 1 – 50; Area 34 – 30; Area 42 – 30
Management Strategy: Special

2020 Trend Count: 163 moose (Area 1 = 76; Area 34 = 45; Area 42 = 42)
2018-2020 Running Average: 184 (Area 1 = 88; Area 34 = 47; Area 42 = 48)

2021 Management Summary

1.) Hunting Season Evaluation: We manage this herd on a Trend Count objective. Over the past four years, we have observed more moose in each hunt area then desired. In response to the increased number of moose observed across the herd unit, we added Type 4 licenses valid for antlerless moose, with five licenses in each hunt area. We maintained Type 1 licenses at 10 for each hunt area.

The opening date for the archery preseason was moved to September 1st to standardize statewide with other moose hunt areas and provide additional opportunity. Since moose are highly visible during early September, there is some concern with moose being harvested in highly visible areas.

There is an ongoing research project in this herd unit, with approximately 58 females currently collared. Collars started dropping off in March 2020, with more scheduled to drop off through 2021. Due to the large investment we have in each collared moose, managers were reluctant to hunt females until the majority of collars dropped. With this study winding down and indices suggesting a growing population, managers are comfortable introducing limited antlerless harvest.

All Wyoming moose herds are managed for a high bull to cow ratio (i.e. 50-70 bulls:100 cows), preferably with a diverse age structure. In Area 1, managers generally observed lower than desired bull:cow ratios, averaging 35 bulls:100 cows over the past five years. Even though we observed fewer bulls than desired, the age structure of harvested bulls in Area 1 indicate we have maintained an adequate number of mature bulls. In Area 34, we observed an average of 87 bulls:100 cows over the past five years, although sample sizes are small. In Area 42, managers observed higher than desired bull:cow ratios four of the past five years, averaging 105 bulls:100 cows.

Hunters, on average, have been harvesting mature bulls during the past three years. Approximately 47% of the harvested males have been five years or older based on the 3-year running average, above the desired 40% threshold. The median age of harvested bulls was 4.0 years old for the 3-year running average, at the desired minimum (≥ 4 years old). An 11-year old bull was harvested in 2020 in Hunt Area 42. Within the herd unit, 24% of the harvested bulls were 8-11 years old. These data suggest we have maintained a good male age structure in this population.

2.) Management Objective Review: This herd is scheduled for its next 5-year herd unit review in 2025.

3) Research: We initiated a research project in 2017 looking at moose movements and season habitat use. Collars started dropping off in March 2020 and continued into 2021. A master's thesis for this project should be completed by the end of 2021.

The University of Wyoming initiated a research project in January 2020 looking at the use of fecal DNA for a modified mark/recapture density estimation technique. Fecal samples have been collected over the past two winters. Analysis to identify individual animals will occur during the summer of 2021. The results of this study may inform managers how current survey techniques and management objectives relate to an independent population estimate.