

MULE DEER

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2015 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2015 - 5/31/2016

HERD: MD319 - POWDER RIVER

HUNT AREAS: 17-18, 23, 26

PREPARED BY: ERIKA PECKHAM

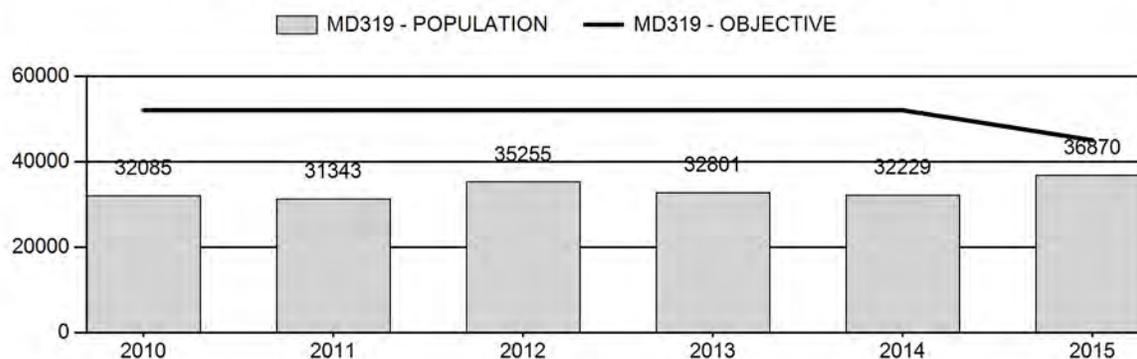
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	32,743	36,870	38,082
Harvest:	2,564	2,883	2,990
Hunters:	3,859	3,903	3,900
Hunter Success:	66%	74%	77%
Active Licenses:	4,017	4,105	4,180
Active License Success:	64%	70%	72%
Recreation Days:	15,281	14,499	15,550
Days Per Animal:	6.0	5.0	5.2
Males per 100 Females	39	50	
Juveniles per 100 Females	75	80	

Population Objective (± 20%) : 45000 (36000 - 54000)
 Management Strategy: Private Land
 Percent population is above (+) or below (-) objective: -18.1%
 Number of years population has been + or - objective in recent trend: 4
 Model Date: 2/22/2016

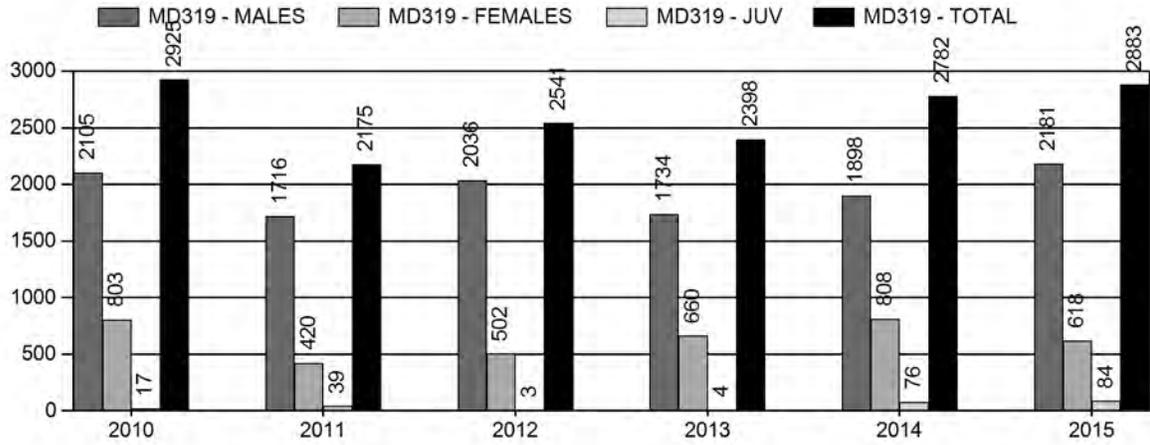
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	6.8%	3%
Males ≥ 1 year old:	29.6%	21.3%
Juveniles (< 1 year old):	0%	.7%
Total:	8.8%	7.2%
Proposed change in post-season population:	-9.7%	3.2%

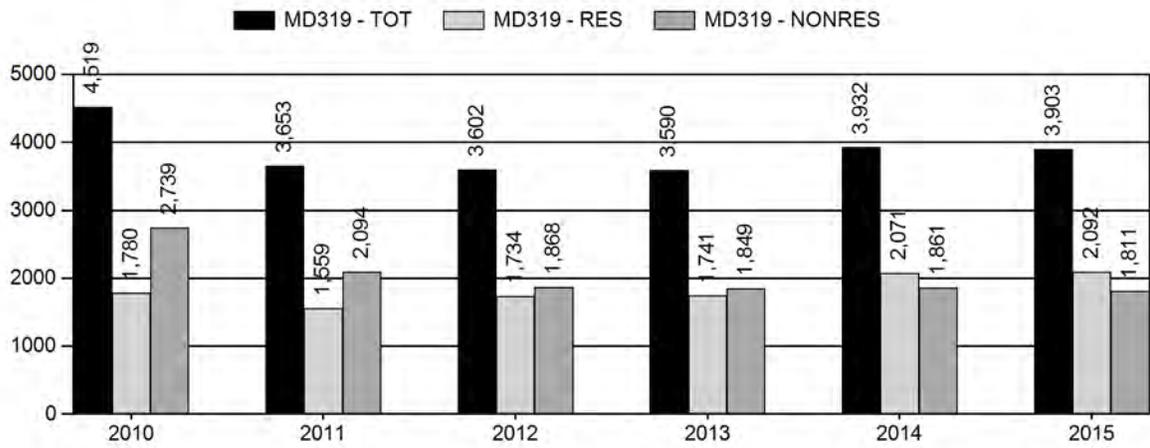
Population Size - Postseason



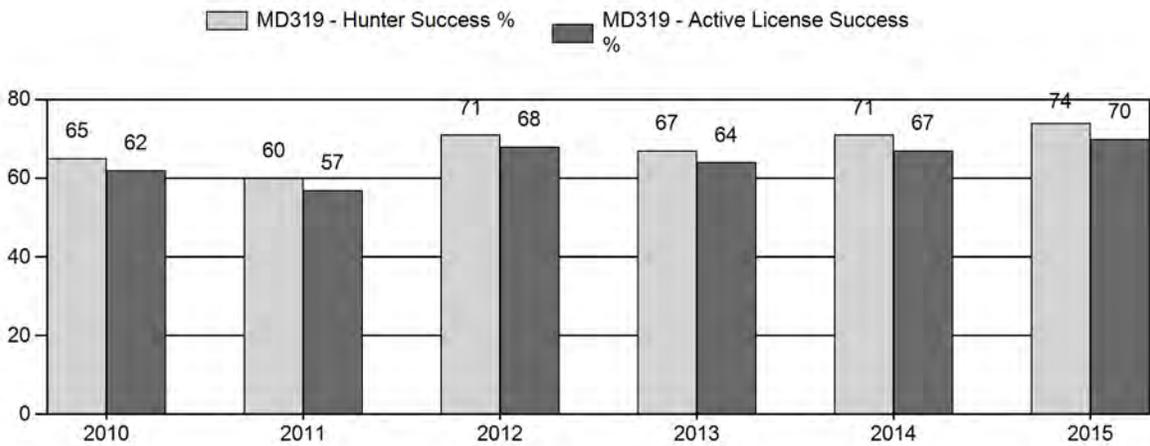
Harvest



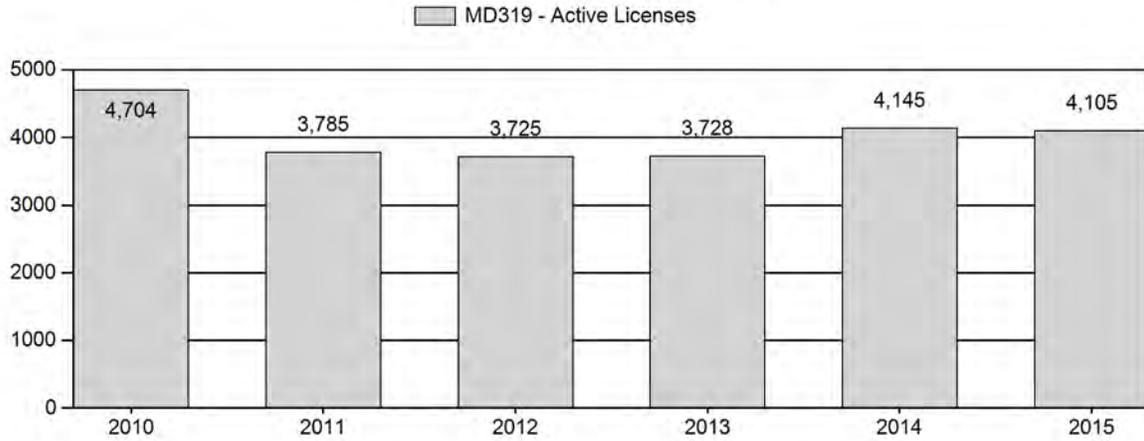
Number of Hunters



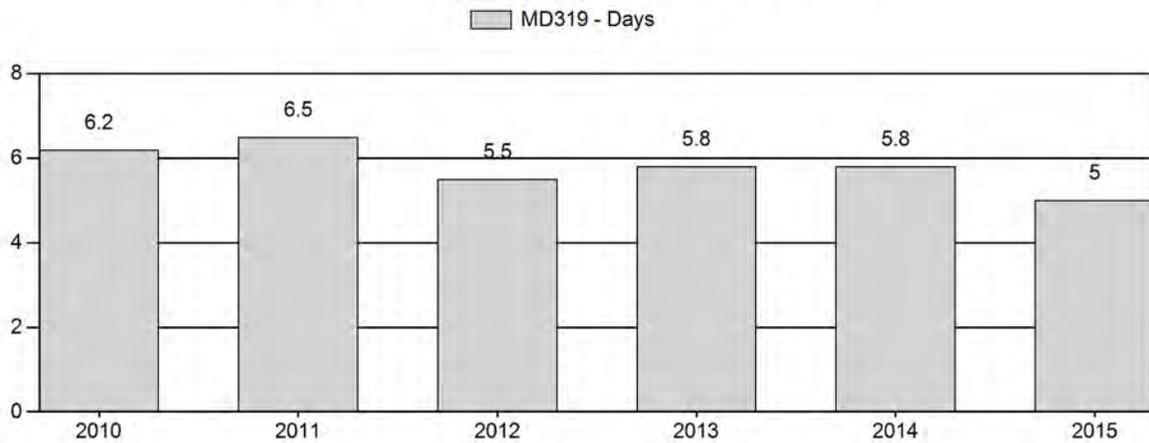
Harvest Success



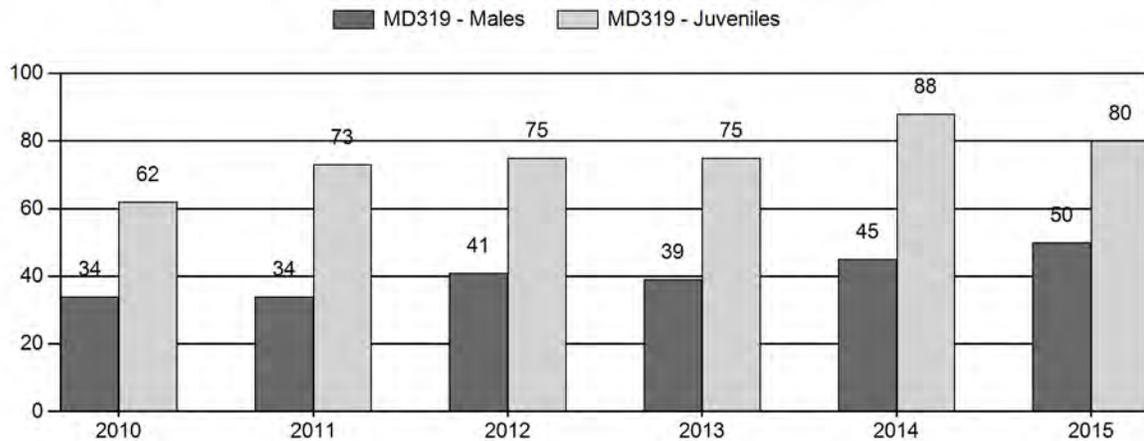
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD319 - POWDER RIVER

Year	Post Pop	MALES								FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Yng			Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult	
2010	32,085	91	0	0	0	364	455	17%	1,348	51%	832	32%	2,635	1,494	7	27	34	± 2	62	± 3	46	
2011	31,343	110	0	0	0	241	351	16%	1,040	48%	755	35%	2,146	1,645	11	23	34	± 3	73	± 4	54	
2012	35,255	260	0	0	0	332	592	19%	1,459	46%	1,088	35%	3,139	1,785	18	23	41	± 2	75	± 4	53	
2013	32,801	168	0	0	0	488	656	18%	1,665	47%	1,247	35%	3,568	1,594	10	29	39	± 2	75	± 3	54	
2014	32,229	230	0	0	0	534	764	19%	1,714	43%	1,508	38%	3,986	1,556	13	31	45	± 2	88	± 4	61	
2015	36,870	185	0	0	0	435	620	22%	1,234	43%	987	35%	2,841	2,056	15	35	50	± 3	80	± 4	53	

**2016 HUNTING SEASONS
POWDER RIVER MULE DEER HERD (MD319)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
17		Oct. 1	Oct. 20		General	Antlered mule deer or any white-tailed deer
18		Oct. 1	Oct. 20		General	Antlered mule deer or any white-tailed deer
23		Oct. 1	Oct. 14		General	Antlered deer off private land, any deer on private land
26		Oct. 1	Oct. 14		General	Antlered deer off private land, any deer on private land
23, 26	6	Oct. 1	Dec. 15	2,000	Limited quota	Doe or fawn valid on private land

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
17, 18, 23, 26	Sep. 1	Sep. 30

SUMMARY OF CHANGES IN LICENSE NUMBERS

Hunt Area	Type	Quota change from 2015
23,26	6	+100
Herd Unit Total	6	+100
Region C Quota		+100

Management Evaluation

Current Postseason Population Management Objective: 45,000

Management Strategy: Private Lands

2015 Postseason Population Estimate: ~36,900

2016 Proposed Postseason Population Estimate: ~38,100

2015 Hunter Satisfaction: 81% Satisfied, 13% Neutral, 6% Dissatisfied

Herd Unit Issues

The postseason population objective for the Powder River Mule Deer Herd is 45,000 mule deer. The management strategy is private lands management. The objective and management strategy were last reviewed and updated in 2015. The postseason management objective was decreased from 52,000, while the management strategy was changed from recreational management to private lands management.

Issues associated with this herd include difficult hunter access to private land and trying to balance private and public land use. Nearly all landowners charge access fees or outfit for buck hunting, and tend to cater to non-resident hunters. This results in nonresidents comprising the majority of the hunters in this herd unit. Most of the public land hunters utilize GPS technologies which help them to find smaller pieces of unmarked public lands; however, this accessibility has increased the complaints of trespass and congestion by neighboring landowners.

Extensive coal bed methane development has occurred in the herd unit and has resulted in a network of roads and other development associated with the infrastructure required to support coal bed methane extraction. This development has tapered off substantially and in certain areas wells are being plugged and abandoned. Proper reclamation will be integral in keeping the habitat intact going into the future.

For various reasons, this herd has been well below objective for several years. This factor was considered when the decision was made to lower the objective in 2015, as it was unlikely that the herd would return to the previous objective in the near future. The 2015 post-season population estimate was about 36,900, which is still below the current objective of 45,000. Around 2008 the population experienced a declining trend in numbers and poor fawn recruitment, likely influenced by weather factors. This was especially true in Hunt Areas 17 and 18. Fawn ratios in 2014 and 2015 were markedly improved in these areas.

Weather

Weather throughout 2014 and into 2015 was optimal for rangeland conditions in this area. The growing season commenced with plentiful rainfall and ideal conditions to produce ample forage. The winter of 2014-2015 was moderate with not much for snow accumulation, or prolonged snow cover. The winter of 2015-16 was mild with minimal snow and frequent above average temperatures. The Palmer Drought Index indicates that throughout 2015, the conditions in the Powder River drainage were mostly “mid-range” interspersed with 4 months of “moderately moist”. During the majority of these two winters, the ground was open, with minimal snowpack. Conditions regarding both drought and severity of winters were optimal for production and survival.

Habitat

Overall, the growing season of 2015 was productive. Moisture was received at critical points throughout the growing season, which allowed for excellent rangeland conditions in most areas. The body condition of the animals going into the winter appeared to be very good. Given the moderate winter of 2015-2016, the deer continue to be in good condition. There is a Wyoming big sagebrush habitat transect located within this herd unit. The utilization is typically very light on this transect. In the fall of 2015, the transect survey showed the average leader growth to be 6.2 cm, which is higher than the 10 year average. Given the favorable moisture received, this was to be expected.

Field Data

Although all hunt areas have experienced a decline in the recent past, it appears that Areas 17 and 18 were impacted greater than 23 and 26. In 2009 and continuing into 2010 there was a sharp drop in the fawn:doe ratio to 55 and 62 respectively. Beginning in 2011, there was an improvement and fawn production increased into the 70's. 2014 had the highest fawn ratio on record for this herd at 88. This upward trend from poor fawn ratios has continued into 2015 with this year's classification observations indicating a fawn ratio of 80 fawns per 100 does.

Over the past several years, the buck ratio has remained fairly constant. The preceding 5 year average was 39 bucks per 100 does, which ranged anywhere from 38-45.

As this is a predominantly private land area, postseason landowner surveys are also considered. In 2015 the survey was fairly split with 38% of respondents stating that deer were below desired levels and 49% stating that they were at desired levels. Only 13% of respondents felt that there were more deer than desired. Although the past few years there was a difference in opinion of deer numbers west vs. east of the Powder River, it appears that this year that disparity has lessened. In Hunt Areas 23 and 26 of those who responded 63% felt that the deer were at or above where they would like to see them. Concerning Hunt Areas 17 and 18, 61% of respondents feel that deer are at or above objective.

Harvest Data

The harvest survey indicated that in 2015 there were around 2,900 animals harvested in this herd unit. Buck harvest increased from ~1,900 to ~2,200 despite no change in the Region C quota. In Areas 23 and 26 the Type 6 limited quota licenses were increased from 1,900 to 2,000 licenses for 2016, still valid only on private land. Comments have been received from landowners and hunters that licenses sold out in 2015 and they were unable to achieve desired harvest on private lands, primarily for white-tailed deer. It is anticipated that the majority of the harvest with these licenses will be white-tailed deer. Hunter success in this herd unit has averaged 67% over the preceding 5 years, with 2015 experiencing an overall success rate of 74%.

Hunter satisfaction was reported as 70% indicating that they were "very satisfied" or "satisfied". As Game and Fish personnel talk to hunters they advise people to obtain private access in this portion of the state as there is limited public land. Hunters that hunt on private land usually enjoy a high success rate, which is typically correlated to satisfaction. However, it should be noted that in speaking to people on public lands, many people were disappointed with the lack of animals, although anecdotal comments seem improved from a few years ago.

Population

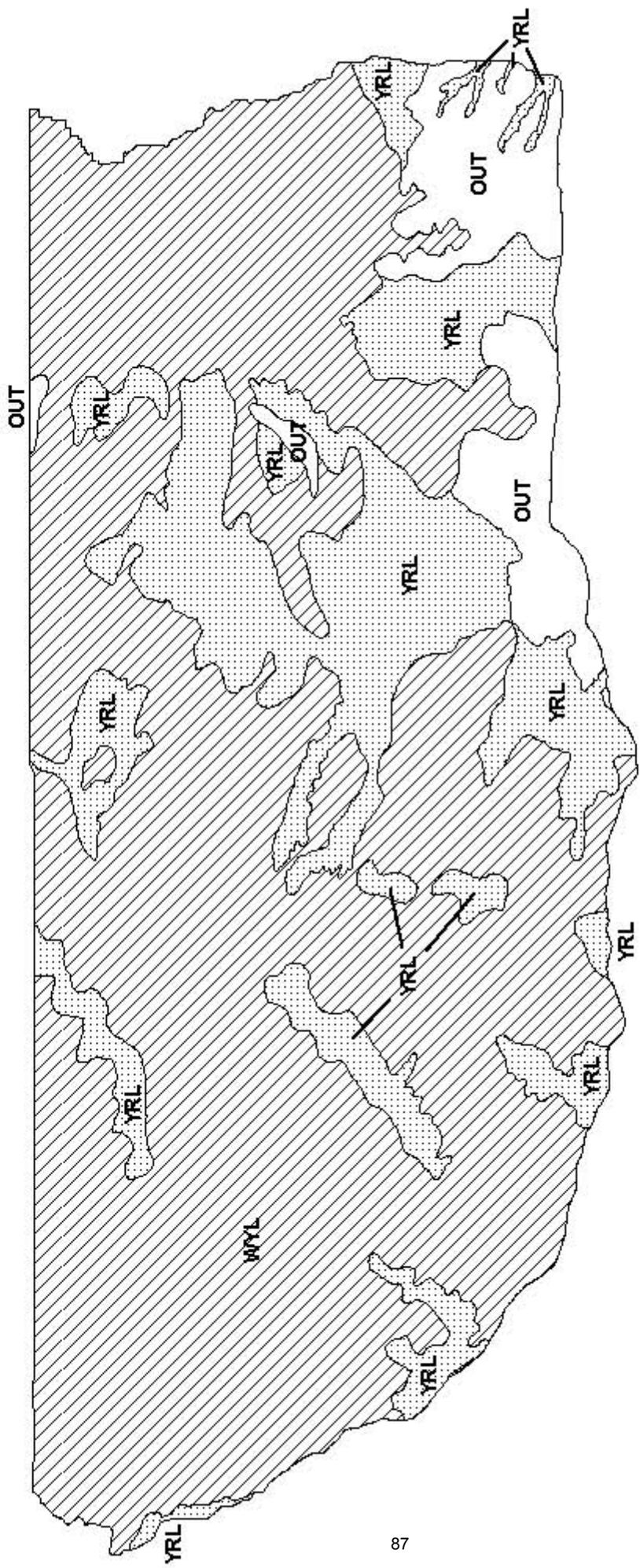
This herd is estimated at ~36,900 mule deer which is around 22% below objective. The "Semi-Constant Juvenile -Semi-Constant Adult Mortality Rate" (SCJ-SCA) spreadsheet model was chosen to use for the post season population estimate of this herd. This model had the lowest AIC value (120) and seemed to represent what has been occurring on the ground (fair model). It should be noted that in the past the "Time Specific Juvenile-Constant Adult" model was used.

Conditions on the day of the aerial classification survey in Deer Area 23 were very poor with much fewer deer observed than anticipated. It seems that it is possible that this may have affected the past model that was used, as the AIC was much higher and the trend did not appear to track with field observations or management data. There is no independent population estimate for this herd. The model indicates that in 2008 the population peaked and began a sharp decline thereafter and began an ascent in 2011. This model appears to fairly consistently track with field observations and management data.

Management Summary

Antlerless harvest has been maintained in Hunt Areas 23 and 26. In recent years, there have been no Type 6 licenses available in Hunt Areas 17 and 18 due to very depressed deer numbers as a partial result of poor fawn production. Private landowners typically allow access based on the number of hunters that can be accommodated for the harvest they believe is appropriate for their ranch. In years of suppressed deer numbers, the harvest on private lands has likely been proportionally reduced. If we attain the projected harvest of 2,990 deer and experience similar fawn recruitment as seen the last few years, it is anticipated that the population will increase. Based on the population model we predict a 2016 post-season population of about 38,100.

We increased the nonresident Region C deer quota by 100 licenses to 2,200 licenses for the 2016 season. Region C contains Hunt Areas 17, 18, 23 and 26 of the Powder River Herd, and 19, 29 and 31 of the Pumpkin Buttes Herd. After several years of decline in these areas, beginning in 2014 there was an increase in the fawn ratio in these two herds. It appears that the herd has begun to trend upward and if favorable conditions persist will continue to move toward the population objective.



Mule Deer (MD319) - Powder River
HA 17, 18, 23, 26
Revised - 3/87

2015 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2015 - 5/31/2016

HERD: MD320 - PUMPKIN BUTTES

HUNT AREAS: 19-20, 29, 31

PREPARED BY: DAN THIELE

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	11,771	12,926	12,985
Harvest:	641	620	620
Hunters:	1,004	927	975
Hunter Success:	64%	67%	64 %
Active Licenses:	1,025	937	985
Active License Success:	63%	66%	63 %
Recreation Days:	3,862	3,509	3,600
Days Per Animal:	6.0	5.7	5.8
Males per 100 Females	40	45	
Juveniles per 100 Females	68	71	

Population Objective (± 20%) : 13000 (10400 - 15600)

Management Strategy: Private Land

Percent population is above (+) or below (-) objective: -0.6%

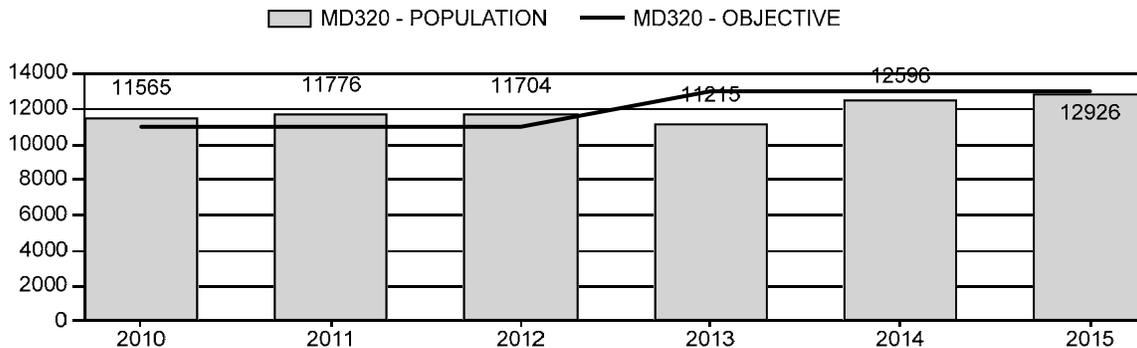
Number of years population has been + or - objective in recent trend: 0

Model Date: 2/19/2016

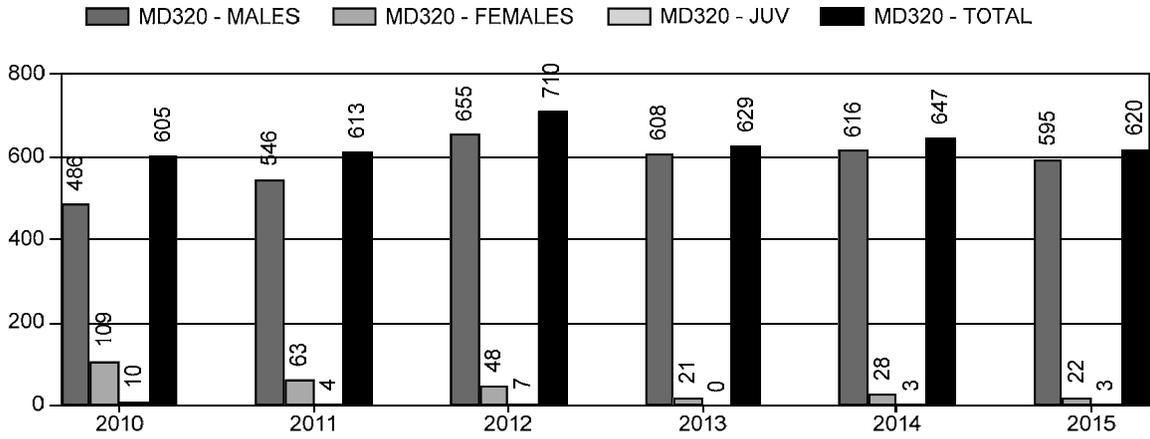
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	18%	19%
Juveniles (< 1 year old):	0%	0%
Total:	5%	5%
Proposed change in post-season population:	+2%	+1%

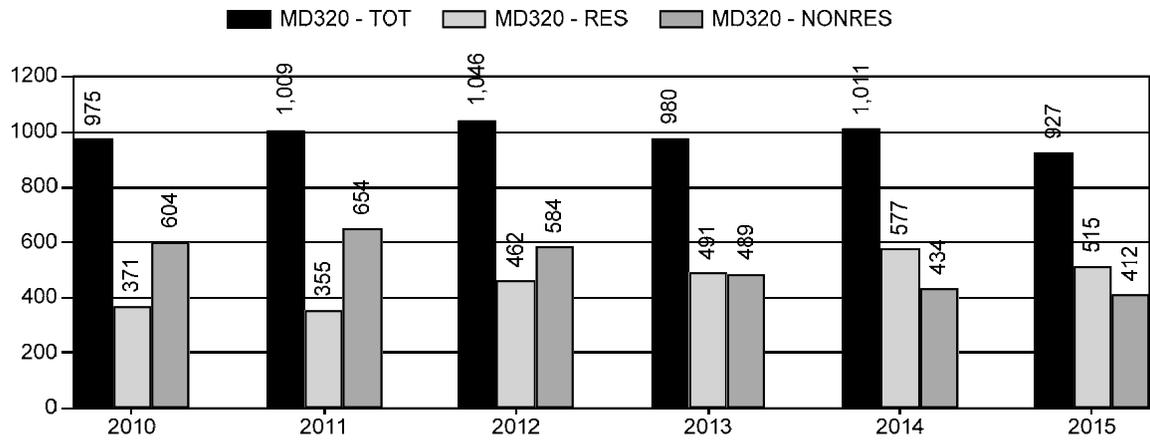
Population Size - Postseason



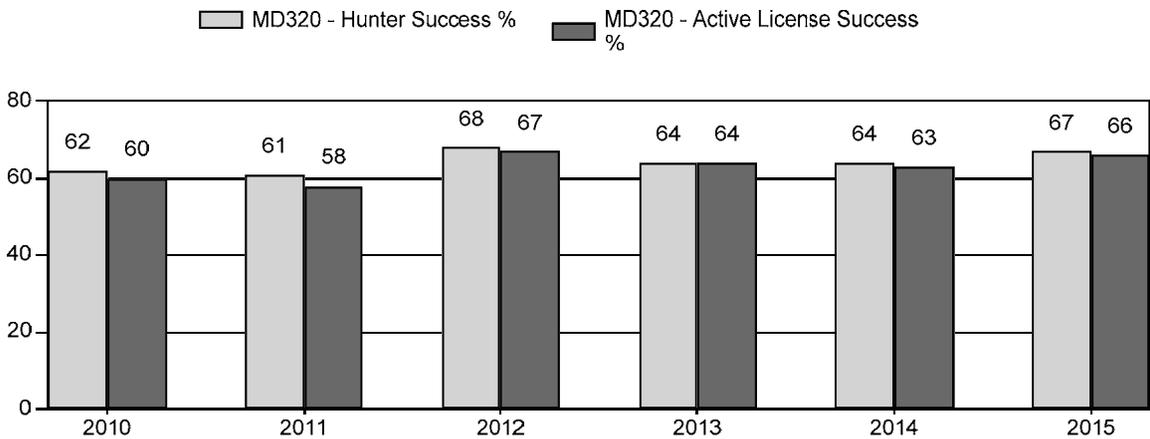
Harvest



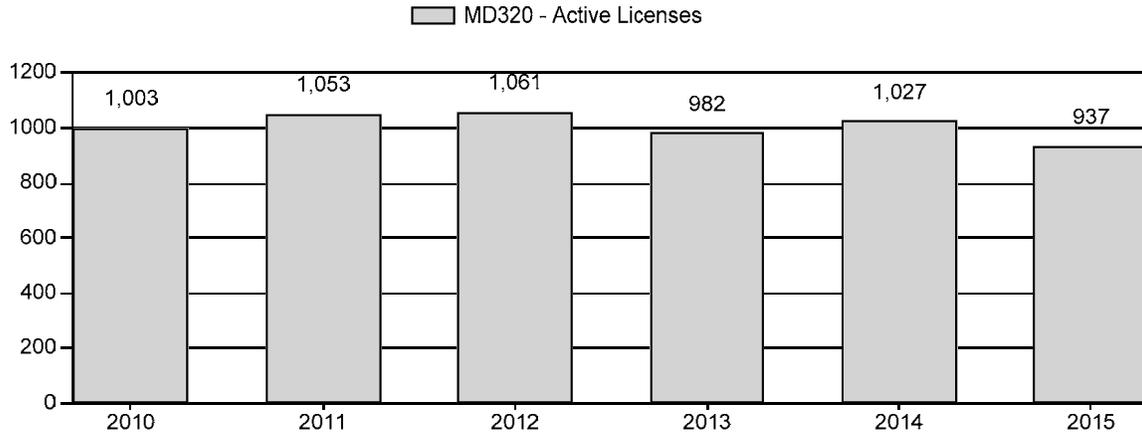
Number of Hunters



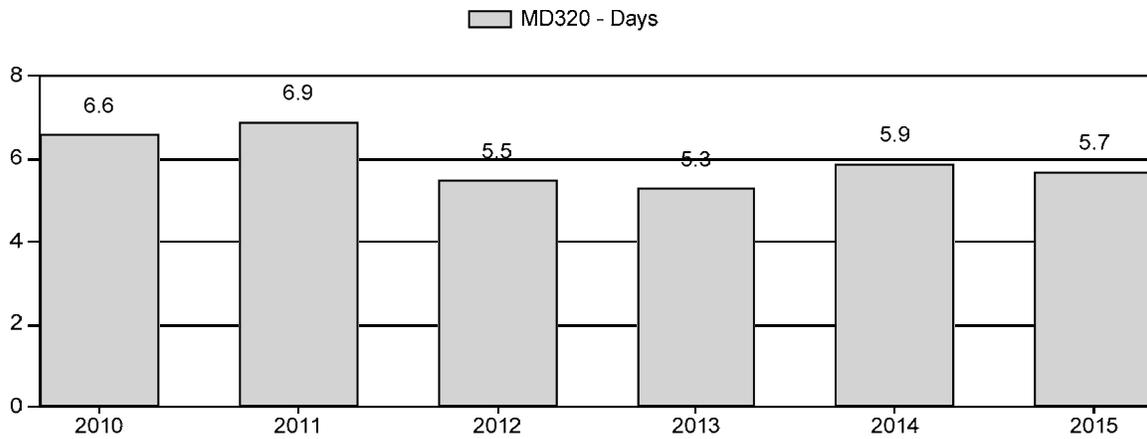
Harvest Success



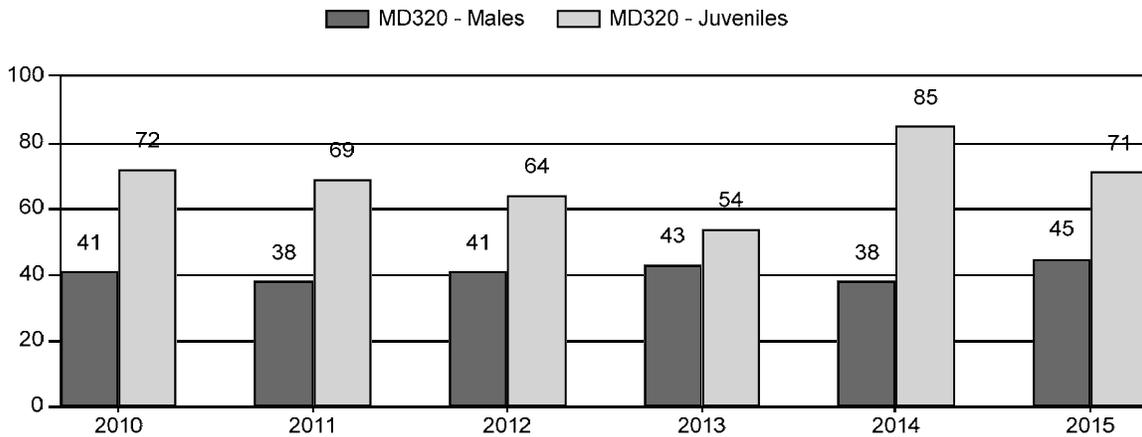
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD320 - PUMPKIN BUTTES

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females			Young to			
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	11,565	75	0	0	0	198	273	19%	659	47%	477	34%	1,409	1,493	11	30	41	± 4	72	± 5	51
2011	11,776	76	0	0	0	225	301	18%	795	48%	545	33%	1,641	1,362	10	28	38	± 3	69	± 5	50
2012	11,704	119	0	0	0	182	301	20%	732	49%	470	31%	1,503	1,234	16	25	41	± 3	64	± 5	45
2013	11,215	96	201	121	2	0	420	22%	977	51%	525	27%	1,922	979	10	33	43	± 3	54	± 3	38
2014	12,596	81	182	58	3	0	324	17%	849	45%	721	38%	1,894	1,942	10	29	38	± 3	85	± 5	61
2015	12,926	139	180	62	6	23	410	21%	903	46%	642	33%	1,955	1,521	15	30	45	± 3	71	± 4	49

**2016 HUNTING SEASONS
PUMPKIN BUTTES MULE DEER HERD (MD320)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
19		Oct. 1	Oct. 20		General	Antlered mule deer
19	6	Oct. 1	Oct. 20	50	Limited quota	Doe or fawn valid on private land
29		Oct. 1	Oct. 14		General	Antlered deer off private land, any deer on private land
31		Oct. 1	Oct. 10		General	Antlered deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
19, 29, 31	Sep. 1	Sep. 30

Region	Deer Hunt Areas	Quota
C	17-19, 23, 26, 29, 31	2200

SUMMARY OF CHANGES IN LICENSES NUMBERS

Hunt Area	Type	Quota change from 2015
19	6	+25
Herd Unit Total	6	+25
Region C		+100

Management Evaluation

Current Postseason Population Management Objective: 13,000

Management Strategy: Private Lands

2015 Postseason Population Estimate: ~12,900

2016 Proposed Postseason Population Estimate: ~12,900

2015 Hunter Satisfaction: 75% Satisfied, 13% Neutral, 22% Dissatisfied

Herd Unit Issues

The Pumpkin Buttes Mule Deer Herd Unit post-season population objective was reviewed in 2013 and revised from 11,000 to 13,000 deer. The management strategy was changed from recreational to private lands management.

In 2016, Hunt Area 20 was incorporated into Hunt Area 19 to simplify the deer hunt area map and more closely match the antelope Hunt Area 23 boundary.

This herd unit is largely private land with limited areas of accessible public lands. Limiting hunting on public lands to antlered deer helps maintain hunting recreation for those unable or unwilling to access private lands.

Coalbed methane gas development has slowed after more than 10 years of intense development in Areas 19 and 20 and the northeast portion of Area 29. Interest in deep oil has also decreased with plunging energy prices. As methane wells are plugged and abandoned, the BLM is working to remove infrastructure and eliminate and reclaim well pads and unneeded roads.

Weather

Weather in the area of the Pumpkin Buttes Herd Unit during 2015 was very favorable for the second year in a row. May precipitation was double the normal followed by above normal June precipitation (132%). The Palmer Drought Index for Climate Division 5 (Powder, Little Missouri and Tongue drainages) showed “mid-range” conditions for May 2015 but improved to “moderately moist” in July and remained so for the rest of the biological year. For the calendar year, precipitation was normal but produced excellent forage growth due to the favorable rainfall during the growing season. Winter weather was very mild with moderate temperatures and limited snowfall.

Habitat

There are two Wyoming big sagebrush transects in this herd unit. Production measured in September 2015 averaged 5.3 cm per leader at Indian Creek in Hunt Area 29 compared to 2.2 cm per leader in 2014 and a 5 year average of 2.5 cm. The Schoonover transect in Hunt Area 19 averaged 4.0 cm in 2015 compared to 2.1 cm in 2014 and a 5 year average of 2.0 cm. Utilization during the 2015-16 winter was light (less than 5% of leaders browsed) as mule deer and pronghorn were dispersed over winter/yearlong range. Winter conditions were mild so above average deer mortality was not observed. Complete shrub monitoring results are available in the appendix, Shrub Monitoring Report for the Sheridan Region.

Field Data

The postseason classification survey resulted in a fawn ratio of 71:100 and a buck ratio of 45:100. The fawn ratio was well below the 85:100 recorded in 2014 but still exceeded the 5 year average of 68:100 due to continued favorable precipitation and mild winter weather. The yearling buck ratio (15:100) responded to the high 2014 fawn ratio and excellent overwinter survival thereby boosting the total buck ratio to a six year high of 45:100. At the hunt area scale, ratios ranged from 35:100 in Hunt Area 20 to 47:100 in Hunt Area 19. Buck ratios have exceeded 40:100 four of the last six years due to the private land status of this herd unit and the conservative hunting philosophy of outfitters and landowners. Classifications have included antler classifications the last three years. In 2015, Class I bucks comprised 75% of the adult buck classification while Class II bucks made up 23% and Class III bucks 2%. Hunters were highly satisfied with the 2015 hunting season with 75% expressing satisfaction with their hunt.

Harvest Data

The 2015 harvest survey reported a slight decrease (4%) in harvest and an eight percent decrease in hunter numbers from 2014. Harvest may have decreased due to fewer hunters, however, those

that hunted found better hunting as active license success increased three percent, the highest since 67% was recorded in 2012. Fewer resident (-11%) and nonresident (-5%) hunters participated in 2015. It is interesting to note that resident hunter numbers increased over the six year period and exceeded nonresident hunter numbers the last three years. Traditionally, this private land herd unit has favored nonresident hunters. Very limited antlerless deer harvest is occurring with that cohort of the population comprising less than 5% of the harvest each of the last three years. Field checks indicated that 88% of the buck harvest was adult bucks, reflective of the high buck ratio and private land hunting. The antler classification for field checked bucks was 65% Class I bucks, 28% Class II bucks and 7% Class III bucks. This generally reflects the postseason classification but favors a slightly higher percentage of Class II and III bucks likely due to the predominance of private land and hunter selection for larger bucks. Hunter success increased to the highest level since 2012 and the second highest level for the six year period. The 5% reduction in the 2014 nonresident Region C quota and lower resident hunter numbers combined with an increase in deer numbers is credited. Likewise, hunter effort showed a slight decrease but has remained relatively stable the last four years.

The annual landowner survey results show that landowners continue to desire a higher deer population. Although 47% are satisfied with current numbers, the remaining 53% prefer an increase in numbers. A majority (62%) of Area 19 and Area 20 landowners are satisfied with current deer numbers whereas 60% of combined Areas 29 and 31 landowners desire more deer. The postseason landowner survey shows a strong indication that landowners believe the population has decreased since 2005. In 2005, 38% of responding landowners thought deer numbers were too low compared to 2013 when 64% reported deer numbers too low.

Population

This population is estimated at about 12,900 mule deer, essentially putting this herd at objective. The population estimate was generated with the EXCEL spreadsheet model. No independent population or survival estimates have been collected for this herd. The Semi-Constant Juvenile/Semi-Constant Adult model (SCJ/SCA) was chosen over the Constant Juvenile/Constant Adult model (CJ/CA) even though it had a higher AIC value (133 vs. 105). This model produced fawn survival estimates within the range of parameters selected while the CJ/CA model selected the lowest possible survival rate allowed. The model predicts a relatively stable population from 2003 to 2013 but an increase the last two years with improved fawn ratios, conservative antlerless harvest and mild winters. A 12% increase in the 2014 population is estimated as a result of the high fawn ratio followed by a 3% increase in 2015. Antlerless harvest has been minimal but the fawn ratio has failed to meet the 66:100 required for population growth in two of the last six years. The significant difference in the three models leads to some uncertainty in the credibility of the model. Additionally, independent survival estimates are lacking for this herd so the user manual suggested starting values are applied. Therefore, this model is considered a fair model.

Management Summary

The nonresident Region C license quota has been reduced 600 licenses (22%) over the past four hunting seasons with the last reduction in 2014. The Region C quota was over-subscribed in the 2015 regular draw resulting in applicants with zero points having drawing odds of 56%. Special Draw applicants experienced 100% draw odds. These adjustments reversed trends in decreasing

hunter success and increasing hunter effort. Nonresident hunters harvest proportionally more bucks and are more successful than resident hunters. In this herd unit, nonresident hunters harvested 339 bucks with 84% hunter success compared to the resident hunter harvest of 256 bucks and 53% hunter success. In the Powder River Herd Unit which comprises the remainder of Region C, nonresident hunters harvested 1,207 bucks with 87% hunter success versus resident hunters harvesting 974 bucks with 63% hunter success. Hunter success and hunter effort remain favorable as these data are influenced by private land outfitted hunters. Public land hunters typically have lower hunter success.

Hunting seasons within the Pumpkin Buttes Herd Unit are very conservative with minimal antlerless harvest occurring (<5%) so harvest strategies are not limiting the growth of this herd. Fawn ratios averaged 68:100 for the five year average indicating that low fawn production has limited herd growth. Although hunter statistics and buck ratios are favorable, landowners desire more deer based on the landowner survey. Favorable weather and habitat conditions hold potential that 2016 will result in a favorable fawn ratio and continued herd growth. The 2016 nonresident Region C quota was increased 100 licenses because of improving hunter statistics and increasing buck ratio. Additionally, Hunt Area 20 will be incorporated into Hunt Area 19 and the Hunt Area 19 Type 6 license quota was increased 25 licenses. The population is expected to increase slightly in 2016.

2015 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2015 - 5/31/2016

HERD: MD321 - NORTH BIGHORN

HUNT AREAS: 24-25, 27-28, 50-53

PREPARED BY: TIM THOMAS

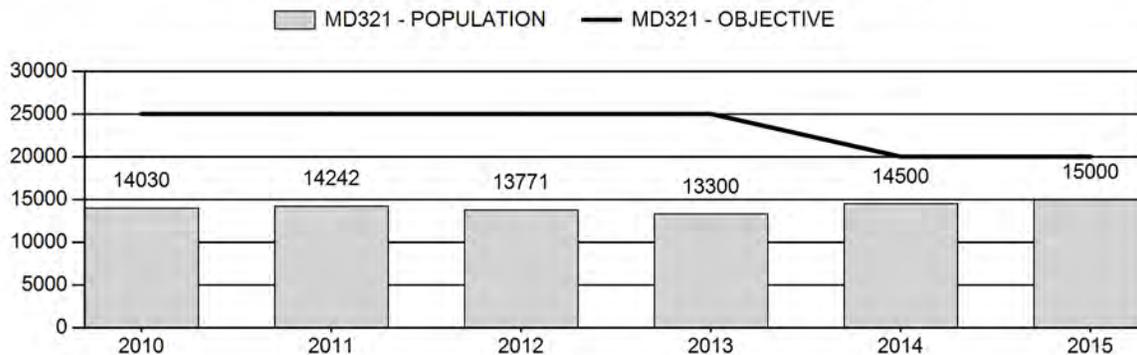
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	13,969	15,000	16,800
Harvest:	1,618	1,513	1,470
Hunters:	3,650	3,630	3,600
Hunter Success:	44%	42%	41 %
Active Licenses:	3,850	3,710	3,700
Active License Success:	42%	41%	40 %
Recreation Days:	18,722	17,951	17,500
Days Per Animal:	11.6	11.9	11.9
Males per 100 Females	33	32	
Juveniles per 100 Females	77	79	

Population Objective (± 20%) :	20000 (16000 - 24000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-25%
Number of years population has been + or - objective in recent trend:	4
Model Date:	2/23/2016

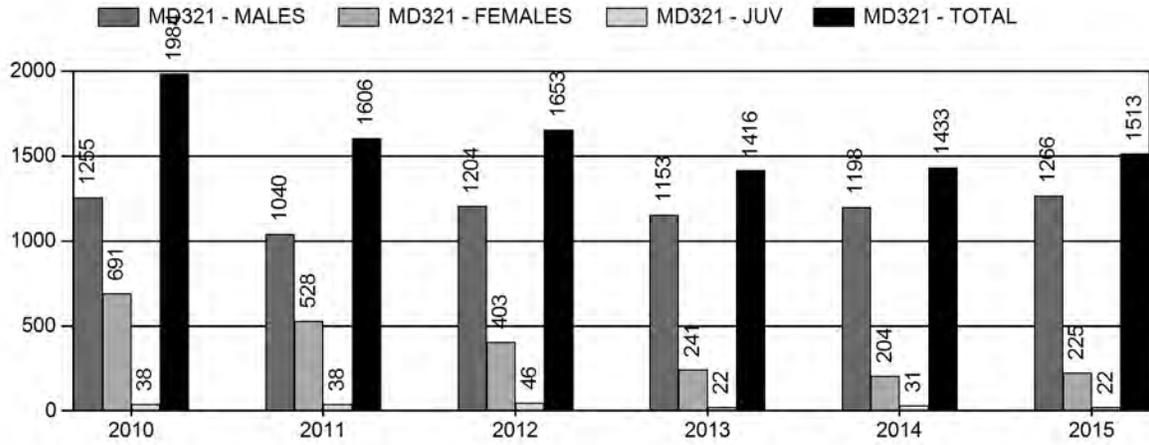
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	3%	3%
Males ≥ 1 year old:	38%	32%
Juveniles (< 1 year old):	1%	1%
Total:	10%	8%
Proposed change in post-season population:	5%	12%

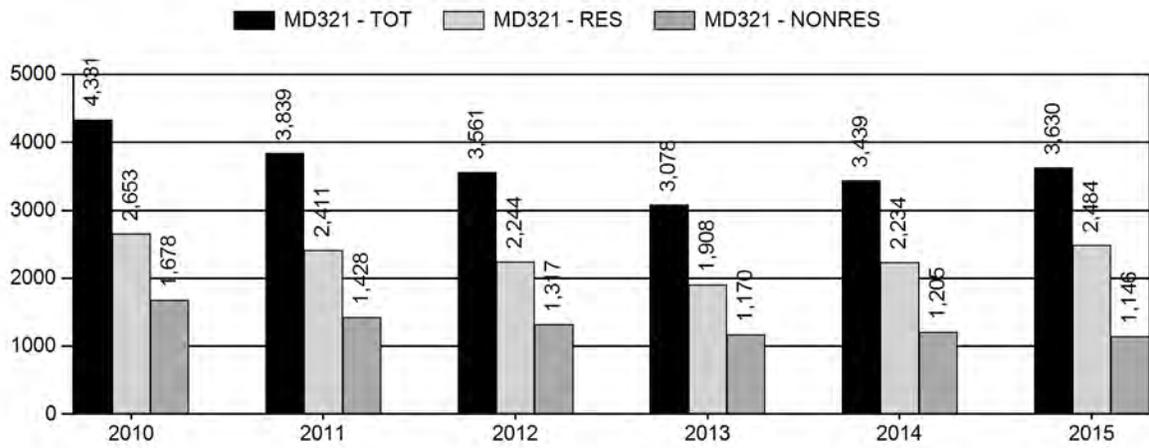
Population Size - Postseason



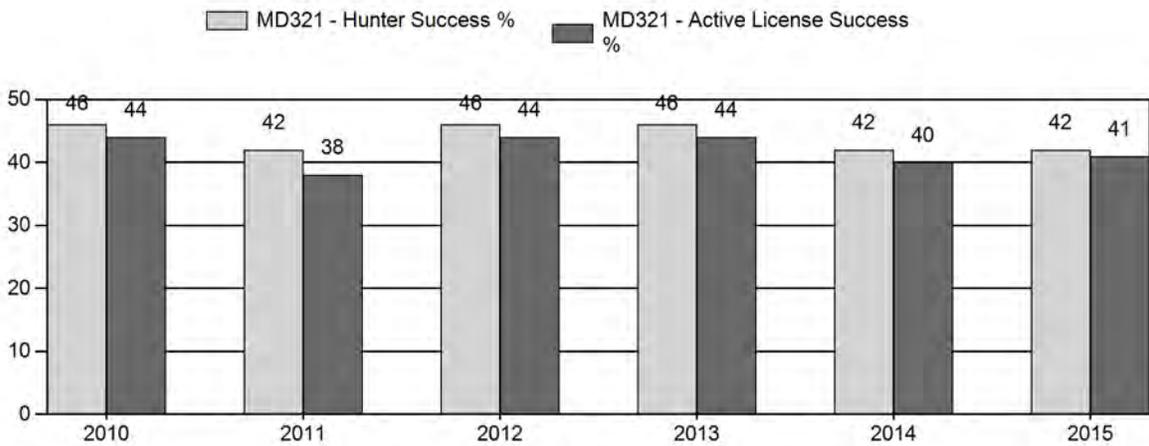
Harvest



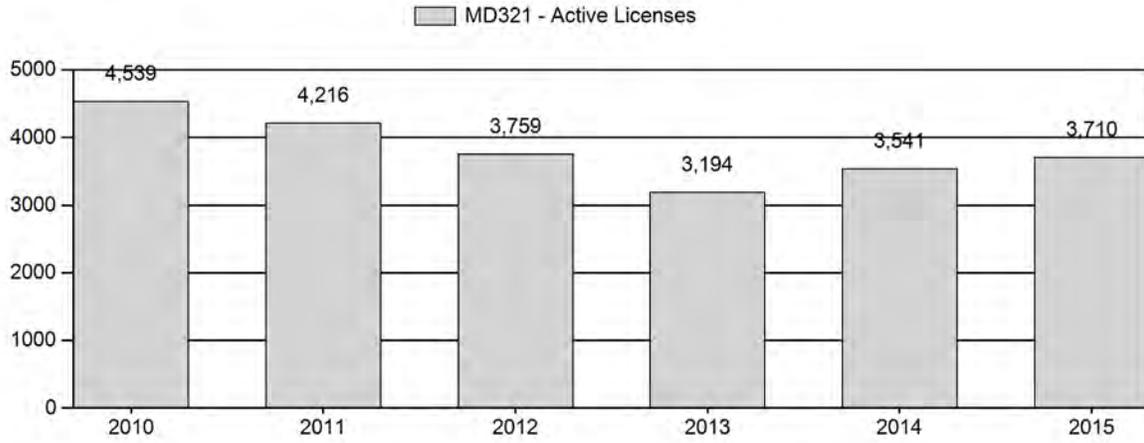
Number of Hunters



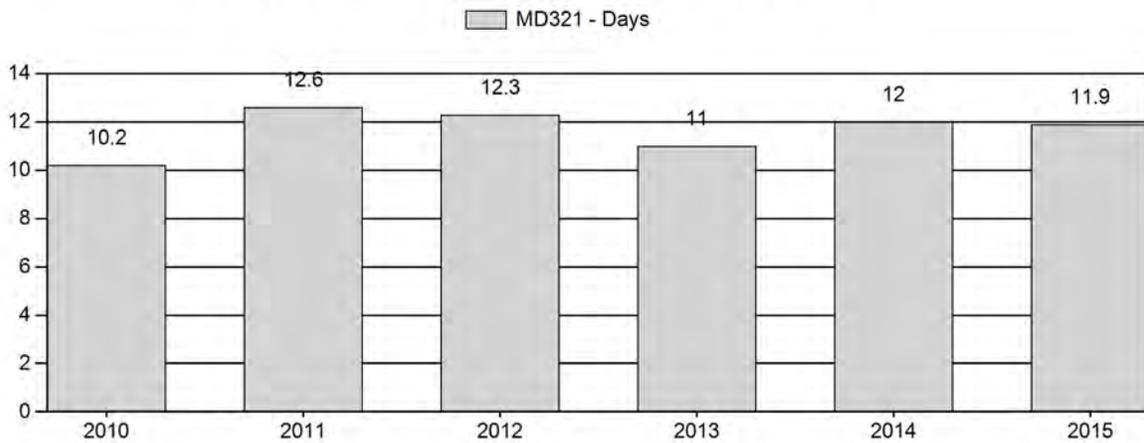
Harvest Success



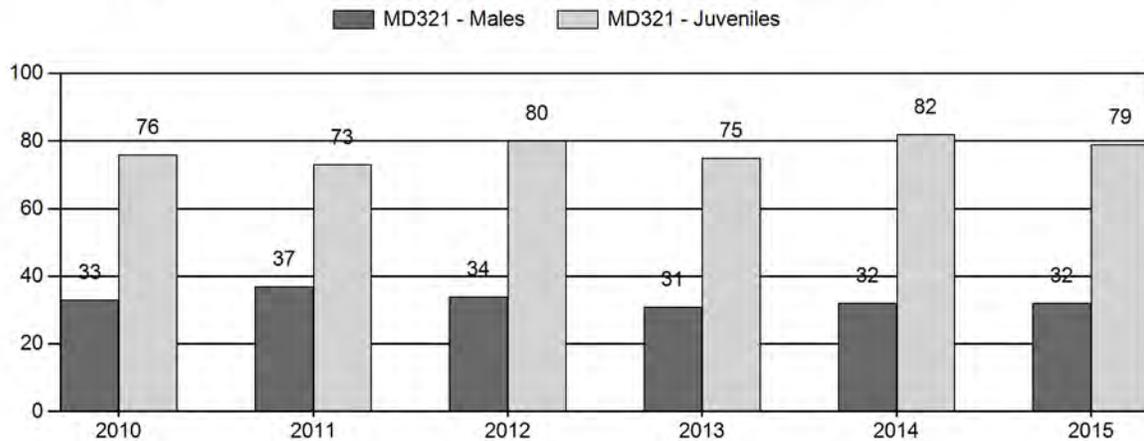
Active Licenses



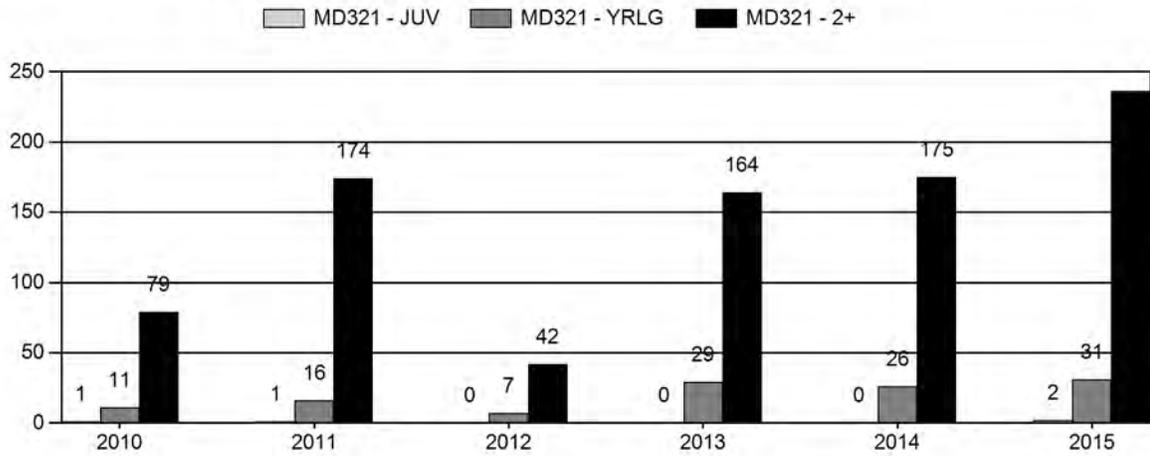
Days per Animal Harvested



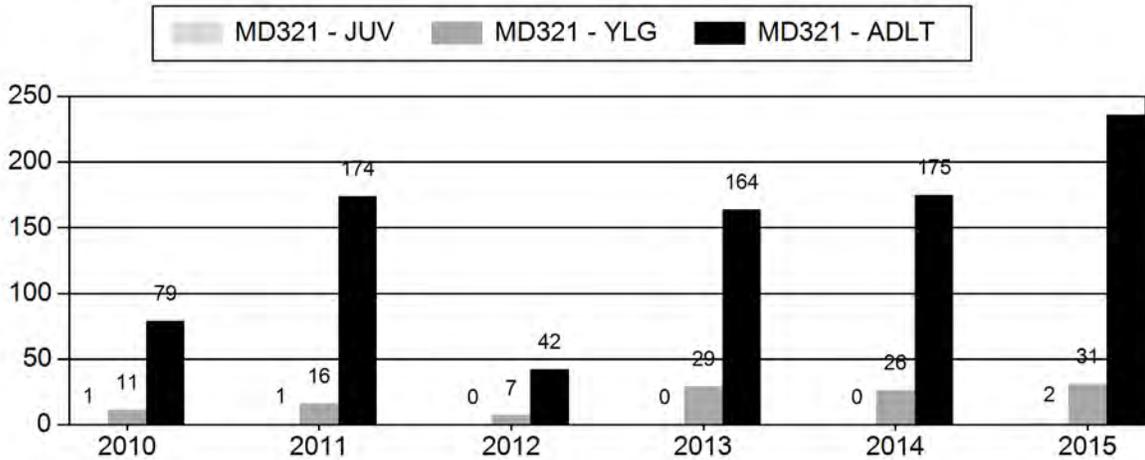
Postseason Animals per 100 Females



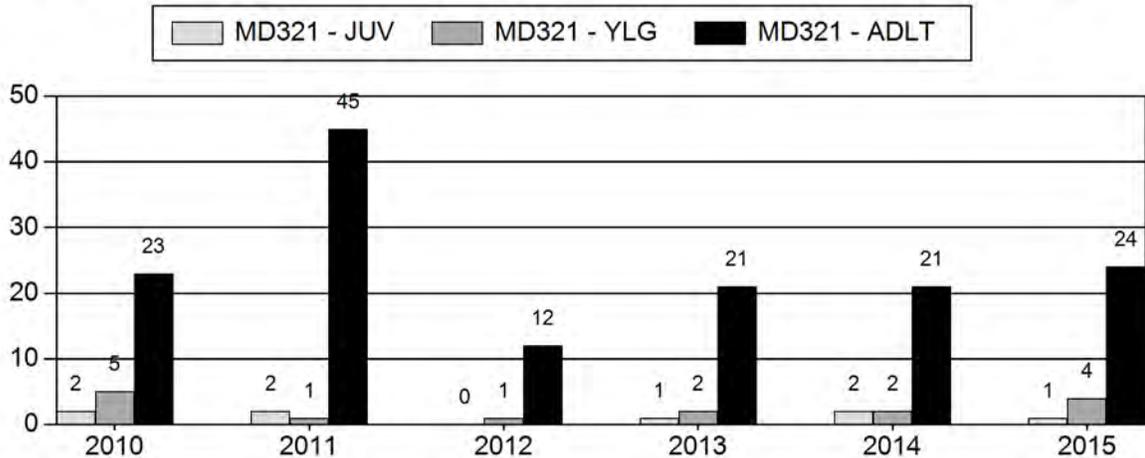
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD321 - NORTH BIGHORN

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot		Males to 100 Females			Young to			
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Cls	Obj	YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	14,030	136	0	0	0	226	362	16%	1,099	48%	838	36%	2,299	1,672	12	21	33	± 2	76	± 4	57
2011	14,242	133	0	0	0	226	359	18%	962	47%	705	35%	2,026	1,588	14	23	37	± 3	73	± 4	53
2012	13,771	118	0	0	0	135	253	16%	749	47%	596	37%	1,598	1,886	16	18	34	± 3	80	± 5	59
2013	13,300	128	0	0	0	240	318	15%	1,012	49%	754	36%	2,084	1,409	13	19	31	± 2	75	± 4	57
2014	14,500	91	0	0	0	187	278	15%	878	47%	718	38%	1,874	1,834	10	21	32	± 3	82	± 5	62
2015	15,000	155	138	36	2	34	365	15%	1,130	47%	894	37%	2,389	1,734	14	19	32	± 2	79	± 4	60

**2016 HUNTING SEASONS
NORTH BIGHORN MULE DEER HERD (MD321)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
24		Oct. 15	Oct. 31		General	Antlered mule deer or any white-tailed deer
	6	Sep. 1	Dec. 15	300	Limited quota	Doe or fawn valid on private land
25		Oct. 15	Oct. 24		General	Antlered mule deer or any white-tailed deer
27		Oct. 15	Oct. 31		General	Antlered mule deer or any white-tailed deer
28		Oct. 15	Oct. 24		General	Antlered mule deer or any white-tailed deer
50		Oct. 15	Oct. 24		General	Antlered deer
51		Oct. 15	Oct. 24		General	Antlered deer
	6	Oct. 15	Nov. 30	100	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
52		Oct. 15	Oct. 24		General	Antlered deer
	6	Oct. 15	Nov. 30	25	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
53		Oct. 15	Oct. 31		General	Antlered deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
24, 25, 27, 28, 50, 51, 52, 53	Sep. 1	Sep. 30

Region	Deer Hunt Areas	Quotas
R	41, 46, 47, 50-53	750
Y	24, 25, 27, 28, 30, 32, 33, 163, 169	1,800

Hunt Area	Type	Quota change from 2015
24	6	-100
51	6	+ 25
Herd Unit Total	6	- 75
Region Y		No Change
Region R		No Change

Management Evaluation

Current Postseason Population Management Objective: 20,000

Management Strategy: Recreational

2015 Postseason Population Estimate: ~ 15,000

2016 Proposed Postseason Population Estimate: ~ 16,800

2015 Hunter Satisfaction: 61% Satisfied; 19% Neutral; 15% Dissatisfied

Herd Unit Issues

The North Bighorn Mule Deer Herd Unit is located in north central Wyoming. It covers the northern portion of the Bighorn Mountains and associated foothills on both sides.

The North Bighorn Mule Deer Herd Unit is managed for a post-season population objective of 20,000 mule deer and the management strategy is recreational management. The objective and management strategy were last revised in 2014.

This mule deer herd has been below the management objective for many years, despite limited doe harvest and relatively conservative seasons. There are other factors limiting this herd from reaching the desired management objective, which likely include, but are not limited to, habitat issues and competition from other ungulates for preferred forage. We do not think predation is a significant limiting factor most years.

Weather

The spring and summer of 2015 was relatively warm and wet, resulting in good forage production throughout the growing season in the Bighorn Mountains. The fall of 2015 was generally warm, dry and open. The winter of 2015-16 was generally warmer and drier than normal. There was a record El Nino affect influencing weather patterns in the intermountain west during later 2015 – 2016, resulting in generally warmer and drier conditions for the Bighorn Mountains. Snow fall was significantly below average during the 2015-16 winter. Overall, adult mule deer entered the winter in good condition and likely survived the winter well. Fawns likely saw about average to above average over-winter survival.

Habitat

We do not have an established habitat transect in this herd unit. Most deer in this herd unit migrate to higher elevations in the Bighorn Mountains during the spring. Deer return to the foothills of the Bighorn Mountains in the fall and spend the winter at lower elevations, often on private lands, especially on the east side of the Bighorn Mountains.

Field Data

During November and December, field personnel classified mule deer in this herd unit using both aerial (helicopter – Hunt Areas 50-53) and ground (Hunt Areas 24 and 27) survey techniques. Hunt Areas 25 and 28 are not surveyed as deer migrate out of these areas during October. We classified a total of 2,389 mule deer, which is above the desired sample at the 80% confidence level (n=1,734). We observed 79 fawns:100 does, a slight decrease from 82:100 observed in 2014. Fawn production, based on observed doe to fawn ratios, has been good the

past 5 years (73-82 fawns:100 does; mean = 78 fawns:100 does), which should help this population increase towards objective.

The observed buck to doe ratio continues to be in the 30s (32 bucks:100 does), but a lot of these bucks appear to be young aged animals. Mature bucks (i.e. 5+ years old) seem to be lacking in this population, resulting in smaller antlered animals generally available for harvest. Habitat quality and quantity also plays a role in antler development. Even though the management strategy for this herd unit is recreational hunting, hunters - both resident and non-resident - have consistently requested better quality (i.e. larger antlered) deer in this herd unit. Starting in 2015, we collected antler measurements and teeth for age analysis. This is an effort to correlate antler development with age in this herd unit.

Preliminary analysis suggests we are harvesting younger bucks (i.e. 2-4 years old) in the North Bighorn Herd Unit compared to other parts of the state (Fig. 1). This could be a function of relatively large younger age cohorts due to increased fawn production and recruitment the past couple of years. Also, data may be biased towards young animals as some hunters did not want a tooth pulled from old deer that they planned to mount. That generally wasn't a concern with younger deer and thus that segment may be represented at a greater level than actually occurred in the harvest.

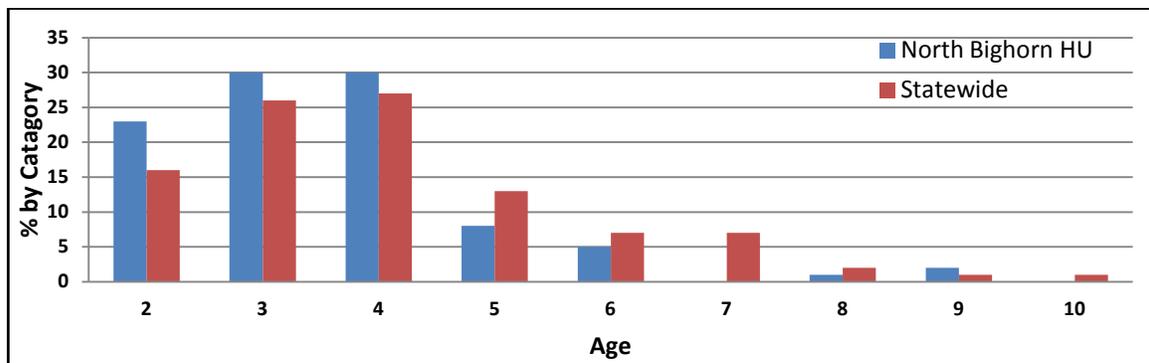


Figure 1. Age of harvested mule deer bucks, by percentage, from the North Bighorn Mule Deer Herd Unit compared to statewide data. Deer were harvested during 2015 hunting season. Yearling harvest is excluded as managers don't consistently collect teeth or record yearlings during field checks.

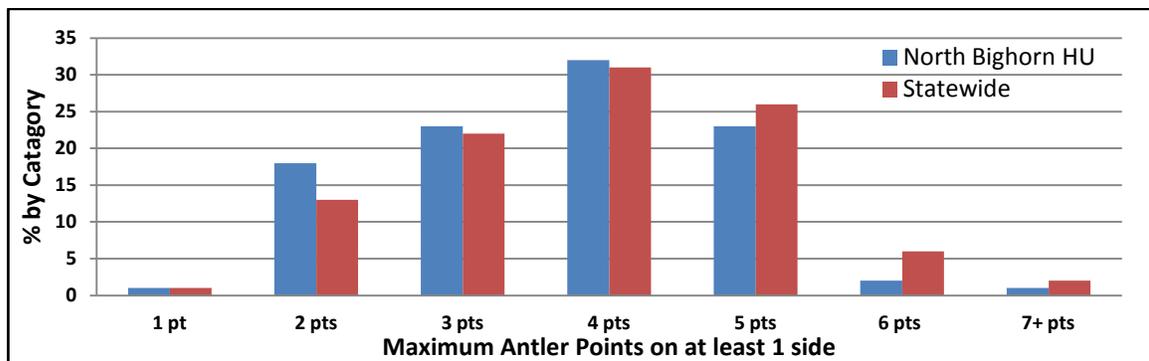


Figure 2. Antler point development of mule deer bucks, by percentage, from the North Bighorn Mule Deer Herd Unit compared to statewide data. Deer were harvested during 2015 hunting season. Deer were categorized by largest number of points on one side.

Hunters also appear to harvest deer with fewer antler points from the North Bighorn Herd Unit compared to other parts to the state. The biggest difference was in deer with at least 2 points on 1 antler (Fig. 2). Deer with at least 3 or 4 antler points on one side were similar across all deer. Only deer with both age and antler measurements were included in this analysis so older aged deer where a tooth was not extracted may be under represented.

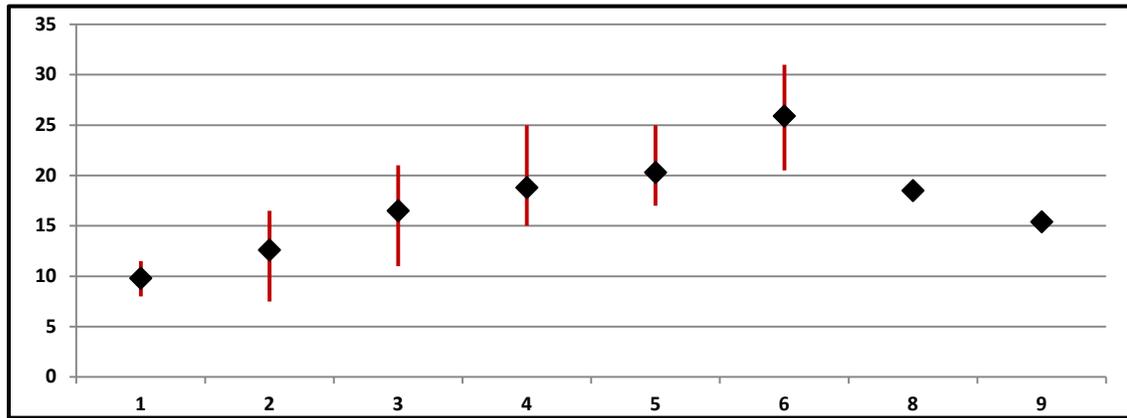


Figure 3. Mule deer antler width by age class for deer harvested from the North Bighorn Herd Unit during the 2015 hunting season.

Antler width development by age class is about what would be expected from harvested mule deer in the North Bighorn Herd Unit (Fig. 3). As animals got older, antler width got bigger, dropping off for older aged animals (i.e. 8+ years). There was also a lot of variation within cohorts as would be expected.

Deer hunters in this herd unit were generally satisfied with their hunt, according to the hunter satisfaction survey attached to the harvest survey. Of 1,050 hunters who responded to the satisfaction survey, the majority (66%) were satisfied or very satisfied, while only 15% indicated they were dissatisfied or very dissatisfied. The balance of responses were neutral. Statewide, this herd unit ranked 16th out of 37 herd units for satisfaction, with an average statewide satisfaction of 65% (range=43.5%-81%).

Non-resident hunters (n=327) were generally more satisfied (73%) than resident hunters (n=723; 63%). Hunter satisfaction was higher on the east side (67%; Hunt Areas 24, 25, 27, and 28) and the west side (59%; Hunt Areas 50-53) of the Bighorn Mountains. Hunt Areas 52, 28 and 53 had the lowest satisfaction rate (52%, 55%, and 57% respectively) while Hunt Areas 24, 25 and 27 had the highest rates of satisfaction (76%, 68%, and 68% respectively). Deer usually migrate early from Hunt Area 28, resulting in limited opportunities during October.

Overall, hunter satisfaction in 2015 was similar to the 2014 hunting season. Hunter satisfaction increased in some hunt areas on the east side of this herd unit and decreased in some hunt areas on the west side. Hunt Areas 25 and 27 saw significant increases in satisfaction levels, while Hunt Areas 51, 52, and 53 saw significant decreases in satisfaction levels. This was likely a function of deer not migrating between hunt areas due to mild weather conditions prior to and during the 2015 season.

Harvest

In 2015, hunters harvested an estimated 1,513 mule deer, a 6% increase over 2014 harvest but still 18% below the previous 10 year (2003-2014) average harvest. Harvest consisted of 1,266 bucks (84%), 225 does (15%), and 22 fawns (1%). This is the highest buck harvest in 8 years even with a shorter season in most hunt areas. Environmental conditions were favorable during most of the hunting season, likely contributing to the increased harvest.

Hunter success was 42%, the same as 2014 but down slightly from previous years. Hunters spent about 11.9 days hunting per deer harvested, similar to 2014 and the 10 year average of 10.9 days/harvest.

Approximately 1/3 of the hunting pressure and harvest occur in west side hunt areas (Hunt Areas 50-53) while ~2/3 of hunting pressure and harvest occur in east side hunt areas (Hunt Areas 24, 25, 27, & 28).

Hunt Area 24 saw the highest total harvest (n=400 mule deer; 26%) as well as for both buck (n=265; 21%) and antlerless (n=135; 55%) mule deer. Hunt Area 52 saw the lowest harvest (n=73 mule deer; 5%). Hunt Area 51 had the highest success rate (51%) and Hunt Area 28 had the lowest success rate (23%). Hunt Area 27 saw the lowest effort rate (7.9 days/animal), while Hunt Area 25 was the highest effort rate (18.8 days/animal).

Population

The 2015 post-season population estimate was about 15,000 mule deer with the population increasing. This population likely peaked in recent years around 2006 and then decreased. Hunters and field personnel have noticed a decline in this deer population over the past several years. The population stabilized and has started to increase with improved fawn production and mild environmental conditions the past 2 years.

We use spreadsheet simulation models for population estimations. Model parameters and input follow the “User’s Guide: Spreadsheet Model for Ungulate Population data” (Morrison 2012). Classification and harvest data are the only empirical data available for mule deer population simulation for this herd unit.

The “Time-Specific Juvenile – Constant Adult Survival Rate” (TSJ,CA) spreadsheet model was chosen to estimate the postseason population estimate of this herd. This simulation model had the lowest relative Akaike information criterion (AIC) value of all the models (96 compared to 99 or 107), and had the lowest fit (4 compared to 62 or 98). This model was selected because it appeared to reasonably simulate the perceived population dynamics of this herd unit. Since we do not have an independent population estimate or survival data for this herd, we consider this simulation model to be of “fair” quality.

Management Summary

Hunting on public land in this herd unit, primarily the Bighorn National Forest, has generally been conservative. Hunting on private lands in this herd has generally been more liberal, often designed to address damage complaints to cultivated crops. Hunting seasons traditionally run

during the last two weeks of October, opening on October 15 and closing on different dates, depending on the hunt area and year. Season length is generally 10-17 days.

An archery pre-season occurs the entire month of September for any deer. Archery hunting can play a significant role in the herd unit. For example, 48% of the harvest (n=263) in Hunt Area 25 was from archery hunters. Over all, archery hunting accounted for 16% of the total 2015 harvest (16% of buck harvest, 20% of doe/fawn harvest).

We decreased Area 24 Type 6 (doe/fawn deer) license numbers by 100 for 2016. These licenses are valid only on private land. In 2015, about 53% of the harvest on this license type was white-tailed deer. This license does allow some landowners to address localized problems of higher than desired mule deer numbers.

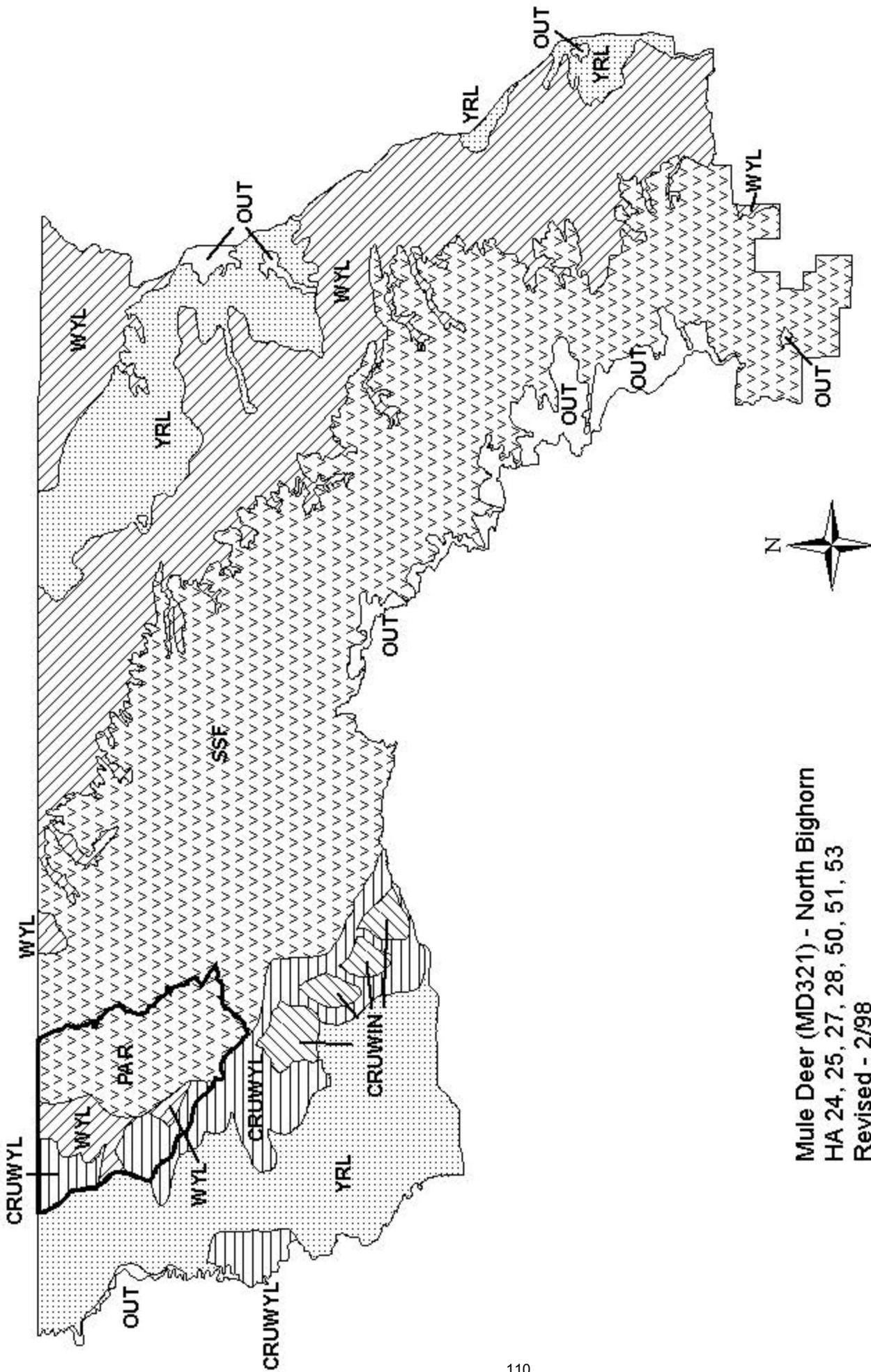
Starting in 2015, we reduced the General license season in Hunt Areas 25 and 28 to a 10-day season, similar to most other hunt areas in the Bighorn Mountains. This was in response to hunter comments to attempt to improve buck quality. Most nonresident hunters are done hunting by October 24 so this most likely affected resident hunters. These two hunt areas tend to have the lower satisfaction levels than other hunt areas in this herd unit.

Starting in 2015, we restricted General license hunters to “antlered” deer in Hunt Areas 51 and 52, similar to most adjoining hunt areas. We increased Hunt Area 51 Type 6 licenses for 2016 to address damage issues on agricultural croplands.

We estimate a harvest of about 1,470 mule deer in 2016. With average recruitment and the proposed harvest, we estimate a 2016 post-season population of about 16,800 mule deer, still below the management objective but improving.

We maintained the nonresident Region R deer quota at 750 licenses for the 2016 season. Region R contains Hunt Areas 50-53 from the North Bighorn Herd Unit and the Paint Rock Herd Unit (Hunt Areas 41, 46 and 47). This quota is set by Cody Region personnel. Hunt Areas 50-53 accounted for 48% of the total mule deer harvest in Region R (Hunt Areas 41, 46, 47, 50-53).

We maintained the nonresident Region Y deer quota at 1,800 licenses for 2016. Region Y contains Hunt Areas 24, 25, 27, 28 of the North Bighorn Herd Unit and the Upper Powder River Herd Unit (Hunt Areas 30, 32, 33, 163 and 169). Hunters in the North Bighorn portion of Region Y (Hunt Areas 24, 25, 27 and 28) accounted for 67% of the total mule deer harvest in Region Y during 2015.



Mule Deer (MD321) - North Bighorn
 HA 24, 25, 27, 28, 50, 51, 53
 Revised - 2/98

2015 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2015 - 5/31/2016

HERD: MD322 - UPPER POWDER RIVER

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

PREPARED BY: DAN THIELE

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	11,763	12,125	12,482
Harvest:	931	760	755
Hunters:	1,542	1,356	1,350
Hunter Success:	60%	56%	56 %
Active Licenses:	1,585	1,373	1,375
Active License Success:	59%	55%	55 %
Recreation Days:	6,239	5,920	5,900
Days Per Animal:	6.7	7.8	7.8
Males per 100 Females	36	43	
Juveniles per 100 Females	70	67	

Population Objective (± 20%) :	18000 (14400 - 21600)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-32.6%
Number of years population has been + or - objective in recent trend:	15
Model Date:	2/19/2016

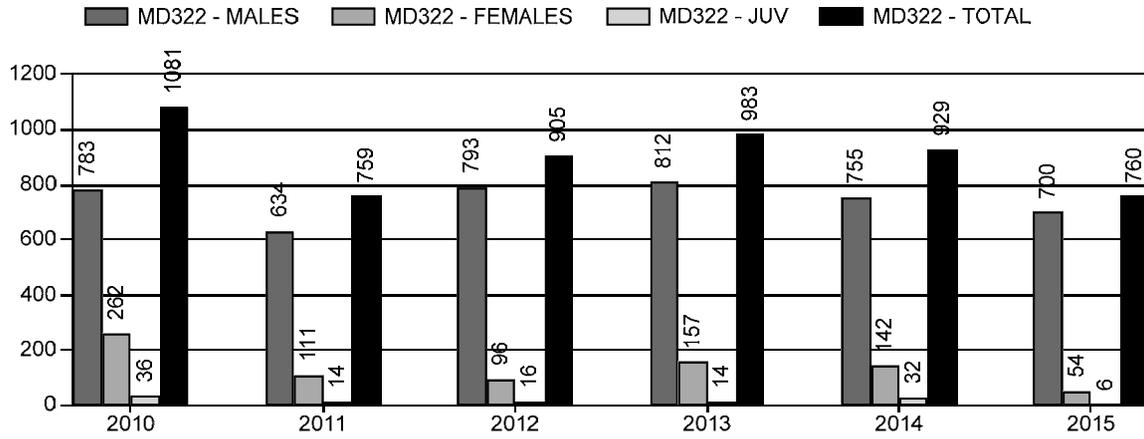
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	23%	23%
Juveniles (< 1 year old):	0%	0%
Total:	6%	6%
Proposed change in post-season population:	-2%	+2%

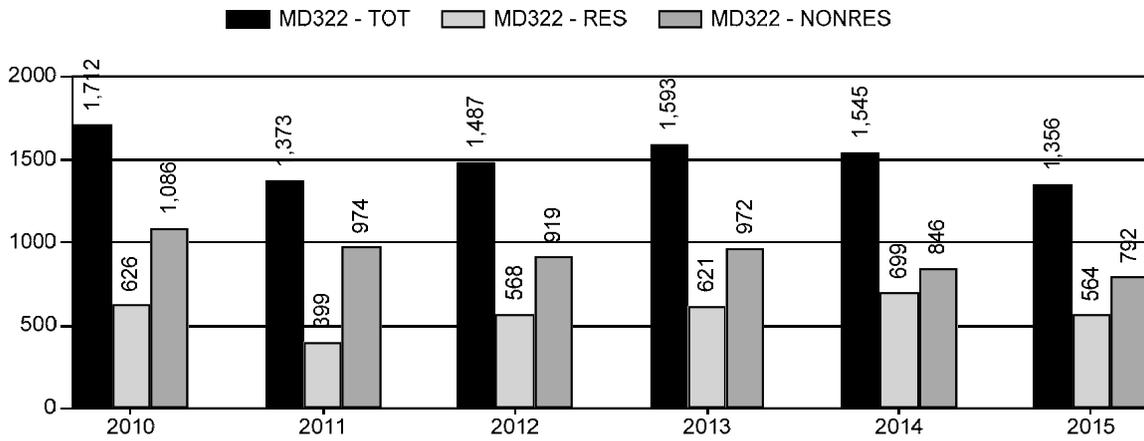
Population Size - Postseason



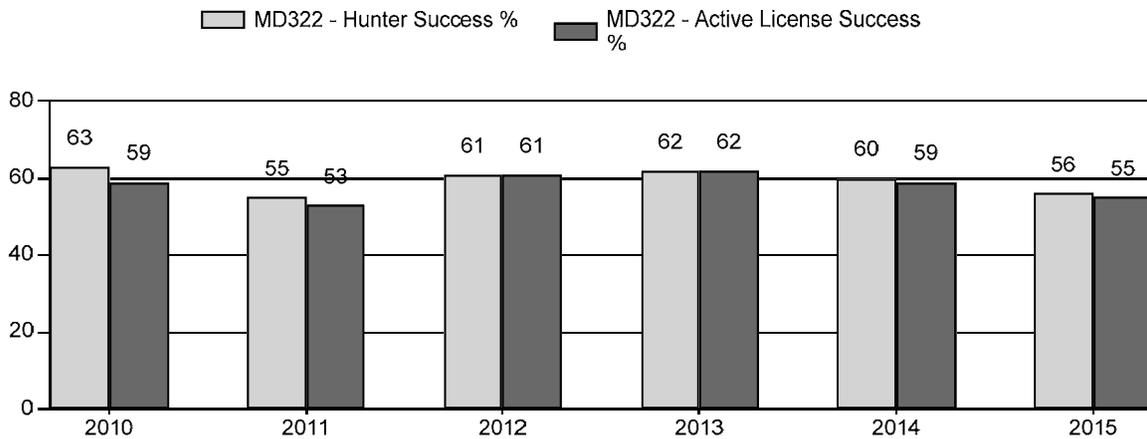
Harvest



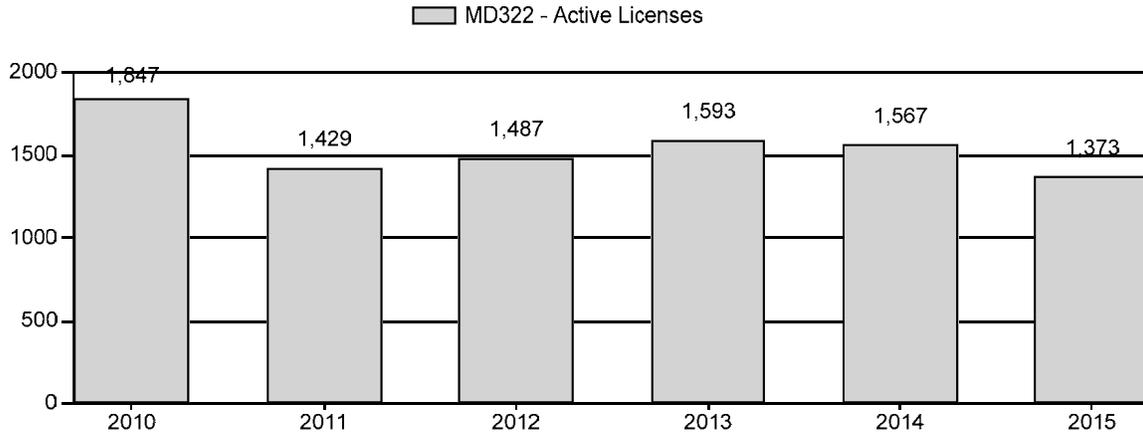
Number of Hunters



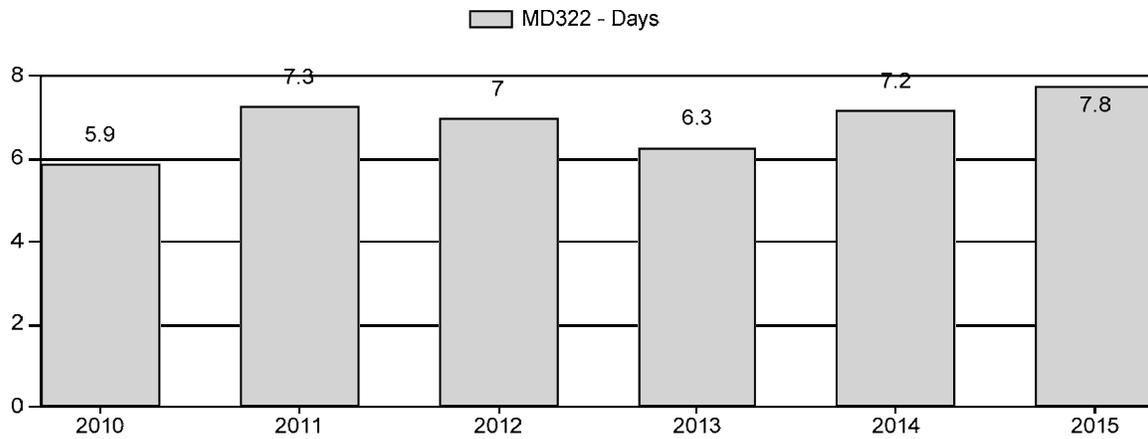
Harvest Success



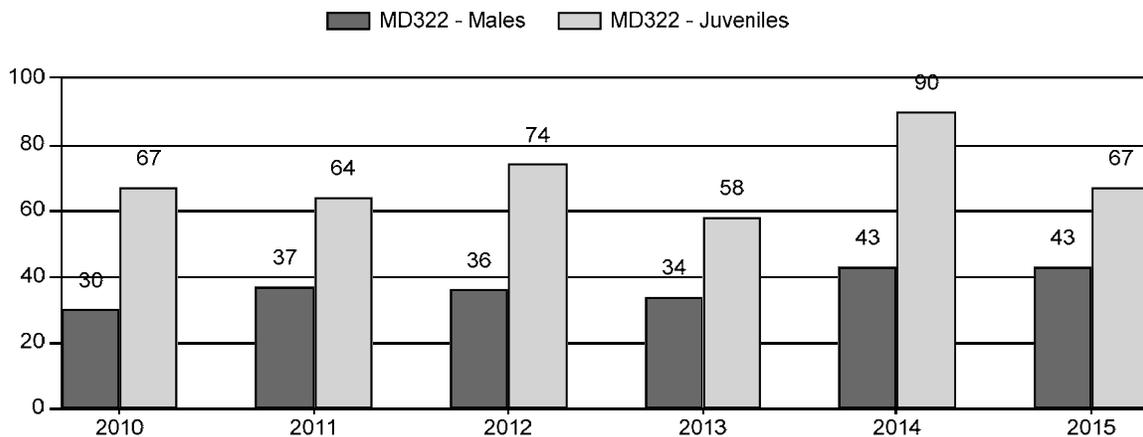
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD322 - UPPER POWDER RIVER

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot		Males to 100 Females			Young to			
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Cls	Obj	YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	11,792	115	0	0	0	196	311	15%	1,047	51%	697	34%	2,055	1,279	11	19	30	± 2	67	± 4	51
2011	11,685	138	0	0	0	246	384	18%	1,049	50%	675	32%	2,108	1,218	13	23	37	± 3	64	± 4	47
2012	11,956	134	0	0	0	188	322	17%	897	48%	662	35%	1,881	1,522	15	21	36	± 3	74	± 4	54
2013	11,112	135	166	47	1	0	349	18%	1,013	52%	586	30%	1,948	1,046	13	21	34	± 2	58	± 3	43
2014	12,268	150	172	39	2	0	363	19%	840	43%	755	39%	1,958	2,177	18	25	43	± 3	90	± 5	63
2015	12,125	170	188	48	2	0	408	21%	940	47%	632	32%	1,980	1,369	18	25	43	± 3	67	± 4	47

2016 HUNTING SEASONS

UPPER POWDER RIVER MULE DEER HERD (MD322)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
30		Oct. 15	Oct. 31		General	Antlered deer off private land, any deer on private land
32		Oct. 15	Oct. 31		General	Antlered deer
33		Oct. 15	Oct. 31		General	Antlered deer off private land, any deer on private land
	6	Oct. 15	Oct. 31	25	Limited quota	Doe or fawn valid on private land
163, 169		Oct. 15	Oct. 21		General	Antlered deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
30, 32, 33, 163, 169	Sep. 1	Sep. 30

Region	Deer Hunt Areas	Quota
Y	24, 25, 27, 28, 30, 32, 33, 163, 169	1,800

SUMMARY OF CHANGES IN LICENSES NUMBERS

Hunt Area	Type	Quota change from 2015
Herd Unit Total		No Change
Region Y		No Change

Management Evaluation

Current Postseason Population Management Objective: 18,000

Management Strategy: Special

2015 Postseason Population Estimate: ~12,100

2016 Proposed Postseason Population Estimate: ~12,500

Herd Unit Issues

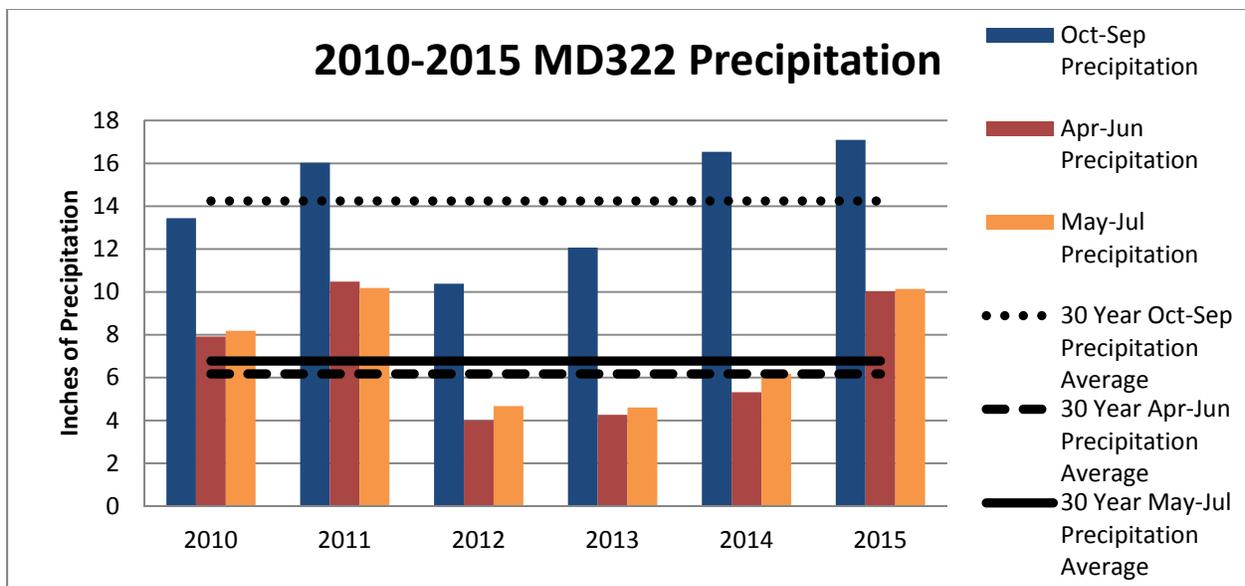
The Upper Powder River Mule Deer Herd Unit objective and management strategy was reviewed in 2013. No change was made to the post-season population objective of 18,000 deer, however, the management strategy was changed from recreational to special management. In 2014, this herd was selected as the Sheridan Region's Mule Deer Initiative herd.

This herd unit has excellent deer habitat extending from sagebrush grasslands in the east to mountain grasslands and mixed conifer habitats to the west. In the last 15 years, white-tailed deer and elk numbers have greatly increased creating potential competition issues with mule

deer. Accessible public lands are limited in the north but more prevalent to the south with these lands receiving heavy hunting pressure. Areas 163 and 169 contain relatively large areas of accessible public lands and are managed with more conservative hunting seasons. Outfitted and trespass fee hunting of private lands limit hunter access resulting in nonresidents comprising a slight majority of the hunters in this herd unit. Hunters have found more flexibility in accessing scattered public lands by using GPS map technology

Another factor influencing this population is mortality attributed to mountain lion predation. Most mountain lion habitat and harvest in mountain lion Hunt Area 15 corresponds to this deer herd unit. Area 15 lion harvest reached a record high 31 lions in 2008-09. Harvest remained high the following two hunting seasons (2010-11 harvest 29 lions and 2011-12 harvest 30 lions). Since then harvest has decreased with 16 lions harvested in 2012-13, 15 lions in 2013-14, 20 lions in 2014-15 and the current season's harvest at 13 lions as of May 2, 2016.

Weather



Precipitation in October 2014 thru September 2015 was markedly higher than the 30 year average. Precipitation during the growing season (April thru June 2015) and the growing season precipitation in the SSF seasonal ranges (May - July 2015) was also notably higher than the thirty year average. The majority of the precipitation came during the growing season (April-July) and was followed by a mild and dry fall.

The 2015-2016 winter was very mild with temperatures averaging 32.8°F during the months of November thru January in Kaycee, WY. Precipitation accumulation recorded in Kaycee during this time is 1.03 inches. The NRCS Snowtel sites for the Powder River drainage reported snow water equivalent at 75% of normal and total precipitation since October 1st at 54% of normal as of February 20th.

Habitat

The growing precipitation was very high during the spring/early summer of 2015. This in turn most likely contributed to the high fawn/doe ratio observed in Upper Powder River mule deer herd (67 fawns/100 does). The abundant growing season precipitation provided ample forage for

mule deer in the area contributing to good conditions for mule deer does early in parturition. Precipitation greatly decreased in the later part of the summer and early fall, which may have decreased the quality of the forage available to lactating does later in the season, which may explain for the decrease in fawn/doe ratios between 2014 and 2015 (90 fawns/100 does compared to 67 fawn/100 does in 2015).

There is one Wyoming big sagebrush habitat transect and one curl-leaf mountain mahogany transect in this herd unit. Sagebrush production measured in September 2015 averaged 4.7 cm per leader compared to 3.6 cm per leader in 2014 and a 5 year average of 3.2 cm per leader. Mountain mahogany production near Outlaw Cave averaged 3.5 cm per leader in 2015 compared to 2.9 cm per leader in 2014 and a 5 year average of 2.3 cm per leader. Utilization during the 2015-16 winter was light (less than 5% of leaders browsed) due to low mule deer numbers and dispersed pronghorn due to an open winter. Complete shrub monitoring results are available in the appendix, Shrub Monitoring Report for the Sheridan Region.

Field Data

Classifications completed following the hunting season resulted in herd ratios of 67 fawns per 100 does and 43 bucks per 100 does. The fawn ratio was well below the 90 fawns per 100 does last year and slightly below the five year average. This was unexpected given the continued favorable precipitation and mild 2014-15 winter. One difference was the abundant September and October precipitation (+119%) in 2013 that boosted doe nutrition going into winter. The high 2014 fawn crop produced a yearling buck ratio of 18:100 indicating excellent yearling recruitment. The total buck ratio matched last year's six year high of 43 bucks per 100 does. Buck ratios remain high with ratios of ≥ 30 per 100 in all six years, supporting the change in management strategy to special management. Classifications have included antler classifications the last three years. In 2015, Class I bucks comprised 79% of the adult buck classification while Class II bucks made up 20% and Class III bucks 1%. High ratios are influenced by the herd unit rugged topography and conservative hunting strategies on private land.

Hunters were generally satisfied with their hunting experience as 65% responded positively to the hunter satisfaction survey. This compares to 62% in 2014. Hunters in Area 32 recorded the lowest satisfaction (57%) which corresponds to 46% hunter success.

Harvest Data

The 2015 harvest survey reported an 18% decrease in total harvest comprised of an 8% decrease in buck harvest and a 65% decrease in antlerless harvest. The decreases resulted from changes in hunting seasons resulting from public input received during the Mule Deer Initiative meetings. Changes included a 10% reduction in the nonresident Region Y quota and addition limits placed on general license antlerless harvest. Hunter numbers decreased 12% with residents comprising the bulk of the decrease (19%). Nonresident hunters continue to comprise the bulk of the hunters accounting for 58% of the hunters this year. Even with the decrease in hunters, harvest data suggests hunting was more difficult with lower hunter success and higher hunter effort. This could be due to unseasonably warm dry weather during the hunting season. Hunter success was the second lowest of the six year period while hunter effort increased to the highest of the six year period. Field checks indicated that 81% of the buck harvest was adult bucks, reflective of the high buck ratio and private land hunting. The antler classification for field checked bucks was 76% Class I bucks, 23% Class II bucks and 1% Class III bucks, very similar to the

postseason classification. Antlerless deer harvest comprised 8% of the harvest after more conservative general license hunting seasons were implemented, compared to 19% in 2014.

Due to public concerns about a lack of quality bucks in this herd, incisors from field checked adult bucks were collected and aged by cementum annuli technique at the Wyoming Game and Fish Lab. Lab ages provided insight into the distribution of the age cohorts in the harvest as well as antler size compared to age. A total of 120 samples were submitted for analysis. Harvested adult buck age averaged 4.5 years and ranged from 2.5 years to 10.5 years. Antler spread average and median were similar at 18.2 inches and 18.0 inches, respectively, with antler spread ranging from 10 inches to 33.5 inches. The 3.5 year and 4.5 year cohorts comprised 56% of the sample followed by 2.5 year old bucks at 20% and 5.5 year old bucks at 19% (Figure 1). Average antler width increased with age up to 7.5 years. However, on average, bucks aged 4.5 to 6.5 years old do not grow very large antlers.

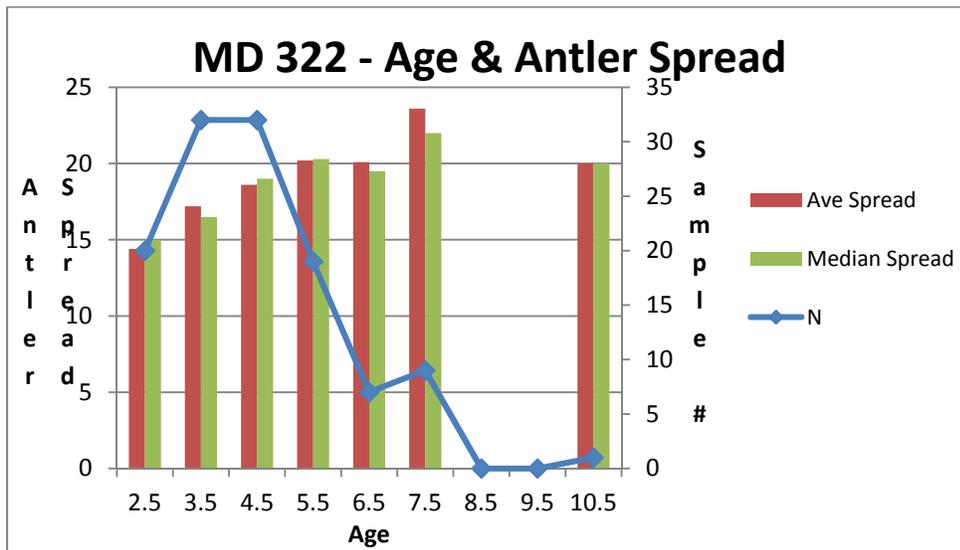


Figure 1. Antler size by age cohort for adult bucks harvested in MD322 in 2015.

Average antler spread generally increased with age up through 7.5 years as did maximum spread (Table 1). These data reflect reasonable age structure of the harvest considering this herd is managed under a special management strategy.

A complete summary of this data is provided at the end of this report.

Table 1. Antler size by age cohort for adult bucks harvested in MD322 in 2015.

MD322	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	10.5
Number	20	32	32	19	7	9	0	0	1
Ave Spread	14.4	17.2	18.6	20.2	20.1	23.6			20.0
Median Spread	15.0	16.5	19.0	20.3	19.5	22.0			20.0
Min Spread	10.0	11.3	12.5	15.5	14.0	15.5			20.0
Max Spread	19.0	22.0	25.5	26.5	28.0	33.5			20.0

The postseason landowner survey reflects the trend of decreasing deer numbers but has somewhat stabilized the last five years with a majority of landowners desiring more deer. In

2015, 61% of responding landowners wanted more deer, while 36% were satisfied with the population. Only one landowner wanted fewer deer. Twenty-five doe/fawn licenses were available in 2015 to address an Area 33 landowner's concern of too many deer on irrigated hay meadows.

Population

This population is estimated at about 12,100 mule deer, approximately 30% below the population objective. The estimate was generated with the EXCEL spreadsheet model. No independent population estimate has been collected. The Semi-Constant Juvenile/Semi-Constant Adult model (SCJ/SCA) was chosen over the Constant Juvenile/Constant Adult model (CJ/CA) even though it has a slightly higher AIC value (92 vs. 87). This model selected fawn survival estimates within the range of parameters while the CJ/CA model selected the lowest survival rates allowed. The model indicates this population decreased from 1998 through 2013 then increased 10% in 2014 due to the high fawn ratio of 90 fawns per 100 does. The population remained stable in 2015. The last year this population was estimated to be at objective was in 2000. The model provides reasonable results that correspond well with management data and field observations. However, because independent survival estimates are lacking for this herd, this model is considered a fair model.

Management Summary

Fawn ratios have exceeded the identified threshold of 66 fawns per 100 does in only four of the last six years limiting the growth potential of this herd. The prevalence of drought since the late 1990's combined with aging shrubs are considered major factors in the low productivity of this herd. High mountain lion numbers have likely influenced deer numbers in some areas of the herd. Additionally, extremely high white-tail deer numbers may be competing with the more productive segments of the mule deer herd, those occurring in and adjacent to riparian corridors with irrigated alfalfa meadows. Additionally, elk numbers remain above objective in the corresponding herd unit. In 2003, Chronic Wasting Disease was discovered in this herd. Since then, the disease has been confirmed in three of the five hunt areas. Limited testing has been completed in recent years so the current prevalence rate is unknown.

Season adjustments were implemented following Mule Deer Initiative meetings last year that further limited general license antlerless deer harvest. As of 2015, only Hunt Areas 30 and 33 offer general license antlerless harvest but take is limited to private land. In addition, 25 Type 6 doe/fawn licenses are issued to address crop depredation complaints in Hunt Area 33. The postseason buck ratio remains more than adequate but is influenced by private land areas that are hunted more conservatively.

The nonresident Region Y license quota was reduced 9% in 2012 to 2,000 licenses and an additional 10% in 2015 to 1,800 licenses. The 2012 adjustment reversed trends in decreasing hunter success and increasing hunter effort. However, hunter success has since continued to decline and hunter effort increase, even with the 2015 Region Y adjustment. In the 2015 regular draw, nonresidents had a 66% chance of drawing with zero points. Nonresident hunters harvest proportionally more bucks and are more successful than resident hunters. In this herd unit, nonresident hunters harvested 792 bucks with 66% hunter success compared to the resident hunter harvest of 564 bucks and 42% hunter success. Public land hunters, which include most resident hunters, have lower hunter success.

As part of the Mule Deer Initiative effort, two public meetings were held in Kaycee in 2015 and a landowner survey and hunter survey have been conducted. Primary concerns voiced by hunters and landowners are the lack of mule deer, continued antlerless deer seasons and lack of “mature” bucks even though the buck ratio meets the special management threshold. Primary causes of the deer decline identified by landowners included mountain lion predation, over harvest, vehicle collisions and drought. Hunters identified overharvest, habitat and drought. Landowners supported limiting hunter numbers whereas hunters were more evenly divided on the issue. Many hunters recommended antler point restrictions even though that option was not presented to them. A management plan was completed this year.

In response to concerns about lack of mature deer, managers collected incisors from adult bucks as well as antler measurements. The hunter harvested tooth age data indicates that there is acceptable age distribution of the adult buck harvest for a herd managed under a special management strategy. Although there are some larger buck deer harvested, on average antler width is average at best. Even though this herd has a very high buck ratio of 43 bucks per 100 does and reasonable cohorts of age class 4.5 year to 6.5 year old bucks, antler size is average. The older age class bucks are typically harvested from ranches with conservative hunting practices. This may be the best that can be expected given the historic hunting pressure in this herd and the nutritional capacity for this herd.

Although the population remains well below objective, hunter success and hunter satisfaction have equaled or exceeded 60%, the buck ratio is high and harvest field checks show antler Class II and III deer comprise about 25% of the adult buck harvest; hunters and landowners have concerns with the deer population, buck quality and hunting seasons. To address these concerns, season recommendations for 2016 included continued conservative hunting seasons for both antlered and antlerless deer. Antlerless harvest is limited to private land to address crop depredation concerns. Mountain lion hunting seasons remain extremely liberal with a yearlong season and reduced price licenses offered. Additionally, liberal white-tailed deer and elk hunting seasons are designed to reduce those populations and limit potential competition. Efforts will be made to initiate additional habitat projects and address vehicle caused mortality on I-25.

The hunting seasons will address public concerns identified in the continuing Mule Deer Initiative efforts and management of this herd. A 2016 population of 12,500 deer is projected.

Upper Powder River Mule Deer Herd Unit (EL322)

Hunt Areas 30, 32, 33, 163, 169

Tooth Age / Antler Size Report

Number of Teeth Lab Aged = 120

Age Range = 2.5 yrs to 10.5 yrs

Average Age = 4.5 yrs

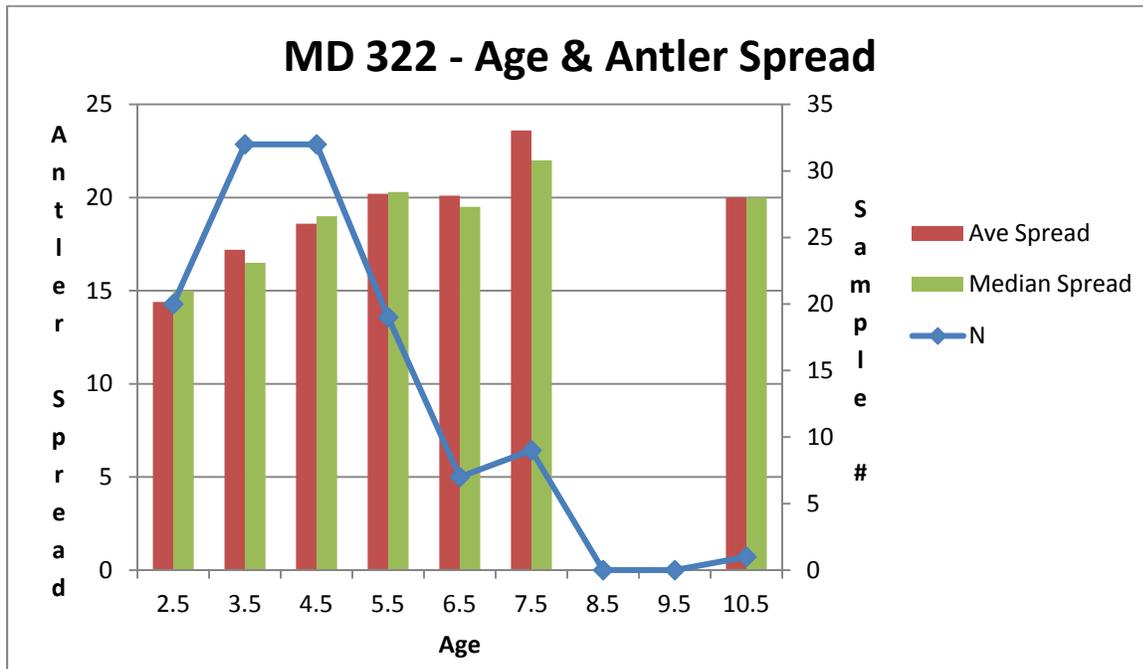
Median Age = 4.5 yrs

Ave Spread = 18.2"

Median Spread = 18.0"

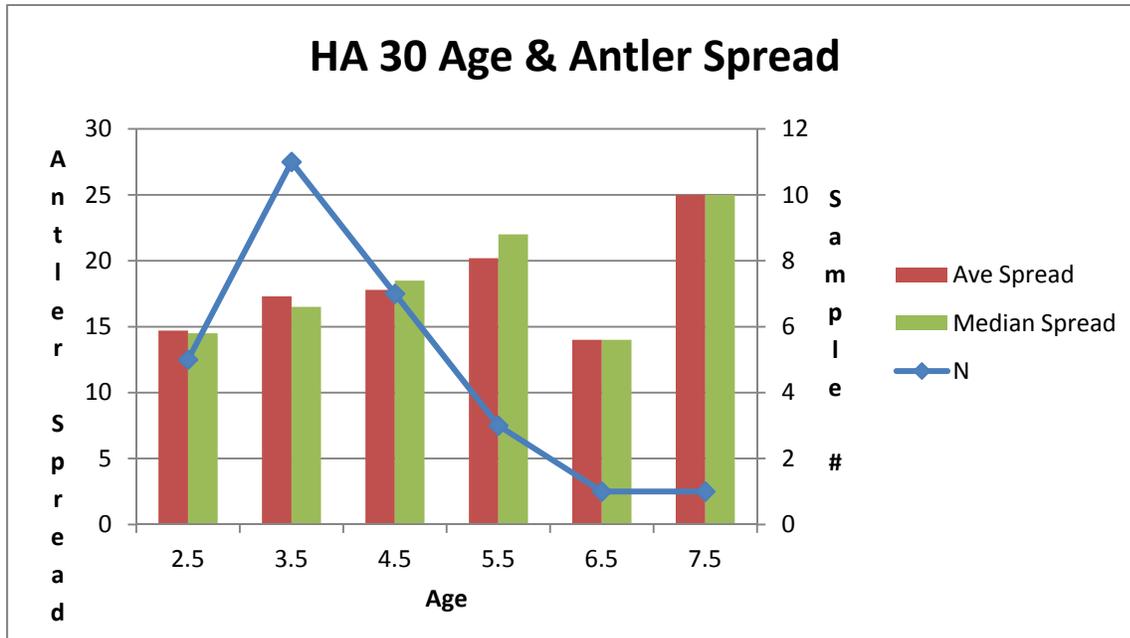
Antler Spread Range = 10" to 33.5"

MD322	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	10.5
Number	20	32	32	19	7	9	0	0	1
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Max Spread	19.0	22.0	25.5	26.5	28.0	33.5			20.0



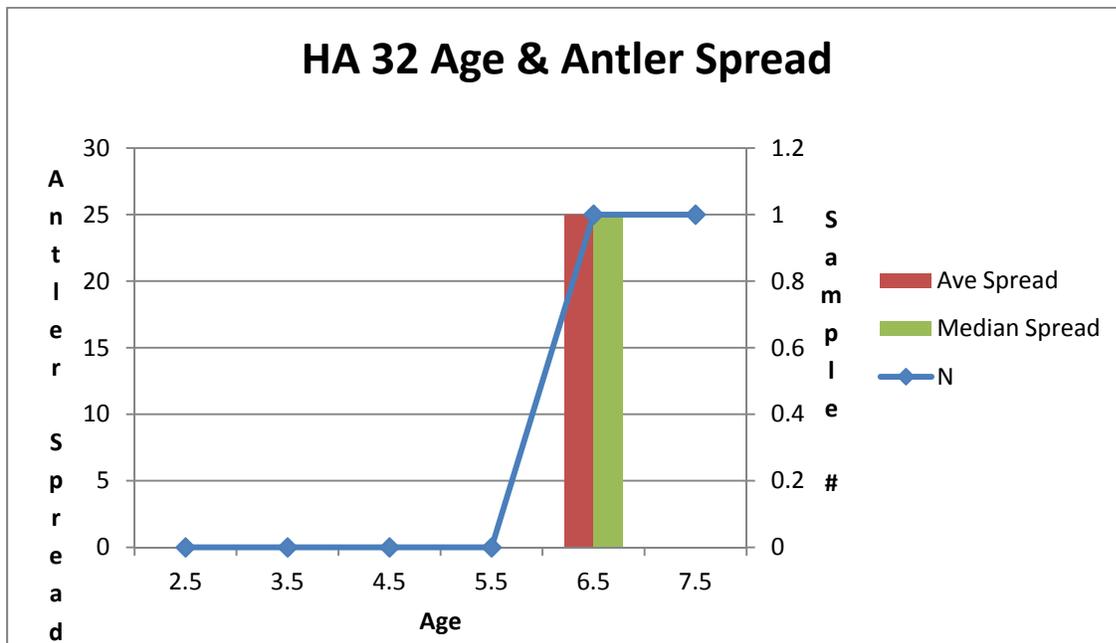
Hunt Area 30

Number of Teeth Lab Aged = 28
 Age Range = 2.5 yrs to 7.5 yrs
 Average Age = 4.0yrs
 Median Age = 3.5 yrs
 Antler Spread Range = 11.5" to 25"



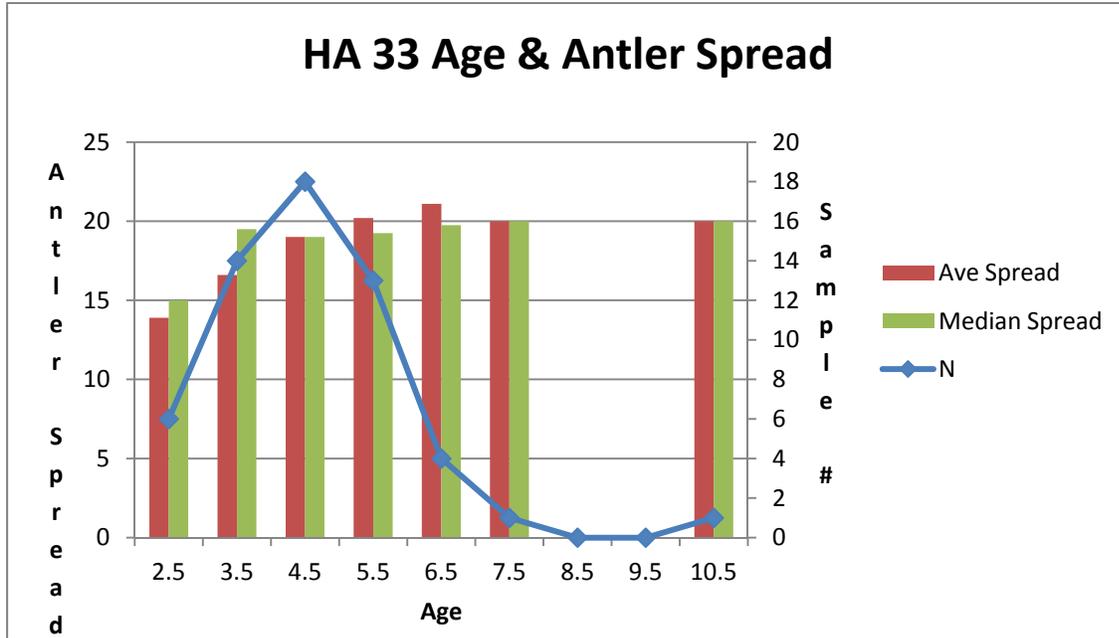
Hunt Area 32

Number of Teeth Lab Aged = 2
 Age Range = 6.5 yrs to 7.5 yrs
 Average Age = 7.0yrs
 Median Age = 7.0 yrs
 Antler Spread Range = NA to 25"



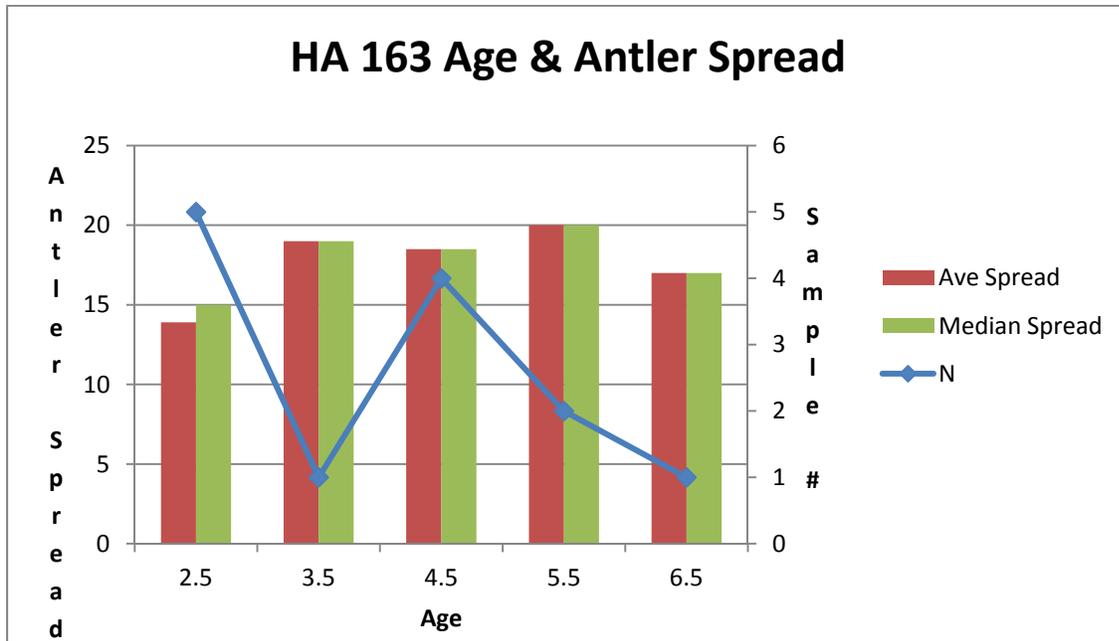
Hunt Area 33

Number of Teeth Lab Aged = 28
 Age Range = 2.5 yrs to 10.5 yrs
 Average Age = 4.8 yrs
 Median Age = 4.5 yrs
 Antler Spread Range = 10" to 33.5"



Hunt Area 163

Number of Teeth Lab Aged = 13
 Age Range = 2.5 yrs to 6.5 yrs
 Average Age = 4.0 yrs
 Median Age = 4.5 yrs
 Antler Spread Range = 12" to 24"



Hunt Area 169

Number of Teeth Lab Aged = 15

Age Range = 2.5 yrs to 7.5 yrs

Average Age = 3.8 yrs

Median Age = 3.5 yrs

Antler Spread Range = 12" to 22"

