MULE DEER

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2018 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2018 - 5/31/2019

HERD: MD319 - POWDER RIVER

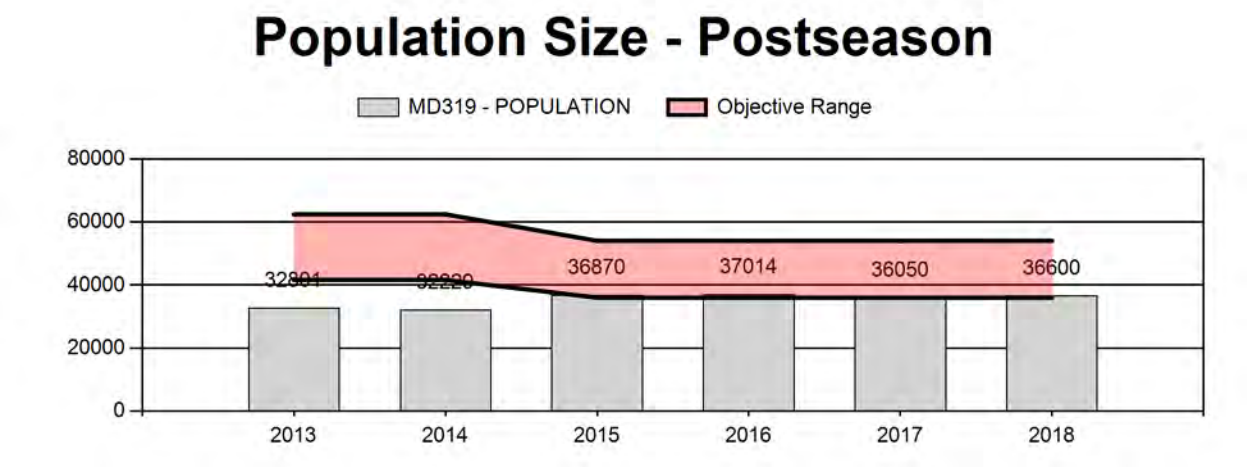
HUNT AREAS: 17-18, 23, 26
PREPARED BY: ERIKA PECKHAM

	2013 - 2017 Average	2018	2019 Proposed
Population:	34,993	36,600	37,750
Harvest:	2,804	2,828	3,000
Hunters:	3,979	4,074	4,275
Hunter Success:	70%	69%	70 %
Active Licenses:	4,130	4,216	4,400
Active License Success:	68%	67%	68 %
Recreation Days:	14,885	15,522	16,500
Days Per Animal:	5.3	5.5	5.5
Males per 100 Females	44	49	
Juveniles per 100 Females	74	56	

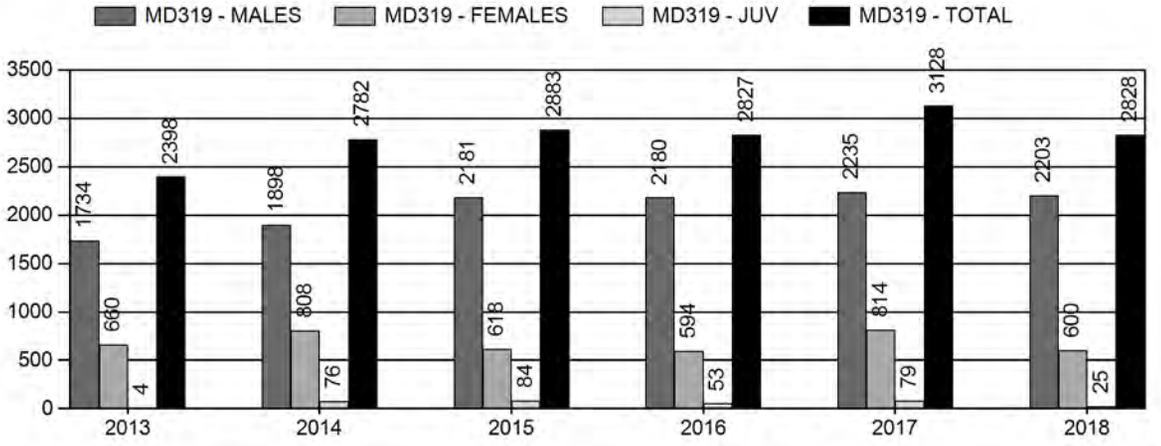
Population Objective (± 20%) :	45000 (36000 - 54000)
Management Strategy:	Private Land
Percent population is above (+) or below (-) objective:	-18.7%
Number of years population has been + or - objective in recent trend:	4
Model Date:	3/3/2019

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

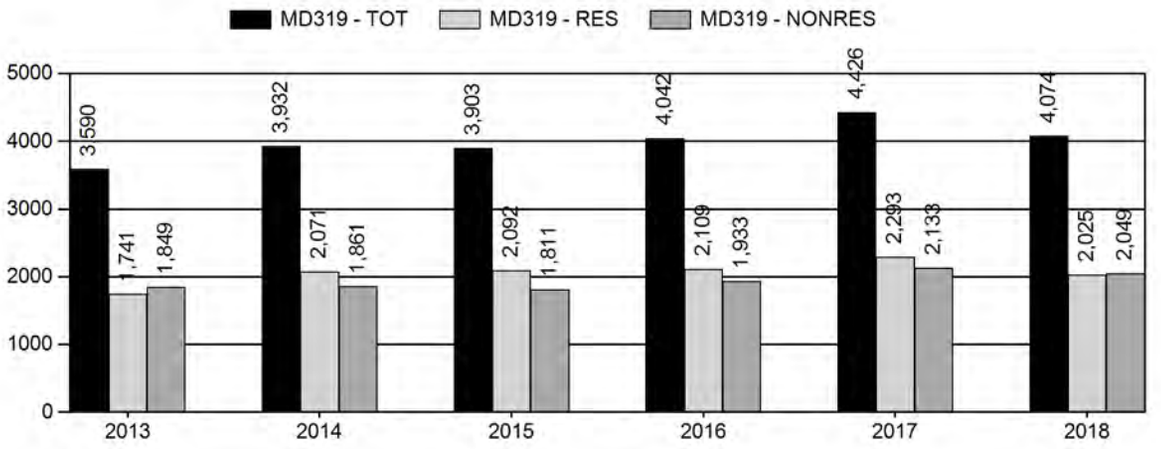
	JCR Year	Proposed
Females ≥ 1 year old:	5.2%	3.7%
Males ≥ 1 year old:	25.4%	24.5%
Total:	8.2%	-8%
Proposed change in post-season population:	.8%	3.2%



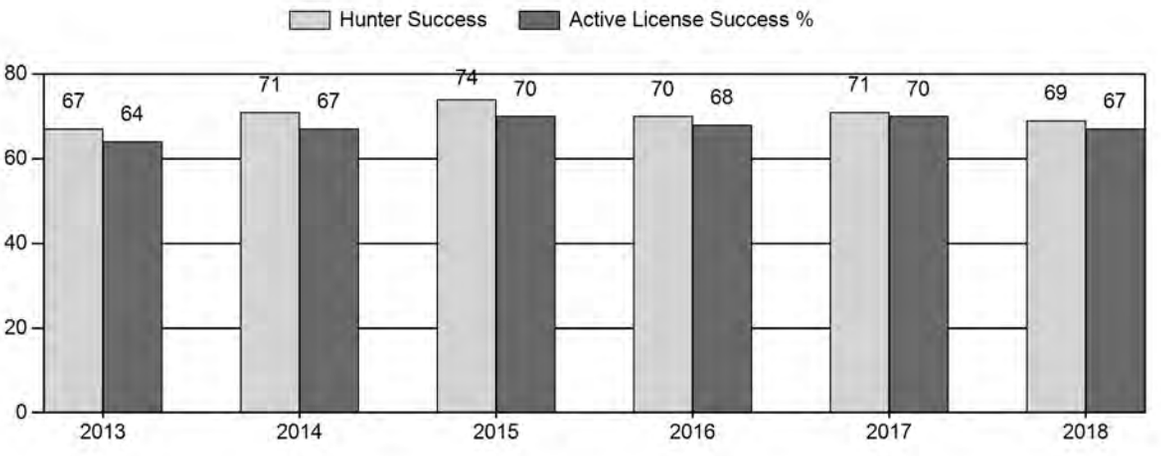
Harvest



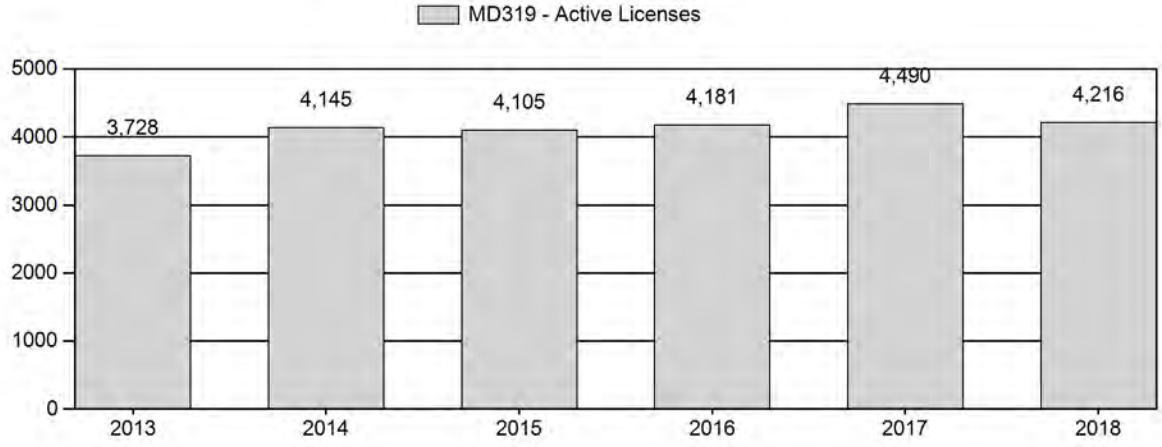
Number of Active Licenses



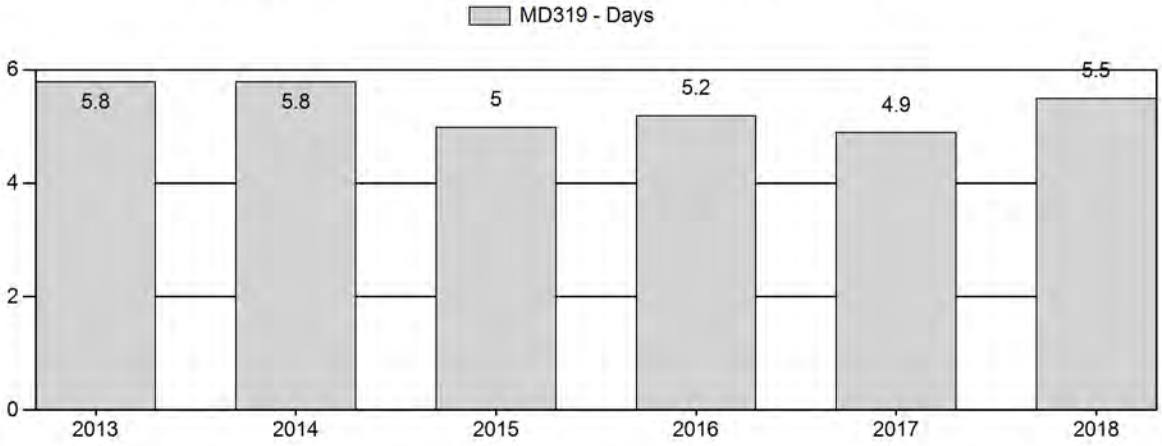
Harvest Success



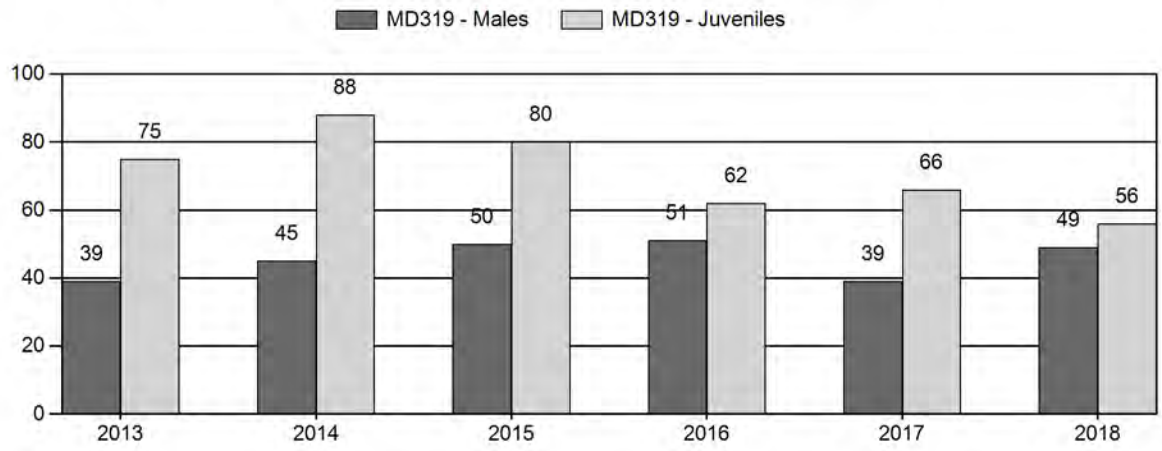
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2013 - 2018 Postseason Classification Summary

for Mule Deer Herd MD319 - POWDER RIVER

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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	37,014	235	196	91	0	209	731	24%	1,447	47%	891	29%	3,069	2,059	16	34	51	± 3	62	± 3	41
2017	36,050	147	134	11	0	261	553	19%	1,414	49%	934	32%	2,901	1,455	10	29	39	± 2	66	± 3	47
2018	36,600	319	497	155	28	181	1,180	24%	2,409	49%	1,358	27%	4,947	1,571	13	36	49	± 2	56	± 2	38

2019 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
17	7	Oct. 1	Oct. 20	50	Limited quota	Doe or fawn valid on private land
18		Oct. 1	Oct. 20		General	Antlered mule deer or any white-tailed deer
18	7	Oct. 1	Oct. 20	100	Limited quota	Doe or fawn valid on private land
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	7	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

Region	Deer Hunt Areas	Quota
C	17-19, 23, 26, 29, 31	2500

SUMMARY OF CHANGES IN LICENSE NUMBERS

Hunt Area	Type	Quota change from 2018
Herd Unit Total		**No Change**
Region C Quota		**+200**

Management Evaluation
Current Postseason Population Management Objective: 45,000
Management Strategy: Private Lands
2018 Postseason Population Estimate: ~36,600
2019 Proposed Postseason Population Estimate: ~37,750
2018 Hunter Satisfaction: 74% Satisfied, 18% Neutral, 8% 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.

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. The majority of public land hunters utilize GPS technologies, which help them to locate smaller pieces of unmarked public lands; however, this accessibility has increased the complaints of trespass and congestion by neighboring landowners. On any given day, hunters are utilizing most parcels of public land.

Extensive coal bed methane development 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.

This herd has been well been about 20% below objective since the objective was lowered in 2015. The 2018 post-season population estimate is about 36,600 deer, which is still below the objective of 45,000. Around 2008, the population experienced a declining trend and poor fawn recruitment, likely influenced by weather factors. This was especially true in Hunt Areas 17 and 18. Observed fawn ratios in 2016 and 2017 were only in the 60's. The observed fawn ratio in 2018 did not improve (56:100).

Weather

Weather throughout 2017 resulted in sub-optimal rangeland conditions due to drought conditions. The winter of 2017-18 was average. In contrast, weather in 2018 was ideal for rangeland conditions with favorable precipitation resulting in good forage availability. The winter of 2018-2019 was moderate with minimal amounts of snow as winter commenced. February was much colder; however, the limited snow allowed animals to access residual forage. Over winter survival was likely slightly impacted with some reports of deer in poor condition or dying. The amount of winter kill will likely not adversely affect this population. May 2019 precipitation was more than double the normal resulting in excellent growing conditions.

The Palmer Drought Index indicates that all months of 2018 experienced "normal" conditions in the Powder River drainage. Additionally, looking at historic temperature information for November and December 2018, mean temperatures were very close to the 30-year normals.

Habitat

This herd unit contains open rangeland dominated by short-grass prairie and big sagebrush, dry land and irrigated crop lands. Portions Hunt Area 18 have had habitat monitoring occurring in the

form of Rapid Habitat Assessments. This information consists of basic plant community inventory and an overall picture of rangeland health. It is not an in depth analysis, but contains photo points in different locations. A total of seven RHA's were conducted, comprised of four upland and three riparian assessments. Within each allotment where a RHA was conducted, the area was walked and plants and habitat conditions were inventoried and assessed to get an overall assessment of the allotment/pasture. An estimated four acres of riparian habitat and 750 acres of upland/shrubland were assessed. This information could prove helpful in planning future habitat projects.

It should be noted that various stands of sagebrush, primarily east of the Powder River, appear stressed with overall low vigor. The cause may be related to the previous prolonged drought. These areas are being monitored to see if die-off is imminent or if plants will recover.

Field Data

In the past there were several years of poor fawn production which likely played a part in setting this herd on a steep decline. Although 2014 and 2015 experienced good fawn production, 2016 and 2017 fawn ratios were 62 and 66, respectively, below what is necessary to increase deer numbers. The observed fawn ratio in 2018 was the lowest for the six-year period at 56:100. Hunt Areas 17 and 18 fawn ratios were 51 and 55, respectively whereas Hunt Areas 23 and 26 were 66 and 60, respectively. The low fawn ratios were not expected given rangeland conditions and overall moderate winters the last few years.

Over the past several years, the buck ratio has remained high. The preceding 5 year average was 45 bucks per 100 does, ranging from 39-51. The 2018 buck ratio of 49:100 is well within the normal range of buck ratios. The herd's private land management strategy is appropriate given that high buck ratios result from landowner and outfitter conservative hunting strategies.

In 2018, incisors from hunter harvested bucks were collected during hunter checks to obtain lab ages to determine age distribution of the harvest and antler width correlated to age. The average age of adult bucks was 5.4 years with age ranging from 2.5 years to 11.5 years (Figure 1). Bucks aged 4.5 years and 5.5 years comprised 47% of the sample. No deer > 11.5 years old were aged. Deer up to 14 years of age were harvested from other hunt areas across the state. This analysis only includes deer >1-year old.

The combined age information as it relates to antler spread was plotted. Antler width ranged from 10" (2.5 year old buck) to 28.75" (5 year old buck) with an average width of 20.3". Average antler width increased up to 7.5 years with 14 bucks averaging 22.3". Median width of all bucks was 21.0" with bucks aged 5.5 years having the highest median antler width at 22.5".

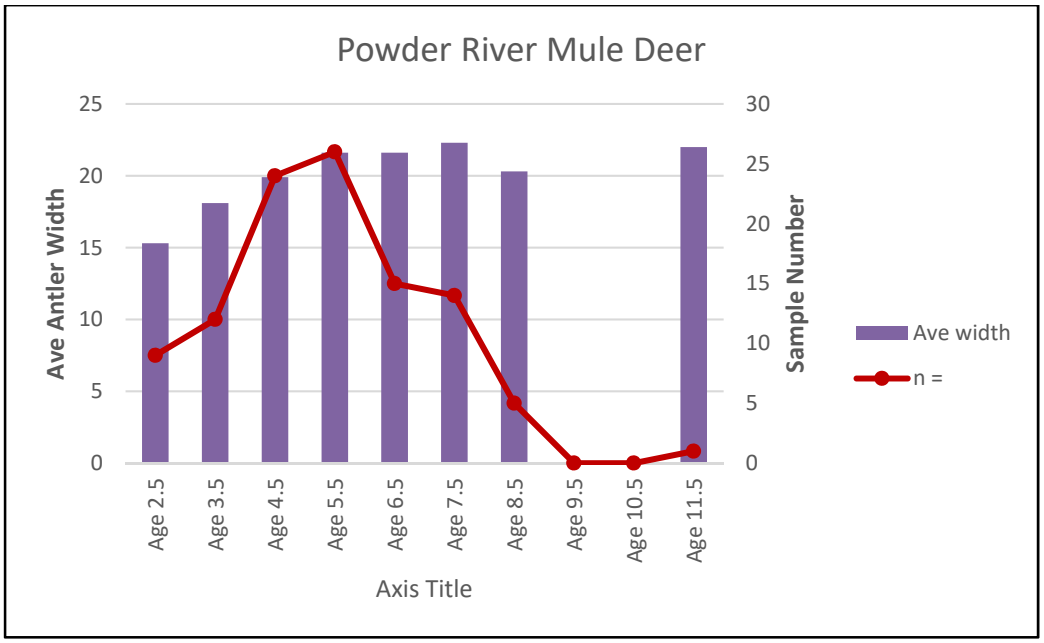


Figure 1. Age of harvested mule deer bucks, by percentage, from the Powder River Mule Deer Herd Unit in relation to antler spread. Deer were harvested during 2018 hunting season. Yearling harvest is excluded as managers don't consistently collect teeth or record yearlings during field checks.

As this is a predominantly private land area, postseason landowner surveys are also considered. In 2018, the majority of respondents (62%) felt that deer were at desired levels. Only 12% of respondents felt that there were more deer than desired. This is similar to perceptions in 2017, although people seem to feel there is a slight increase in deer compared to 2017. The past several years there has been a disparity in what the landowners east and west of the Powder River think; however, it appears that there is less of a discrepancy in opinions in 2018. The majority of landowners in Hunt Ares 23 and 26 (67%) feel that the deer are at objective. A small portion of respondents feel that the deer are below objective (22%). Concerning Hunt Areas 17 and 18, the majority (59%) feel that deer numbers are where they would like to see them, with only a few respondents feeling that there are too many, and 29% believing that there are still too few deer. In general, landowner perceptions of deer numbers have improved compared to the 2017 survey results.

Harvest Data

The 2018 harvest survey indicated 2,828 deer were harvested, including 2,203 bucks and 625 does and fawns. Buck harvest was similar to 2017 while doe/fawn harvest declined 30% with unchanged Type 7 quotas. The majority of the doe/fawn harvest occurs in Hunt Area 23. Hunter success averaged 71% over the preceding 5 years, with 2018 experiencing an overall success rate of 69%, comparable to the statewide average of 71% success. Days per harvest rarely fluctuates from 5-6 days, and 2018 was no exception, with hunters averaging 5.5 days to harvest a deer.

Hunter satisfaction was reported at 74% indicating hunters were "very satisfied" or "satisfied". As Game and Fish personnel talk to hunters, they advise people to obtain private land access in this portion of the state as there is limited public land hunting opportunity. Hunters that hunt private

land usually enjoy high success, which is typically correlated to satisfaction. In 2018, comments received from public land hunters were overall positive, particularly compared to the recent past, with many indicating they were pleased with deer numbers.

Population

This herd is estimated at ~36,600 mule deer, which is around 20% below objective. The "Semi-Constant Juvenile –Semi-Constant Adult Mortality Rate" (SCJ-SCA) spreadsheet model was chosen for the post season population estimate. This model had the lowest AIC value (155) and seemed to best represent what has been occurring on the ground (fair model). There is no independent population estimate or survival estimates for this herd. The model indicates that in 2008 the population peaked, followed by a sharp decline and then began a gradual increase in 2011. The model suggests that the herd leveled out the last few years; however, anecdotal observations indicate deer numbers are likely trending upwards, albeit slowly. This model appears to reasonably track field observations and management data.

Although classification surveys are utilized to obtain herd ratios, it is of interest that the total number of deer classified is the highest on record (~4,950). The preceding 5-year average of number of deer classified was around 3,270. Although this information is not statistically significant, the same routes are driven and areas flown and the number of deer classified can illustrate a trend over time.

Management Summary

Antlerless harvest has been maintained in Hunt Areas 23 and 26 to address landowner concerns with crop depredation. Type 7 licenses in Hunt Areas 17 and 18 were issued in 2018 and seemed to adequately address concerns in the targeted areas. 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. If we attain the projected harvest of 3,000 deer and experience similar fawn recruitment as the last few years, it is anticipated that the population will slightly increase. Based on the population model we predict a 2019 post-season population of about 37,750 mule deer.

Nonresident Region C contains Hunt Areas 17, 18, 23 and 26 of the Powder River Herd and Hunt Areas 19, 29 and 31 of the Pumpkin Buttes Herd. The quota has been increased 200 licenses since 2015. Given hunter success and hunter effort has remained favorable and buck ratios remain high, an increase of 200 licenses was made for 2019.

2018 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2018 - 5/31/2019

HERD: MD320 - PUMPKIN BUTTES

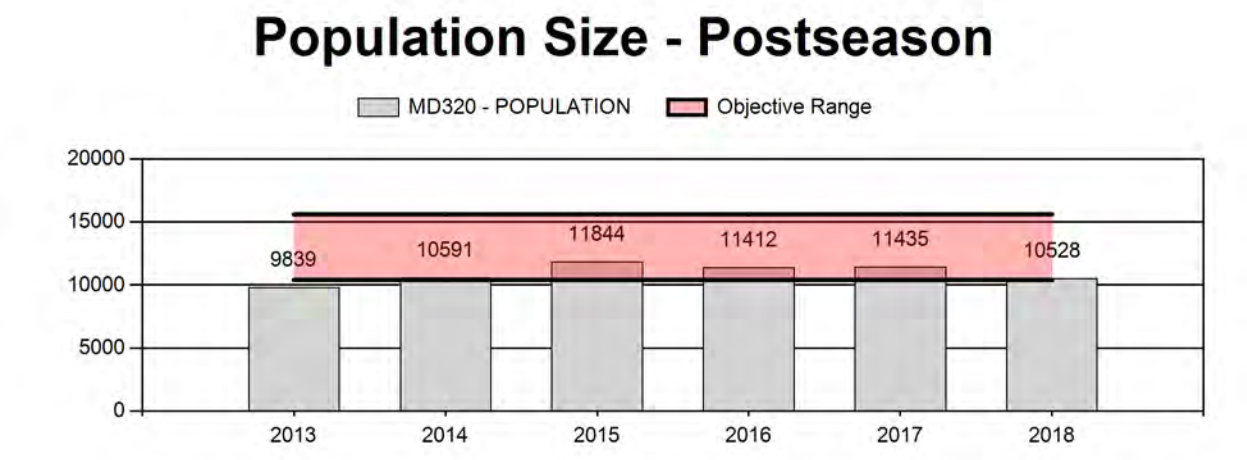
HUNT AREAS: 19, 29, 31
PREPARED BY: CHEYENNE STEWART

	2013 - 2017 Average	2018	2019 Proposed
Population:	11,024	10,528	11,373
Harvest:	643	633	644
Hunters:	1,000	974	980
Hunter Success:	64%	65%	66 %
Active Licenses:	1,013	991	1,000
Active License Success:	63%	64%	64 %
Recreation Days:	3,694	3,626	3,650
Days Per Animal:	5.7	5.7	5.7
Males per 100 Females	43	43	
Juveniles per 100 Females	68	53	

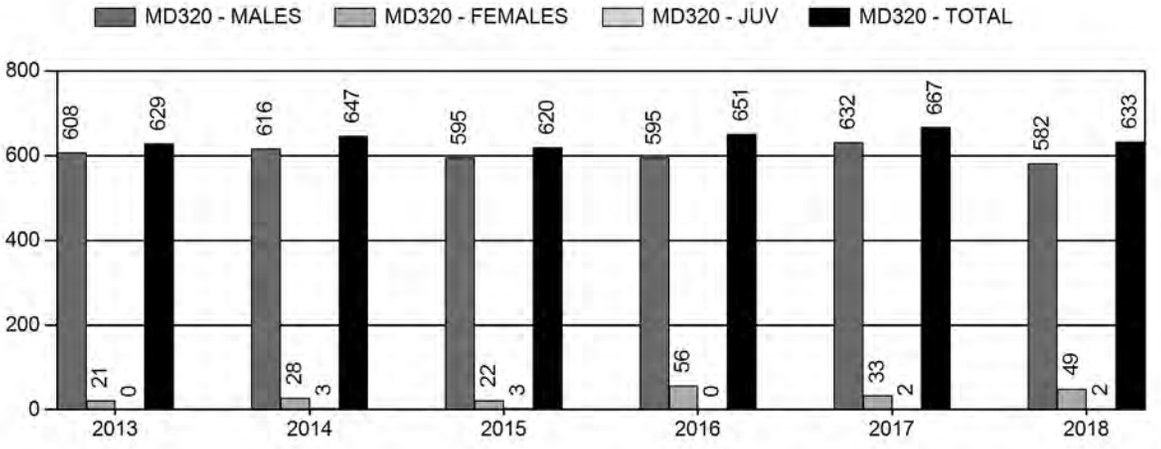
Population Objective (± 20%) :	13000 (10400 - 15600)
Management Strategy:	Private Land
Percent population is above (+) or below (-) objective:	-19.0%
Number of years population has been + or - objective in recent trend:	0
Model Date:	2/20/2019

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

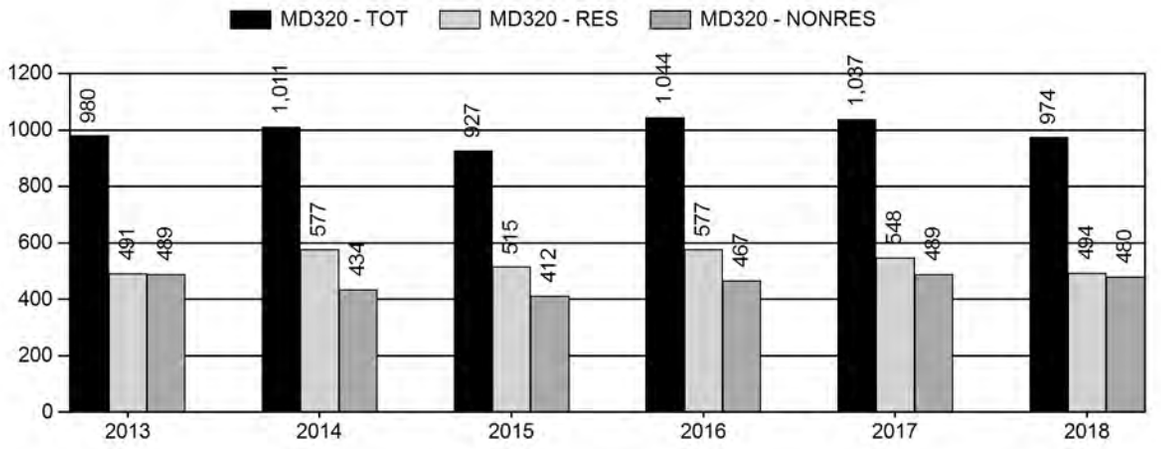
	JCR Year	Proposed
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	20%	20%
Total:	6%	5%
Proposed change in post-season population:	-1%	+1%



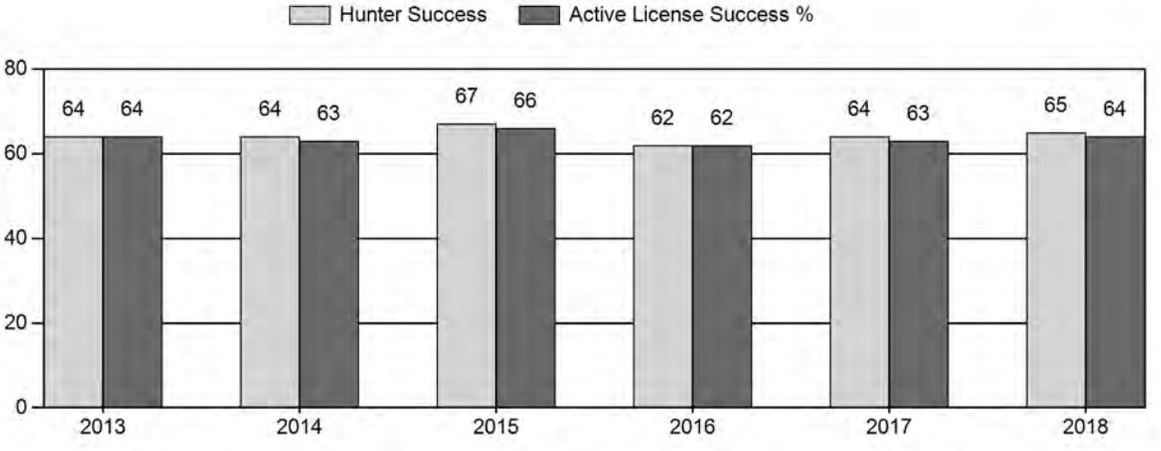
Harvest



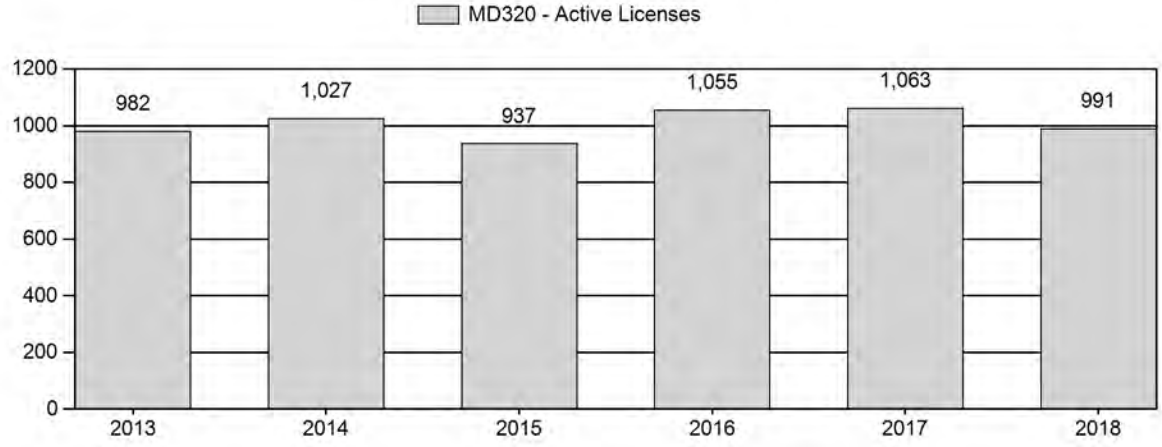
Number of Active Licenses



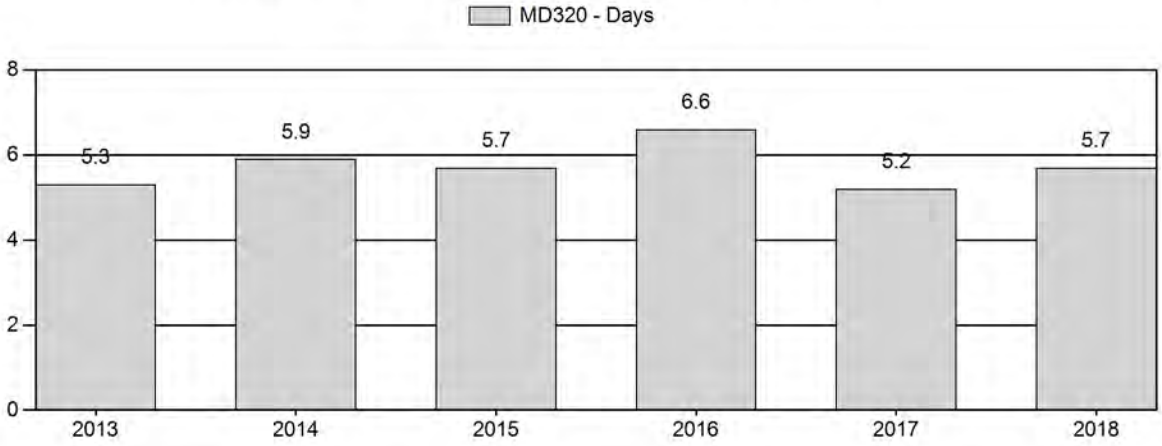
Harvest Success



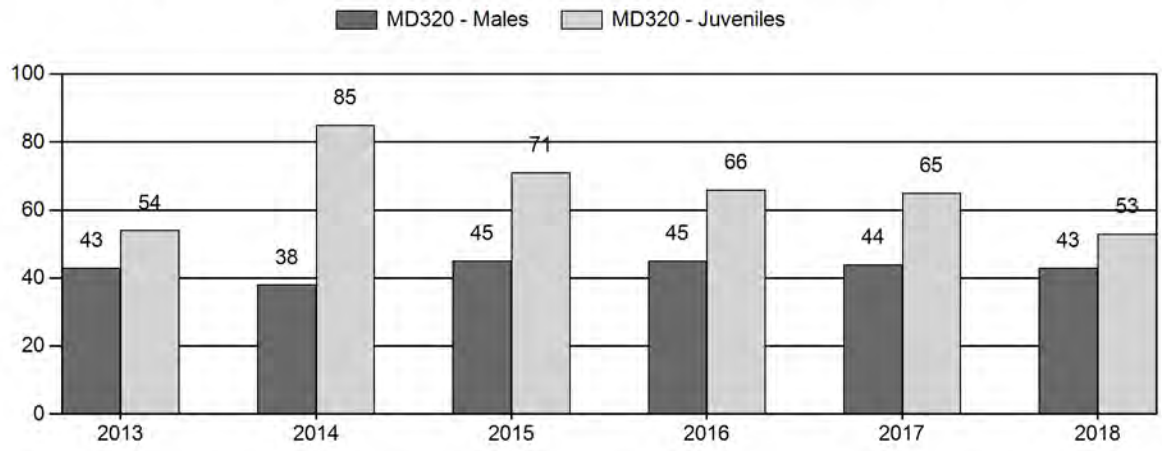
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2013 - 2018 Postseason Classification Summary

for Mule Deer Herd MD320 - PUMPKIN BUTTES

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	9,839	96	201	121	2	0	420	22%	977	51%	525	27%	1,922	979	10	33	43	± 3	54	± 3	38
2014	10,591	81	182	58	3	0	324	17%	849	45%	721	38%	1,894	1,942	10	29	38	± 3	85	± 5	61
2015	11,844	139	180	62	6	23	410	21%	903	46%	642	33%	1,955	1,521	15	30	45	± 3	71	± 4	49
2016	11,412	160	204	88	8	0	460	21%	1,027	47%	677	31%	2,164	1,365	16	29	45	± 3	66	± 4	46
2017	11,435	122	215	95	3	0	435	21%	989	48%	647	31%	2,071	1,329	12	32	44	± 3	65	± 4	45
2018	10,528	72	251	134	9	0	466	22%	1,074	51%	564	27%	2,104	1,422	7	37	43	± 3	53	± 3	37

2019 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 deer
19	7	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	2500

SUMMARY OF CHANGES IN LICENSES NUMBERS

Hunt Area	Type	Quota change from 2018
19		No change
29		No change
31		No change
Herd Unit Total		**No change**
Region C		**+200**

Management Evaluation

Current Postseason Population Management Objective: 13,000
Management Strategy: Private Lands
2018 Postseason Population Estimate: 10,500
2019 Proposed Postseason Population Estimate: 11,400
2018 Hunter Satisfaction: 74% Satisfied, 18% Neutral, 8% Dissatisfied

Herd Unit Issues

The Pumpkin Buttes Mule Deer Herd Unit consists of hunt areas 19, 29, and 31. The herd unit is managed by the Buffalo and Gillette Wildlife Biologists, with the Buffalo Biologist having reporting responsibility. The management objective is a post-season population objective of

13,000 deer. During the 2013 herd unit review, the objective was increased from 11,000 deer and the management strategy was changed from recreational to private lands management. No changes were made during the 2018 objective review. 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.

Weather

Weather conditions are summarized from Natural Resources Conservation Services Applied Climate Information System (www.wcc.nrcs.usda.gov) data from the Kaycee and Midwest stations (Station IDs 5055 and 6195, respectively) for precipitation and the Palmer Drought Index (www.ncdc.noaa.gov) from Climate Division 5 (Powder, Little Missouri and Tongue drainages) for drought conditions.

The beginning of the 2018 biological year had much higher precipitation than average for the month of June, however it was followed by a dry summer and average fall and winter. The previous winter had average precipitation; however it was colder than normal. This winter has had locally variable precipitation levels, with the Powder River basin averaging below average precipitation. February had unusually persistently cold temperatures. Severe winter conditions may have affected fawn recruitment of the 2017 cohort (see Field Data below). Timing of precipitation in summer 2018 followed by cold February temperatures may similarly affected fawn recruitment of the 2018 cohort.

Habitat

The herd unit consists of sagebrush and sage-grassland with small breaks. Grazing regimes for sheep and cattle can vary annually and impact utilization, particularly in dry years. Coalbed methane gas development was fairly extensive in hunt area 19 and the northeast portion of hunt area 29. Recently, as methane wells are plugged and abandoned, the BLM is working to remove infrastructure and eliminate and reclaim well pads and unneeded roads.

Spring 2018 precipitation provided for average shrub growth and good herbaceous forage production. Dry summer conditions may have negatively impacted the mule deer forage growing seasons, however. Winter conditions were normal with some colder temperatures, however large-scale deer winter mortality was not expected or observed.

Field Data

The post-season classification survey was conducted in November and December via ground and aerial classifications. The classification resulted in 2,104 deer classified, achieving an adequate sample size of ≥1,422 deer.

Classifications in 2018 resulted in a fawn:doe ratio of 53:100, the lowest ratio in the past five years. The yearling male:doe ratio (7:100) was very low, following a higher 2017 fawn:doe ratio of 65:100. These results indicate that the 2017-2018 winter may have resulted in higher fawn mortality than expected. In addition, timing of 2018 precipitation and dry summer conditions have resulted in poorer habitat conditions than expected, leading to poor fawn recruitment in 2018.

The 2018 buck:doe ratio was 43:100, which is equivalent to the previous five-year average. High buck ratios in this herd unit are attributed to the private land status of this herd unit and the conservative hunting philosophy of outfitters and landowners.

The annual landowner survey results show landowners continue to desire a higher deer population. Of the 17 respondents, 41% think the population is at desired levels and 47% believe the population is below desired levels.

Harvest Data

Total harvest (633) was slightly below the previous five-year average (643 from 2013 to 2017). Hunter success (65%) is very consistent and higher than the statewide success rate for general license areas (41%). Hunter numbers increased in 2016 and 2017, due in part to a 100 license increase in the 2016 and 2018 Region C quotas. Resident hunters have outnumbered non-residents since 2014, which is unexpected given the large percentages of private land.

Hunters were very satisfied with the 2018 hunting season with 74% expressing satisfaction with their hunt, showing virtually identical results to the 2017 survey. Satisfaction was notably higher for non-residents (85%) as compared to residents (64%). We do not know how satisfaction varies between public and private land hunters and expect non-residents to have higher satisfaction because they are more likely to pay for access to private lands.

Population

We used integrated population models, referred to as Excel Spreadsheet Models, based on White and Lebow (2002) to estimate the population. Model parameters and input follow the "User's Guide: Spreadsheet Model for Ungulate Population Data" (Morrison 2012).

The Time-Specific Juvenile & Constant Adult Survival (TSJ, CA) model was selected because it out-performed the Semi-Constant Juvenile & Semi-Constant Adult Survival model based on AIC ranking and because the Constant Juvenile & Adult Survival model appears to have grossly over-estimated population estimates. The TSJ, CA estimates produced results that align with the landowner survey, classification data, and harvest data.

The 2018 post-season population estimate of 10,500 deer maintains this population at the low end of objective. The model estimates indicate the population has been at objective since 2014. The population estimates show the population increasing from 2011 to 2015 and remaining stable with annual fluctuations since 2015. The model predicts an increase in the 2019 population, which could be due the population rebounding after low fawn and yearling male ratios observed in 2018; decreased the 2018 population estimate.

The three models produced very similar population trends, however the population estimates were grossly different. This leads to some confidence in the general trend of population stability in recent years, however leads to uncertainty in the credibility of the model's ability to produce population estimates. Additionally, independent survival estimates are lacking so the user manual suggested starting values were applied. This model is therefore considered a fair model.

Management Summary

This herd unit is at objective and we do not expect excessive winter mortality to affect the 2019 hunting season.

The herd unit continues to have high hunter success (65%). Seasons continue to be very conservative, with less than one percent of the estimated pre-hunt doe population being harvested; so harvest strategies are not limiting the growth of this herd. Weather is the most significant factor influencing fawn ratios and fawn ratios and recruitment are the major population drivers. Dry summer conditions in 2018 resulted in low fawn survival and may have impacted deer nutritional condition coming into the 2018/2019 winter. Average winter precipitation may combat the effects of colder February temperatures of wintering deer, however.

The 2019 seasons are unchanged. Increasing the nonresident Region C quota by 200 licenses to 2,500 licenses is expected to provide additional opportunity to nonresidents, given that nonresident success and satisfaction continue to be very high. The population is expected to increase slightly in 2019.

Literature Cited

Morrison, T. 2012. User Guide: Spreadsheet model for ungulate population data. Wyoming Cooperative Fish and Wildlife Research Unit. Unpublished. 41 pp.

White, G.C. and B.C. Lubow. 2002. Fitting population models to multiple sources of observed data. Journal of Wildlife Management 66:300-309.

2018 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2018 - 5/31/2019

HERD: MD321 - NORTH BIGHORN

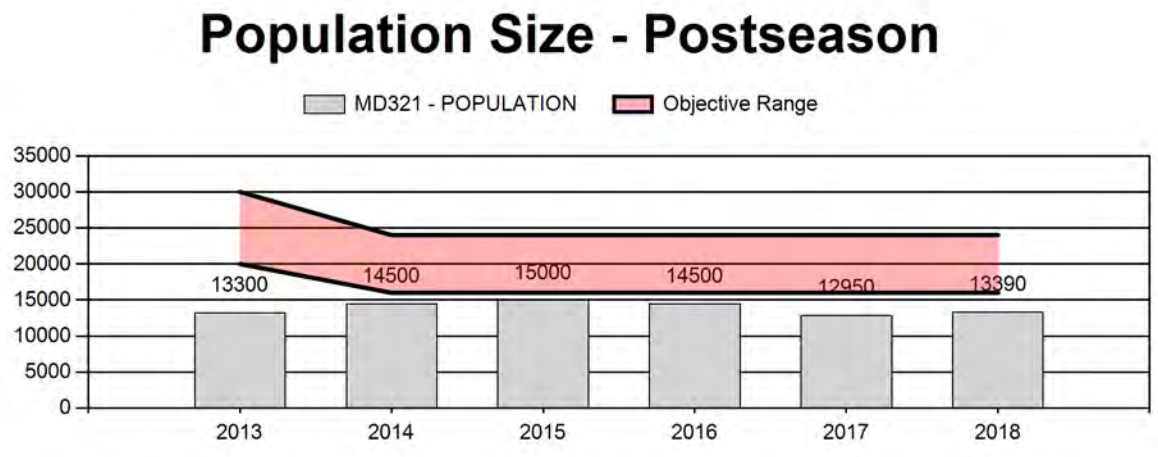
HUNT AREAS: 24-25, 27-28, 50-53
PREPARED BY: TIM THOMAS

	2013 - 2017 Average	2018	2019 Proposed
Population:	14,050	13,390	14,100
Harvest:	1,419	1,150	1,220
Hunters:	3,351	2,867	3,000
Hunter Success:	42%	40%	41%
Active Licenses:	3,459	3,003	3,100
Active License Success:	41%	38%	39%
Recreation Days:	16,367	14,551	14,000
Days Per Animal:	11.5	12.7	11.5
Males per 100 Females	31	30	
Juveniles per 100 Females	74	66	

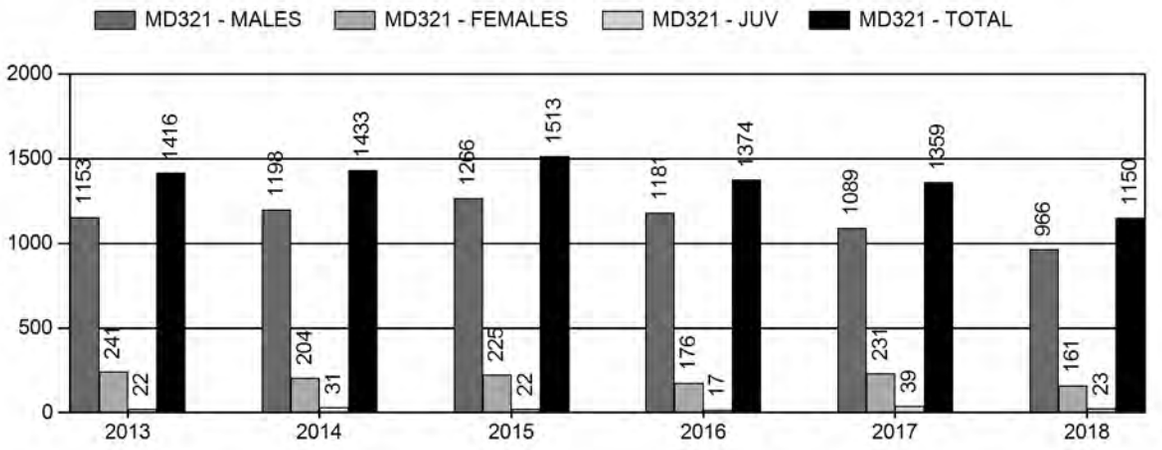
Population Objective (± 20%) :	20000 (16000 - 24000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-33.0%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/28/2019

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

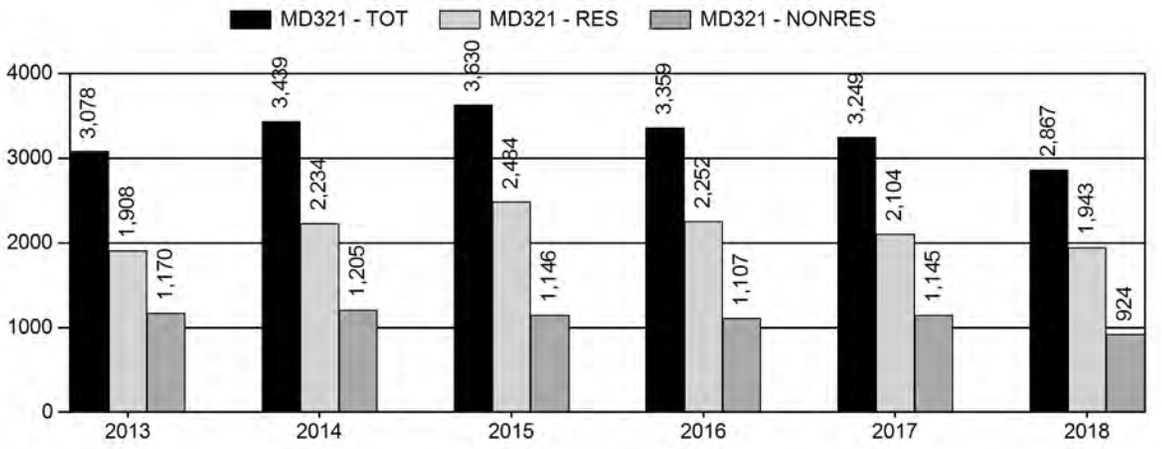
	JCR Year	Proposed
Females ≥ 1 year old:	3%	3%
Males ≥ 1 year old:	34%	33%
Total:	9%	9%
Proposed change in post-season population:	2%	2%



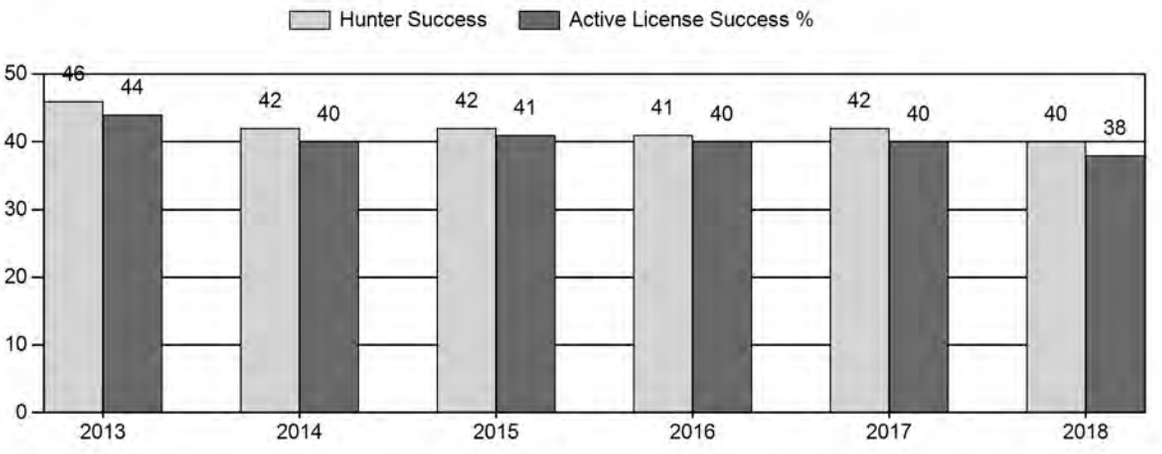
Harvest



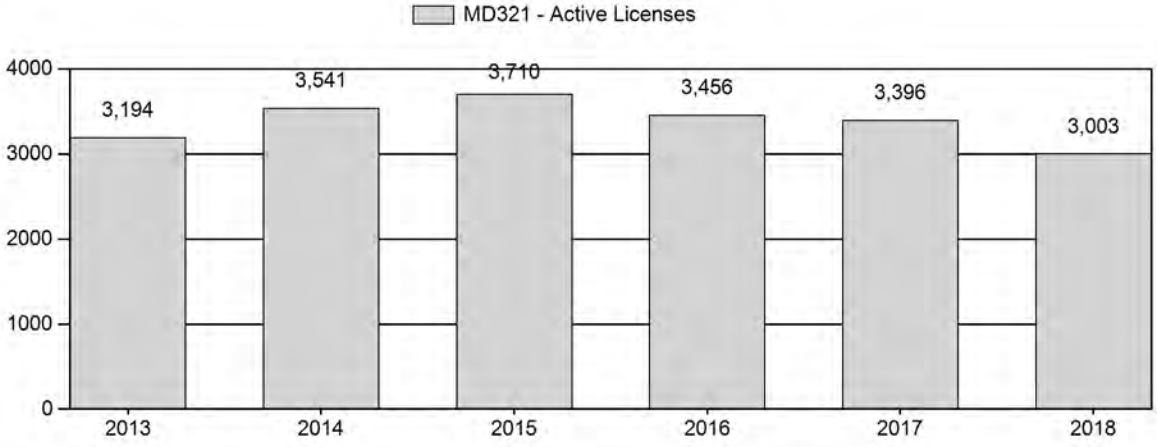
Number of Active Licenses



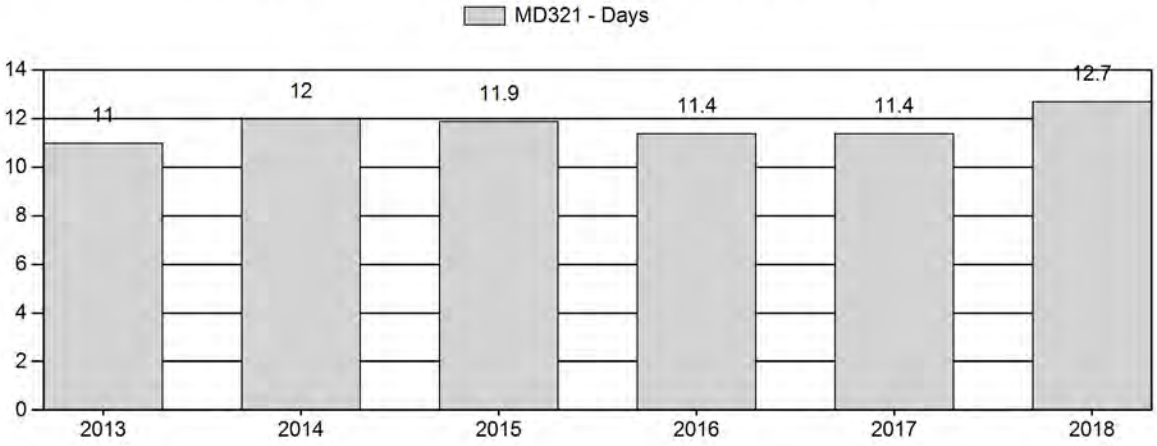
Harvest Success



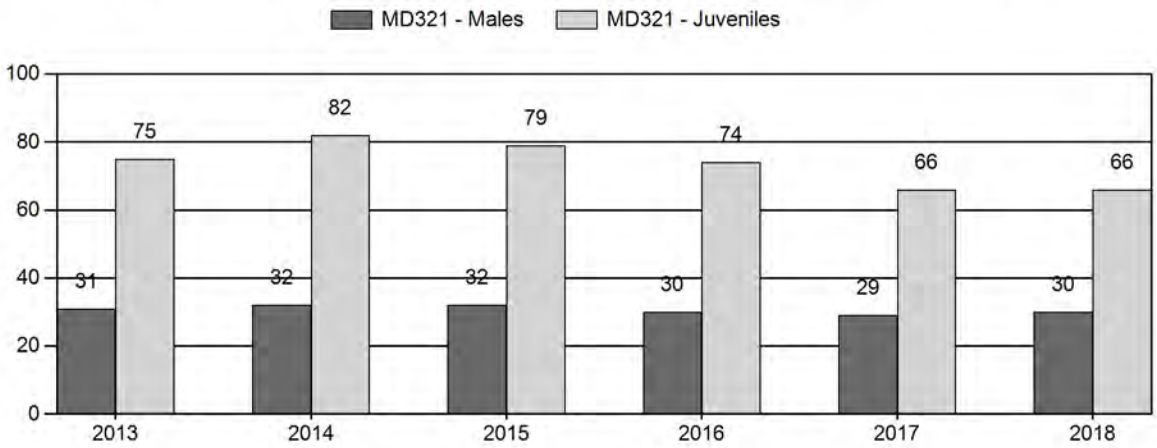
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary
for Mule Deer Herd MD321 - NORTH BIGHORN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	14,841	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2014	16,000	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2015	16,650	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2016	16,000	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2017	14,500	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2018	14,655	20	63	83	26%	160	50%	80	25%	323	979	12	39	52	± 0	50	± 0	33

2013 - 2018 Postseason Classification Summary
for Mule Deer Herd MD321 - NORTH BIGHORN

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	13,300	128	0	0	0	190	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	14,500	116	38	28	4	132	318	15%	1,044	49%	771	36%	2,133	1,544	11	19	30	± 2	74	± 4	57
2017	12,950	122	60	35	4	160	381	15%	1,302	51%	859	34%	2,542	1,267	9	20	29	± 2	66	± 3	51
2018	13,390	114	157	56	6	0	333	15%	1,096	51%	728	34%	2,157	1,278	10	20	30	± 2	66	± 4	51

2019 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
	7	Sep. 1	Dec. 15	250	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 mule deer or any white-tailed deer
51		Oct. 15	Oct. 24		General	Antlered mule deer or any white-tailed deer
	6	Oct. 15	Nov. Nov. 15	50	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
	7	Oct. 15	Nov. 15	100	Limited quota	Doe or fawn valid within one (1) mile of Shell Creek
52		Oct. 15	Oct. 24		General	Antlered mule deer or any white-tailed 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. 24		General	Antlered mule deer or any white-tailed 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	600
Y	24, 25, 27, 28, 30, 32, 33, 163, 169	1,800

Hunt Area	Type	Quota change from 2018
24	7	+ 50
Herd Unit Total	**7**	**+ 50**
Region Y		**No Change**
Region R		**No Change**

Management Evaluation

Current Postseason Population Management Objective: 20,000
Management Strategy: Recreational
2018 Postseason Population Estimate: ~ 13,400
2019 Proposed Postseason Population Estimate: ~ 14,100
2018 Hunter Satisfaction: 66% Satisfied; 19% Neutral; 15% Dissatisfied

Herd Unit Issues

The North Bighorn Mule Deer Herd Unit is located in north central Wyoming. It basically covers the northern portion of the Bighorn Mountains and associated foothills. The Sheridan and Cody Regions share management, with the Sheridan wildlife biologist having herd unit reporting responsibility. Three wildlife biologists and five game wardens have management responsibility.

This herd unit contains eight hunt areas. Areas 24, 25, 27 and 28 are on the east side of the Bighorn Mountains and Areas 50-53 are on the west side. Areas 24, 27, 51 and 52 contain predominately private lands while areas 25, 28, 50 and 53 contain mostly public lands.

We manage the North Bighorn Mule Deer Herd Unit for a post-season population objective of 20,000 mule deer, with a recreational management strategy. We revised the objective and management strategy for this herd in 2014. We conducted a 5-year herd unit evaluation in 2019, resulting in no recommended changes.

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 quality and competition from other ungulates for preferred forage. We do not think predation is a significant limiting factor most years, although we recognize predation is a contributing factor to mule deer mortality.

Herd Unit Review

The herd unit objective and management strategy were revised in 2014. This year, we evaluated and considered population status, hunter satisfaction, observed buck to doe ratios and habitat data included in this report. There is significant concern by hunters and managers about the population status and buck quality. We have collected age and antler measurements from hunter harvested

deer during 2015-2018. Most bucks harvested are ≤4 years old, which isn't unexpected in an area managed for recreational opportunity. Hunters have requested an increase in the age and number of bucks on the public lands portions of this herd. Since most deer migrate off the national forest prior to post-season classifications surveys, we initiated pre-season classifications surveys in 2018 in Hunt Areas 25, 28, 50 and 53 to better understand this portion of the population.

The current object and strategy meet our management needs. We concluded a change is not warranted at this time. We will review the herd objective and management strategy again in 2024. If the situation arises that a change is necessary, we will review and submit a proposal as needed.

Weather

Temperature and precipitation data referenced in this section were collect at the Burgess Junction (#481220), Shell (#488124) and Sheridan Airport (#488155) weather stations located within this herd unit. These data were reported by the Western Region Climate Center on their website (www.wrcc.dri.edu).

Spring 2018 was generally warm and wet, with slightly above normal temperatures and above normal precipitation, resulting in a good start for forage production in the Bighorn Mountains. Precipitation during May was almost twice the long-term mean. Precipitation was near normal (June and July) to above normal (August) during the summer. Temperatures through the summer were near or slightly above normal. During the fall of 2018, precipitation was below normal (September), well above normal (October) or near normal (November), with temperatures slightly below normal. Precipitation was 50% of normal during December and near normal for January. Temperatures were above average in December and January, turning cold in February. Average monthly temperature was 12^0F - 15^0F below average during February. March was slightly colder than average while April was near normal for temperature and precipitation. May was 3^0F - 5^0F colder than normal, with precipitation 1.6-2.5 times normal. Wet cool weather during parturition could negatively influence neonate survival.

Adult deer appeared to have entered the winter in good condition, allowing them to survive the winter fairly well. We received numerous reports of dead or dying fawns during late winter. Fawns are more susceptible to adverse effects of cold temperatures due to limited body reserves and small body size. Cold temperatures, as low as -17^0 F, and crusted snow in February and early March likely resulted in at least normal overwinter fawn mortality.

Habitat

Habitats in this herd unit range from mountain foothills to alpine. Lower elevations contain short-grass prairie, sage-brush steppe, mountain shrub communities as well as converted rangeland land and cultivated crop lands. As you progress upward in elevation into the Bighorn Mountains, communities change to conifer forests with some quaking aspen stands, and open parks. Willow riparian habitats occur along streams and rivers. Higher elevation habitats transition from spruce and subalpine fir to alpine habitats.

We do not have established habitat transects in this herd unit. Most deer migrate to higher elevations in the Bighorn Mountains during the spring and spend summer months on Forest Service lands. These 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. Some deer remain at lower elevations year round.

Field Data

In order to gain better understanding about the mule deer that spend part of the year on the Bighorn National Forest, we initiated summer classification surveys in 2018. During August, field personnel conducted pre-season classifications in Hunt Areas 25, 28, 50 and 53 using ground survey techniques. Managers drove assigned routes, classifying all observed mule deer. We plan to refine our survey protocol during 2019 to increase sample size and distribution of samples.

A total of 323 deer were classified, with 52% (*n*=167) of the sample from Area 25. We observed 52 bucks per 100 does and 50 fawns per 100 does. The buck to doe ratio seems reasonable and about what we would expect pre-season. Of the 63 adult bucks observed, 78% (*n*=49) were classified as Class I bucks based on antler width (≤19”). The low fawn to doe ratio concerns managers. If this sample is truly representative of the population, this level of fawn production is not sufficient to maintain this segment of the population.

During November and December, field personnel classified mule deer using both aerial (helicopter; Areas 50-53) and ground (Areas 24 and 27) survey techniques. Hunt Areas 25 and 28 are not surveyed as deer migrate out of these areas during October and are not present during the survey period. We classified 2,157 mule deer, a decrease from 2017 but still well above the desired sample at the 80% confidence level (*n*=1,278). We observed 66 fawns:100 does, the same as in 2017, but still the second lowest observed fawn to doe ratio since 2009 (66:100). Fawn production, based on observed fawn to doe ratios, has been fair to good the past five years (66-82 fawns:100 does; mean = 73 fawns:100 does). This level of production should be sufficient to maintain or slowly grow this population towards the management objective.

The observed buck to doe ratio was 30 bucks:100 does, similar to recent years. A lot of these bucks appear to be young aged animals. Mature bucks seem to be lacking in this population, resulting in smaller antlered animals generally available for harvest. Of bucks assigned to an antler class during classification surveys (n=219), 72% were Class I (<19” wide) bucks; 26% were Class II (19”-26” wide) bucks, and only 3% were Class III (>26% wide) bucks. Even though the management strategy for this herd unit is recreational hunting, some hunters - both resident and non-resident - have consistently requested better quality (i.e. larger antlered) deer. Starting in 2015, we collected antler measurements and teeth for age analysis from hunter harvested deer. This is an effort to correlate antler development with age.

Preliminary analysis suggests we harvested younger bucks (i.e. 2-4 year old bucks) at a similar or higher proportion in the North Bighorn Herd Unit compared to other hunt areas of the state where teeth were collected during 2018 (Fig. 1). This could be reflective of the true proportions these cohorts occur in this population or a function of small sample size and associated variance. No deer > 10 years old were aged from the North Bighorn Herd Unit. Deer up to 14 years of age were harvested from other hunt areas across the state. This analysis only includes deer >1-year old.

Based on field check data, hunters appear to select for deer with at least three antler points on one side. In 2015, 81% of checked deer >1 year of age (*n*=99) had at least three antler points. In 2016, 86% of deer >1 year of age (*n*=100) had at least three antler points. In 2017, 89% of the deer >1

year of age (*n*=82) had at least three antler points. In 2018, 89% of of the deer > 1 year of age (*n*=64) had at least three antler points. In 2017, hunters appeared to select for deer with at least four antler points on one side (Fig. 2). Only field checked deer with both tooth age and antler measurements were included in this analysis.

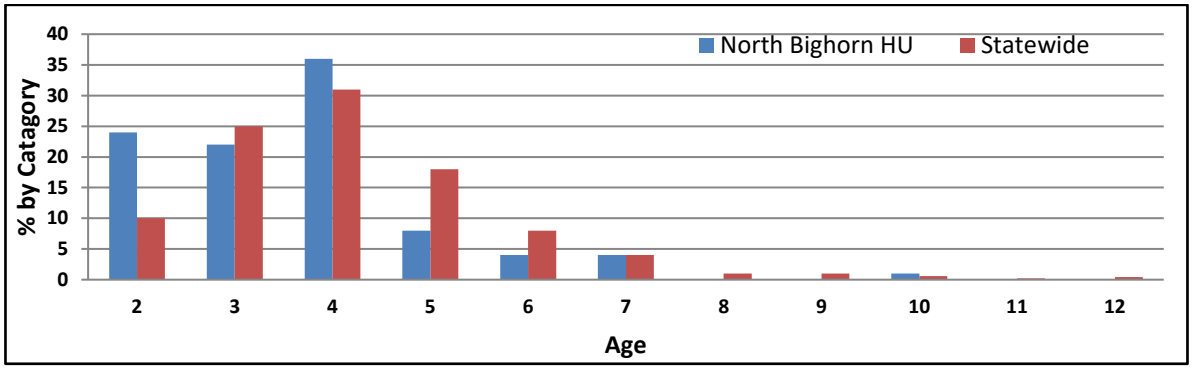


Figure 1. Age of harvested mule deer bucks, by percentage, from the North Bighorn Mule Deer Herd Unit compared to statewide tooth age data. Deer were harvested during 2018 hunting season. Yearling harvest is excluded as managers don't consistently collect teeth or record yearlings during field checks.

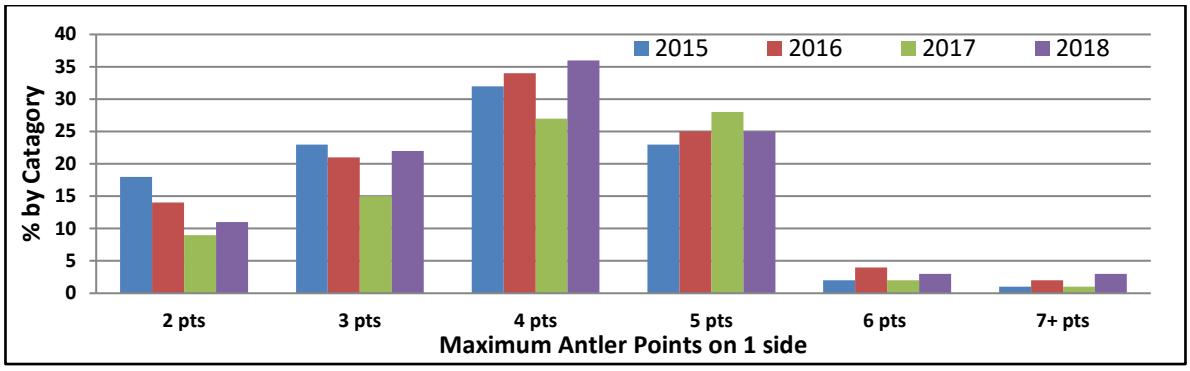


Figure 2. Antler point development of mule deer bucks, by percentage, from the North Bighorn Mule Deer Herd Unit during the 2015 - 2018 hunting seasons. Deer were categorized by largest number of antler points on one side. Yearling bucks are excluded due to inconsistency of data collection.

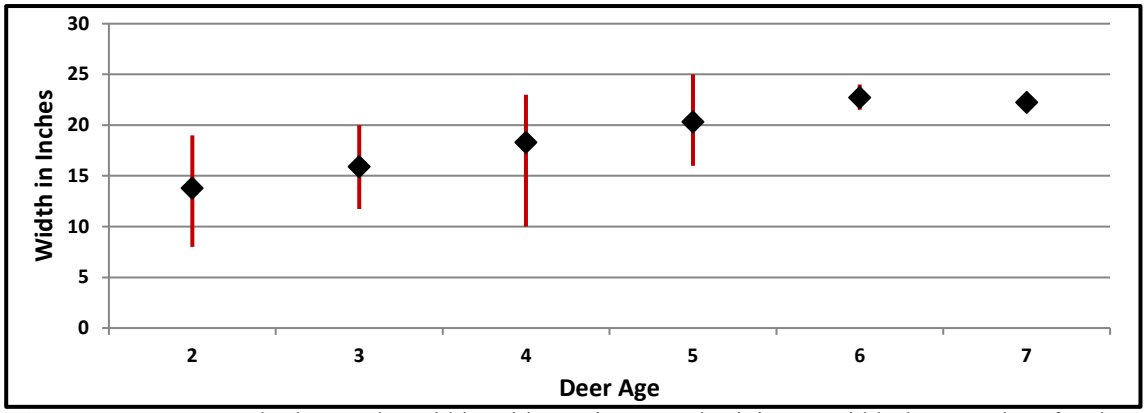


Figure 3. Average mule deer antler width, with maximum and minimum width, by age class for deer harvested from the North Bighorn Herd Unit during the 2018 hunting season. Sample collected during field checks of successful hunters.

Antler width development by age class in 2018 is about what would be expected from harvested mule deer in the North Bighorn Herd Unit (Fig. 3). As a deer ages, antler width tends to increase, leveling off around 6 years old, and dropping off for older aged animals (i.e. 8+ years). There is a lot of variation within cohorts, as is expected. It is interesting to note that most variation for 4-year old deer occurs below the average width while most variation for 5-year old deer occurs above the average width, and the variation for 6-year old deer is less and more evenly centered around the average. Average antler width did not exceed 25 inches for any age class. This could suggest there is a nutritional factor limiting larger antler development.

According to the hunter satisfaction survey attached to the harvest survey, deer hunters were generally satisfied with their hunt. Of 873 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 (19%) were neutral. Statewide, this herd unit ranked 20th out of 37 mule deer herd units for satisfaction (i.e. satisfied or very satisfied), down two place from 2017. The statewide average hunter satisfaction was 66% (range=43%-86%).

Non-resident hunters (n=264) were generally more satisfied (74%) than resident hunters (*n*=609; 62%). Hunter satisfaction was similar on the east side (61.6%; Hunt Areas 24, 25, 27, and 28) compared to the west side (62.4%; Hunt Areas 50-53) of the Bighorn Mountains. Hunt Areas 28, 50 and 53 had the lowest satisfaction rates (44%, 51%, and 58% respectively) while Hunt Areas 24, 52 and 51 had the highest satisfaction rates (75%, 71% and 70% respectively). Deer usually migrate early from Hunt Area 28, resulting in reduced opportunities and low hunter success rates during the October hunting season, likely influencing satisfaction responses.

Overall, hunter satisfaction in 2018 was similar to the 2017 hunting season. Hunter satisfaction increased in some hunt areas and decreased in others. Hunter satisfaction is generally higher in private land areas (i.e. Areas 24 and 51) and lower in public land areas (i.e. Areas 53 and 28).

Harvest

In 2018, an estimated 2,867 hunters harvested an estimated 1,150 mule deer, a 15% decrease from the 2017 harvest and 19% below the previous 5-year (2013-2017) average harvest (*n*=1,419). This was the lowest harvest in at least 40 years. This is the first time since at least 1982 that hunter numbers were under 3,000. Poor weather conditions likely contributed to few hunters going afield.

Harvest consisted of an estimated 966 bucks (84%), 161 does (14%), and 23 fawns (2%). Buck harvest declined about 11% while doe harvest decreased 30%. Buck harvest was the lowest ever recorded (i.e. 37 years). While general licenses were basically restricted to antlered deer, doe/fawn licenses were decreased for the 2018 season, accounting for the decreased doe harvest. A significant snowfall on October 13th, two days before the opening day, likely contributed to the reduced harvest.

Hunter success was 40%, slightly down from recent years. Hunters spent an estimated 12.7 days hunting per deer harvested, an increase from 11.4 days in 2017 and above the 5-year average of 11.5 days/harvest. Statewide, hunters spent 9.1 days hunter per deer harvested and hunter success was 54%. These harvest statistics suggest deer were generally difficult to find during 2018.

In 2018, approximately 31% of the hunting pressure and 42% of the harvest occurred in west side hunt areas (Hunt Areas 50-53) while 69% of the hunting pressure and 58% of the harvest occurred

in east side hunt areas (Hunt Areas 24, 25, 27, & 28). Archery hunters are generally more successful in this herd unit compared to statewide success (Fig. 4). This is especially evident in Hunt Area 25 where the archery hunters harvested an average of 56% of the mule deer from 2011-2018.

Hunt Area 24 saw the highest total harvest (*n*=359; 31%), as well as buck harvest (*n*=249; 26%). Hunt Area 28 saw the lowest deer harvest (*n*=37; 3%). Hunt Area 51 had the highest success rate (66%) and Hunt Area 28 had the lowest success rate (13%). Hunt Area 51 saw the lowest effort rate (5.8 days/animal), while Hunt Area 28 had the highest effort rate (36.6 days/animal). These harvest statistics are generally similar to those from the 2017 season.

Population

The 2018 post-season population estimate is about 13,400 mule deer, about 33% below the management objective of 20,000 deer. This population most recently peaked around 2006, then decreased, and now appears to have stabilized at around 13,000 - 14,000 deer. From 2005-2012, hunters harvested an average of 581 does annually, which likely contributed to a decline in this population. Hunters and field personnel have noticed a decline in this deer population over the past decade. The population stabilized and has started to slowly increase with lower doe harvest, good fawn production and mild environmental conditions in recent years.

We use integrated population models in an Excel spreadsheet format, based on White and Lebow (2002), to estimate the mule deer population. 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 to input in the model.

The "Time-Specific Juvenile – Constant Adult Survival Rate" (TSJ,CA) model was chosen to estimate the postseason population. This simulation model had the lowest relative Akaike information criterion (AIC) value of the three models (87 compared to 107 or 110), and had the lowest fit (5 compared to 71 or 101). This model also appeared to reasonably simulate the perceived population dynamics of this herd. Since we do not have an independent population estimate or age specific survival data for this herd, we consider this simulation model to be of "fair" quality.

Management Summary

Hunting strategies on public land, primarily the Bighorn National Forest, have generally been conservative. Hunting strategies on private lands have generally been more liberal, often designed to address damage complaints to stored or cultivated crops. Several larger ranches outfit for mule deer, which generally results in limited harvest. Hunting seasons traditionally run 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 long.

An archery pre-season occurs the entire month of September. Archery hunting accounted for 16% of the 2018 harvest (18% of buck harvest), including 60% of the Hunt Area 25 harvest (n-161). Statewide, archery hunters harvested an estimated 5% of the mule deer harvest (Fig. 4).

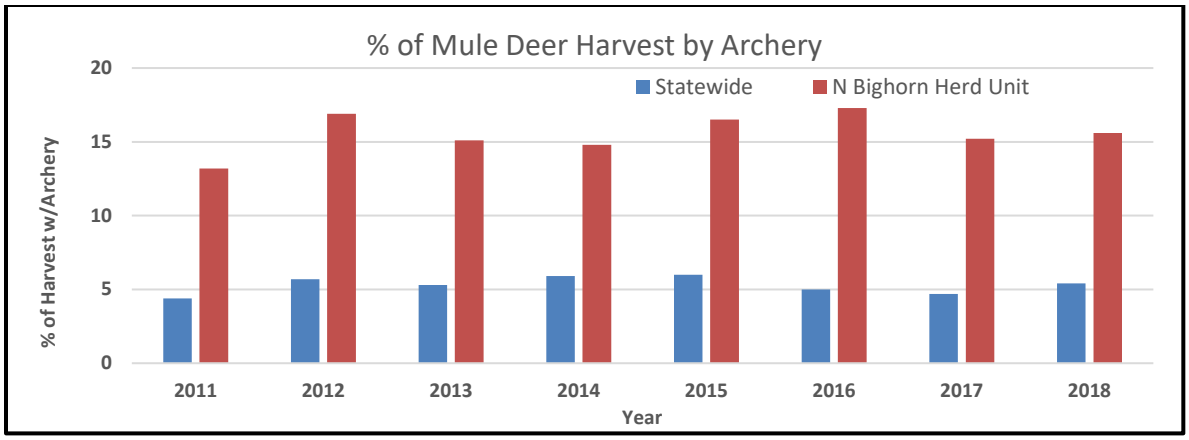


Figure 4. Percentage of mule deer harvest by archery hunters from 2011-2018 for North Bighorn Mule Deer Herd Unit and Statewide.

We standardized the general license limitations in all hunt areas to "Antlered mule deer or any white-tailed deer", eliminating antlerless harvest on this license. Doe/fawn harvest will be limited to hunt areas with Type 6 or 7 licenses. During 2018, hunters harvested 34 does and fawns on a general licenses, all in Hunt Area 24.

In Area 24, we increased Type 7 licenses from 200 to 250 for the 2019 season to offset the change in general license limitations. These licenses are valid only on private land, protecting the limited public lands in this hunt area from over harvest. In 2018, 59% of the harvest (n=129 total) on this license type was mule deer (*n*=76). This license allows some landowners the opportunity to address localized problems of higher than desired mule deer numbers.

We maintained doe/fawn license quotas in Hunt Areas 51 and 52 for the 2019 season. These licenses are provided to address damage issues on agricultural croplands.

We estimate a harvest of about 1,200 mule deer for 2019. With average recruitment, stable fawn production and similar proposed harvest, we estimate a 2019 post-season population of about 14,000 mule deer, below the management objective but stable.

We maintained the nonresident Region Y deer quota at 1,800 licenses for 2019. 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 47% of the total mule deer harvest in Region Y during 2018 and 38% of the mule deer harvested by nonresident hunters in this region.

We maintained the nonresident Region R deer quota at 600 licenses for the 2019 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. Nonresident hunters in that portion of Region R in the North Bighorn Herd Unit (Areas 50-53) are significantly more successful at harvesting mule deer than resident hunters. Three hundred thirty-four nonresident hunters harvest 254 mule deer (53% success) while 636 resident hunters harvested only 234 mule deer (32% success). Hunt Areas 50-53 accounted for 47% of the total mule deer harvest in Region R (Hunt Areas 41, 46, 47, 50-53) and 43% of the mule deer harvested by nonresident hunters in Region R.

Since 1978, when the WGFD started testing for chronic wasting disease (CWD), there have been 27 mule deer and 32 white-tailed deer that tested positive within this herd unit. Sampling effort has not been consistent between years. There has been at least one positive deer in Hunt Areas 24, 27, 28, 51 and 52. We have yet to detect CWD positive deer in Hunt Areas 25, 50 or 53. In 2018, there were 20 deer (6 mule deer and 14 white-tailed deer) that tested positive for CWD in this herd unit.

The Sheridan Region will be a focus area for CWD sampling during the 2019 season. Increased sample sizes should give us a better idea of current distribution and prevalence rates for CWD in this deer population.

Special Projects

During 2018, we sent surveys to 1,587hunters who reported hunting in Hunt Areas 25, 28, 50 and/or 53 at least once during the 2015-2017 seasons. Three hundred-twenty hunters responded, including 128 nonresident and 192 resident hunters.

Forty-eight percent of respondents indicated they were very satisfied (10.6%) or satisfied (37.2%), compared to 53.9% reported from the hunter harvest survey satisfaction. Respondents were similarly dissatisfied (29.1%) compared to the hunter harvest survey response (23.9%). Neutral responses were similar between both surveys (23.1% vs. 22.3%).

The number one reason for hunter dissatisfaction was “too few deer” (22.3%), followed by “few trophies” (15.9%) and “too crowded” (13.3%). The primary reasons for hunter satisfaction were “enjoy hunting” and “enjoy family/friends” (both at 14.9%), “enjoy outdoors” (14%) and “good location” (13.5%).

When asked how satisfied they were with the number of deer, 36.6% responded as satisfied, 28.7% as neutral, and 34.7% as dissatisfied. When asked specifically about the number of bucks, only 29.1% responded as satisfied, 25.6% as neutral and 45.4% were dissatisfied. This was not a surprise as managers have heard concern about buck numbers and total deer numbers for several years.

Based on the concerns expressed, 42.3% of respondents would support limiting the number of hunters. Yet 82.4% indicated it was somewhat important (31.6%) or very important (50.8%) to be able to hunt every year.

The full survey results are attached as Appendix A of this report.

Literature Cited

Morrison, T. 2012. User Guide: Spreadsheet model for ungulate population data. Wyoming Cooperative Fish and Wildlife Research Unit. Unpublished. 41 pp.

White, G.C. and B.C. Lubow. 2002. Fitting population models to multiple sources of observed data. Journal of Wildlife Management 66:300-309

Appendix A

North Bighorn Mule Deer
Hunter Survey

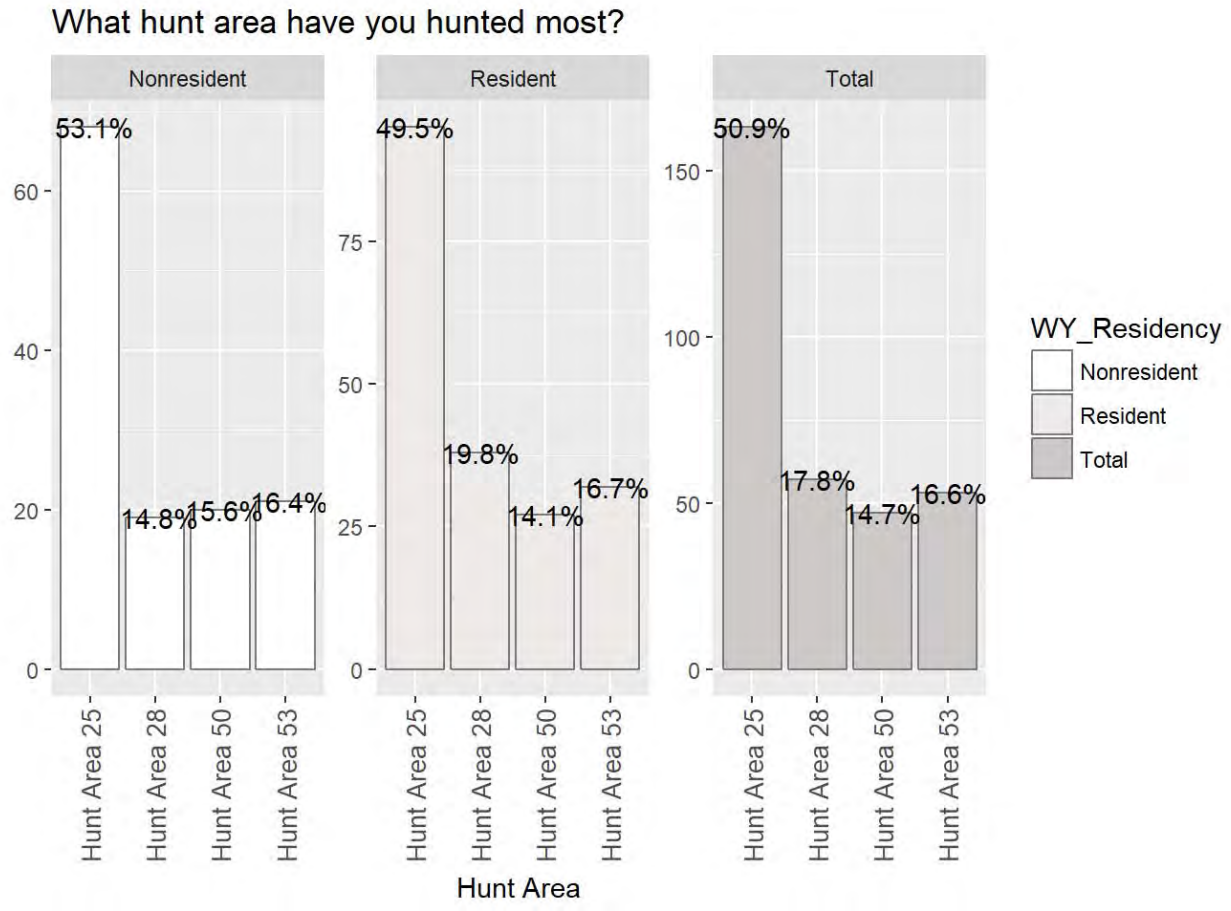
2018

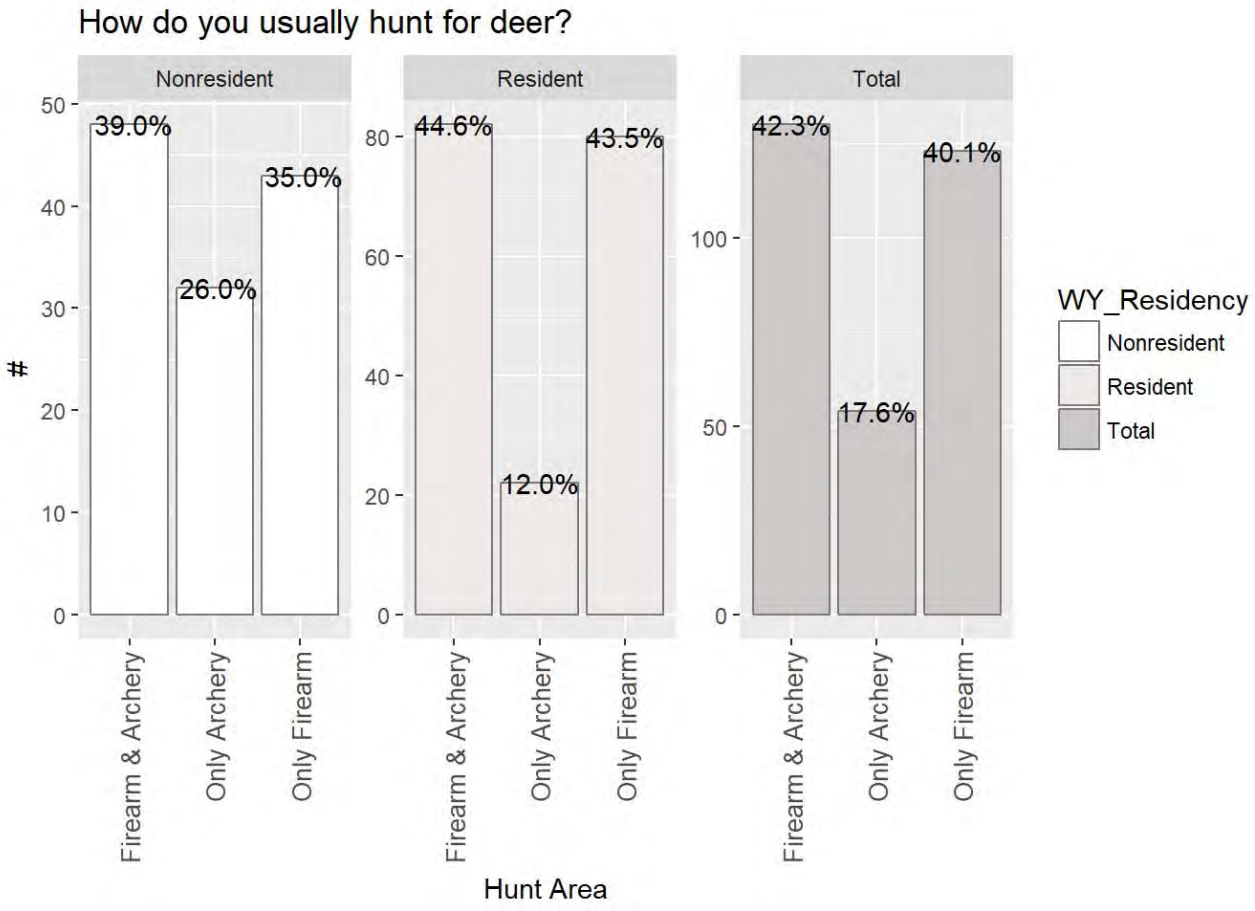
Conducted and Compiled by
Emily Gates
Statewide Wildlife and Habitat Management Section
Wildlife Division
Wyoming Game and Fish Department

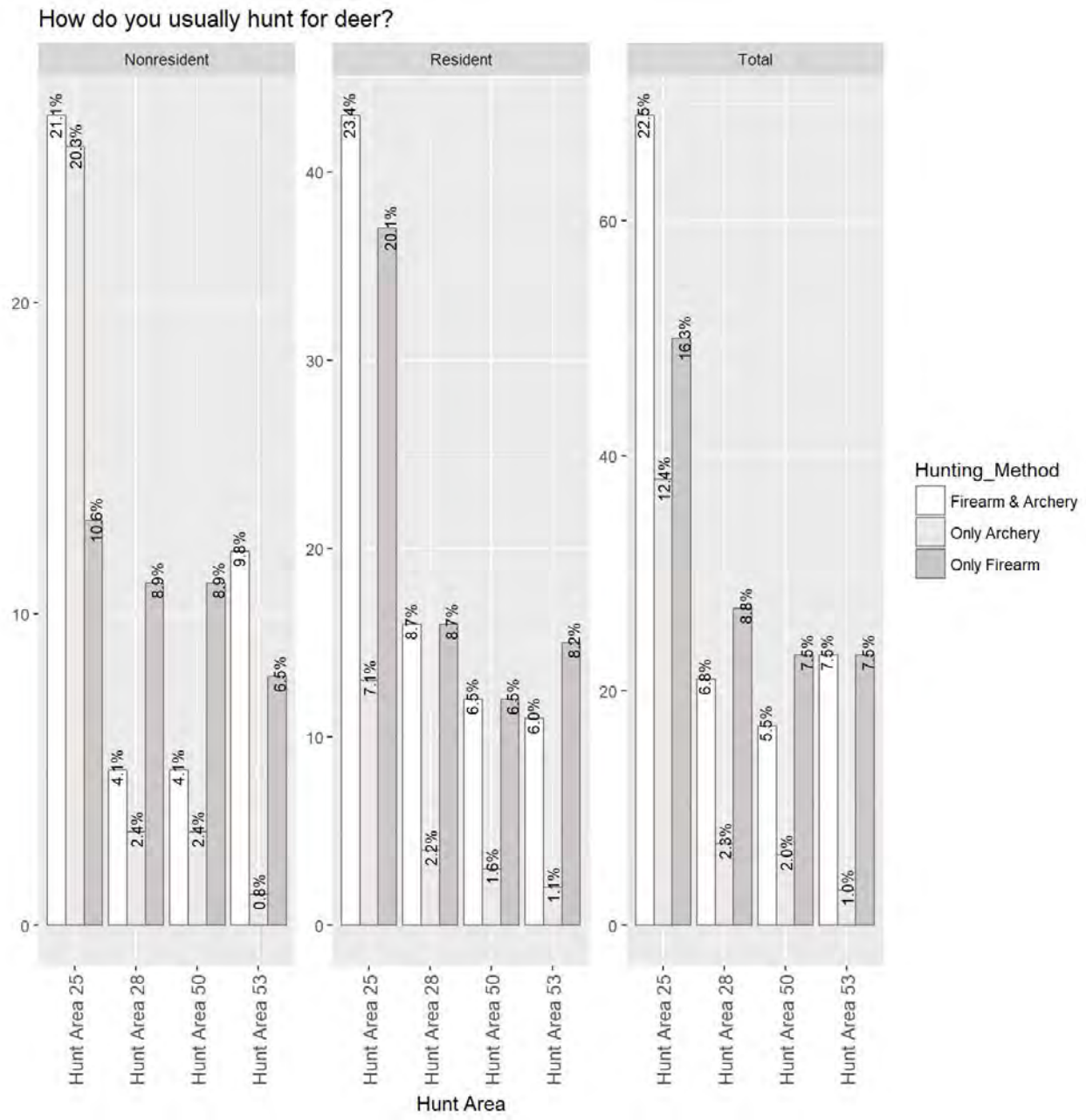
Noth Bighorn Mule Deer Hunter Survey

Responders:

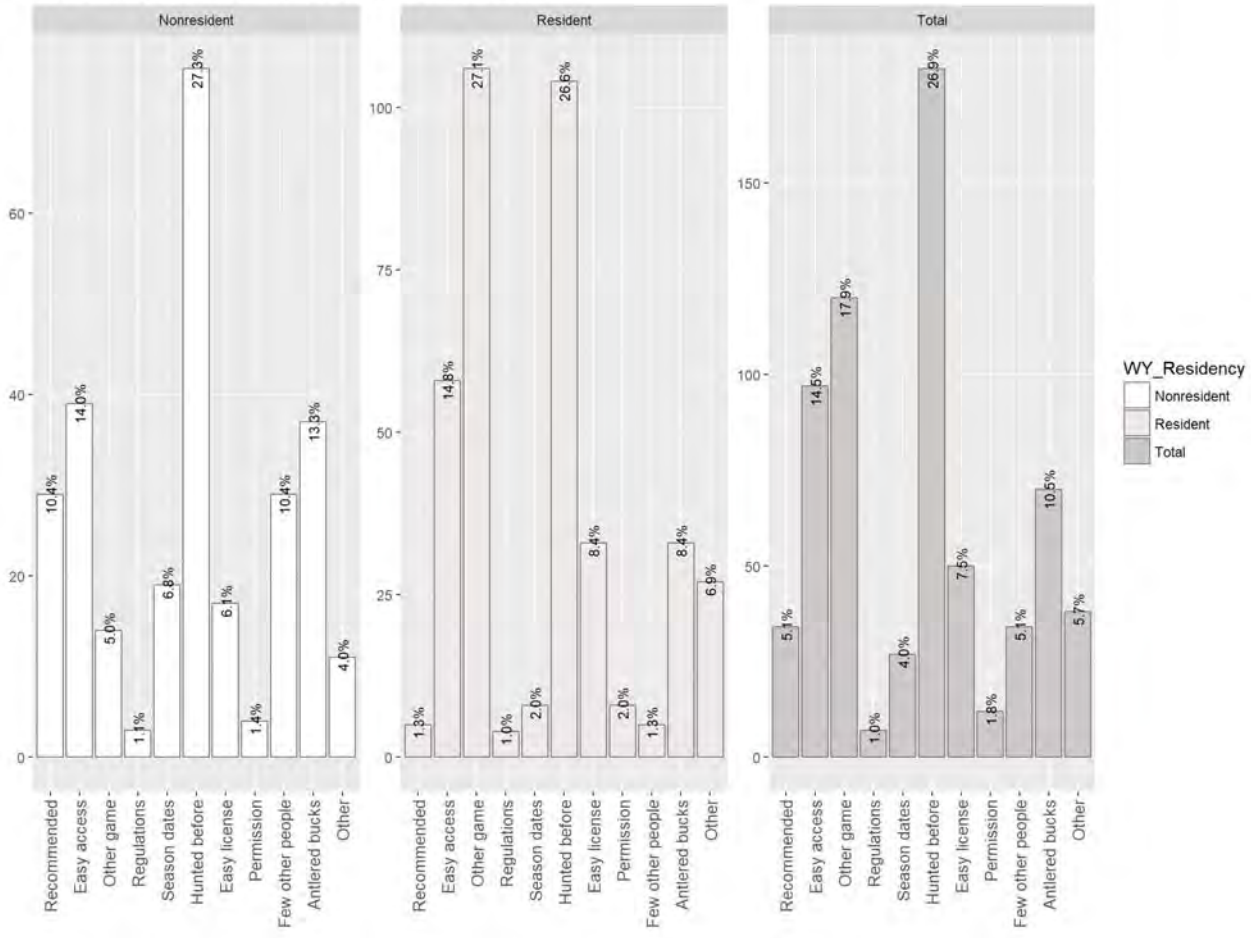
WY_Residency	#
Nonresident	128
Resident	192
Total	320

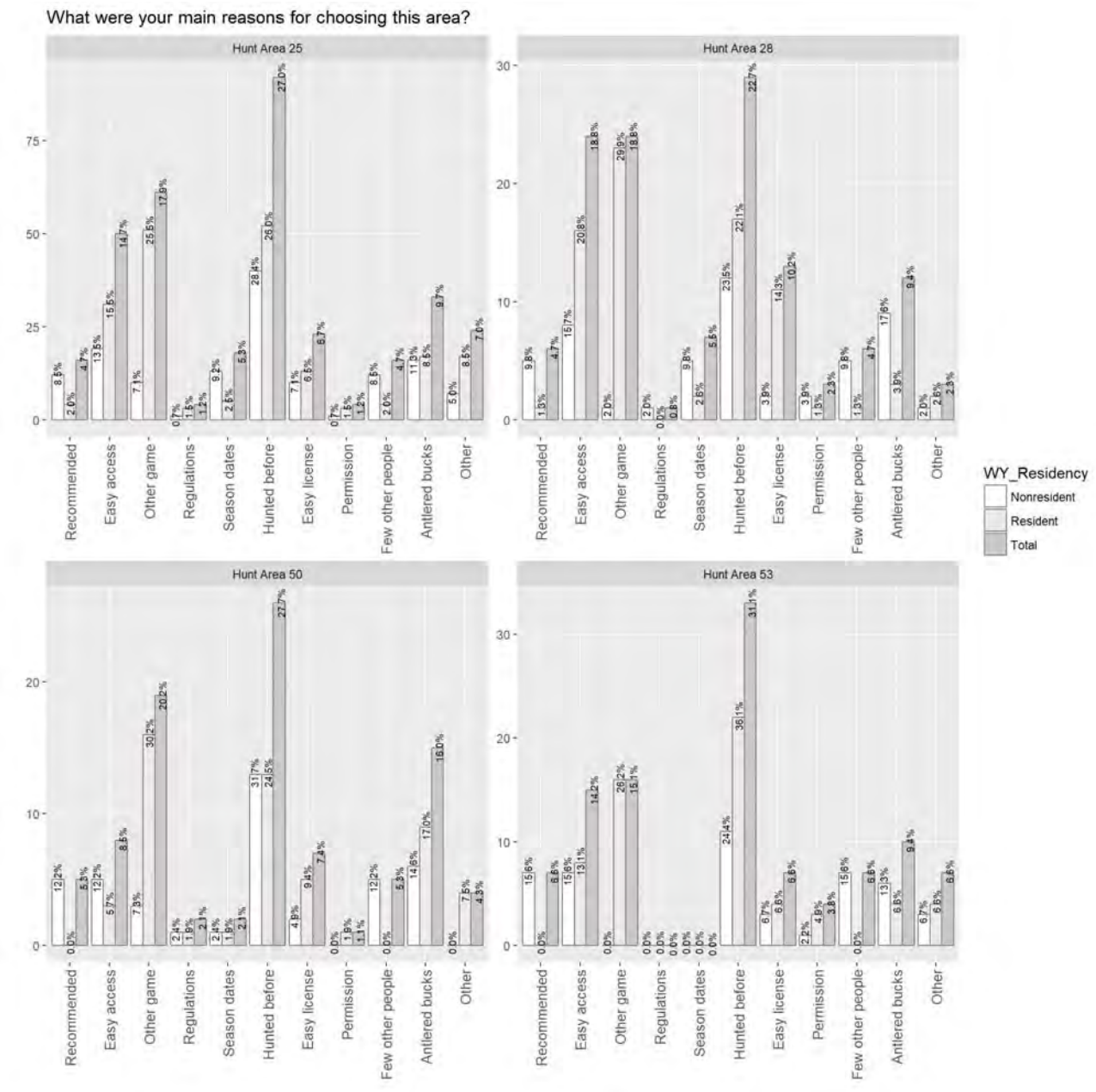



How do you usually hunt for deer?
Nonresident
Resident
Total
#
Hunt Area
Firearm & Archery
Only Archery
Only Firearm
39.0%
26.0%
35.0%
44.6%
12.0%
43.5%
42.3%
17.6%
40.1%
WY_Residency
Nonresident
Resident
Total


How do you usually hunt for deer?
Nonresident
Resident
Total
21.1%
20.3%
10.6%
4.1%
2.4%
8.9%
4.1%
2.4%
8.9%
9.8%
0.8%
6.5%
23.4%
7.1%
20.1%
8.7%
2.2%
8.7%
6.5%
1.6%
6.5%
6.0%
1.1%
8.2%
22.5%
12.4%
16.3%
6.8%
2.8%
8.8%
5.5%
2.0%
7.5%
7.5%
1.0%
7.5%
Hunt Area 25
Hunt Area 28
Hunt Area 50
Hunt Area 53
Hunt Area
Hunting_Method
Firearm & Archery
Only Archery
Only Firearm

What were your main reasons for choosing this area?



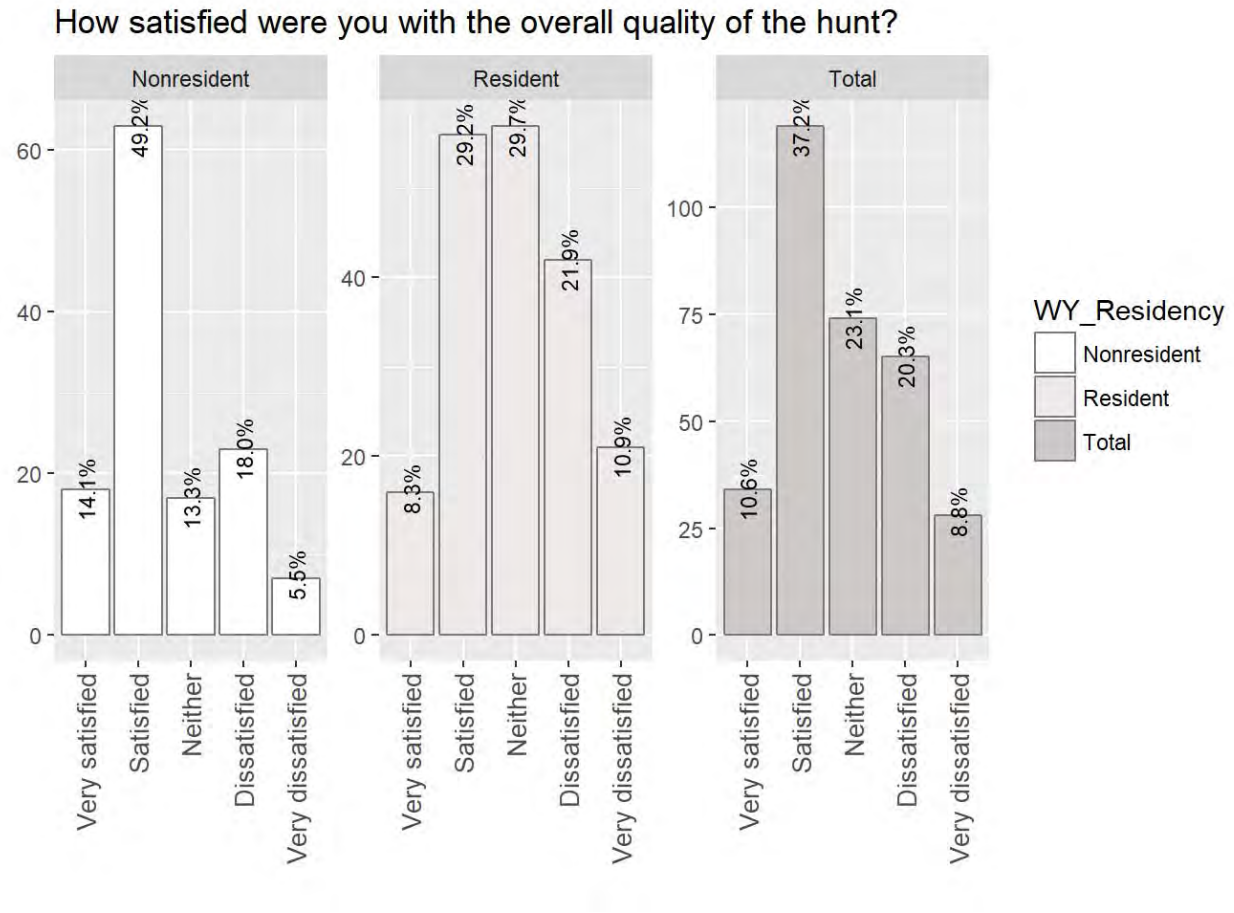


Other:

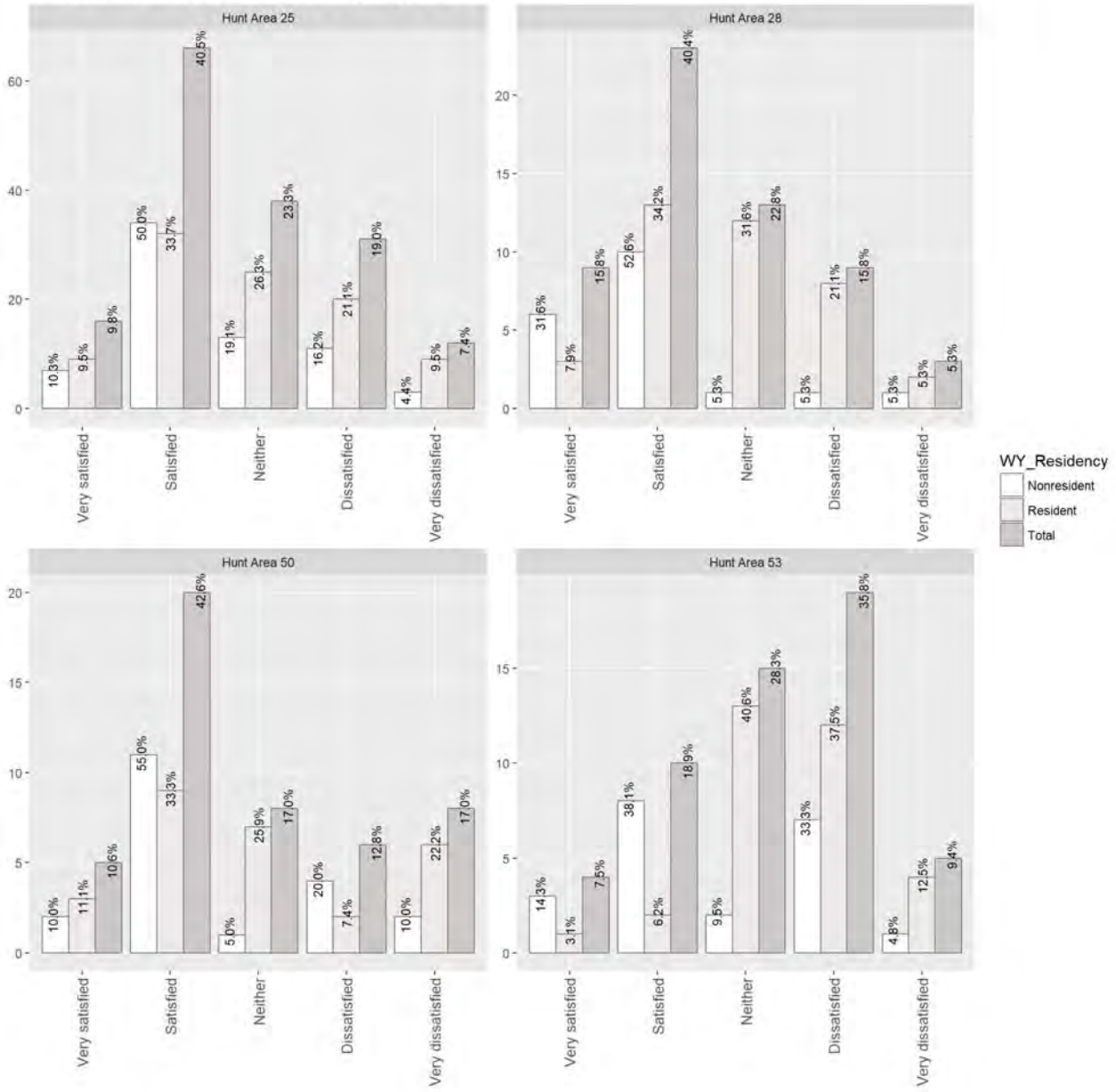
WY_Residency	Hunt_Area	Main_Reasons_Other..please.specify.
Resident	Hunt Area 25	Close to home
Resident	Hunt Area 25	Close to home
Resident	Hunt Area 25	Proximity to home
Nonresident	Hunt Area 25	Did not hunt Muley. Hunted whitetails
Resident	Hunt Area 53	It is the closest area to my home
Resident	Hunt Area 25	No grizzlies

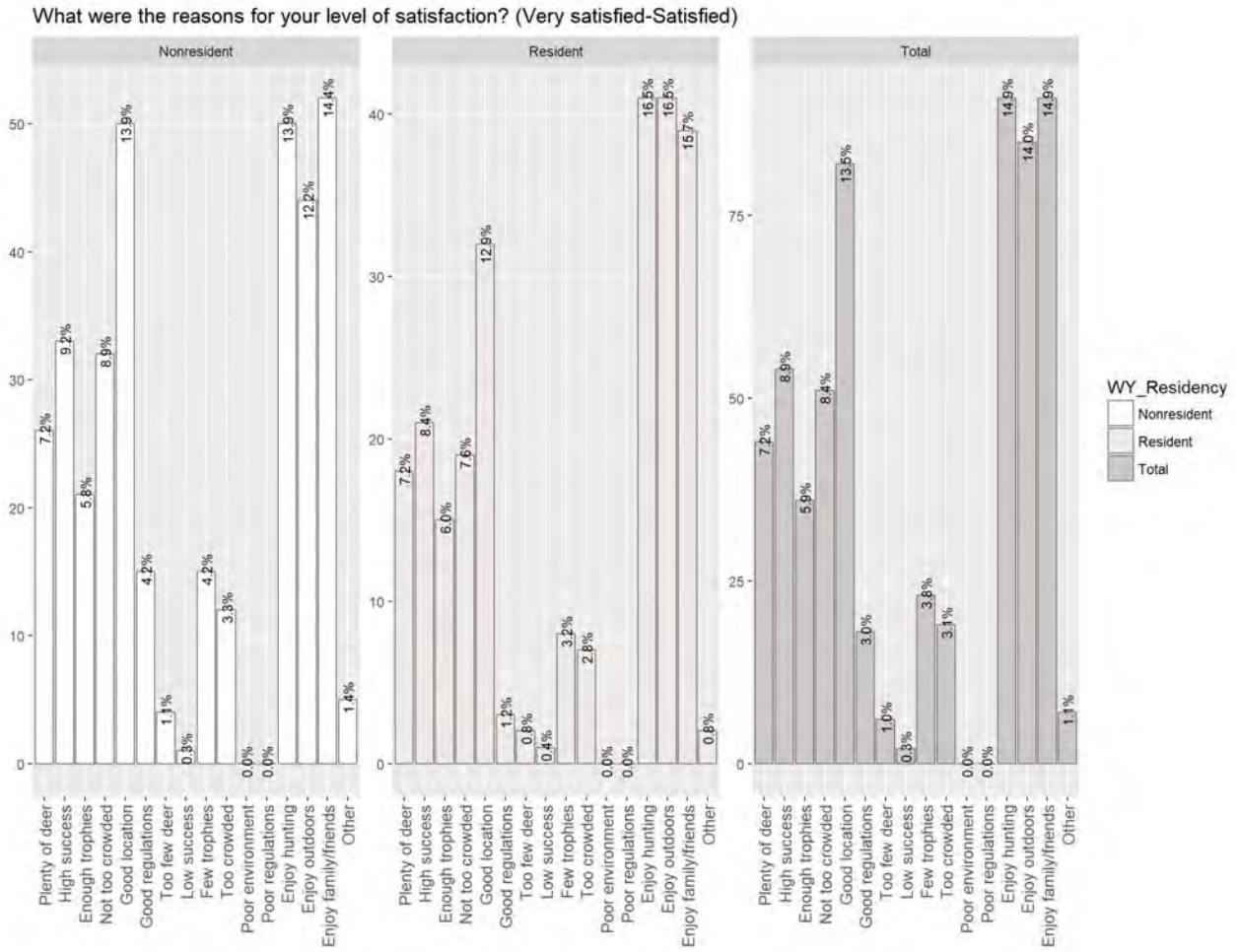
WY_Residency	Hunt_Area	Main_Reasons_Other..please.specify.
Nonresident	Hunt Area 25	Learning the area for a future elk hunt
Resident	Hunt Area 25	Elk
Resident	Hunt Area 25	I mostly hunr for whitetail
Resident	Hunt Area 50	Need make a 3 point better to harvest
Resident	Hunt Area 28	Generally do not hunt this area havent in 3 years
Resident	Hunt Area 50	2017 had a good population of deer, 2016 and 2015 there were low numbers and I was dissappointed.
Resident	Hunt Area 25	Close to residence
Nonresident	Hunt Area 25	Also saving for Elk points for this area
Resident	Hunt Area 25	public land, national forest, close to where i live
Resident	Hunt Area 50	Great place to backpack hunt with kids - no grizzly bears.
Nonresident	Hunt Area 53	Saw more deer in that area
Resident	Hunt Area 25	Close to home
Resident	Hunt Area 25	close to my home in Sheridan,and in the forest.
Resident	Hunt Area 25	Close to home
Nonresident	Hunt Area 25	Lots of wildlife to see, and the landscape is awesome to hunt and witness
Nonresident	Hunt Area 25	FIRST TIME
Resident	Hunt Area 28	I hunt on Forest service Land
Nonresident	Hunt Area 25	High altitude non wilderness
Resident	Hunt Area 50	Unable to draw a tag in other areas
Resident	Hunt Area 53	I’ve hunted the area for 35 yrs and liked the old regulations
Resident	Hunt Area 25	Close to sheridan
Nonresident	Hunt Area 53	Just picked it
Resident	Hunt Area 25	We camp up there alot
Resident	Hunt Area 25	Its close to home
Nonresident	Hunt Area 53	I like Wyoming High Country Lodge
Resident	Hunt Area 25	I live close by. Dayton, Wy
Resident	Hunt Area 53	Close to home. Not a great chance at mature deer anymore though.
Nonresident	Hunt Area 28	I had an elk permit for this area

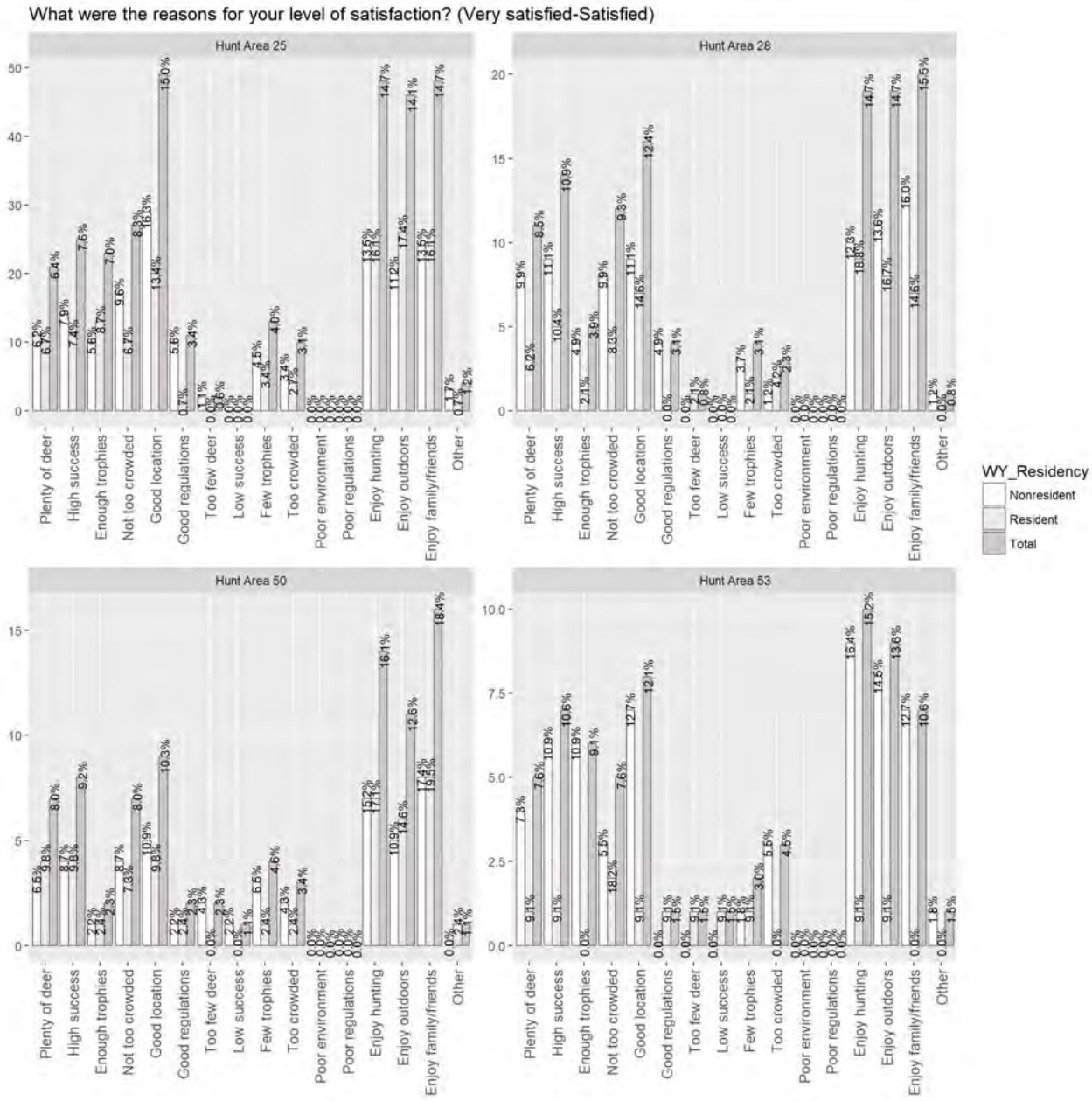
WY_Residency	Hunt_Area	Main_Reasons_Other..please.specify.
Resident	Hunt Area 53	Grew up in Lovell
Resident	Hunt Area 25	My out of state father can draw a tag regularly
Nonresident	Hunt Area 25	Like the area,views camping in mountains,visit with friends and maybe get to try for a very big buck.
Resident	Hunt Area 25	Close to my home and I love the country up there!

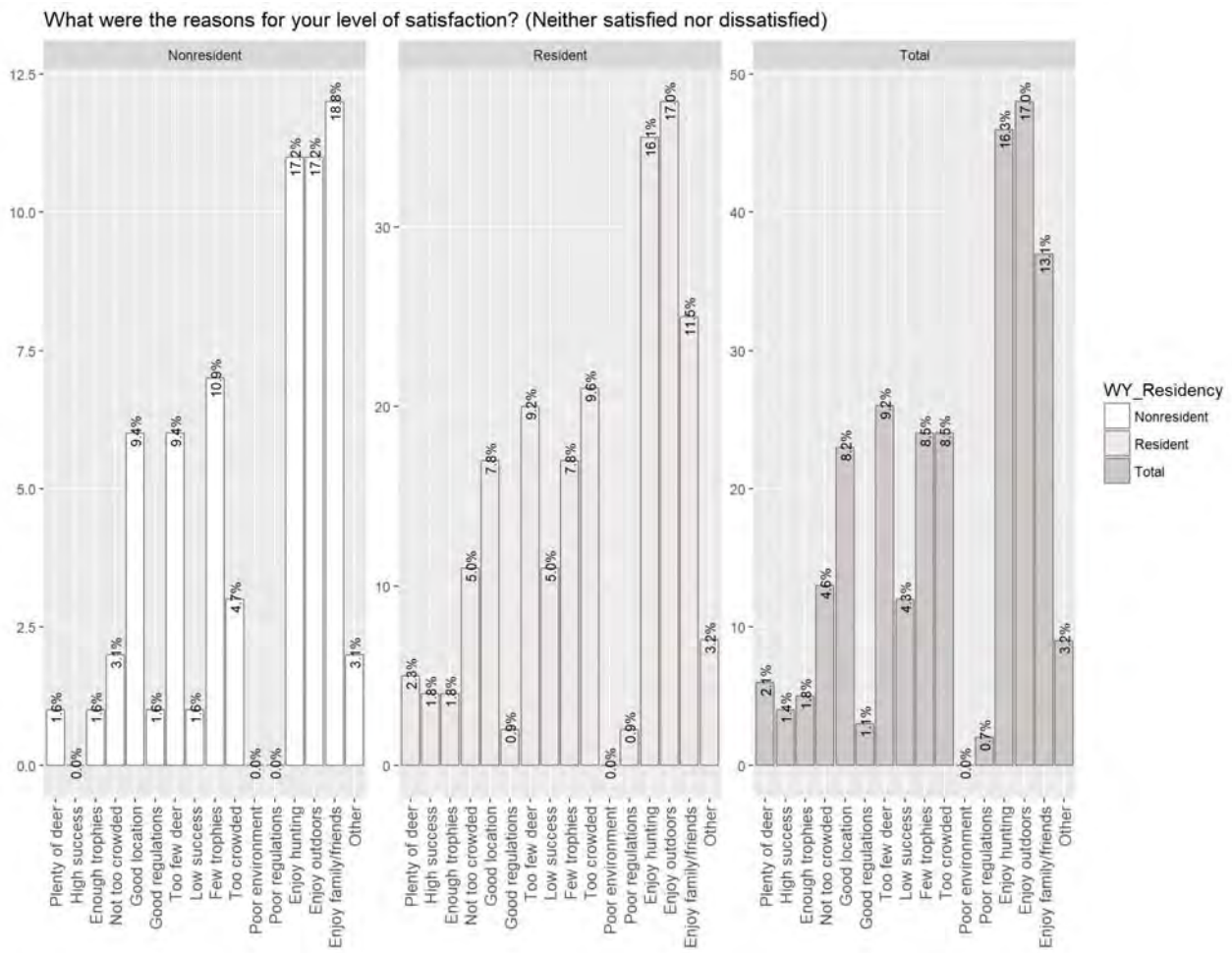


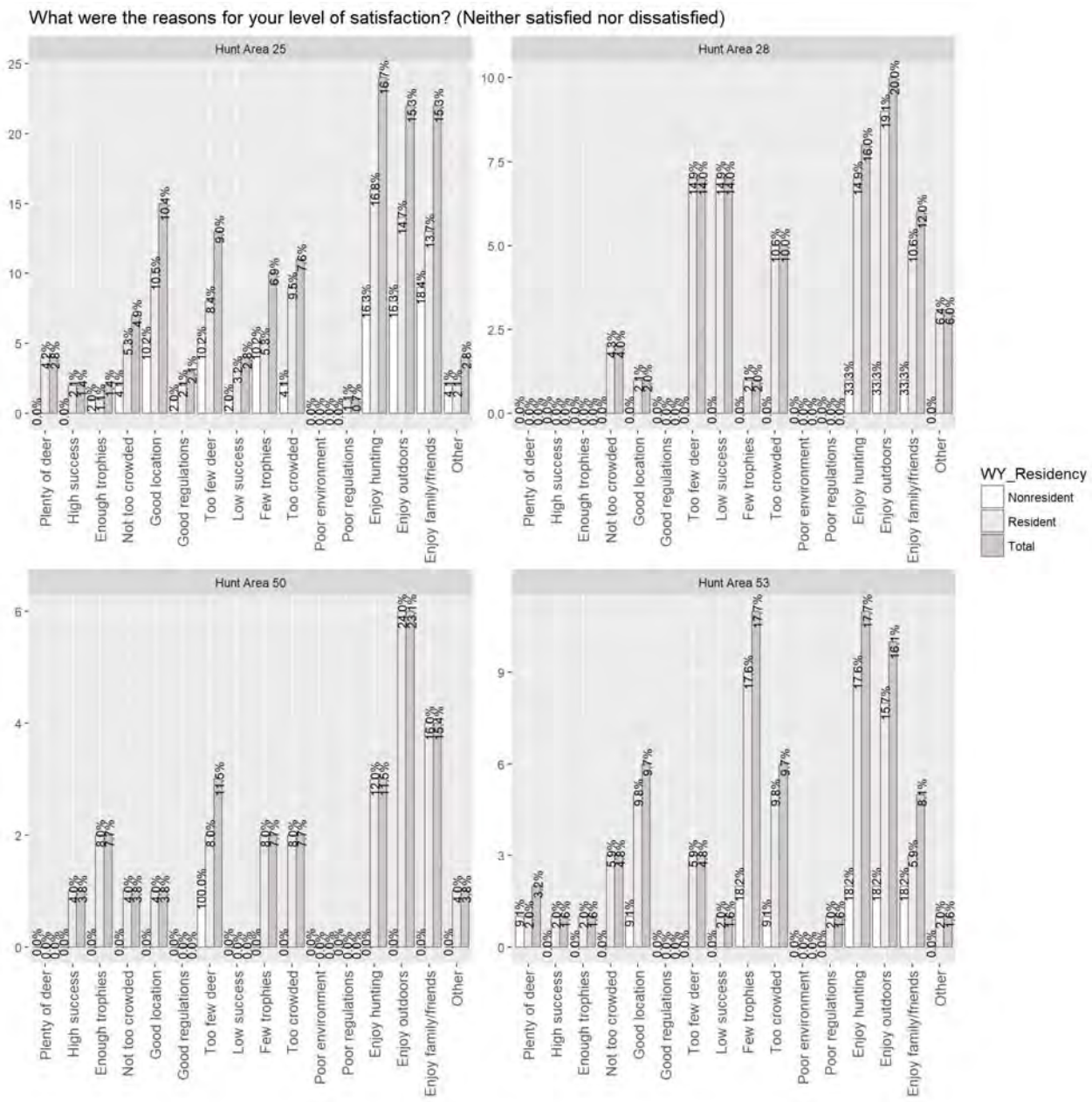
How satisfied were you with the overall quality of the hunt?

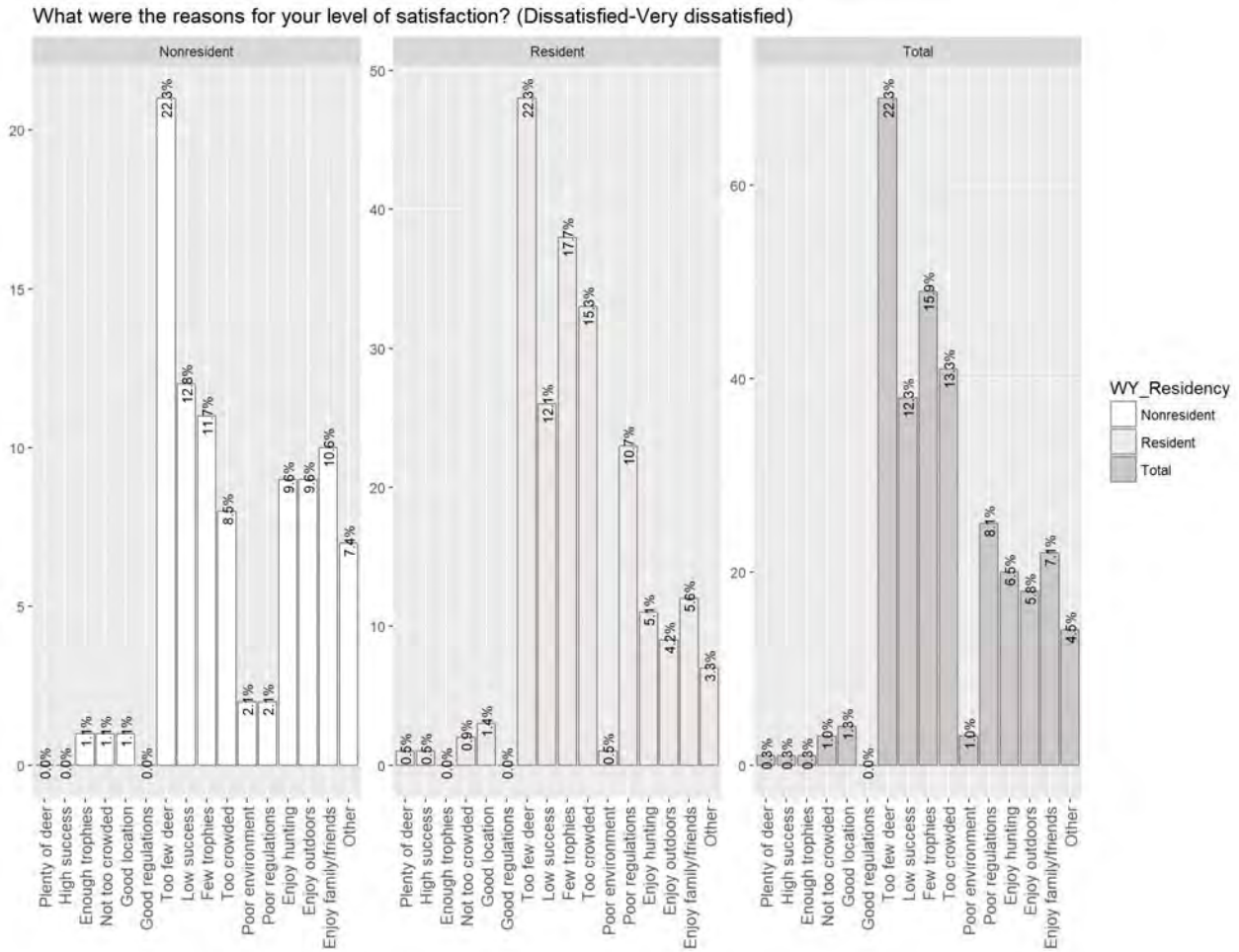


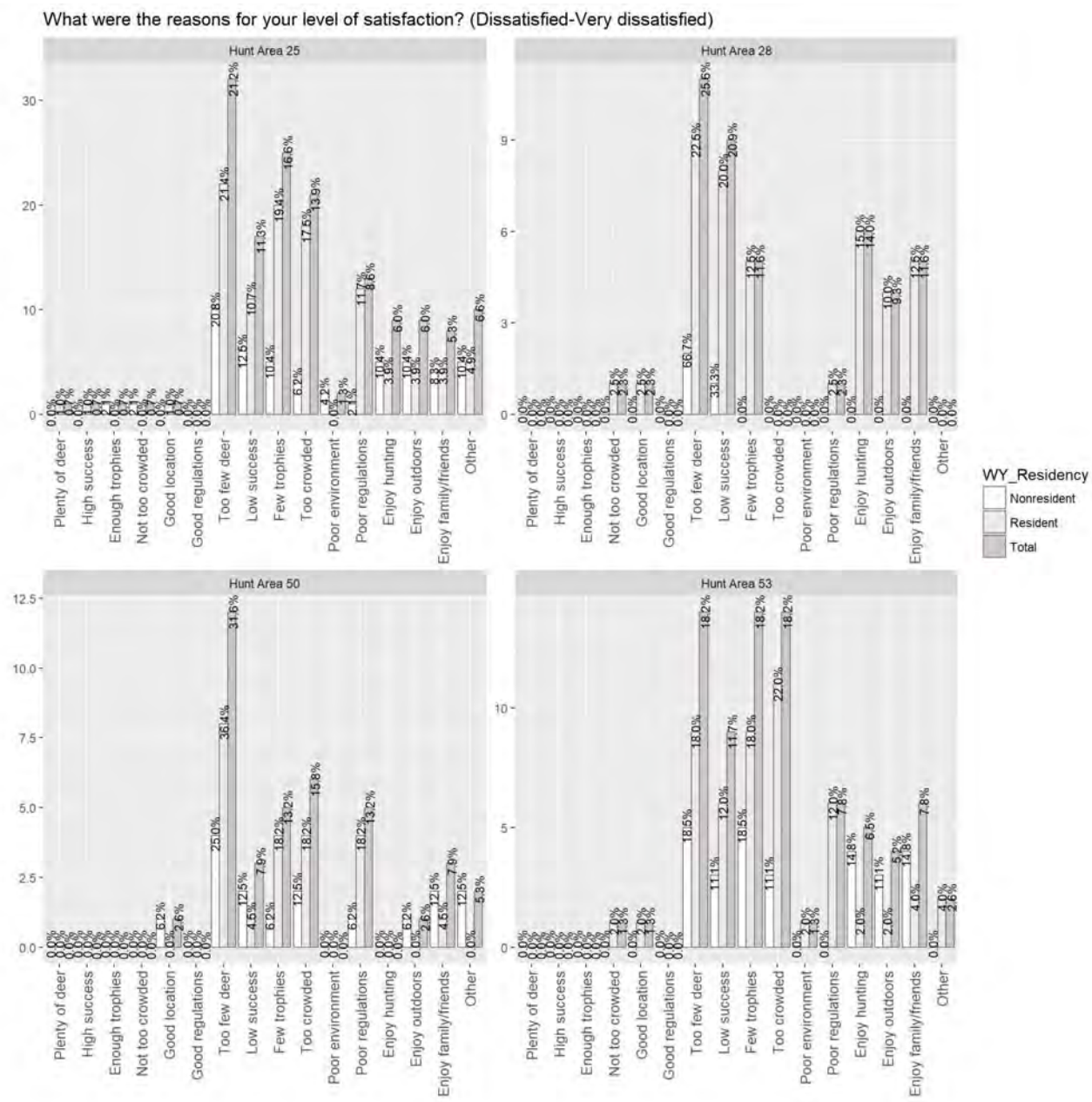

What were the reasons for your level of satisfaction? (Very satisfied-Satisfied)
Nonresident
Resident
Total
WY_Residency
Nonresident
Resident
Total
Plenty of deer
High success
Enough trophies
Not too crowded
Good location
Good regulations
Too few deer
Low success
Few trophies
Too crowded
Poor environment
Poor regulations
Enjoy hunting
Enjoy outdoors
Enjoy family/friends
Other


What were the reasons for your level of satisfaction? (Very satisfied-Satisfied)
Hunt Area 25
Hunt Area 28
Hunt Area 50
Hunt Area 53
Plenty of deer
High success
Enough trophies
Not too crowded
Good location
Good regulations
Too few deer
Low success
Few trophies
Too crowded
Poor environment
Poor regulations
Enjoy hunting
Enjoy outdoors
Enjoy family/friends
Other
WY_Residency
Nonresident
Resident
Total


What were the reasons for your level of satisfaction? (Neither satisfied nor dissatisfied)
Nonresident
Resident
Total
WY_Residency
Nonresident
Resident
Total
Plenty of deer
High success
Enough trophies
Not too crowded
Good location
Good regulations
Too few deer
Low success
Few trophies
Too crowded
Poor environment
Poor regulations
Enjoy hunting
Enjoy outdoors
Enjoy family/friends
Other


What were the reasons for your level of satisfaction? (Neither satisfied nor dissatisfied)
Hunt Area 25
Hunt Area 28
Hunt Area 50
Hunt Area 53
Plenty of deer
High success
Enough trophies
Not too crowded
Good location
Good regulations
Too few deer
Low success
Few trophies
Too crowded
Poor environment
Poor regulations
Enjoy hunting
Enjoy outdoors
Enjoy family/friends
Other
WY_Residency
Nonresident
Resident
Total


What were the reasons for your level of satisfaction? (Dissatisfied-Very dissatisfied)
Nonresident
Resident
Total
WY_Residency
Nonresident
Resident
Total
Plenty of deer
High success
Enough trophies
Not too crowded
Good location
Good regulations
Too few deer
Low success
Few trophies
Too crowded
Poor environment
Poor regulations
Enjoy hunting
Enjoy outdoors
Enjoy family/friends
Other
0.0%
0.0%
1.1%
1.1%
1.1%
0.0%
22.3%
12.8%
11.7%
8.5%
2.1%
2.1%
9.6%
9.6%
10.6%
7.4%
0.5%
0.5%
0.0%
0.9%
1.4%
0.0%
22.3%
12.1%
17.7%
15.3%
0.5%
10.7%
5.1%
4.2%
5.6%
3.3%
0.3%
0.3%
0.8%
1.0%
1.3%
0.0%
22.3%
12.3%
15.9%
13.3%
1.0%
8.1%
6.5%
5.8%
7.1%
4.5%

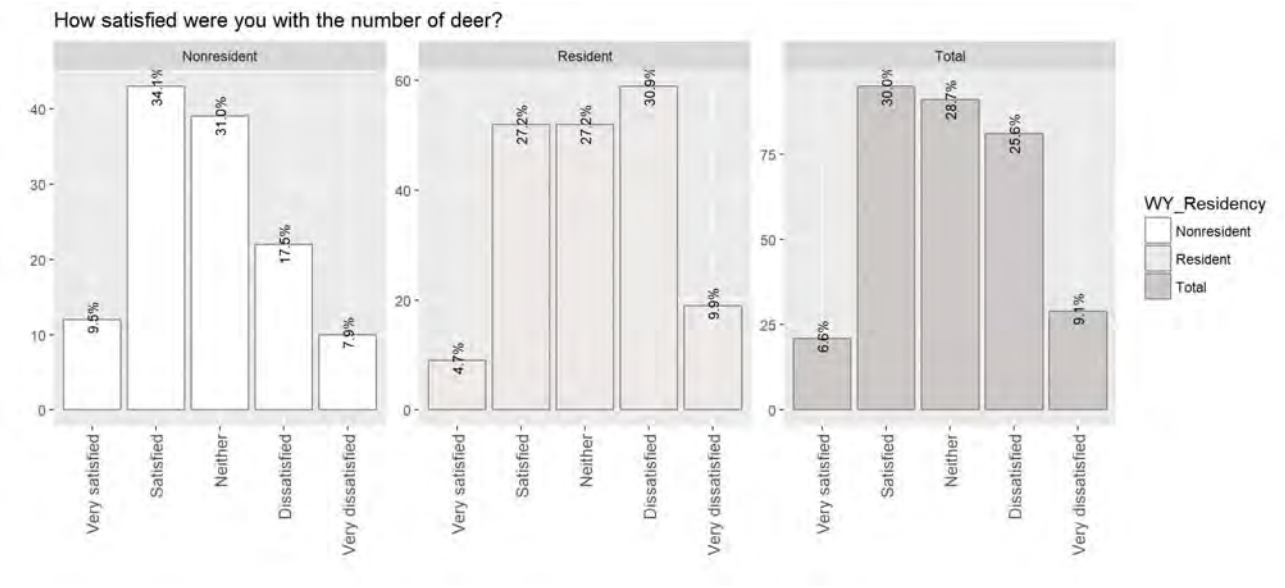


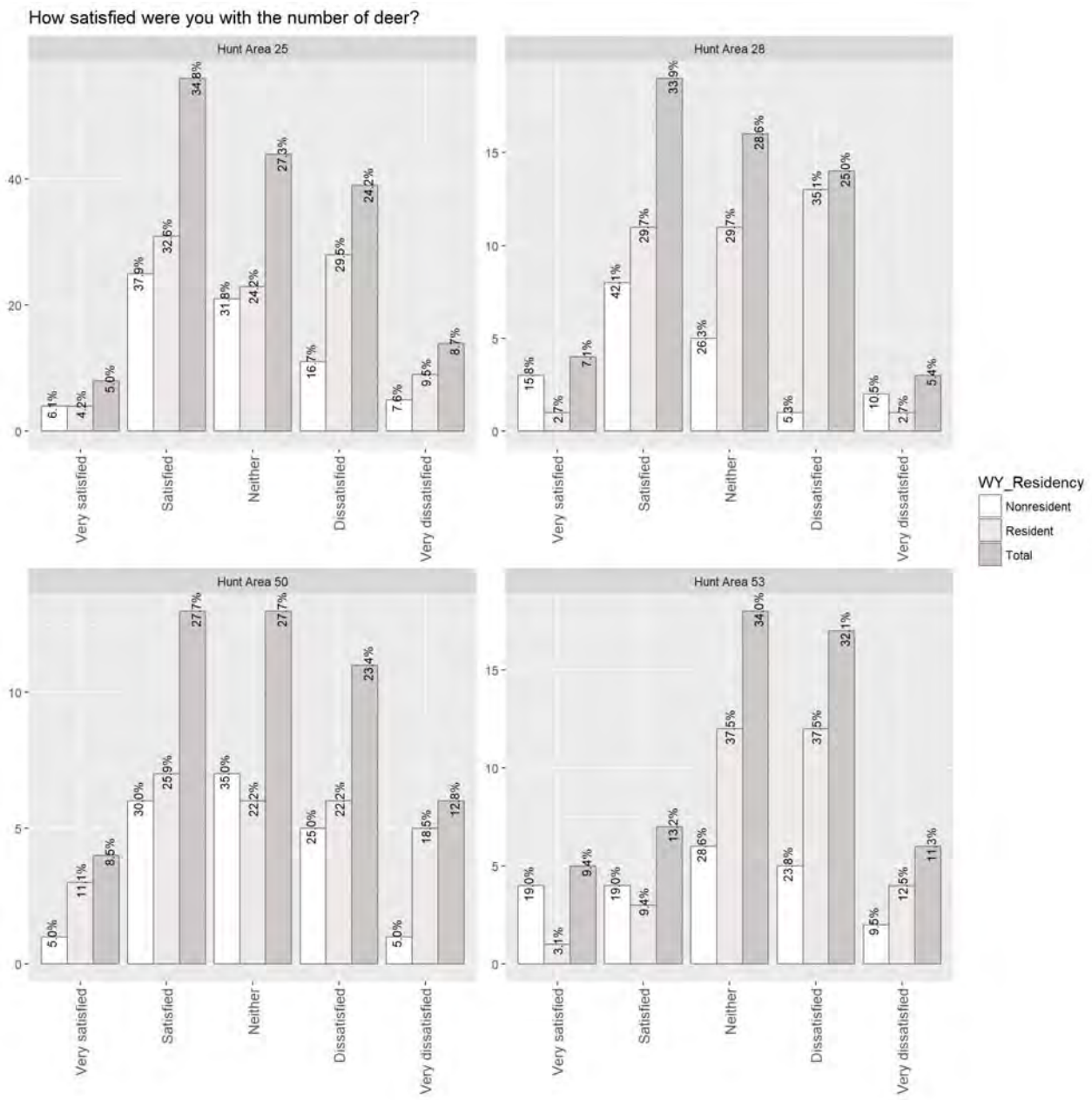
Other:

WY_Residency	Hunt_Area	Satisfaction_Overall	Satisfaction_Reasons_Other..please.specify.
Nonresident	Hunt Area 25	Dissatisfied	All the game was already spooked off the area
Resident	Hunt Area 28	Neither satisfied nor dissatisfied	I hunt elk primarily and only hunt mule deer coincidentally.
Resident	Hunt Area 53	Neither satisfied nor dissatisfied	It is a short time frame
Resident	Hunt Area 25	Dissatisfied	More out of state hunters than in state hunters. They were everywhere!

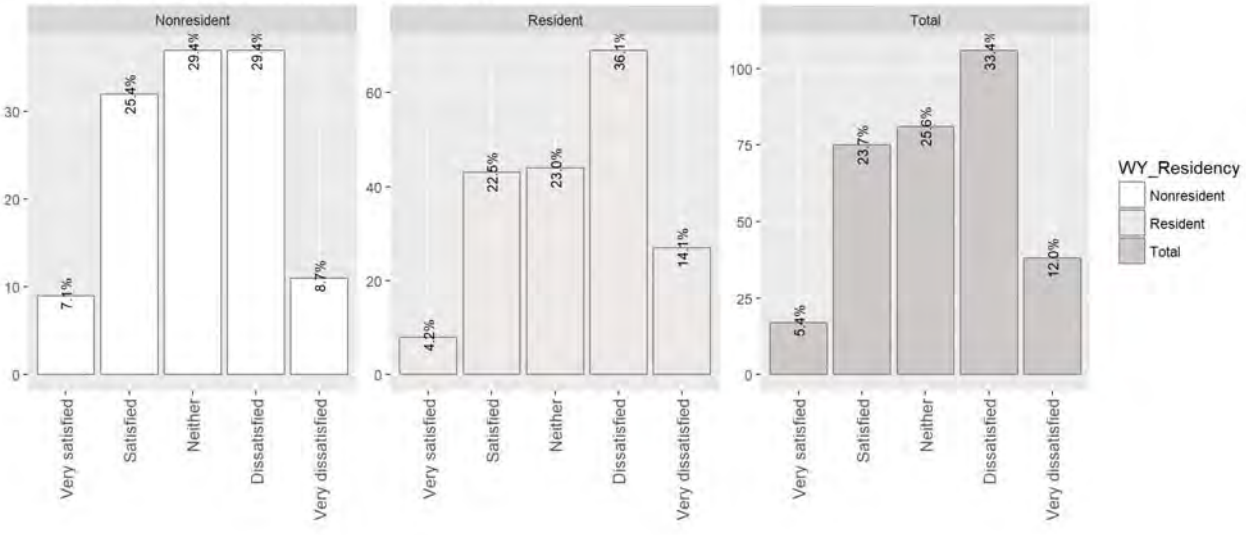
WY_Residency	Hunt_Area	Satisfaction_Overall	Satisfaction_Reasons_Other..please.specify.
Nonresident	Hunt Area 25	Satisfied	Deer numbers do appear to be down and hunter numbers were up in my area
Resident	Hunt Area 25	Very satisfied	Good whitetail numbers where I hunt
Nonresident	Hunt Area 25	Dissatisfied	The overall population seems to have dropped over the past few years and appears to be a bit more hunting pressure.
Resident	Hunt Area 25	Very dissatisfied	poor managment
Resident	Hunt Area 50	Satisfied	2017 had a good population of deer, previously 2015, 2016 the population was low.
Resident	Hunt Area 28	Neither satisfied nor dissatisfied	Elk first, deer is just a bonus
Resident	Hunt Area 25	Very dissatisfied	hardly see any deer, not quality hunt, feew does and little bucks it u see any
Nonresident	Hunt Area 25	Satisfied	Bucks are present not a high number of mature/trophy bucks
Resident	Hunt Area 25	Neither satisfied nor dissatisfied	Too many non-residents hunting mule deer specifically
Nonresident	Hunt Area 25	Dissatisfied	TOO EARLY IN SEASON
Nonresident	Hunt Area 25	Very dissatisfied	Too many predators, way too many black bears.
Resident	Hunt Area 25	Dissatisfied	The Season has gotten too short!!! Not enough time to harvest/hunt.
Resident	Hunt Area 25	Neither satisfied nor dissatisfied	People harvesting young bucks
Nonresident	Hunt Area 25	Neither satisfied nor dissatisfied	to many small bucks harvested. Especially now with crossbows.
Nonresident	Hunt Area 53	Satisfied	Mature bucks are not very numerous most years, but 2.5-3.5 year old bucks are there in o.k. numbers
Nonresident	Hunt Area 28	Satisfied	Good area to hunt when waiting to draw a limited quota license
Nonresident	Hunt Area 25	Satisfied	more trophy bucks are starting to show up still not like 1995
Resident	Hunt Area 53	Dissatisfied	Too many young deer getting harvested.
Resident	Hunt Area 28	Neither satisfied nor dissatisfied	I hunt with a camera now, even though I purchase a license.

WY_Residency	Hunt_Area	Satisfaction_Overall	Satisfaction_Reasons_Other..please.specify.
Nonresident	Hunt Area 25	Neither satisfied nor dissatisfied	I was mainly elk hunting but was dissapointed in the number of deer
Resident	Hunt Area 53	Very dissatisfied	The hunt season has been shortened too short, no snow=no bucks
Nonresident	Hunt Area 50	Dissatisfied	The deer numbers seem to be dropping
Resident	Hunt Area 50	Neither satisfied nor dissatisfied	This area has gone down hill over the last few years. A four point buck was average 5 years ago now its rare
Nonresident	Hunt Area 25	Dissatisfied	Saw very few mule deer. 6 total in 6 days of hunting and no antlered bucks. Lots of elk and moose though.
Nonresident	Hunt Area 50	Dissatisfied	A
Resident	Hunt Area 25	Very dissatisfied	Managed too much for elk. I'd like to see some limited quota deer units in the Bighorns.

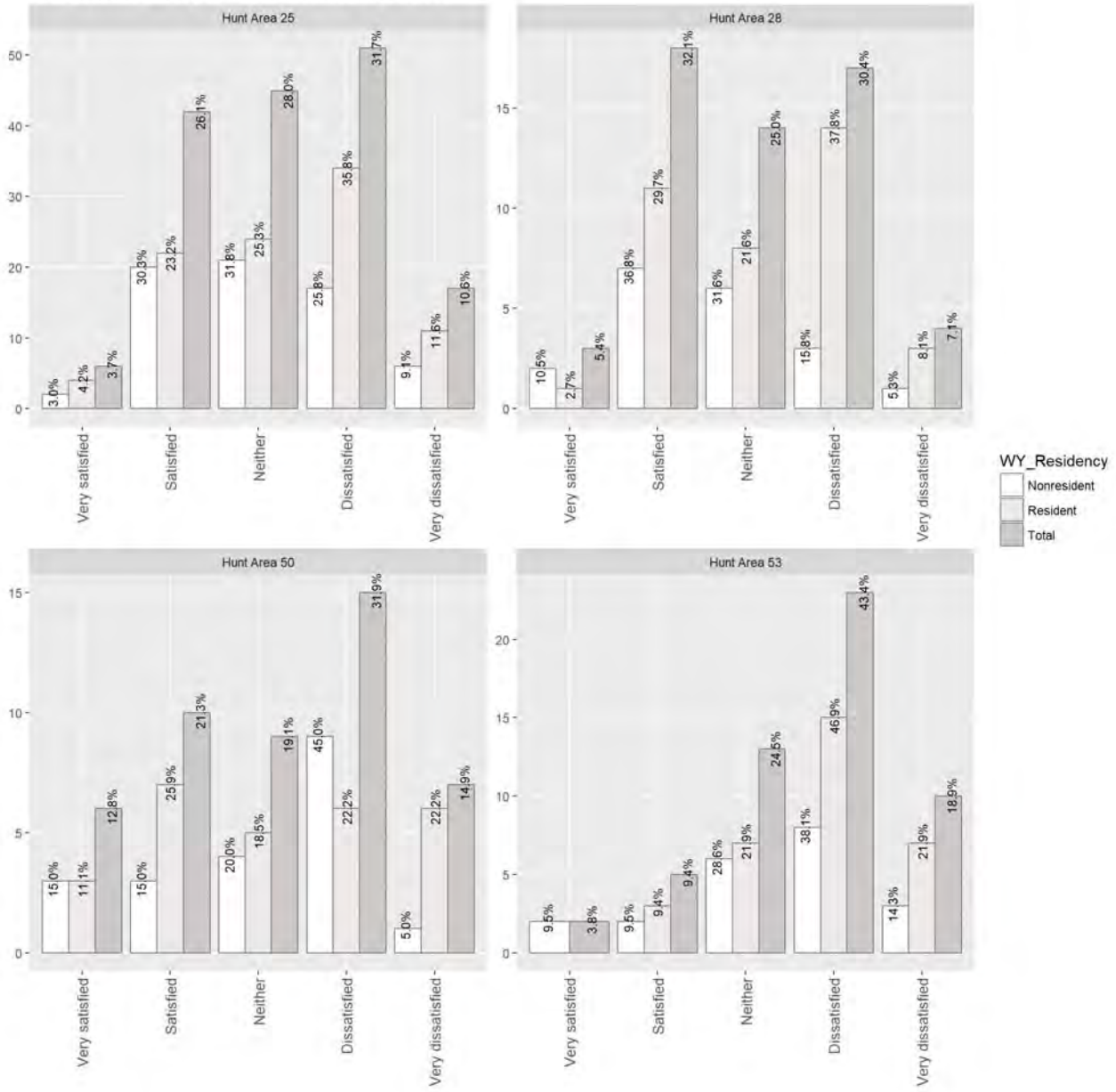


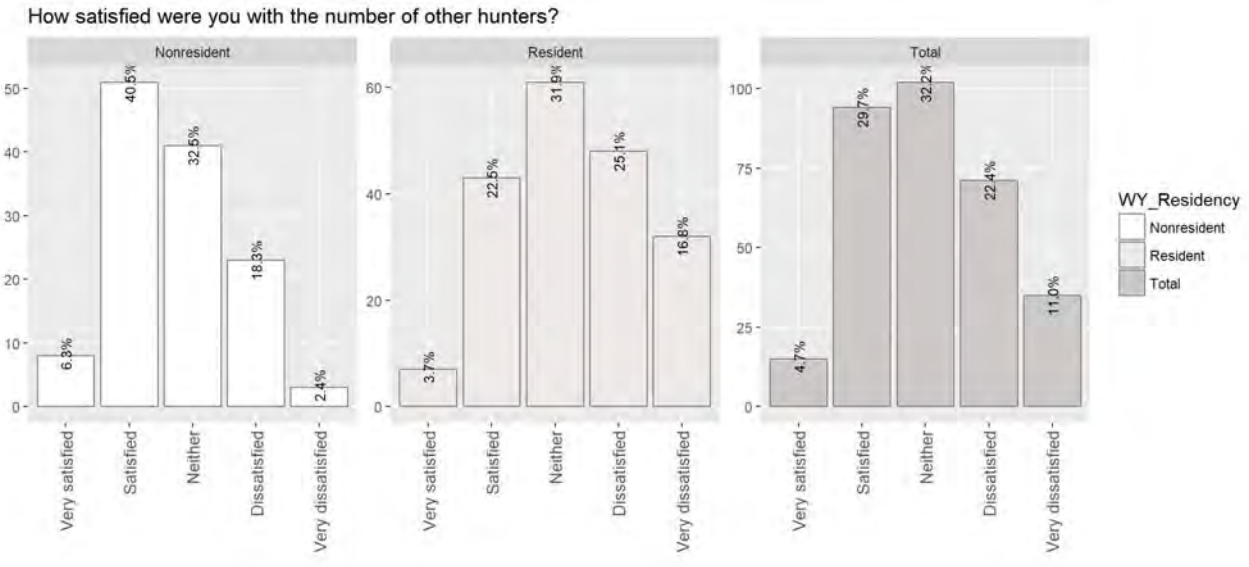

How satisfied were you with the number of deer?
Hunt Area 25
Hunt Area 28
Hunt Area 50
Hunt Area 53
Very satisfied
Satisfied
Neither
Dissatisfied
Very dissatisfied
WY_Residency
Nonresident
Resident
Total

How satisfied were you with the number of bucks?

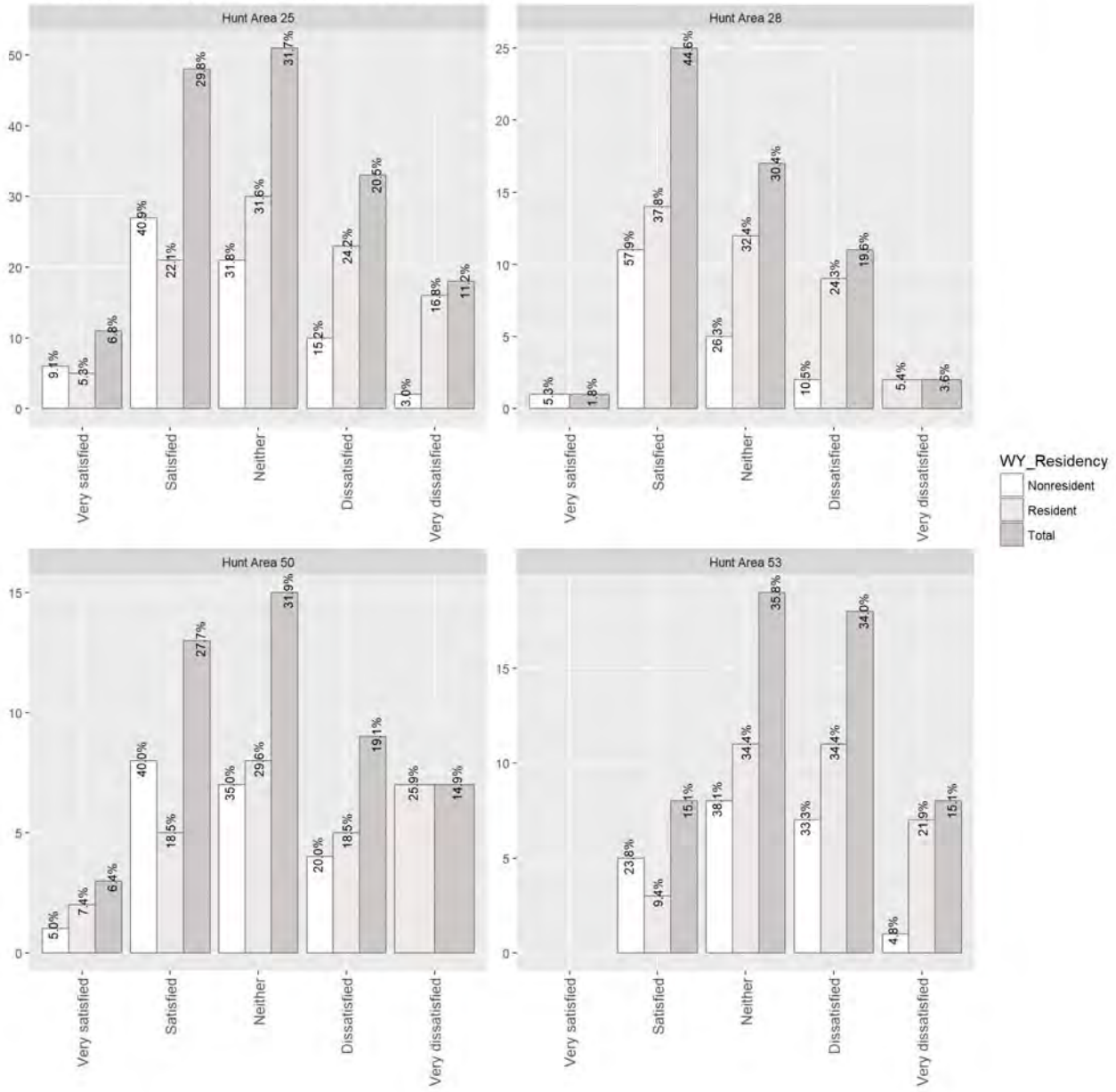


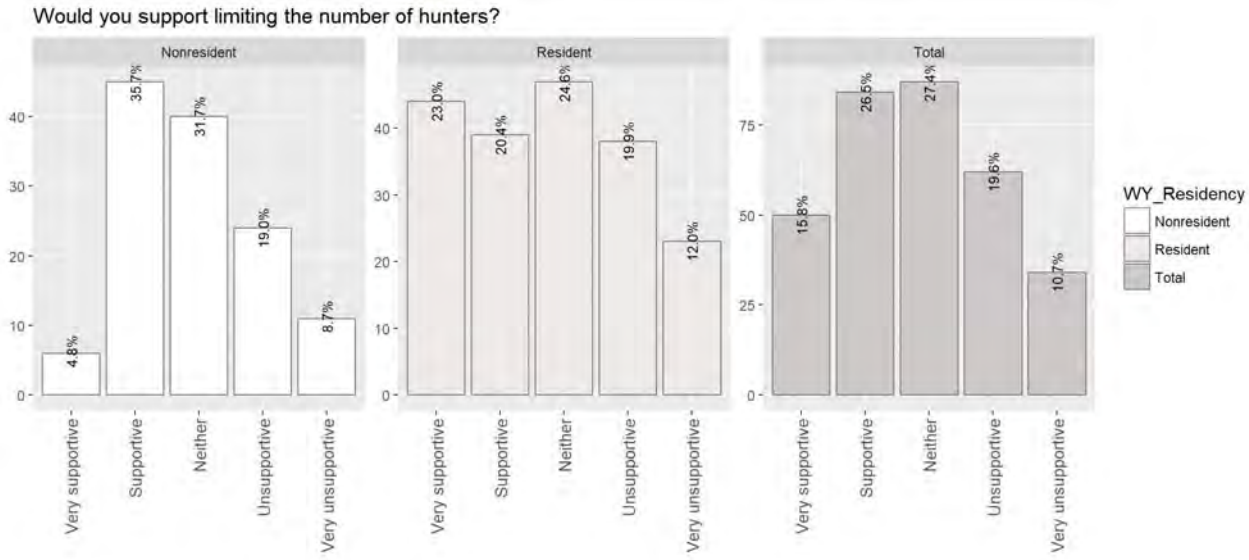
How satisfied were you with the number of bucks?



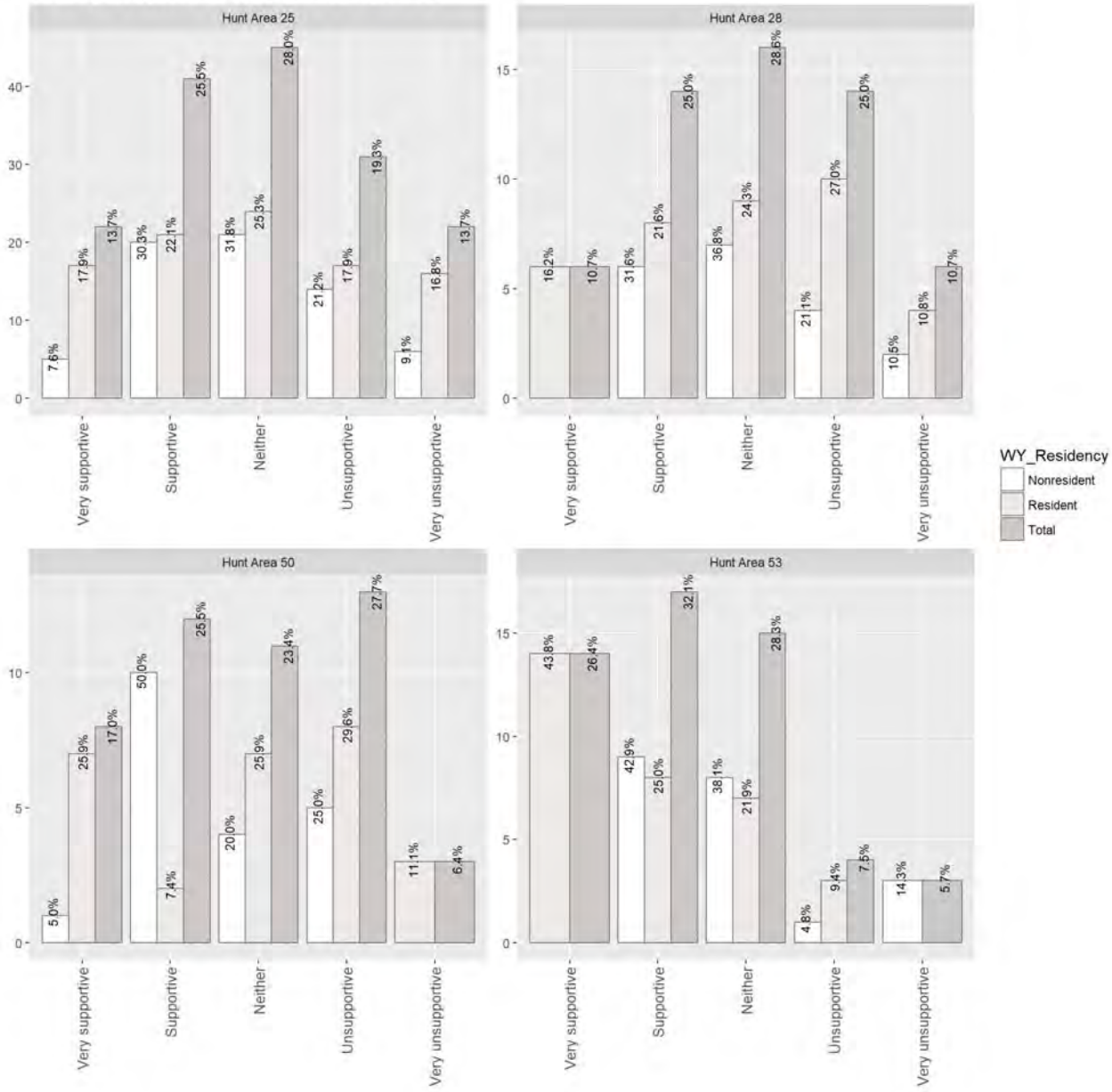

How satisfied were you with the number of other hunters?
Nonresident
Resident
Total
6.3%
40.5%
32.5%
18.3%
2.4%
3.7%
22.5%
31.9%
25.1%
16.8%
4.7%
29.7%
32.2%
22.4%
11.0%
Very satisfied
Satisfied
Neither
Dissatisfied
Very dissatisfied
WY_Residency
Nonresident
Resident
Total

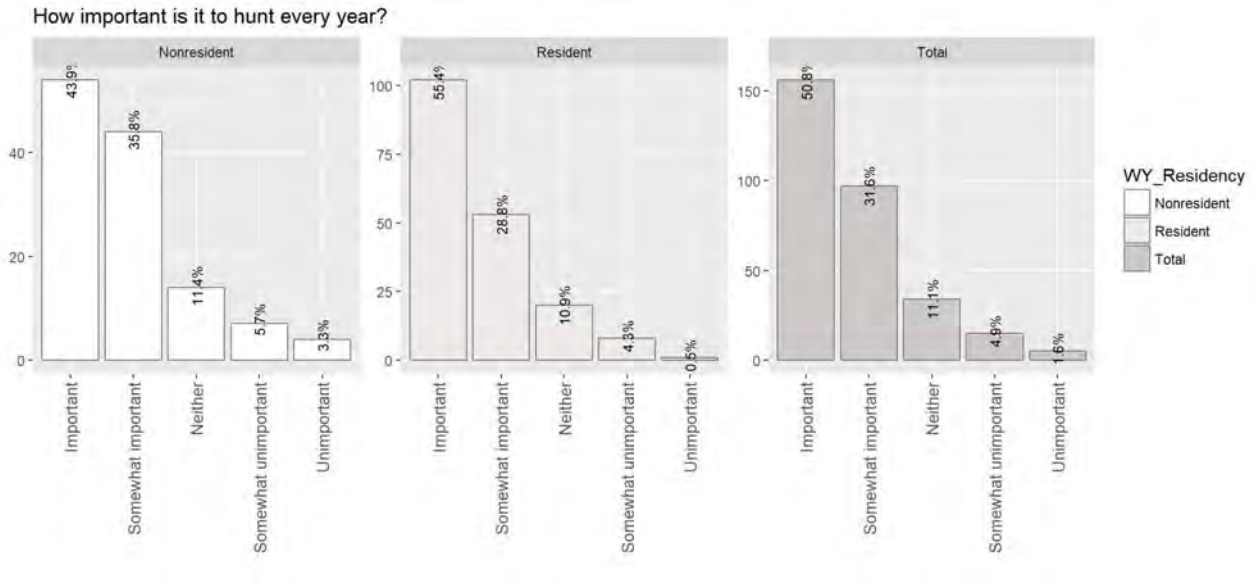
How satisfied were you with the number of other hunters?

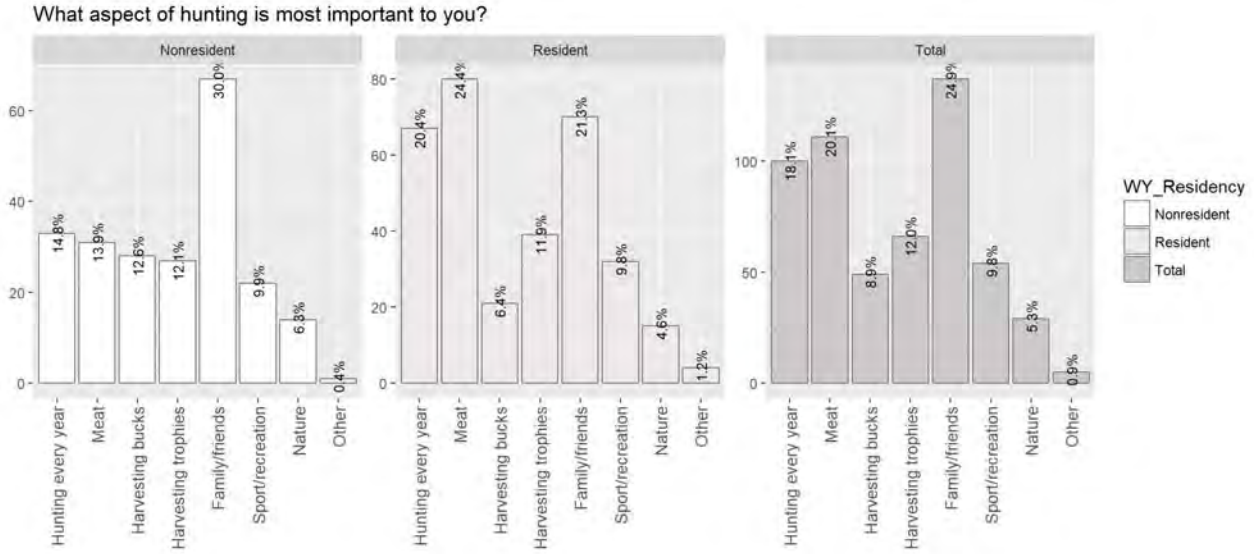



Would you support limiting the number of hunters?
Nonresident
Resident
Total
4.8%
35.7%
31.7%
19.0%
8.7%
23.0%
20.4%
24.6%
19.9%
12.0%
15.8%
26.5%
27.4%
19.6%
10.7%
Very supportive
Supportive
Neither
Unsupportive
Very unsupportive
WY_Residency
Nonresident
Resident
Total

Would you support limiting the number of hunters?







Other:

WY_Residency	Hunt_Area	Hunting_Aspects_Other..please.specify.
Resident	Hunt Area 50	Hunting on public land
Resident	Hunt Area 25	having a quality hunt, with a healthy herd. the deer numbers are so low that in my opinion g&f needs to have limited quota, in order to have any deer. everybody has a deer license and shots the few deer we have.. sad sad deer population. i would reather hunt less but when i did draw have a quality hunt and see deer in the feild then hunt every year and see nothing….
Nonresident	Hunt Area 25	I love the challenge that you get hunting in the mountains, the weather, the terrain, and the challenge of finding a specific animal and exclusively hunting it…its this challenge that brings my friends together, provides great meals for our bodies, and puts me in the environment that I get to see and watch many awesome things in nature we wouldnt normally see

WY_Residency	Hunt_Area	Hunting_Aspects_Other..please.specify.
Resident	Hunt Area 25	More elk tags and less out of staters
Resident	Hunt Area 25	A chance for a trophy and hunting with grand kids and family seeing deer at least even if to small to shoot

Comments:

WY_Residency	Hunt_Area	Comments
Resident	Hunt Area 25	Limit the number of hunters, especially archery
Resident	Hunt Area 50	Have a longer limited quota season with a 4 point restriction
Resident	Hunt Area 25	Maybe open a doe season and restrict buck harvest.
Resident	Hunt Area 25	Quit giving out so many doe tags in this area
Resident	Hunt Area 53	I'd like to see this area be general for archery but a draw for rifle. Archery puts little pressure on.
Resident	Hunt Area 28	Need to harvest more white-tailed deer in this area.
Resident	Hunt Area 25	The current regulations allow too many young bucks to be harvested. You should try a 4 point season restriction.
Resident	Hunt Area 53	Time to go to limited quota here. It will be unpopular, but its time.
Resident	Hunt Area 53	Yes, go to a draw.
Resident	Hunt Area 28	Too many hunters. Go to quota.
Resident	Hunt Area 28	I've never got a muley buck here
Resident	Hunt Area 25	Areas a bit difficult due to private land
Resident	Hunt Area 53	Too many nonresidents
Resident	Hunt Area 25	Every one I talk to would like to see fewer hunters
Resident	Hunt Area 25	Maybe try doe/fawn only for a few years.

WY_Residency	Hunt_Area	Comments
Resident	Hunt Area 25	Limiting tags is an obvious choice
Nonresident	Hunt Area 28	Game wardens were very helpful showing us where public access was
Nonresident	Hunt Area 53	Would be nice if there were more places to camp
Nonresident	Hunt Area 25	Save the little bucks for later
Nonresident	Hunt Area 50	Put in a point restriction
Nonresident	Hunt Area 25	This was the first year we didn’t get to hunt in this area. Would like to be able to hunt in the same area every year.
Resident	Hunt Area 28	Would like to see better access
Nonresident	Hunt Area 28	Regulations are good right now. Why change it?
Resident	Hunt Area 25	Restrict to 3 points or better
Resident	Hunt Area 25	Restrict to 3-4 points
Nonresident	Hunt Area 25	I think there are a lot of white-tails in this area
Nonresident	Hunt Area 50	Restrict harvest of small bucks
Nonresident	Hunt Area 25	Deer chased off the mountain by early snow fall
Resident	Hunt Area 25	Increased cat populations seem to be impacting the deer population
Nonresident	Hunt Area 25	Deer end up on the private property
Resident	Hunt Area 25	Too many people, fewer deer every year.
Nonresident	Hunt Area 25	2 out of 7 of our party harvested bucks.
Nonresident	Hunt Area 25	We need a few general areas with high deer numbers to engage the hunting community.
Nonresident	Hunt Area 25	Some of the problems might have to do with the weather

WY_Residency	Hunt_Area	Comments
Resident	Hunt Area 25	manage for larger bucks
Nonresident	Hunt Area 28	Doing a good job!
Resident	Hunt Area 28	No.
Nonresident	Hunt Area 28	I think Wyoming does a good job in animal management for the state.
Resident	Hunt Area 53	Start limited quota in these areas. This would give the population a chance to possibly recover. It would cut down on hunting pressure. Due to relatively easy access to a good portion of these areas there are a lot of hunters in the field. A high percentage of these hunters shoot the first animal they see, unfortunately this is most often the younger animals. I would whole-heartedly support a limited quota hunt in these areas even though my possibility to hunt deer in these area would be very limited. I believe the deer population would greatly benefit from this option.
Resident	Hunt Area 25	Open mule deer doe for harvest. Ive seen a ridiculously healthy mule deer doe population and believe they should be open for harvest. Type 9 all the way!
Nonresident	Hunt Area 50	More quality bucks would make this a great place.
Resident	Hunt Area 25	More effort on habitat on the winter range.
Resident	Hunt Area 50	Separate seasons for elk and deer.
Resident	Hunt Area 28	Limiting the number of hunters is fine if the chance of success goes up accordingly.
Nonresident	Hunt Area 53	For the most part, I think that the Wyoming fish and game do a fine job at managing there deer herd, however as much as I want to hunt every year, I do think a decline in buck tags is necessary.
Resident	Hunt Area 53	Restrict harvest to 4 points or better as is being done in other areas in SW Wyoming.
Nonresident	Hunt Area 25	Notably fewer deer in 2018, but was still able to find some good bucks. But doe numbers seemed to be way down.
Resident	Hunt Area 25	Reduce the number of hunters or put a point restrictions in place so your not shooting all of the yearling bucks.
Nonresident	Hunt Area 25	Try to eliminate the rampant road hunting taking place. Gives hunting a black eye.
Resident	Hunt Area 50	3 point or larger to havest.
Nonresident	Hunt Area 50	Encourage the Forest Service to maintain major access roads like Hunt Mountain to improve hunter distribution.

WY_Residency	Hunt_Area	Comments
Resident	Hunt Area 25	I believe if we went to a harvest for bucks based on the number of points it would generate a more mature deer pipulation. I see many out of state deer hunters that dont get off the beaten path and harvest spike or 2 point bucks. I try for 4 points on a side or bigger in the hopes that the younger buck I passed up will become a trophy animal at a later daye in time. As well as pass on favorable genetics.
Resident	Hunt Area 25	Decrease the amount of hunters allowed to hunt each area
Resident	Hunt Area 50	Limit out of state tags. 4 point antler restrictions.
Resident	Hunt Area 53	Less non-resident deer licenses & a 4-point or better regulation.
Nonresident	Hunt Area 28	more regeneration to support more deer food sources could be better if you cut more trees
Resident	Hunt Area 53	Four points on one side rule
Resident	Hunt Area 50	No
Resident	Hunt Area 28	Based on my one year of hunting deer in this area i would suggest limiting the number if licenses in these areas to increase the population. There are other areas with bigger population we could hunt.
Resident	Hunt Area 28	No
Nonresident	Hunt Area 25	Do what you are doing
Resident	Hunt Area 25	Area 25 used to have alot of mature mule deer bucks. They are few and far between now. Put a point to system in for harvesting bucks, 4 point on at least one side or better. The bucks aren’t getting a chance to grow, when every out of state Hunter and some locals I assume, shoot the little guys right off the roads. They never get a chance to mature.
Resident	Hunt Area 53	put the 4 point or bigger rule back in
Resident	Hunt Area 25	Get rid of nonresident hunters.I know you won’t because they are game and fish cash cow.
Resident	Hunt Area 50	I don’t know what happened but numbers had been down for several years, last year they seemed to come up and I was seeing more deer and more bucks. I wouldn’t mind making these areas a 3pt or better area when gun hunting, so those first year 2pts can live through the season until they turn 2 1/2.
Resident	Hunt Area 50	Limit the bucks killed and give out some doe tags would help.
Nonresident	Hunt Area 25	I have hunted area 25 for 7 years now. I have seen a decline in deer numbers each year. The buck population is slowly following that number. The overcrowded statement has to do more with road hunting in that unit more than anything, vehicle traffic makes it tough with roads running on top of good deer basins. I really think having the deer up there separated into type 9 archery tags and type 1 rifle tags would help a lot. I am not sure if the idea of starting the archery season even later than Sept 1st would benefit that area or you guys when it comes to non resident sales. I love the area I hunt in and would love to see the numbers back to where it was in 2012-2016. Type 9 and 1 tags are the way to go I believe.

WY_Residency	Hunt_Area	Comments
Resident	Hunt Area 25	plan and simple limited quota and build the heard up and keep it that way to sustane a healthy herd. you cant have a general area on public land, to much pressure.. bows shot farhter and guns shot farther. the deer dont stand a chance, other than limit the number of hunters to have a good population and a quality hunt when u do draw.
Resident	Hunt Area 50	As a whole, I feel the state of Wyoming does an excellent job of balancing general deer areas with limited quota areas. Any change that moves towards more limited quota areas on the premise of reducing hunter crowding would forever reduce opportunities for the average hunter. Tell me the last time a hunt area for deer, elk, or antelope went from limited quota to general. Please do not go down the slippery slope of fewer general areas un less a herd is in serious jeopardy. The north bighorn deer herd is below objective in terms of total deer numbers. It is my understanding buck to doe ratios are within the range of 20-30 bucks per 100 does. I encourage Game and Fish to address fawn recruitment and survival to the best of their ability before any regulatory change to hunting is made. I really hope Game and Fish leaves the north bighorn deer herd as general deer areas. My son and I hiked in 2 miles into one of the rare roadless areas in deer area 50 last season. In one day of hunting we saw zero hunters, 5 bucks, including one very respectable buck that we failed to get within 300 yards of for an ethical shot. Keep up the good work and stand up to the vocal minority - not every hunter is a trophy hunter! Thanks!
Resident	Hunt Area 28	no
Resident	Hunt Area 50	I would love to see a point restriction, even if it is 3-points or better. There are far to many 2-points killed each year when they are young and dumb. Let them get a year older. I understand this may mean some people will walk away from a 2-point they shoot, but it still saves a ton of other 2-points from almost certain death by lazy hunters shooting the first legal buck they see.
Resident	Hunt Area 25	If WG&F does not actively support passing legislation to give Residents preference points for elk, deer and antelope I am going to stop buying general licenses when I do not draw a license. It is patently unfair for non-residents to get pref points and not give them to residents.
Resident	Hunt Area 28	Consider having livestock removed from the National Forest earlier and reduce the amount of non-resident licenses.
Resident	Hunt Area 53	these areas need to be limited quota. To many people and not enough deer
Nonresident	Hunt Area 25	Limited licenses or impose size requirements
Resident	Hunt Area 53	Point restrictions or limited quota on bucks
Nonresident	Hunt Area 25	no
Resident	Hunt Area 25	Move the beginning of bird season to September 15th. Give the Archery hunters both deer and elk a chance to hunt with out gun shots going off. In the past 4 years I have had bird hunters shoot way to close to me while I was stalking a deer.
Resident	Hunt Area 25	Make deer tags area specific, not just general. Seems most non-residents hunt the northern Bighorn mtns. Limit non-resident tags per individual hunt area. No, multi area, general tags to non-residents
Resident	Hunt Area 25	None at this time.

WY_Residency	Hunt_Area	Comments
Nonresident	Hunt Area 50	Well, my group and I hunted out there twice. The first trip we didn't get anything, and the second trip we tagged out. Which is the way it goes. But we stopped applying because the draw rate is so low. I believe it was only 25 percent of the people that apply get a tag. At least that was the last time I looked.
Resident	Hunt Area 25	1. Three points or better for a few years
Resident	Hunt Area 25	Put in an antler restrictions 3 points or more
Resident	Hunt Area 25	Put an antler point regulation on the bucks to be harvested to improve heard qualitys and larger buck numbers.
Resident	Hunt Area 53	change buck regulations to 4 pointer or better for several years to increase number of mature bucks.
Resident	Hunt Area 25	no
Resident	Hunt Area 53	Perhaps limit non resident licencing since a majority of the people I had contact with were from out of state.
Nonresident	Hunt Area 53	judging by the doe and fawn numbers I seen I would think the herd is doing good. lack of bigger bucks could be due to lots of reasons Maybe a point restriction on bucks ? Just a thought as i have no real knowledge on the number of quality bucks, they can get pretty sneaky when under pressure. I do feel the game and fish is doing a good job with the deer and elk.
Resident	Hunt Area 53	The local managers in the past have had some good ideas and then someone in Cheyenne stops them. Trust your wildlife managers!
Resident	Hunt Area 25	limit the amount of non resident hunters
Nonresident	Hunt Area 50	The last few years we have noticed very few bucks. Weather seems to be playing a large role in the dear moving down low where we cant hunt. Maybe have every other season so the young bucks have a chance to mature.
Nonresident	Hunt Area 25	I have hunted unit 25 since 2010, the deer numbers have always made my hunts enjoyable. I have seen some very big mature bucks over the years up there, some that may have even stretched the tape measure near 200. I supported the descion made to eliminate the hunting of antlerless mule deer. I also think this survey is great, I hope positive changes come from the information gathered from it. I think the Wyoming game and fish does a great job managing this unit and hope they continue doing so. If I could make changes or recommendations to its management, I would suggest implementing a limited tag quota unit with a type 1 season rifle only and a type 9 season archery only, and would not allow type 1 tag holders archery hunt. Years ago I thought point restrictions would have been the way to go, but after many hours of talks with my hunting partners I think we all feel the type 1 type 9 is the best way to approach this
Nonresident	Hunt Area 50	Stop giving out tags for does to the meat hunters who shoot anything to fill tags when the deer numbers are too low to start with. In the 10 years we have hunted,the deer numbers have plummeted.We are considering hunting other states if it continues this way with low deer numbers.
Resident	Hunt Area 53	Go to 3 points or better
Nonresident	Hunt Area 28	no

WY_Residency	Hunt_Area	Comments
Nonresident	Hunt Area 53	no
Resident	Hunt Area 25	Go to a four point or better rule.
Resident	Hunt Area 25	Add days to the season and closer to the rut
Nonresident	Hunt Area 25	Let wild fires burn much farther, controlled burns, focus on habitat quality, increase winter ranges, acquire more habitat, keep all public land and buy more, use different money sources for land acquisition and wild life management, control wolves and Mt lions, if needed have open archery deer seasons to allow more hunting which is low kill, increase price of licenses, increase wildlife studies including migration and safeguard migrations and winter range, restriction of land divisions and subdivisions below the Bighorns, strengthen sage grouse habitat which would improve deer habitat, elect politicians who are pro wildlife politicians unlike most Wyoming politicians who have only business interests, strengthen USFS and BLM land control, increase funding to Wyoming fish and game Dept. Thank you.
Resident	Hunt Area 53	I think we should make it to where if you harvest a buck it has to be at least maybe a 3 or 4 point to let them grow and let the gene pool build up.
Resident	Hunt Area 28	To many hunters. See more hunters than bucks.
Resident	Hunt Area 28	I am strictly a meat hunter and I am more about the hunt and being outdoors. As far as changing anything my suggestion would be for a longer season so that everyone would have more time to hunt and maybe the quality of bucks would increase due to people passing on the little bucks in my mind that increase the numbers of larger bucks and possibly more. I have only harvested small bucks and spend most of my days hunting area 28. Thank you for including me in your survey.
Nonresident	Hunt Area 25	Let nonresidents hunt wilderness. Ive hunted around the world including humans in Viet Nam. Dont tell me Im not competent to survive in federally held lands witout a minder. Overall deer management plan seems to be working, thank you.
Resident	Hunt Area 25	The survey only allowed me to choose one hunt area. However, the answers provided above can be applied to each of the hunt areas associated with this survey. The one aspect that I feel could use improvement across the entire North Bighorn herd is the overall number of bucks (especially 4+). Shortened seasons or incorporating an antler point restriction will not necessarily provide a long term increase in age structure of the herd. However, limiting the number of hunters can. Look at deer hunt area 87 as an example.
Resident	Hunt Area 50	It would be nice if the WGF was honest with sportsmen. G&F says bowhunters harvest most of the deer taken and we need to cut the archery season. I agreed assuming that was the case, until I looked up the statistics and found that non-residents kill by far the most archery killed deer. And you want to limit the residents too? I was misled by at least 2 G&F people by far. (No, Dustin you weren't one of them) You biologists keep saying the habitat in the Bighorns is so bad the deer are doing poorly. That is the biggest bunch of BULLSHIT I or any other sportsmen have ever heard of. If you guys would tear yourselves away from those computers and actually drive up on that hill and look around from time too time It would help everyone out a lot. Perhaps you could cite me some studies you have done on the browse. I contacted the USFS and asked them about the browse for deer specifically and was told it is better than it has ever been. Perhaps if the WGF would quit selling a gazillion licenses just to make money at the expense of the resident sportsmen it would be a start. By the way, why don't you stop people in the backcountry and ASK them their opinions instead of these cheesy computer questions. You are sitting at your computers doing the work you should be doing on foot or from a pickup.
Nonresident	Hunt Area 25	season should start later. Too many predators. Don't know why there needs to be so many Black Bears. We also see a lot of coyote and Mountain Lion tracks when there is snow.

WY_Residency	Hunt_Area	Comments
Resident	Hunt Area 28	Leave it as a general zone. There are large numbers of deer in the archery season and deer timber up in the rifle season. Good chances of harvesting a trophy buck no need for a limited quota
Resident	Hunt Area 25	Please carefully consider some sort of point rule for mature mule deer. The # of mature deer does not seem to lineup with the reduction in season dates.
Nonresident	Hunt Area 25	my experience in area 25 is limited but we saw bucks almost every day from 9/1 to about 9/15. there were bucks of various ages. my hunting partners did say that the overall number of bucks seemed lower than in previous years.
Resident	Hunt Area 25	To many non residence are shooting immature small mule bucks. I will not shoot a small mule buck, would rather shoot a whitetail deer. Non residence will shoot any mule deer just to fill their tag because they don't have mule deer where they come from. This is one reason I feel there are a lack of quality buck mule deer in all of these units listed in this survey
Resident	Hunt Area 50	People need a place to go hunting. Not drawing a tag for several years has forced me to hunt General Areas. Without that opportunity I can see how people would lose interest in hunting all together if drawing tags continues to be this difficult. I love hunting, but if was forced to sit out for several years because I could not draw a tag, I would find a new hobby. Many friends feel the same way and some have even abandoned hunting General Areas.
Resident	Hunt Area 28	Not sure why the numbers are down, but if less pressure would help to bring back the herd I'm all for it.
Resident	Hunt Area 25	No comment
Nonresident	Hunt Area 25	You should open up doe hunting in region Y
Nonresident	Hunt Area 53	The reason i was unsatisfied with the hunter numbers was because an elk season opened the same day.
Resident	Hunt Area 53	without much thought, doe/fawn tags when necessary and allow younger bucks to mature if possible. Go back to Nov 4 close date and less nonresident tags.
Resident	Hunt Area 53	Consider going to limited quota in 53 but go back to the longer season with a little bit of rut hunting. I hate to see the general season go but the quality of the hunt has been poor.
Resident	Hunt Area 25	Eliminate all the whitetail that have ruined the mule deer habitat. I've been here for nearly 50 years, and the maggots have taken over everywhere. I rode nearly to the head of the south fork of the Shoshone and all whitetail up the river.
Resident	Hunt Area 25	Not at this time
Nonresident	Hunt Area 53	I think having a antler-point restriction for Mule deer would help give younger bucks a better chance to mature in these units. Possibly imposing a restriction of 4 points or more on one side.
Nonresident	Hunt Area 53	Add an antler point restriction
Resident	Hunt Area 25	Issue fewer Non-Resident licenses for the units!
Resident	Hunt Area 25	Maybe limiting buck harvest by making it 4 point or better, but keeping it general. This would limit the number of young bucks that are being harvested and improve trophy quality.

WY_Residency	Hunt_Area	Comments
Nonresident	Hunt Area 25	Been hunting deer there for 15 years , the deer population has dropped every year don’t know why. But I see elk population getting bigger.
Nonresident	Hunt Area 25	No
Nonresident	Hunt Area 25	I would like to see a point restriction. And all bows cased in a automobile , and no shooting on roads.
Resident	Hunt Area 50	do away with domestic livestock grazing, insure closed roads are indeed closed and enforced
Resident	Hunt Area 50	4 point or better for 5 years
Nonresident	Hunt Area 25	Been going to bear lodge for 25+ years and seen the ups and downs. The hunting went from great to poor and now it has been getting pretty good again. This year none of our group of 16 people drew a tag so now were all talking about finding another place to hunt. Poss Colorado or Montana. We love the bighorn mTns but it is getting too costly for the average hunter. Dont make it a rich mans sport
Nonresident	Hunt Area 53	No
Nonresident	Hunt Area 50	I think the predator pop should be controlled Saw 8to10 Coyotes a day and saw a couple of Cougars. Benn hunting in that area for over 30 years off and on and never saw that many predators
Nonresident	Hunt Area 53	I think moderately reducing motorized traffic access would have a very positive impact on allowing for more animals to reach older age classes. This would also improve the hunting experience for those willing to work a little harder to hike away from the roads.
Resident	Hunt Area 25	I believe the winter had a big affect on the deer herd last year so it was a little hard but this year so far while camping we have seen more than last year
Resident	Hunt Area 28	Do not leave pets unattended in camp sites..
Resident	Hunt Area 50	The number of groups of out-of-state hunters in this area is the only downside. I hunt in Shell Canyon, when there is early snow they all end up in the same place, which interferes with all hunting.
Resident	Hunt Area 25	Dont let the niners kill little bucks. If they want to kill little ones, shoot the doggone white tails on the farm ground
Resident	Hunt Area 25	I don’t hunt deer only elk.I buy a deer tag in case I run into a nice buck. But you guys only give out elk tags to out of staters.
Nonresident	Hunt Area 25	Stop the early shooters. Stop the late night hunting. Stop poaching all together.
Nonresident	Hunt Area 53	Keep grizzly’s out. Control wolves
Resident	Hunt Area 25	2 days any antlered deer then four point or more on one side rest of season. It will allow meat hunters to do there thing first couple days then allow a chance to still hint and get a chance for trophies. Gives deer a chance to grow up but also lets some young dumb ones to get killed. Makes non residents decide early if they are going to take home meat or take a chance on something bigger. Locals will squeal but after a couple years they will see more deer and in my opinion and will get over it pretty quick.

WY_Residency	Hunt_Area	Comments
Resident	Hunt Area 25	The quality of mature mule deer bucks in the northern bighorns has been in a downward spiral for 20 years. 10 years ago you could still find and see some great bucks. I outfit in the unit for elk and spend upwards of 100 days in the field. In the last 2 years I have not seen a single buck that is old think of harvesting but the meatless at the lodoes areally full of 2 point (1.5 year old deer). It's time you restrict harvest by point restrictions or limiting nonresident tags.
Nonresident	Hunt Area 25	Maybe make a 4 point restriction on bucks so the age of the Mule deer will get older. then the stronger older bucks will do the breeding and hopefully build a strong herd to make it through winters
Resident	Hunt Area 53	I have made suggestions in the past and they seemed to be over looked. I have continued to fight for something to be done in these areas, and now 5 years later Im glad we can ALL see there is a problem. In my opinion start but cutting even more non resident tags, or go strictly to a limited quota area. Limit a select few tags to a late season. This would help the success of the early season draw percentage. Also we must somehow apply a 4 point of better rule. Then a big thing to me is stop killing the does!!!
Resident	Hunt Area 28	Let hunters get one license. Choose if you want to hunt with a bow or gun. I am relatively certain there are more deer than it appears during gun season. Bow hunters have been chasing them for a month, and the smart ones are farther in.
Nonresident	Hunt Area 28	No
Resident	Hunt Area 53	Limit the amount of out of state licenses, enforce a horn minimum, extend the deer season to coincide with the elk season for that area
Resident	Hunt Area 25	The number of resident hunters in the area has risen dramatically since we started hunting the area 15 years ago.
Resident	Hunt Area 25	I have grown up in Sheridan and this unit used to be a great unit with good populations of deer, a solid buck to doe ratio and some outstanding bucks in the mix. In the past 10-15 years this area gets so much out of state and resident pressure, with harvest of the young bucks and a steadily declining deer herd, that it has become nearly a fantasy to see good bucks anymore. I would fully support this unit adopting a 4-point minimum, shorter season and much more limited access. I would like to see it as a limited quota unit to help the herd recover. It is so over-run with out of state hunters that you cannot ever expect the herd to rebound. A minimum point restriction would solve that problem. The short, almost non-existent season has done nothing to help the problem. As a resident and hunter, I would support any measure that might make this unit great again.
Resident	Hunt Area 28	Point limit. 4 or better on one side
Resident	Hunt Area 25	No.
Resident	Hunt Area 50	It seems like more nonresidents are in the area hunting on limited time. They dont see or get a chance at a mature buck and since they came so far and paid NR fees they feel they need to kill a young buck ruining the quality of the herd
Resident	Hunt Area 25	Reduce the number of non resident tags. Many non residents simply want "any buck" and thus shoot the first buck they see regardless of size. Initiate a limited entry late buck hunt in November to pull some pressure away from the general October season. Reduce livestock grazing to provide more forage for mule deer. Lengthen the general deer season to October 31. Combining this with fewer non resident tags should increase the hunting experience as with the current 7-9 day season the pressure remains high the entire time, and if weather does not cooperate to move the deer, then success is quite limited.

WY_Residency	Hunt_Area	Comments
Nonresident	Hunt Area 25	I've hunted this area off and on since 2000 and the number of deer is dramatically less now around the Hunt Mountain Rd and north of Alt 14. Elk area 40 (not sure the deer unit #) should also be have a significant tag reduction as well since that where a large number of deer go when the first big snow hits at or before hunting begins.
Nonresident	Hunt Area 50	Not at the moment .
Nonresident	Hunt Area 50	Point restrictions may be an improvement, there seems to be good genetics
Nonresident	Hunt Area 25	When the number of #'s of deer are down, the # of hunters should be down or shorter seasons to get the herd #'s up, maybe both at the same time or close the area for a year or 2 if need be.
Nonresident	Hunt Area 50	Limit residents
Nonresident	Hunt Area 25	Open the gated roads to ATVs for retrieval of harvested game only. All of the road closures are age discrimination against older hunters who no longer can pack out animals.
Resident	Hunt Area 50	Limit the bucks killed and give out some doe tags good for National Forest.
Resident	Hunt Area 25	Split the archery and rifle its time to choose your weapon species and state wide
Resident	Hunt Area 25	I believe there is a BIG problem with our neighbors to the north, that think they are entitled to whatever they want. Both deer and elk. I also think wolves starting to show up in the Bighorns will devastate the populations.
Resident	Hunt Area 25	To have a 3 or 4 point rule in place. Pretty disheartening watching people shoot spikes or fork and horn bucks.
Nonresident	Hunt Area 25	I would like to see some way to limit the harvest of young bucks. I do not support antler point restrictions as I have seen first hand the reduction of the best genetics in an area when it is used. It would benefit everyone if we could have rules more inline with sheep hunting where they need to count growth rings. Perhaps something like a mass measurement or tine length could be used.
Nonresident	Hunt Area 25	Must have 4 points or better, give less rifle tags and cater to the archers. Archers are more sportsman than rifle hunters. Archers have better edicate and respect for animals.
Resident	Hunt Area 53	It would not go over well but, I think these areas are in need of going limited quota or something. There are so many people hitting and shooting the first buck they see that numbers are not like they were in the past. Plenty of deer in areas of the mtn that are general areas.
Resident	Hunt Area 25	Overall the Bighorns have huge potential for quality trophy mule deer hunting. The habitat and landscape is amazing and the historical records show the great deer hunting that used to exist. I'd rather see some of the current elk units be changed to general and those same units be changed from general deer to limited quota. I feel the Bighorns can be managed for both species, but in different units due to the fact that mule deer and elk don't coexist in high numbers in the same area. More general units for elk and more limited quota units for deer is my wish. Thank you!
Resident	Hunt Area 50	We need to limit harvest either through 4 point or better or limited quota regs. Also quit hunting the does down on the lower lands so hard.
Resident	Hunt Area 25	Season is way to short. There are plenty of mulie does, let us harvest them in public land.

WY_Residency	Hunt_Area	Comments
Resident	Hunt Area 50	4 point antler restriction. Cut out of state tags. 4 point antler restriction. Cut out of state tags. 4 point antler restriction. Cut out of state tags. 4 point antler restriction. Cut out of state tags. 4 point antler restriction. Cut out of state tags. 4 point antler restriction. 4 point antler restriction. 4 point antler restriction. 4 point antler restriction. 4 point antler restriction. 4 point antler restriction. 4 point antler restriction. 4 point antler restriction. 4 point antler restriction. 4 point antler restriction. Cut out of state tags. 4 point antler restriction.
Nonresident	Hunt Area 25	Access to areas with atv to retrieve deer

2018 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2018 - 5/31/2019

HERD: MD322 - UPPER POWDER RIVER

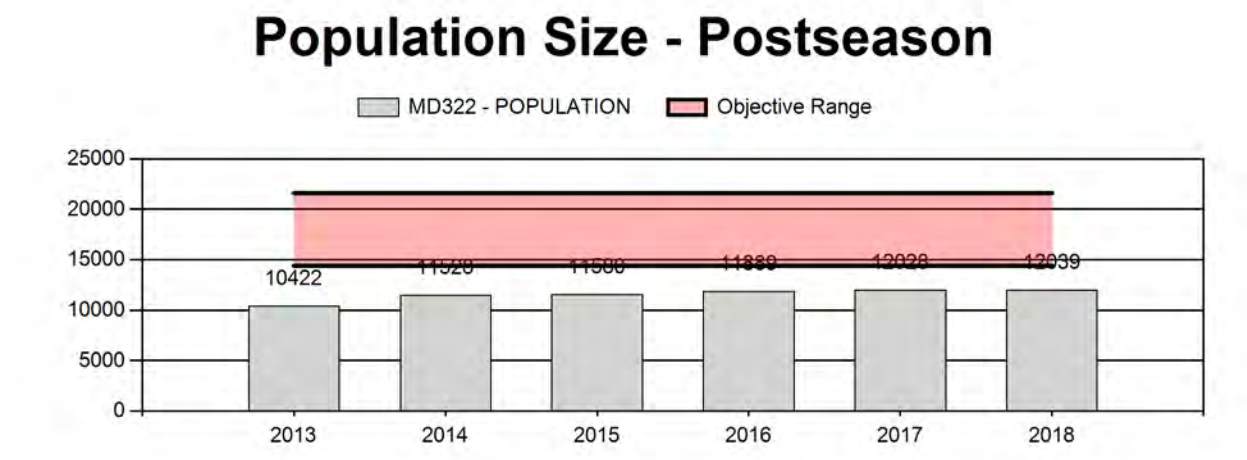
HUNT AREAS: 30, 32-33, 163, 169
PREPARED BY: CHEYENNE STEWART

	2013 - 2017 Average	2018	2019 Proposed
Population:	11,489	12,039	12,495
Harvest:	886	749	817
Hunters:	1,448	1,327	1,400
Hunter Success:	61%	56%	58%
Active Licenses:	1,461	1,340	1,400
Active License Success:	61%	56%	58%
Recreation Days:	5,916	5,341	5,500
Days Per Animal:	6.7	7.1	6.7
Males per 100 Females	43	40	
Juveniles per 100 Females	71	64	

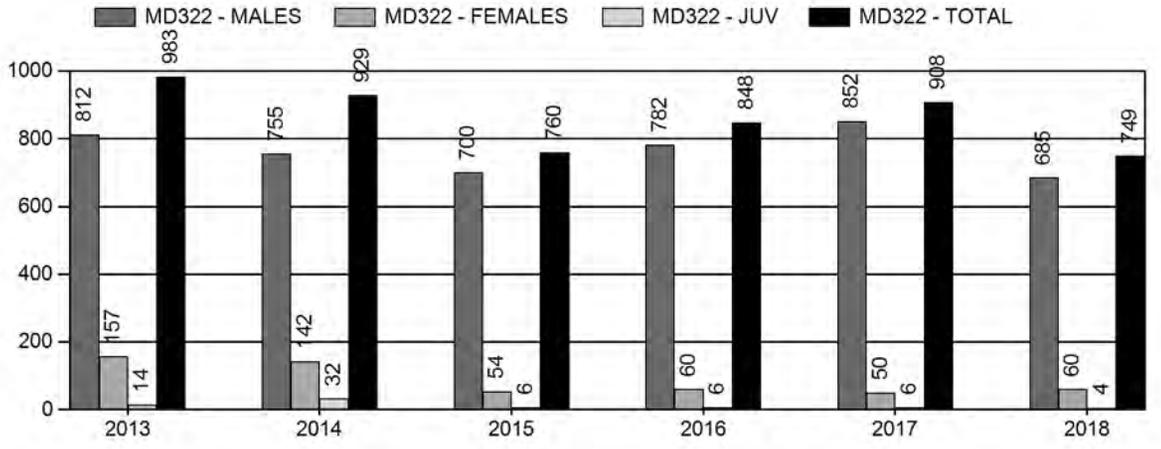
Population Objective (± 20%) :	18000 (14400 - 21600)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-33.1%
Number of years population has been + or - objective in recent trend:	15
Model Date:	2/19/2019

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

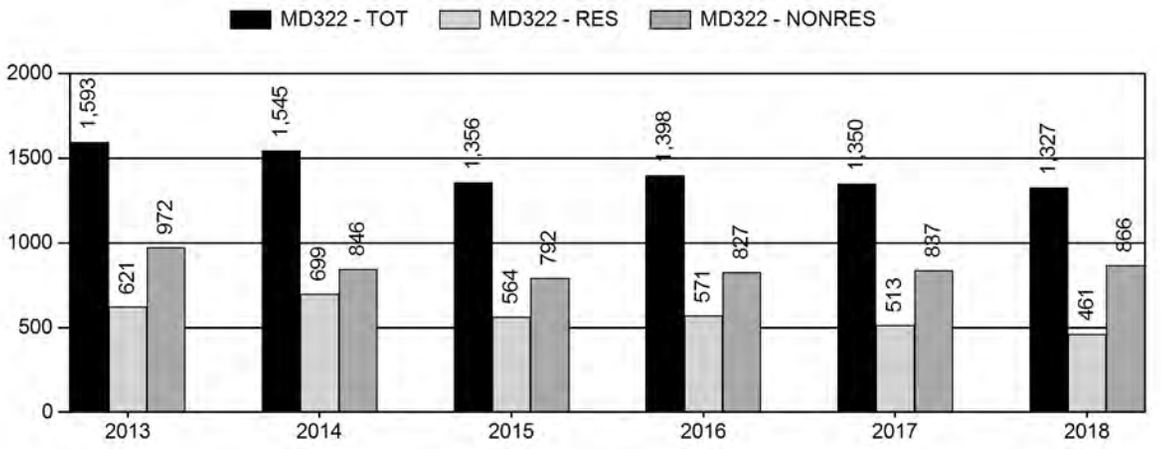
	JCR Year	Proposed
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	22%	23%
Total:	6%	6%
Proposed change in post-season population:	0%	+4%



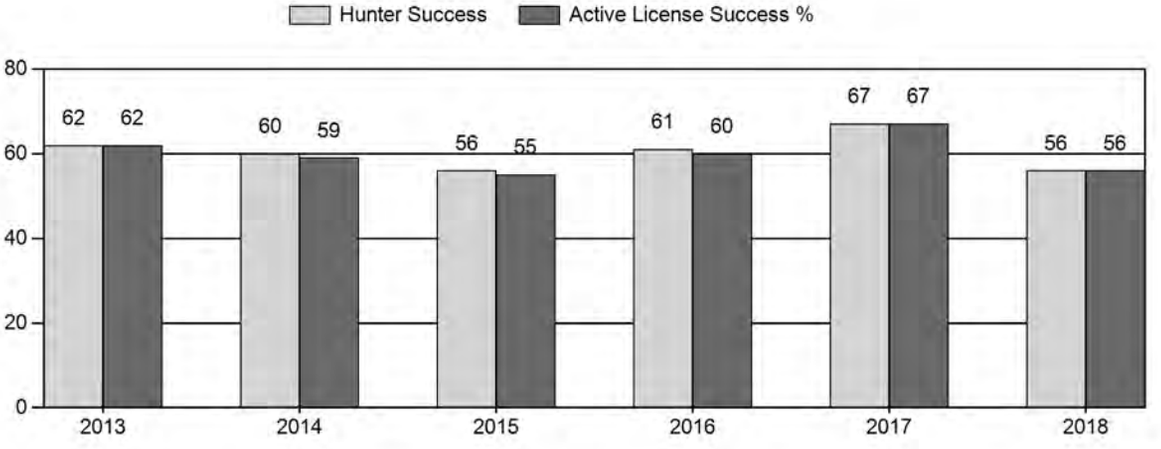
Harvest



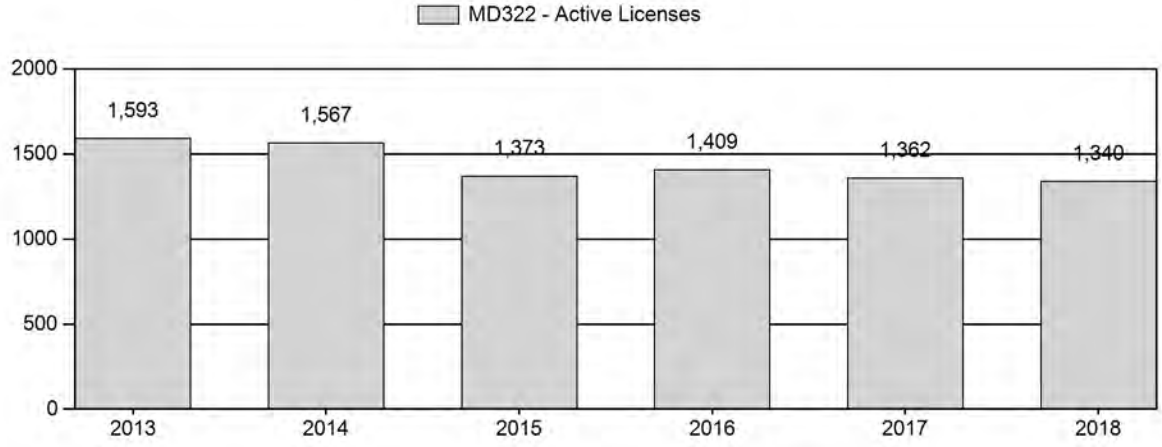
Number of Active Licenses



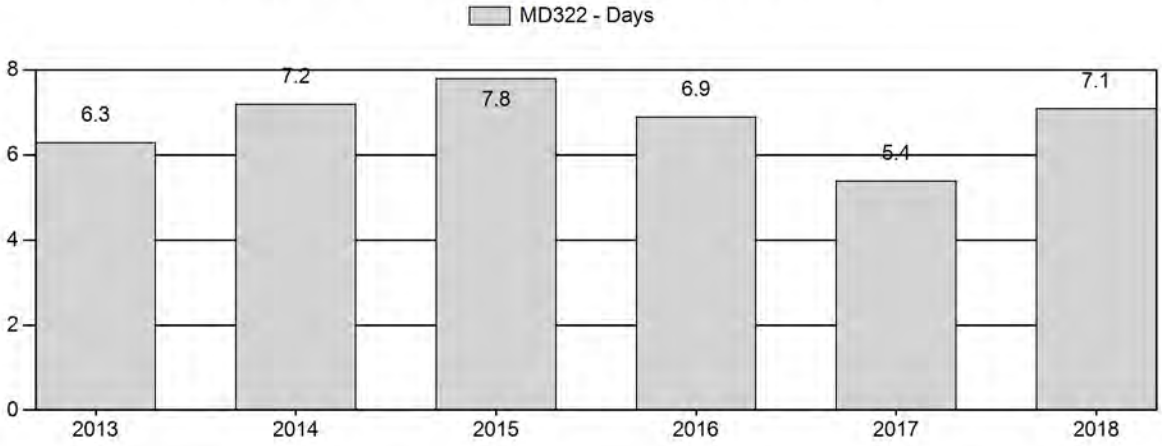
Harvest Success



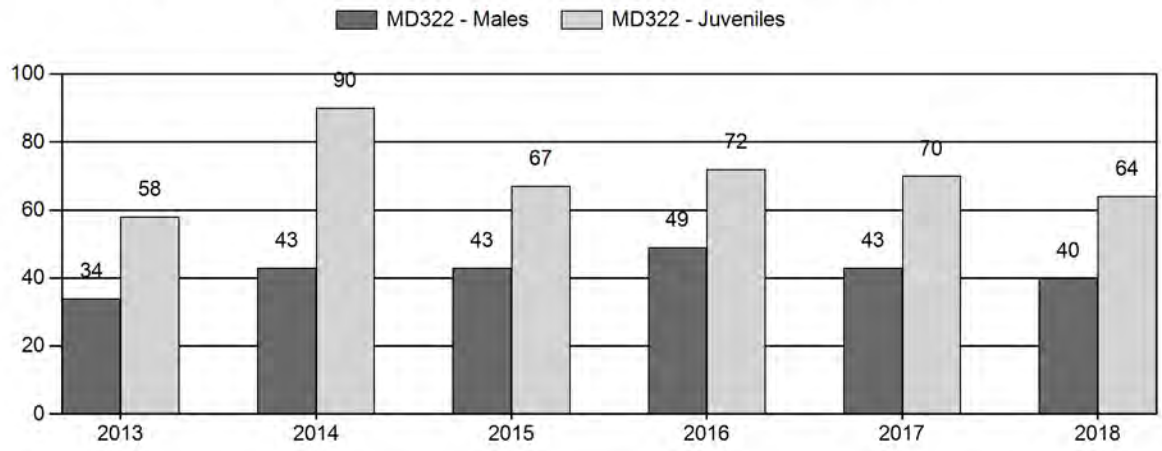
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2013 - 2018 Postseason Classification Summary

for Mule Deer Herd MD322 - UPPER POWDER RIVER

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	10,422	135	166	47	1	0	349	18%	1,013	52%	586	30%	1,948	1,046	13	21	34	± 2	58	± 3	43
2014	11,528	150	172	39	2	0	363	19%	840	43%	755	39%	1,958	2,177	18	25	43	± 3	90	± 5	63
2015	11,580	170	188	48	2	0	408	21%	940	47%	632	32%	1,980	1,369	18	25	43	± 3	67	± 4	47
2016	11,889	185	263	50	0	0	498	22%	1,021	45%	734	33%	2,253	1,562	18	31	49	± 3	72	± 4	48
2017	12,028	126	141	86	0	0	353	20%	822	47%	573	33%	1,748	1,440	15	28	43	± 3	70	± 4	49
2018	12,039	87	169	80	0	0	336	20%	832	49%	531	31%	1,699	1,474	10	30	40	± 3	64	± 4	45

2019 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		Oct. 15	Oct. 21		General	Antlered deer
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 2018
30, 32, 33, 163, 169		No Change
Herd Unit Total		**No Change**
Region Y		**No Change**

Management Evaluation
Current Postseason Population Management Objective: 18,000
Management Strategy: Special
2018 Postseason Population Estimate: 12,000
2019 Proposed Postseason Population Estimate: 12,500
2018 Hunter Satisfaction: 69% Satisfied / 17% Neutral / 14% Dissatisfied

Herd Unit Issues

The Upper Powder River Herd Unit consists of hunt areas 30, 32, 33, 163, and 169 and is managed by the Buffalo Wildlife Biologist. The management objective is a post-season population objective of 18,000 deer. The management strategy is special management, with the post-hunt buck-to-doe ratio goal of 30 – 45 bucks:100 does. The management strategy was changed from recreational to

special management in 2013. The herd unit was reviewed in 2018 and no changes were made. In 2014, this herd was selected as the Sheridan Region's Mule Deer Initiative herd (WGFD 2019).

Accessible public lands are limited in the northern portion of the herd unit, but are more prevalent to the south, which receive 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. GPS mapping technology is assisiting hunters to navigate small and scattered public land areas.

Weather

Precipitation (extrapolated from PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu, created 4 Feb 2004) from October 2017 through September 2018 (water year) was slightly higher than the 30 year average. Precipitation during the growing season (April through June) was higher than the 30 year average while the growing season precipitation for high elevation SSF seasonal ranges (May - July) lower than the 30 year average. The majority of the precipitation came during the months of May and June. Overall and precipitation accumulation was comparable to long term averages for the area (Figure 1).

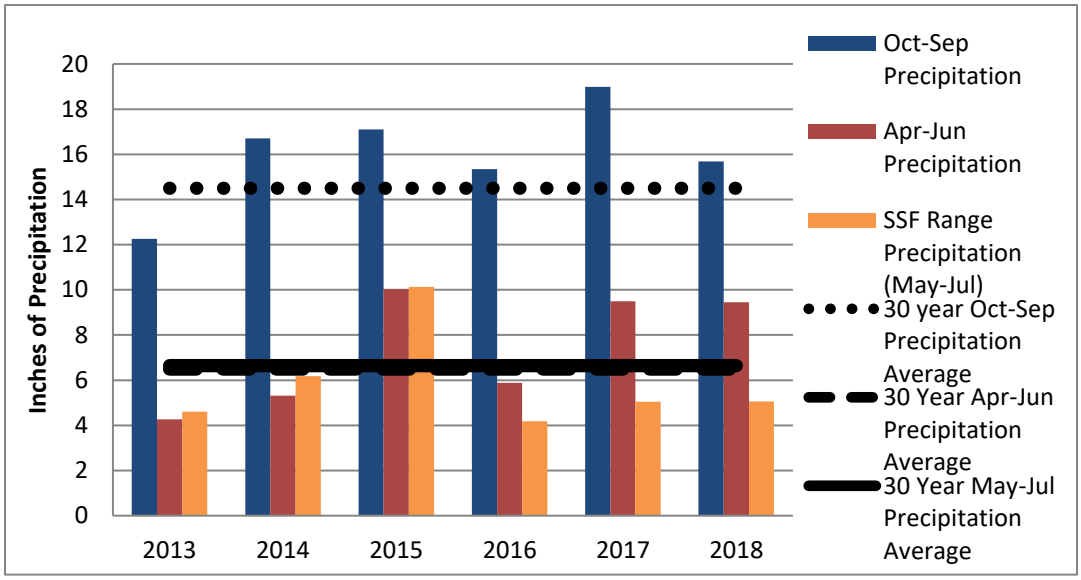


Figure 1. Water year precipitation and 30-year average for MD322 from 2013 through 2018.

Early 2018-2019 winter was warmer than previous winters, with the temperatures averaging 28.7°F during the months of November through January as recorded in Kaycee, WY. This is 1.8 degrees warmer than the 30-year average for Kaycee. February, however was much colder than average (25.0°F) with an average temperature of 14.1°F. March and April temperatures were more similar to long-term averages. Moisture accumulation recorded in Kaycee during this time-period was 1.22 inches of precipitation (30-year average is 0.99 inches) and 16 inches of snow (30-year average is 16.06 inches). The snow water equivalent measured at Powder River Pass, Beartrap Meadow, Middle Powder, and Grave Springs Snotel sites recorded February 10th, 2019 was 53%, 84%, 55%, and 62% of the official mean for those respective sites. From this data, it appears that winter conditions will have minimal impacts on wintering mule deer, given average winter temperatures and precipitation. Drier conditions at higher elevations however, may

provide less than normal moisture and could have negative impacts on spring forage productivity.

Habitat

The growing season (April – June) precipitation in the Upper Powder River mule deer herd unit appeared higher than average but didn't appear till later in the growing season (May). Mule deer Spring, Summer, Fall seasonal range (May - July) experienced a drier than average season, with precipitation 76% of average (Figure 1). It is possible these climatic conditions had an effect on habitat quality for mule deer. Due to late arrival of spring precipitation, plant phenology could have been delayed, and early green up forage could have been lacking due to the absence of April moisture. Habitat quality may also been lower than normal in the upper elevations of the deer herd, due to the drier than normal conditions observed in the Spring, Summer, Fall mule deer seasonal range. This could have effected nutritional quality of migratory mule deer that summer at upper elevations.

Two permanent shrub transects are measured in this herd unit. While the long-term trend data is informative, it is important to note that weather and habitat conditions vary greatly throughout this herd unit and two transects are not sufficient to summarize conditions for the entire area. One transect is located in a Curl-leaf mountain mahogany stand near Outlaw Cave, and the other is located in a Wyoming big sagebrush stand near Tisdale Mountain. Leader growth, hedging class, and age class were recorded in Fall of 2018. Leader production was 2.3 cm at Outlaw Cave and 2.5 cm for Tisdale Mountain. Leader production at Outlaw Cave was comparable to the ten year average (2.30 cm) while leader production at Tisdale Mountain was slightly lower than the ten year average (3.2 cm). Hedging class scores for Outlaw Cave and Tisdale Mountain were 1.5 and 1.54, respectively. Both of the scores are lower than the ten-year average those respective sites (1.71 for Outlaw Cave; 1.65 for Tisdale Mountain). Age class scores for Outlaw Cave and Tisdale Mountain were 1.98 and 2.02, respectively. Both of the scores are slightly lower than the ten-year average for those respective sites (2.12 for Outlaw Cave; 2.18 for Tisdale Mountain). Shrub utilization measurements were also recorded at these sites during spring 2019. Shrub utilization was 26% at Outlaw Cave and 10% at Tisdale Mountain. Outlaw Cave utilization was higher than the 10-year average for that site (3.38), while utilization was comparable than the 10-year average for Tisdale Mountain (11.49).

During the months of April through July of 2016 and 2017, mule deer habitat conditions were assessed using the Rapid Habitat Assessment (RHA) framework developed by the Wyoming Game and Fish Department (WGFD). Overall, habitat conditions were meeting mule deer habitat objective guidelines in the spring-summer-fall seasonal range. Alternatively, fawning and parturition habitats assessed either partially met, or did not meet, habitat requirements. The majority (64%) of winter/yearlong habitat assessed was meeting habitat objectives, while 14% partially met objectives and 21% did not meet objectives. Results indicate that riparian areas in winter/yearlong seasonal ranges are the biggest limiting factor for mule deer. Invasive species, historic over-utilization by livestock, and anthropogenic manipulation are the biggest factors that have led to the degradation of these habitats. Detailed analysis of the findings from this assessment can be found in "Upper Powder River Mule Deer Rapid Habitat Assessments, 2016-2017" (Appendix 1).

A number of mule deer habitat improvement projects have been completed with WGFD funding. One treatment type includes the removal of undesirable or encroaching species. In 2016, 702 acres of cheatgrass was treated. The removal of conifers encroaching on curl-leaf mountain

mahogany stands occurred on 1,098 acres from 2016 to 2017, with 870 additional acres planned for treatment in 2019. Conifer removal has also occurred in 22 acres of conifer encroached aspen stands, with 328 additional acres planned for treatment in 2019. Another treatment type includes establishing desirable plant species. Forty and 30 curl-leaf mountain mahogany plantings occurred in 2016 and 2018, respectively, in an experimental effort to establish new stands. Planting of deciduous browse trees has also occurred experimentally, starting with ten plants in 2016 with a goal of planting more if the initial plants are successful. Dixie harrowing was conducted on 14 acres in 2015 to remove decadent silver sagebrush and was followed with planting native grasses and forbs. For more detailed information about these projects, please refer to the WGFD's Strategic Habitat Plan annual reports (WGFD 2018).

Field Data

The post-season classification was conducted in November and December of 2018 via ground and aerial surveys. The classification resulted in 1,699 deer being classified, achieving an adequate sample size of ≥1,474 deer.

Classifications in 2018 resulted in a fawn:doe ratio of 64:100, the lowest ratio since 2013. The yearling male:doe ratio (10:100) was also very low, following a higher 2017 fawn:doe ratio of 70:100. These results indicate that the 2017-2018 winter may have resulted in higher fawn mortality than expected. In addition, timing of 2018 precipitation and dry summer conditions have resulted in poorer habitat conditions than expected, leading to poor fawn recruitment in 2018.

The total buck:doe ratio was 40:100, which is slightly lower than the previous five-year average (42:100) and remains at objective. Buck ratios have remained ≥30 per 100 does every year since the change in management strategy to special management in 2013. In 2018, the percent of Class II (20"-25" outside antler width) bucks relative to all bucks classified (24%) was the same as in 2017 and higher than the previous five-year average (14%). The percent of Class I (≤19") bucks relative to all buck classified has varied annually from 40% to 53% in the last six years, with 50% classified in 2018. High buck ratios are influenced by the herd unit's rugged topography and conservative hunting strategies on private land.

Thirty-seven landowners responded to the post-season landowner survey. Most landowners responded that deer were below desired levels (62%), while 35% believe that deer numbers are at desired levels. One landowner noted that deer were above desired levels, which corresponds to a localized area where wildlife damage occurs. The postseason landowner survey reflects the trend of a stabilizing and potentially slowly increasing population, but low overall deer numbers.

Harvest Data

Total harvest (749) was the lowest it has been in over 30 years and continues the decreasing trend of total harvest. Historically, harvest was always greater than 1,000 deer, which has not occurred since 2011. Decreased harvest in 2018 was a result of decreased buck harvest, given that doe (8% of total harvest) and fawn (<1% of total harvest) harvest were nominal and similar to previous year's harvest. Hunter success (56%) had decreased from the previous five year average (61%) and there was fairly average hunter effort (7.1 days to harvest as compared with the previous five-year average of 6.7). Since 2014, non-resident hunters outnumber resident hunters by an increasing margin each year.

Hunter satisfaction was high, with 69% responding positively to the hunter satisfaction survey. The satisfaction rate was slightly lower than 2017 (78%), which is likely due to decreased success.

Resident and non-resident hunter responses were identical, which is surprising given the high quantities of private lands in the unit.

Hunting dynamics in this herd could be explained by hunters being highly selective for larger deer, resident hunters avoiding this herd unit due to population concerns, a decreased population, and/or non-residents primarily hunting on private lands with outfitters.

Due to public concerns about a lack of quality bucks, incisors from field checked adult bucks were collected from 2015 - 2017 to determine harvested buck ages via cementum annuli techniques at the Wyoming Game and Fish Lab. Lab ages provide insight into the distribution of the age cohorts in the harvest as well as corresponding antler sizes. Despite inter-annual variation in the data, two general trends became apparent. The first observation is that 3.5-year-old deer are the most highly represented cohort of harvested deer, and the harvest rate decreases with increasing age cohort. The second trend is that antler size increases steadily from an average of 13.7 inches in 2.5 year old deer to an average of 19.8 inches in 5.5 year old deer and increases at a slower rate after that, resulting in an average of 21.8 inches in 7.5 year old deer. The limited sample size of deer over 5.5 years old makes it difficult to draw too many conclusions from the older deer cohort, other than there being fewer deer of that age that are available in the population for harvest (Figure 2).

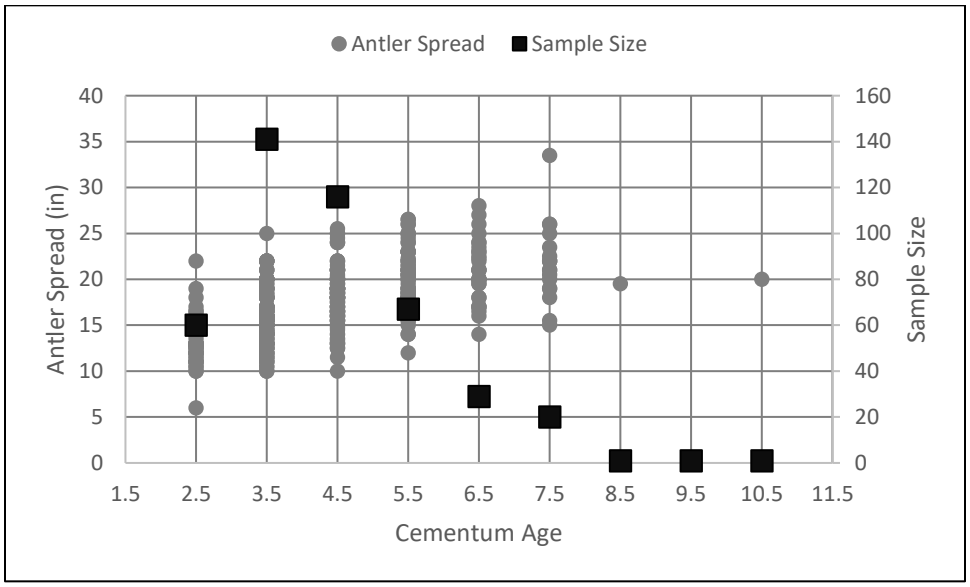


Figure 2. Cementum age of harvested deer with corresponding antler spread and sample sizes from 436 mule deer sampled from 2015 to 2018.

Population

We used integrated population models, referred to as Excel Spreadsheet Models, based on White and Lebow (2002) to estimate the population. Model parameters and input follow the "User's Guide: Spreadsheet Model for Ungulate Population Data" (Morrison 2012).

The Semi-Constant Juvenile/Semi-Constant Adult (SCJ/SCA) survival model out-performed the other models and produced the lowest AIC value (106). The 2018 post-season population estimate of 12,039 deer continues the trend of a relatively stable and slowly increasing population that is below objective.

All three models showed a similar trend of population stability since the late 2000's, with inter-annual variation. Conversely, there were major discrepancies between the population estimates for each model over that time. The selected model provides reasonable results that correspond well with management data and field observations. Since independent survival estimates are lacking , this model is considered a fair model.

Special Projects

In December of 2018, 70 adult doe mule deer were captured, marking the initiation of the Upper Powder River (UPR) Mule Deer Initiative (MDI) research project. The goal of the project is to better understand the population dynamics that may be influencing this herd's productivity. At the completion of the study, we hope to determine 1) cause-specific mortality, 2) sources of variation in nutritional status, 3) habitat use and movement strategies, 4) parturition ranges and habitat use, 5) CWD dynamics, 6) barriers to movement, and 7) migration routes.

Deer capture locations were distributed across the herd unit. Biological samples and measurements were collected from each deer, including blood and fecal samples, rectal CWD biopsies, lactation status, and morphometric and ultrasonic rump fat measurements. Each deer was outfitted with a radio-collar that stores GPS locations at two-hour intervals and transmits locations at six-hour increments via satellite transmissions. During December 2019, 2020, and 2021 we plan to re-capture radio-collared deer as well as re-deploy collars from mortality events to maintain a sample size of 70 deer for the duration of the three-year study. Re-captured deer will have their biological measurements re-sampled each year.

Deer captured were in very poor condition coming into winter, with low or no sub-cutaneous fat measured. As of May 21, 13 mortalities have occurred and cause of death determinations are pending. In February, six deer were captured to deploy recovered radio-collars from mortalities. The poor nutritional condition and high mortality rate was unexpected, highlighting the importance of this study. The study would not be possible without funding from the Buffalo Bureau of Land Management Field office, Wyoming Sportsman's Group and WGFD Mule Deer Initiative funding and collaboration from Dr. Kevin Monteith at the University of Wyoming and the WGFD Veterinary Services.

In 2018, pilot data was collected to address wildlife mortalities on Interstate 25, on the eastern boundary of the herd unit. Trail cameras were set and monitored at existing highway crossing structures with the goal of monitoring wildlife use of the structures. These structures were not designed for wildlife but provide permeability to the road corridor and include underpasses, culverts, and bridges for intersecting roads, draws, and rivers. Wildlife crossing structures are often prohibitively expensive to build, however if wildlife are documented using existing structures, the hope is that implementing wildlife fencing would funnel wildlife to the existing structures. If effective, this would reduce highway wildlife mortalities, increase driver safety, and save millions of dollars that would be spent constructing wildlife-specific crossing structures. Data collected during the pilot study indicated that 13 species passed through the structures at least once and mule deer were observed using every passage to cross the interstate except for one. From the pilot study, we learned that the workload is manageable for WGFD personnel, with an intern's help for data entry. Data collection of wildlife use officially began January 1, 2019 and will continue for two years to provide data prior to potential fence construction.

Management Summary

This herd was identified as a MDI herd in 2015. In 2018, the herd unit population persisted below objective while the buck:doe ratio is at objective. Preliminary mortality rates from the UPR MDI study suggest that 2018 weather did not produce favorable habitat conditions for mule deer. Winter fawn survival will likely be impacted even though we have not experienced severe winter conditions.

Long-term concerns over this herd have resulted in management actions including liberal mountain lion, elk, and white-tail seasons, and extremely limited doe mule harvest. Public comments noted high concern that mountain lion densities have had long-term impacts on this deer herd. Extremely high white-tailed deer numbers may be causing competition for more productive habitats in and adjacent to riparian corridors and irrigated alfalfa meadows. Elk numbers remain above objective, which may be causing heavier browse levels than native forage plants can sustain. Mule deer doe harvest is limited to private land in hunt areas 30 and 33 with a General license as well as with 25 Type 6 doe/fawn licenses valid on private land in hunt area 33. Doe mule deer harvest averaged less than one percent (.95%) of the pre-hunt doe population over the last four years, which provides high confidence that doe harvest is not having population level impacts. In addition, doe mule deer are primarily harvested on private lands where densities are high enough to cause damage to irrigated hay meadows. In these situations, doe harvest may be an appropriate herd management strategy in order to reduce large concentrations of deer and slow the spread of Chronic Wasting Disease (CWD).

In 2004, CWD was discovered in this herd. Since then, the disease has been confirmed in all of the hunt areas, including the first detections in hunt areas 32 and 169 in 2018. In 2018, efforts were made to sample over 100 adult mule deer bucks to estimate prevalence for the herd. These increased efforts resulted in a sample size of 119 adult bucks and a prevalence rate of 15%. From 2014 to 2018, a total of 244 adult bucks have been sampled resulting in a prevalence estimate of 14%.

Hunting seasons continue to address public concerns identified with the continuing Mule Deer Initiative efforts and management of this herd. No changes were made for the 2019 season. Discussion of the non-resident Region Y quota resulted in conflicting arguments. Increasing the quota may be useful in early prevention of high CWD prevalence rates in this and surrounding herd units. Decreasing the quota, however, helps mitigate hunter crowding, success, and satisfaction in areas with limited public land. No changes in the Region Y quota are made this year.

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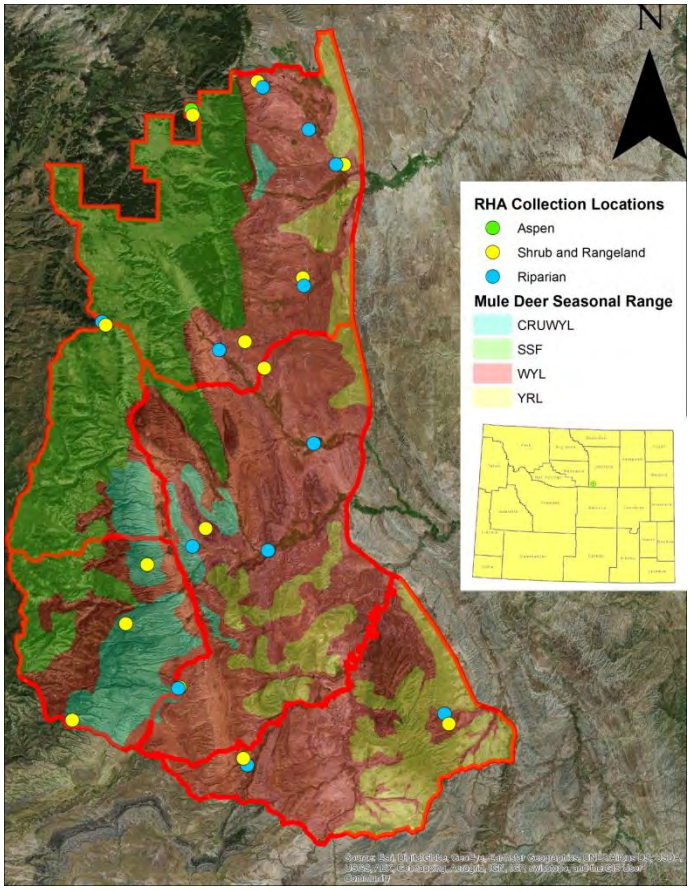
APPENDIX #1

Upper Powder River Mule Deer Rapid Habitat Assessments, 2016-2017

Introduction

During the months of April thru July of 2016 and 2017, mule deer habitat conditions were assessed in the Upper Powder River (UPR) mule deer herd unit using the Rapid Habitat Assessment framework developed by the Wyoming Game and Fish Department (WGFD). The Rapid Habitat Assessment (RHA) framework is a qualitative assessment designed to evaluate the current habitat conditions in a given herd unit are meeting mule deer habitat needs. A total of 27 RHA's were completed in three habitat types (aspen, shrub and rangeland, and riparian) across four seasonal ranges (crucial winter (CRUWYL),yearlong (YRL), spring-summer-fall (SSF), winter yearlong (WYL) (Figure 1). Site selection for RHA's was based on perceived important habitats for mule deer based on casual observations and big game surveys by WGFD staff, distribution across multiple seasonal ranges, and accessibility due to landownership (private land with permission granted and public land).

Figure 1

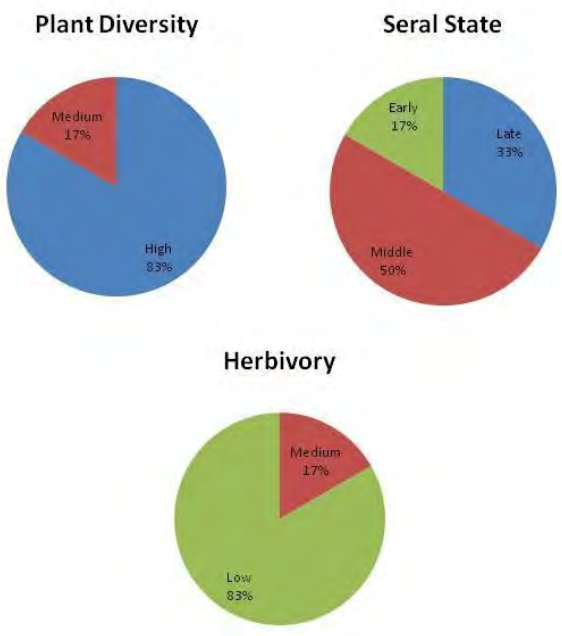


Mule deer in the UPR herd appear to be split between two different life history strategies. One segment of the herd migrates to upper elevations of the southern Bighorn Mountains during the spring, summer, and fall seasons, and then migrates to lower elevations for winter. The other segment of the population stays at the lower elevations year around. Parturition/fawning habitat of the migratory segment of the population is believed to be comprised of mesic mountain meadows/grasslands, riparian areas, and aspen forests. Parturition/fawn rearing habitat for the non-migratory portion herd occurs throughout rangelands and agricultural areas that provide adequate cover and high quantity/ quality nutrition. Mule deer are thought to dependent on riparian areas in the non-migratory segment for fawn rearing habitat. Due to drier conditions in the lower elevations during later summer/early fall, riparian areas provide high quality nutrition to lactating does as the uplands grass and shrublands dry out. Winter range habitat used by both population segments appears to be dominated by either large stands of Wyoming Big sagebrush or Curl-leaf mountain mahogany.

Parturition/Fawn Rearing Habitat

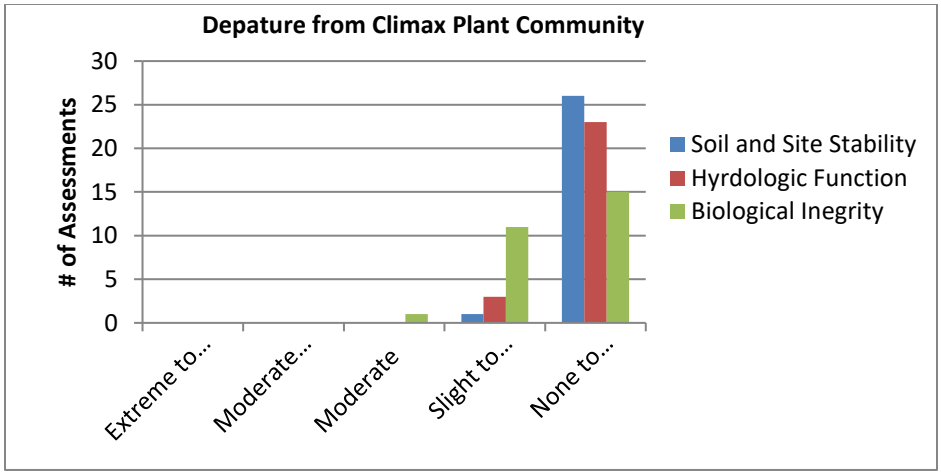
Six RHA's were conducted within spring, summer, fall seasonal range fawning habitat thought to be used by the migratory portion of the herd (four shrub and rangeland assessments, one aspen assessment, and one riparian assessment). Overall, habitat conditions met habitat objectives for spring, summer, fall seasonal range. Plant diversity was high in surveyed habitats, indicating that a variety of different forages were available to meet reproductive needs. Plant communities mostly appeared to be in a mid seral state, with only two of the six assessments exhibiting plant communities in a late seral state. Herbivory appeared to be low on all surveyed habitats except for the aspen assessment, in which herbivory was evaluated as moderate, which is expected for aspen habitats (Figure 2).

Figure 2 – UPR Mule Deer Spring, Summer, Fall seasonal range habitat attributes



In addition to RHA data collected by the WGFD, the Bureau of Land Management (BLM) collected rangeland health data on grazing allotments during the same time period that WGFD conducted RHA's. Thirty rangeland health assessments were conducted in allotments occurring in mule deer spring, summer, and fall seasonal range. Data from these assessments indicated that rangelands were generally stable and functioning properly, based on the Rangeland Health Protocol (Pellant et. al 2005). Soil and site stability appeared stable, with only 3% of the assessments ranking slight to moderate in departure from expected conditions and the remaining (97%) falling into the slight to no departure from expected climax plant communities. Hydrologic function also appeared to be stable, with only 12% of the assessments falling into the slight to moderate departure from expected conditions, and the remaining (88%) falling into the slight to no departure category. Biological integrity was split between none to slight departure (56%) category or slight to moderate (41%) category (Figure 3). Rangelands that exist in a state of slight to moderate departure from climax biological integrity typically represent optimal mule habitat. As rangelands get closer to climax plant communities, they lack early seral species and younger plant age classes, which often provide desirable mule deer forage. The BLM rangeland health assessments indicate that mule deer habitat conditions may be limited in some areas by late seral plant communities trending towards climax.

Figure 3-UPR Spring, Summer, Fall seasonal range BLM rangeland health assessments



For the non-migratory portion of the herd, parturition/fawning habitat is thought to be highly dependent on riparian areas. To assess parturition/fawning habitat in the non-migratory portion of the population, 11 riparian RHA's were completed throughout mule deer winter/yearlong range. Overall, parturition/fawning habitats assessed either partially met or did not meet mule deer habitat requirements. Plant diversity was either average (64%) or lower than expected (27%). Plant diversity was limited by invasive weeds and grasses that were dominating riparian areas. Many of the riparian areas assessed were dominated by smooth brome and/or Kentucky Bluegrass, which are both known to inhibit the production of desirable forage and cover species. Other invasive species that were commonly recorded were Canadian thistle, Houndstongue, and Russian Olive. The majority of the areas assessed appeared to have mid seral successional plant communities, mostly due to lack of deciduous woody cover and lack of native plant species diversity. Herbivory levels appeared to be light throughout most of the assessed areas (Figure 4). One of the biggest concerns identified was lack of cover from woody plant species. Typical vertical structure was composed of either short (<3 feet in height) or tall (>15 feet in height) woody plant species cover (or a mixture of short and tall). Mid level woody cover (3-15 feet in height) was lacking in the majority of the riparian species assessed. Mid level woody plant cover was only found in 40% of the riparian areas assessed (see figure 5).

Figure 4 - UPR Winter/Yearlong Seasonal Range Riparian Habitat Attributes

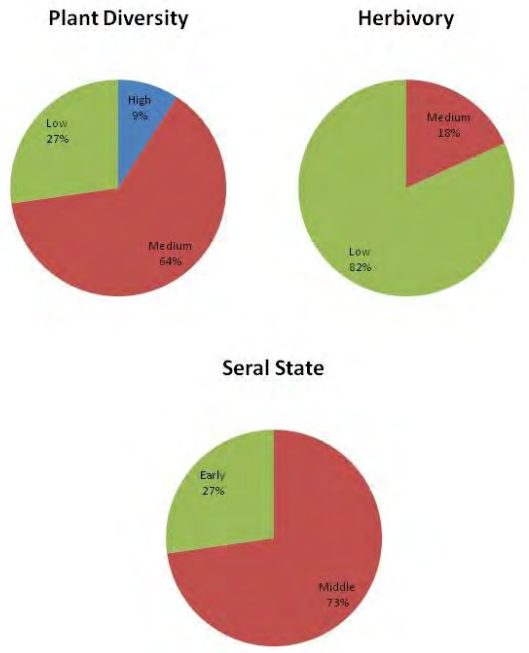
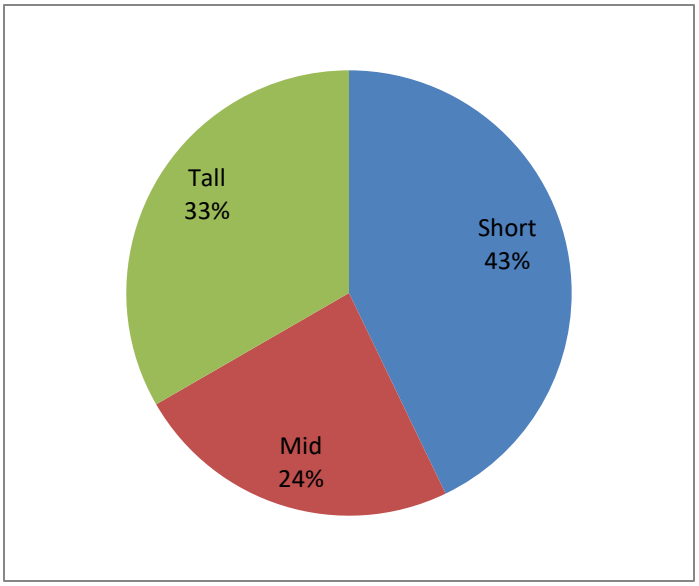
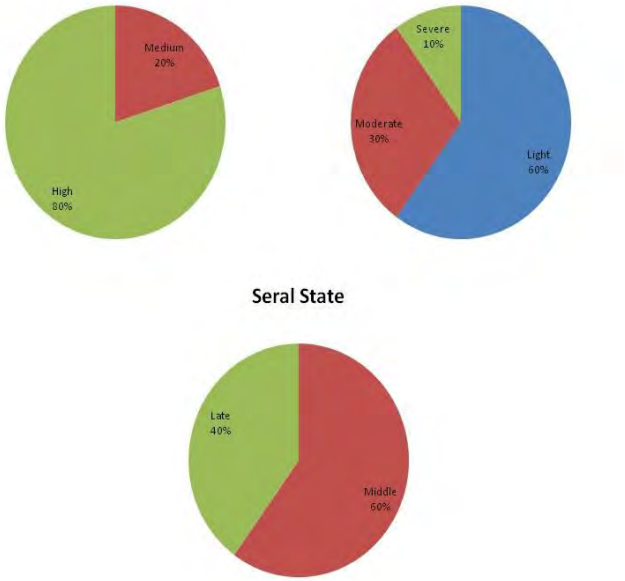


Figure 5-Vertical Structure Classifications in Riparian Areas in UPR Winter/Yearlong Seasonal Range



Winter/Yearlong Habitat

Figure 6-Figure 4 – Rangeland and Shrub Habitat Attributes in UPR Winter/Yearlong seasonal range



Seven rangeland and shurbland RHA's were collected on mule deer winter/yearlong range. The majority of the habitat assessments (64%) met mule deer habitat objectives while14% partially met objectives, and 21% did not meet objectives. Completed rangeland and shrub RHA's showed the majority of the assessed plant communities were in a mid seral state (60%), with 40% trending towards late seral plant communities. Herbivory was highly variable between areas assessed, with some sites receiving light use on shrubs and herbaceous plants, and others exhibiting high use on shrubs and herbaceous plant communities, by both livestock and wildlife. Plant diversity appeared fairly high in all of the areas assessed, indicating fairly stable rangelands with minor invasive plant concerns (Figure 6).

The BLM conducted 44 rangeland health assessments in mule deer winter/yearlong habitat. Soil and site stability of rangelands was good, with the majority of the sites assessed falling into the slight to no departure from expected category (81%) and only a few sites assessed falling into the slight to moderate (14%) and moderate (5%) categories. Hydrologic function appeared to be more impaired than desired,

with only 64% of assessed rangelands falling into the “slight to none” category. 30% of the allotments assessed fell into the “slight to moderate” category and 7% in the “moderate” category. Biological integrity of the majority of the rangeland assessments (84%) fell within the moderate to slight or slight to no departure from climax range conditions, which indicates relatively stable resilient rangelands. Stable and resilient rangelands are ideally preferred for mule deer winter/yearlong habitat. These habitats are more resistant to conversion in the event of disturbance and if present, shrublands are healthy and capable of providing adequate winter browse (Figure 7). Some (16%) of the assessed rangelands had a biological integrity rating of “Moderate”, which indicates that a portion of the rangelands exhibit signs that the plant community is showing signs of degradation. Typical indicators ranking a rangeland lower in rangeland health assessments include lack of expected plant species, depressed rangeland production from expected conditions, and presence of invasive weed species (Figure 8).

Figure 7-Figure 3-UPR Winter/Yearlong Seasonal Range BLM Rangeland Health Assessments

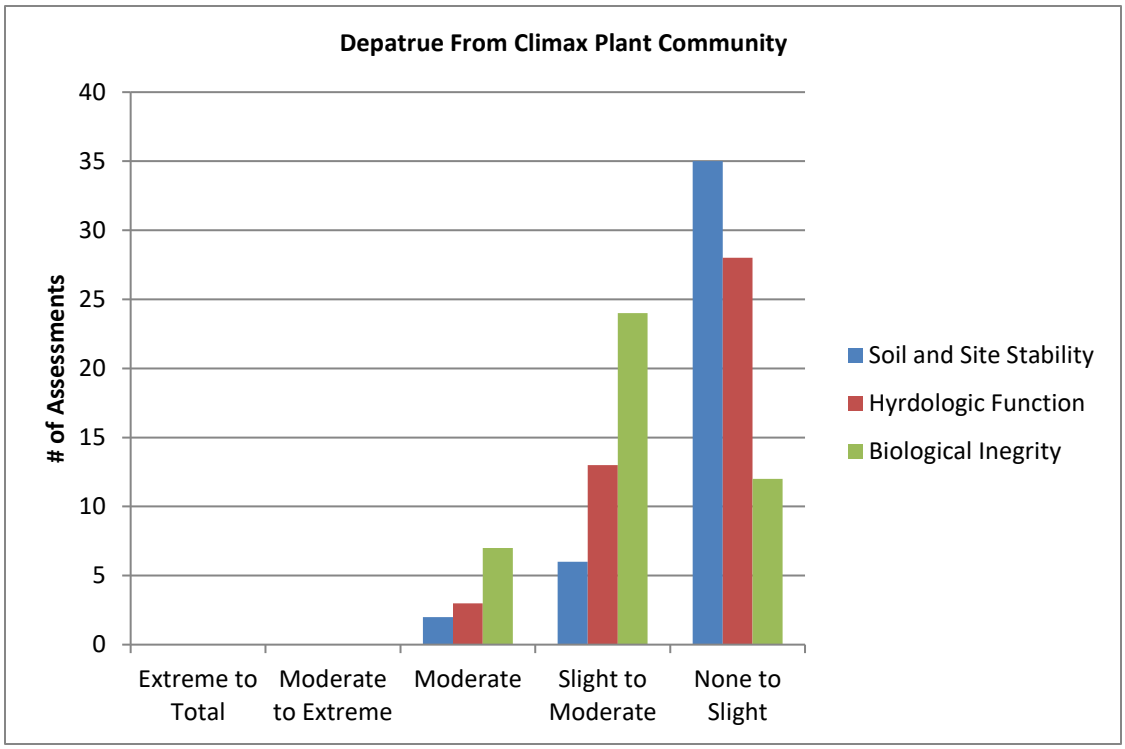
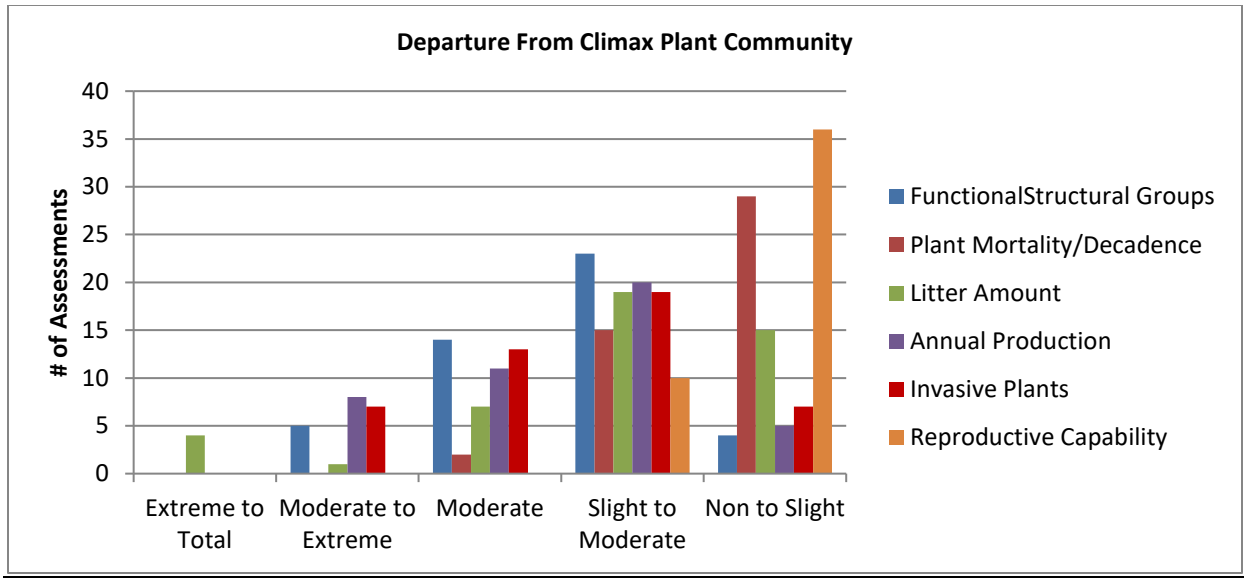


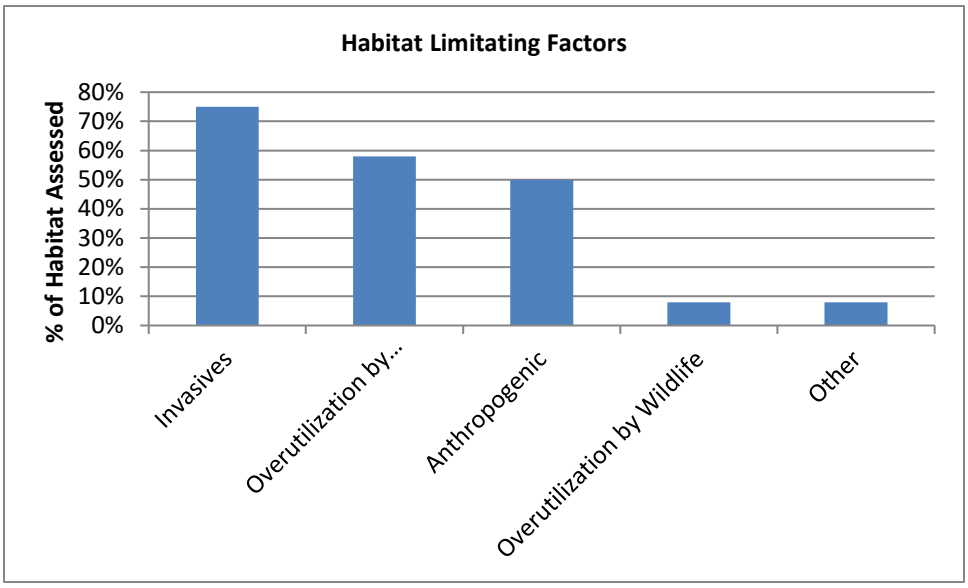
Figure 8-Rangeland Health Indicators relating to Biological Integrity



Summary

The WGFD RHA's and the BLM rangeland health assessments provide insight to the mule deer habitat conditions in the UPR herd unit in 2016 and 2017. From these assessments, the largest concern is the condition of riparian habitat in the non-migratory portion of the mule deer herd. Parturition/fawn rearing habitat for the non-migratory portion of the mule deer herd is thought to rely substantially on riparian habitat. Of all the habitats assessed, this habitat appeared to be the most heavily degraded and least likely to meet mule deer habitat needs. Not one riparian RHA found riparian habitat fully meeting mule deer habitat needs. The biggest issues identified in these assessments was the lack of adequate hiding cover by woody plant species and lack of plant diversity in relation to mule deer forage species. The causes of these issues is attributed to invasive plant species, overuse by livestock, and lack of riparian function due to anthropogenic alteration of riparian areas (Figure 9). Invasive and non-native plant species were identified in the majority of the riparian areas (75%) assessed, with the most common species identified being smooth brome and Kentucky bluegrass. Although both of these grass species are palatable to mule deer, they are non-native and tend to dominate riparian areas, thus competing with desirable deciduous browse and forb species for moisture, sunlight, and space. In addition, invasive weed species such as thistles and Russian olive were identified as limiting potential mule deer habitat in some of the assessed areas. Overutilization by livestock was observed in 67% of the assessed riparian areas, reflecting livestock overutilization at some point in time affecting mule deer habitat conditions (Figure 9). It is to be noted that in many of the riparian areas assessed, however, present grazing impacts were typically low, with 83% having light levels of herbaceous herbivory. The lack of younger age classes of deciduous browse tree and shrub species in addition to the incision of stream banks in riparian areas assessed indicated at one time in the last 30 to 50 years, these areas had been heavily over-utilized by livestock. As a result, riparian function was limited due to deep stream incision and cover was lacking due to lack of recruitment of deciduous woody plant species, which provide both cover and forage for reproducing mule deer.

Figure 9-UPR Winter/Yearlong Seasonal Range Riparian Habitat Limiting Factors



Parturition/fawn rearing habitat for the migratory portion of the UPR mule deer herd appeared to be in good condition overall. The only concern was that a good portion of the assessed habitat appeared to be reaching a late seral plant community (56% of BLM allotments and 33% of WGFD RHA's), which has limited value to reproducing mule deer. Late seral habitats typically lack early seral plant species (i.e. forbs) and age classes (i.e. younger age class browse). As plant communities trend towards late seral plant communities, desirable mule deer forage declines in quantity and nutrition quality.

Winter/yearlong habitat for mule deer appeared to be in good condition and met mule deer habitat objectives. The majority of the concerns related to habitat assessed in winter/yearlong range were related to shrub communities lacking recruitment and/or overutilization by either livestock or wildlife on the primary browse plant species. Only 35% of the RHA's indicated concerns with overutilization or lack of shrub recruitment, while the majority of the assessments showed that the habitat was meeting mule deer objectives for winter/yearlong habitat. Similarly to the WGFD RHA's, the rangeland health assessments conducted by the BLM indicated that the majority of the rangelands surveyed were stable, healthy, and therefore likely meeting mule deer needs for winter/yearlong habitat. The biggest issues documented in the BLM rangeland health assessments were the lack of plant annual production, lack of/abundance of expected rangeland plant communities, and invasive plants. These issues are often the result of past/current overutilization, disturbance, and/or invasive annual grass establishment. These concerns were documented on less than 10% of the rangelands assessed.

Management Implications

Mule deer habitats assessed by RHA's indicated that one of the biggest limiting factors affecting mule habitat needs is in riparian areas in Winter/Yearlong seasonal ranges. Riparian areas, occupy a minor amount of acreage compared to other habitats, and are important for mule deer in the northern Great

Plains. Riparian areas provide high quantities of high quality forage due to the mesic nature of these habitats. The high quantity of vegetation that grows in riparian habitats also provides ample cover for mule deer. The high proximity of quality forage and cover provide excellent fawning habitat for mule deer in relation to the adjacent xeric, open uplands. Riparian areas in winter/yearlong seasonal ranges are in poor condition, and may be affecting fawn recruitment. One of the biggest issues identified in the RHA's related to riparian habitat was invasive and non-native plant species. An assortment of different invasive weed species were found in riparian areas surveyed. In some areas, these invasive plant species could be managed with active weed management. The majority of the non-native plant issues revolved around the presence of smooth brome. Smooth brome is an introduced perennial grass that has taken over many riparian areas in the northern Great Plains and tends to form monocultures. As riparian areas become dominated by smooth brome, native plant diversity is reduced, resulting in less forage and diversity of cover. Improving riparian habitats dominated by smooth brome is difficult, due to the perennial life cycle and highly aggressive nature of the grass. Management options are limited to improve mule deer habitat in smooth brome dominated riparian areas. One option is to plant deciduous woody plant species to improve lateral cover diversity. It is difficult for deciduous woody plant species to become established in smooth brome dominated communities naturally due to competition, but with direct planting, establishment of deciduous woody plant cover is possible.

Another factor affecting riparian areas in winter/yearlong mule deer seasonal range was over utilization by livestock and anthroprogenic manipulation. Most of the riparian areas identified as degraded by over utilization by livestock was not result of current grazing management, but rather long term alteration of riparian hydrology due to past heavy livestock use. Most of the riparian areas surveyed were well vegetated with herbaceous vegetation, and recent signs of heavy livestock overutilization were not present. Most of the riparian areas surveyed in the RHA in mule deer winter/yearlong seasonal range were incised and lacking deciduous woody vegetation, which is thought to be the result of past heavy utilization by livestock. There was little to no floodplain available to trap sediment, which is important for riparian areas to be able to retain water in high flows and establish deciduous woody plant species. It is thought that heavy past livestock use and possibly past neglectful herbicide treatment removed vegetation from the banks of these riparian areas, which led to increase downcutting of the stream channel. The result of these actions was a deeply incised channel that is unable to stabilize and collect sediment due to lack of vegetation on the banks to slow water movement into the riparian area. Although many of the streams surveyed had good herbaceous component present, there was little to no deciduous woody vegetation present. It is thought that woody deciduous riparian plant roots are needed to retain soil during high flows. Although herbaceous vegetation does hold soil in place to a degree, herbaceous plant root systems are not as effective at holding soil during high flows observed during high runoff. As a result, many of the riparian areas are either not able to redevelop a floodplain are slow in recovering the floodplain. In some of the riparian areas surveyed, past irrigation infrastructure had altered stream hydrology, creating similar conditions as observed with heavy past livestock use. Stream channels were altered by the creation of ditches and/or banks were altered to divert water, which resulted in stream hydrology downcutting and stream incision. Solutions to mitigate this issue include re-establishing woody deciduous plant species and possibly introduction of beaver or Beaver Dam Analogs (BDA's) to help these riparian areas trap sediment and redevelop floodplains.

The majority of the rangeland habitat assessed in winter/yearlong mule deer seasonal ranges was meeting mule deer habitat needs. Overutilization by livestock, lack of shrub recruitment, invasive annual grasses, and decreased production of desired plant communities were some of the issues identified as limiting mule deer habitat in winter/yearlong season range. These issues were very specific to certain areas, and can be addressed through working on grazing management improvements with landowners/permitees, annual grass herbicide treatments, and preservation of shrub stands.

The majority of the rangeland habitats assessed in spring/summer/fall (SSF) seasonal ranges appeared to be meeting mule deer habitat needs. The biggest concern identified in these habitats was related to the late seral vegetative communities. These plant communities appeared to be intact ecologically, but lacked early seral vegetation, which is preferred by mule deer. Setting back succession in these habitats has the potential to improve mule deer production. This can be achieved through mechanical conifer removal and prescribed burns.