

WHITE-TAILED DEER

For formatting purposes,
this page left blank intentionally.

2017 - JCR Evaluation Form

SPECIES: White tailed Deer

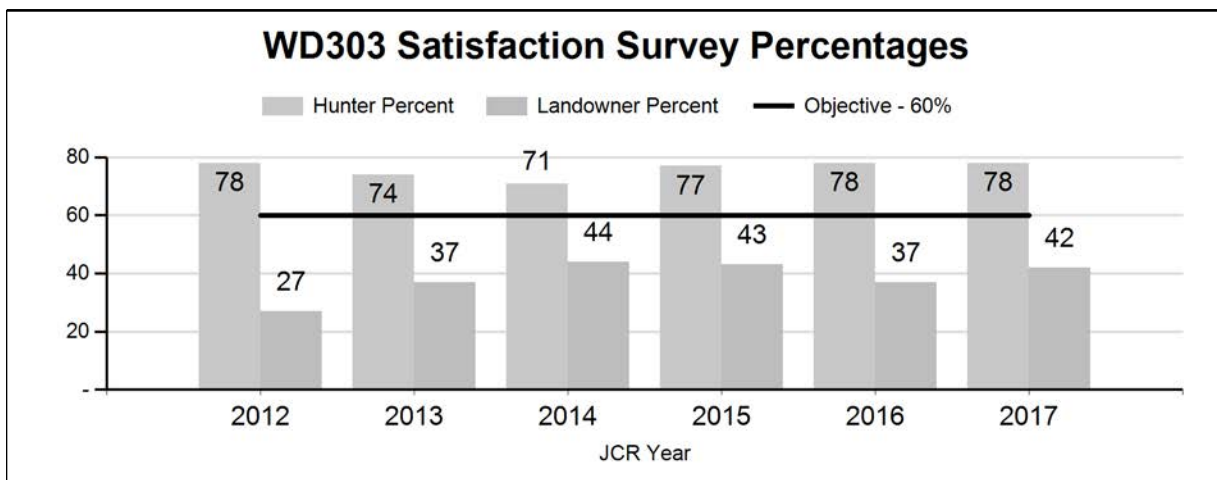
PERIOD: 6/1/2017 - 5/31/2018

HERD: WD303 - POWDER RIVER

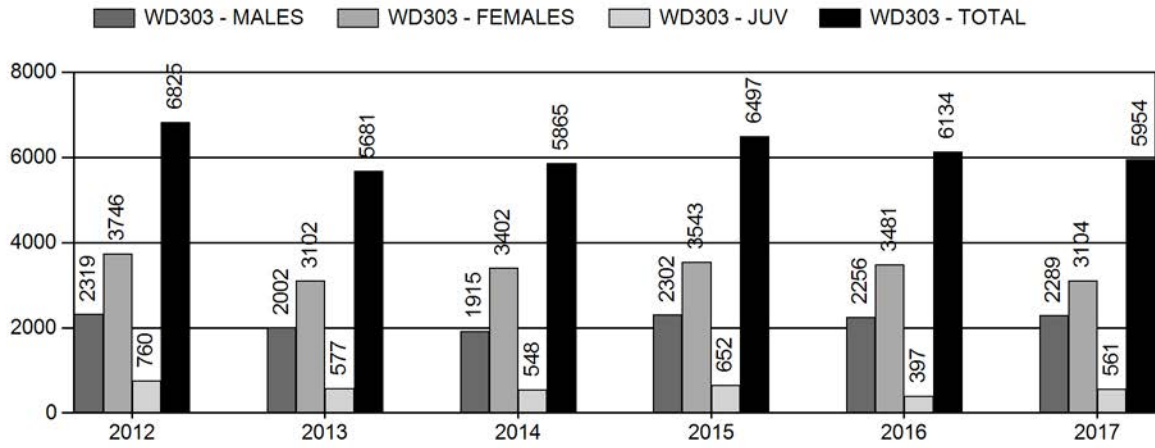
HUNT AREAS: 17-20, 23-33, 163, 169

PREPARED BY: TIM THOMAS

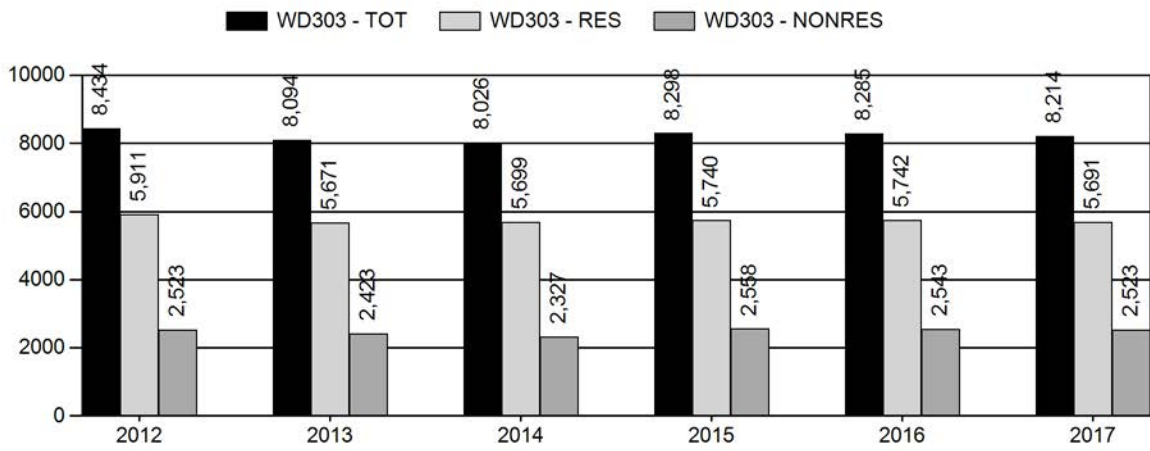
	<u>2012 - 2016 Average</u>	<u>2017</u>	<u>2018 Proposed</u>
Hunter Satisfaction Percent	75%	78%	75%
Landowner Satisfaction Percent	38%	42%	50%
Harvest:	6,200	5,954	6,000
Hunters:	8,227	8,214	8,300
Hunter Success:	75%	72%	72%
Active Licenses:	9,571	9,388	9,450
Active License Success:	65%	63%	63%
Recreation Days:	40,051	35,819	36,000
Days Per Animal:	6.5	6.0	6
Males per 100 Females:	38	37	
Juveniles per 100 Females	69	70	
Satisfaction Based Objective			60%
Management Strategy:			Private Land
Percent population is above (+) or (-) objective:			0%
Number of years population has been + or - objective in recent trend:			7



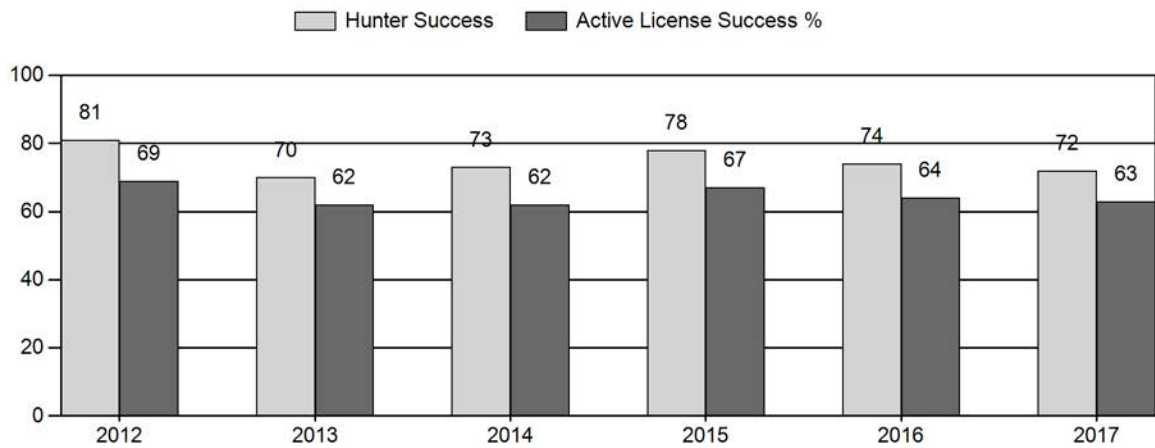
Harvest



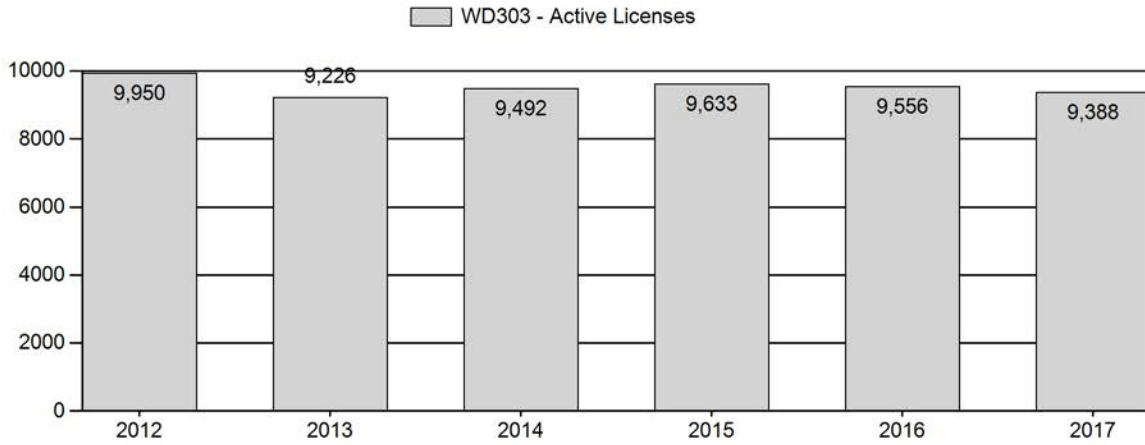
Number of Active Licenses



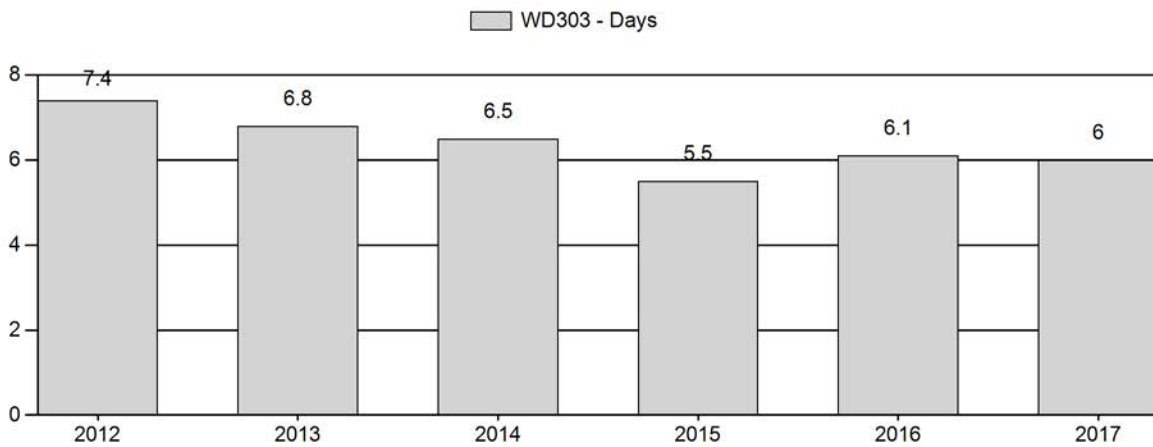
Harvest Success



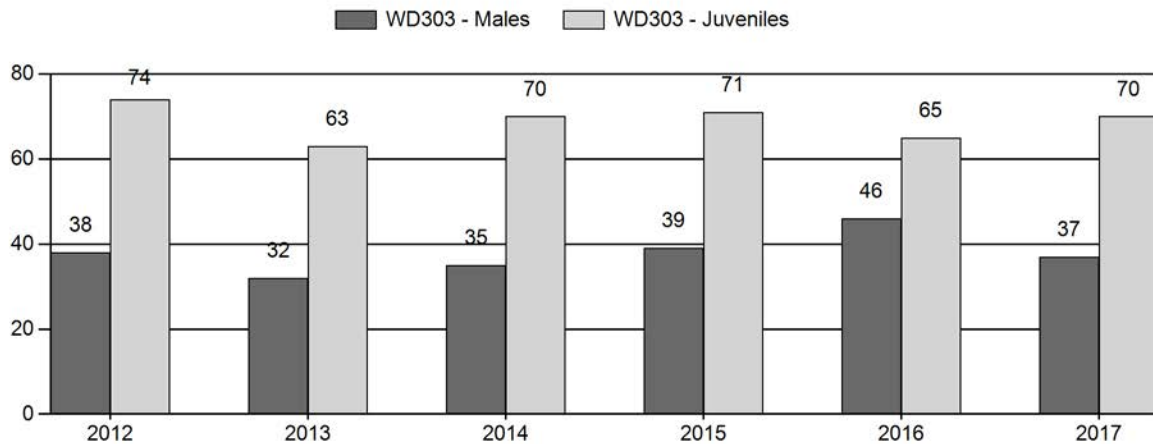
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2012 - 2017 Postseason Classification Summary

for White tailed Deer Herd WD303 - POWDER RIVER

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2012	16,600	193	249	442	18%	1,163	47%	861	35%	2,466	1,573	17	21	38	± 3	74	± 4	54
2013	18,000	150	303	453	16%	1,437	51%	907	32%	2,797	1,211	10	21	32	± 2	63	± 3	48
2014	20,000	235	401	636	17%	1,839	49%	1,296	34%	3,771	1,484	13	22	35	± 2	70	± 3	52
2015	0	206	375	581	19%	1,483	48%	1,058	34%	3,122	1,554	14	25	39	± 0	71	± 0	51
2016	0	247	379	626	22%	1,364	47%	884	31%	2,874	1,429	18	28	46	± 0	65	± 0	44
2017	0	192	446	638	18%	1,706	48%	1,198	34%	3,542	1,457	11	26	37	± 0	70	± 0	51

**2018 HUNTING SEASONS
POWDER RIVER WHITE-TAILED DEER HERD (WD303)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
17		Oct. 1	Oct. 20		General	Antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 30		General	Any white-tailed deer
	7	Oct. 1	Oct. 20	50	Limited quota	Doe or fawn valid on private land
	8	Oct. 1	Nov. 30	250	Limited quota	Doe or fawn white-tailed deer
18		Oct. 1	Oct. 20		General	Antlered mule deer or any white-tailed deer
	7	Oct. 1	Oct. 20	100	Limited quota	Doe or fawn valid on private land
	8	Oct. 1	Oct. 31	50	Limited quota	Doe or fawn white-tailed deer valid on private land
19		Oct. 1	Oct. 20		General	Antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 15		General	Any white-tailed deer
	7	Oct. 1	Oct. 20	50	Limited quota	Doe or fawn valid on private land
	8	Nov. 1	Nov.15	75	Limited quota	Doe or fawn white-tailed deer
23		Oct. 1	Oct. 14		General	Antlered deer off private land; any deer on private land
		Nov. 1	Nov. 30		General	Any white-tailed deer
23, 26	3	Nov. 1	Nov. 30	150	Limited quota	Any white-tailed deer
	7	Oct. 1	Dec. 15	2,000	Limited quota	Doe or fawn valid on private land
24		Oct. 15	Oct. 31		General	Antlered deer off private land; any deer on private land
		Nov. 1	Nov. 30		General	Any white-tailed deer
	3	Nov. 1	Nov. 30	300	Limited quota	Any white-tailed deer
	7	Sep. 1	Dec. 15	200	Limited quota	Doe or fawn valid on private land
	8	Sep. 1	Dec. 15	Unlimited	Limited quota	Doe or fawn white-tailed deer
25		Oct. 15	Oct. 24		General	Antlered mule deer or any white-tailed deer

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
26		Oct. 1	Oct. 14		General	Antlered deer off private land; any deer on private land
		Nov. 1	Nov. 30		General	Any white-tailed deer
27		Oct. 15	Oct. 31		General	Antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 30		General	Any white-tailed deer
	8	Sep. 1	Sep. 30	1,200	Limited quota	Doe or fawn white-tailed deer valid on private land
	8	Oct. 15	Dec. 15		Limited quota	Doe or fawn white-tailed deer valid in the entire area
28		Oct. 15	Oct. 24		General	Antlered mule deer or any white-tailed deer
29		Oct. 1	Oct. 14		General	Antlered deer off private land; any deer on private land
		Nov. 1	Nov. 15		General	Any white-tailed deer
		Nov. 16	Dec. 15		General	Antlerless white-tailed deer
	8	Sep. 1	Sep. 30	700	Limited quota	Doe or fawn white-tailed deer valid on private land north of Crazy Woman Creek
	8	Oct. 1	Dec. 15		Limited quota	Doe or fawn white-tailed deer valid in the entire area
30		Oct. 15	Oct. 31		General	Antlered deer off private land; any deer on private land
		Nov. 1	Nov. 30		General	Any white-tailed deer
		Dec. 1	Dec. 15		General	Antlerless white-tailed deer
	8	Sep. 1	Sep. 30	500	Limited quota	Doe or fawn white-tailed deer valid on private land
	8	Oct. 15	Dec. 15		Limited quota	Doe or fawn white-tailed deer valid in the entire area
31		Oct. 1	Oct. 10		General	Antlered deer
32		Oct. 15	Oct. 31		General	Antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 15		General	Any white-tailed deer
32, 163	8	Oct. 15	Nov. 15	50	Limited quota	Doe or fawn white-tailed deer

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
33		Oct. 15	Oct. 31		General	Antlered deer off private land; any deer on private land
		Nov. 1	Nov. 15		General	Any white-tailed deer
		Nov. 16	Dec. 15		General	Antlerless white-tailed deer
	6	Oct. 15	Oct. 31	25	Limited quota	Doe or fawn valid on private land
	8	Sep. 1	Sep. 30	500	Limited quota	Doe or fawn white-tailed deer valid on private land
	8	Oct. 15	Dec. 15		Limited quota	Doe or fawn white-tailed deer valid in the entire area
163		Oct. 15	Oct. 21		General	Antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 15		General	Any white-tailed deer
169		Oct. 15	Oct. 21		General	Antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 15		General	Any white-tailed deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
17-19, 23-33, 163, 169	Sep. 1	Sep. 30

Region	Deer Hunt Areas	Quotas
C	17-19, 23, 26, 29, 31	2,300
Y	24, 25, 27, 28, 30, 32, 33, 163, 169	1,800

Hunt Area	Type	Quota change from 2016
17	7	+ 50
18	7	+ 100
19	8	+ 25
Herd Unit Total	7	+ 150
	8	+ 25
Region C		+ 100
Region Y		No Change

Management Evaluation

Current Hunter / Landowner Management Objective: 60% Landowner / Hunter Satisfaction

Secondary Management Objective: 20 bucks:100 does observed minimum

Management Strategy: Private Land

2017 Hunter Satisfaction Estimate: 78%

2017 Landowner Satisfaction Estimate: 43%

Most Recent 3-year Running Average Hunters Satisfaction Estimate: 78%

Most Recent 3-year Running Average Landowner Satisfaction Estimate: 41%

Herd Unit Issues

The Powder River White-tailed Deer Herd Unit is located in north central Wyoming. This herd unit contains 16 hunt areas; 17-19, 23-33, 163 and 169. Hunt areas 19 and 20 were combined into one (HA 19) in 2016. Area 20 still appears on the evaluation form so historic data are captured from the JCR database at the herd unit level. The herd unit overlaps all biologist and warden districts in the Sheridan Region. The Sheridan biologist has herd unit reporting responsibilities while each biologist and warden retains management authority in their respective hunt areas.

The primary management objective for the Powder River White-tailed Deer Herd Unit is Hunter and Landowner Satisfaction at 60% or above, with a secondary postseason classification objective of 20 or more bucks observed per 100 does. The management strategy is Private Land Management. The objective and management strategy were last revised in 2014.

We do not have a reliable population estimate at this time for this herd. The spreadsheet simulation model developed for white-tailed deer populations with postseason classification data does not function with the limited empirical data available.

Most white-tailed deer in this herd unit occur on private lands. There is substantial rural development in portions of this herd unit that act as refuges for white-tailed deer, allowing them to quickly repopulate surrounding areas that receive harvest. Our ability to control this deer population with hunting is limited and localized due to limited access to private lands and refuges where harvest isn't allowed. Mortalities due to deer-vehicle collisions and disease (i.e. viral hemorrhagic diseases) help keep this population from being even higher than it is.

White-tailed deer depredation of standing and stored agricultural crops, especially alfalfa, is a significant problem in localized areas of this herd unit. Game wardens and damage technicians spend considerable amounts of time and effort to address these damage concerns. The WGFD pays damage payments to some landowners to compensate them for damage caused by high numbers of white-tailed deer.

Weather

Temperature and precipitation data referenced in this section were collected at the Sheridan Co Airport (#488155) weather station located within this herd unit. Data were reported by the Western Region Climate Center (www.wrcc.dri.edu).

The 2017 spring was early, with warm temperatures in February-May, and increased precipitation, especially in March and April. March precipitation was over 3x average and April

precipitation was almost 2.5x average. This allowed for an early start for grasses and forbes, providing high quality forage just prior to and during parturition. Temperatures remained near normal to above normal during the summer and fall. Conditions were dry during June-August, with increased precipitation at the start of the fall. September saw above normal precipitation, while October saw only 27% of normal precipitation. Winter started in November with increased precipitation and slightly above average temperatures from November through December. January was open, with slightly below average precipitation and slightly above average temperatures. February turned cold and snowy, with precipitation double the normal and average temperature ~12°F below normal. There were several periods of 0°F or below, with at least one -20°F day.

Fluctuating temperatures during January and February resulted in several thaw and freeze cycles, as well as blowing snow, resulting in hard crusted snow which could have limited white-tailed deer ability to forage on covered vegetation.

While adult wildlife entered the winter in good condition, they faced prolonged severe weather conditions during periods of the winter. Fawns, being more susceptible to extremely cold temperatures, likely saw below average over-winter survival.

Habitat

White-tailed deer in this herd unit occur primarily along river and stream corridors as well as the foothills of the Bighorn Mountains. Agricultural lands provide along drainages provide a high quality reliable food source for deer. Mountain shrub communities along the east face of the Bighorn Mountains provide excellent white-tailed deer habitat. White-tailed deer are occasionally found in more arid sage-brush steppe / short grass prairie habitats. White-tailed deer appear to be expanding into more mountainous habitats in the Bighorn Mountains.

We do not have established habitat transects in this herd unit to monitor white-tailed deer use. Monitoring of other habitat programs, such as Conservation Reserve Program (CRP) riparian buffers, indicate high white-tailed deer populations have done extensive damage to native deciduous woodlands and riparian areas. Irrigated croplands and refuge areas allow these populations to be maintained at levels higher than native habitats would normally support. Woody species such as native plum and serviceberry, as well as desirable forbs such as sunflowers, are being severely suppressed or eliminated in some woody draw communities along the Bighorn Mountains due to excessively high browsing pressure.

Field Data

Field personnel conducted post-season classification surveys during mid-November through mid-December using ground survey techniques. A small number of white-tailed deer were classified while conducting aerial surveys for mule deer. Personnel were assigned designated routes to survey. We classified a total of 3,542 white-tailed deer, a 23% increase from 2016 and the second highest classification ever recorded in this herd unit.

Fawn production, as measured by the observed fawn to doe ratio, was 70 fawns:100 does, an increase from 2016. The long-term (n=36 years) average fawn to doe ratio is 76:100. Relatively low fawn production under favorable environmental conditions could be a density dependent response of lower reproduction. Reduced fawn production could slow the growth of this herd,

which has declined in recent years in response to increased harvest and mortalities due to viral hemorrhagic disease. We documented epizootic hemorrhagic disease (EHD) during three of the past seven years, with the 2013 outbreak the most extensive and widespread.

Field personnel observed 37 bucks:100 does, a decrease from 2016 but similar to observed buck to doe ratios during 2008-2015. Due to the secretive nature of male white-tailed deer, we likely under observe bucks compared to does and fawns. We are likely maintaining a higher buck:doe ratio due to the increased harvest of females and restricted access for harvesting bucks. We are observing sufficient males in this population to meet our secondary postseason classification management objective of a minimum of 20 bucks:100 does.

During the 2017 season, 79% of hunters ($n=1,583$) who completed a harvest survey indicated they were satisfied (43%) or very satisfied (36%) with their hunting experience in this herd unit. At the hunt area level, excluding Hunt Areas 31, 33, 163 and 166 due to low samples sizes (range=4-8), satisfaction levels varied from 66% (Hunt Area 25; $n=44$) to 85% (Hunt Area 24; $n=473$). Hunt areas with higher densities of white-tailed deer tended to have higher satisfaction levels, even in predominately private land hunt areas.

Nonresident hunters were generally more satisfied (86%) than resident hunters (76%). Access to private lands through trespass fees or outfitted hunts, which is common in this herd unit, caters more to nonresident than resident hunters. Hunter satisfaction in both groups increased slightly in 2017 compared to 2016, possibly in response to recovering deer numbers, especially bucks, after the EHD disease outbreak in 2013.

We surveyed landowners to gauge their level of satisfaction with white-tailed deer numbers. One hundred twenty-seven landowners from all hunt areas, except for Areas 25 and 28 which are predominately public lands, completed the white-tailed deer portion of their survey. Of these landowners, 47% ($n=59$) indicated white-tailed deer numbers were higher than desired and 43% ($n=5$) believed numbers were at or near desired levels (Fig. 1). Most respondents (57%, $n=71$) suggested similar or more liberal (35%, $n=43$) season strategies for 2018.

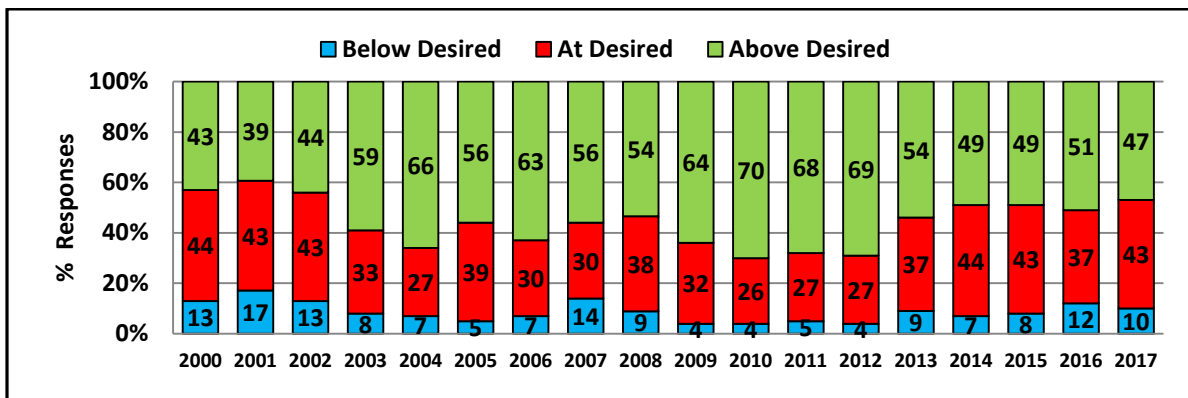


Figure 1. Relative landowner perceptions of white-tailed deer populations on their property in the Powder River White-tailed Deer Herd Unit, by percentage. Desired level is a subjective expression of individual landowner tolerance of white-tailed deer.

Harvest

An estimated 8,214 hunters (5,691 resident hunters; 2,523 nonresident hunters) harvested an estimated 5,954 white-tailed deer in 2017, a decrease of ~3% from 2016 and ~4% below the 5-year mean (2012-2016; n=6,200). This is the fourth highest harvest ever in this herd unit. Hunters harvested an estimated 2,289 bucks (38%), 3,104 does (552%) and 561 fawns (9%) in 2017. Buck harvest was similar to 2016 while doe harvest decreased 19% and fawn harvest increased 41%.

Of total hunters, 69% were resident and 31% were nonresident hunters. Resident hunters harvested 71% of the total deer harvested and 81% of the bucks harvested in 2017. Nonresident hunters harvest 29% of the total harvest and only 19% of the buck harvest.

Hunter success was 72%, down slightly from 2016 (74%) and below the 5-year average of 75%. Hunter effort, as measured by days hunted per deer harvested, was 6.0 days/harvest, basically the same as in 2016. Effort was slightly below the 5-year average of 6.5 days/harvest. Hunter effort seems high for the amount of antlerless animals harvested as well as the relatively high success rate. This could be a function of each harvest being consider independent of other harvest. Our survey protocol may not account for multiple harvests per day per hunter which would result in a higher than actual estimated effort rate.

In summary, slightly fewer hunters were slightly less successful and harvested slightly fewer white-tailed deer with similar effort than the year before. This suggests deer in general were relatively available for harvest during the 2017 season. Weather conditions during the hunting season were generally favorable and likely didn't hamper harvest efforts.

White-tailed deer harvest is a significant source of high quality protein for hunters. Statewide, this herd unit accounts for 32% of all white-tailed deer harvest. Assuming an average yield of 45 lbs. of meat from a buck, 30 lbs. from a doe and 12 lbs. from a fawn, hunters were able to harvest over 200,000 lbs. of deer meat from this herd unit alone in 2017 (Fig. 2). Statewide, hunters harvested over 650,000 lbs. of meat from white-tailed deer hunting.

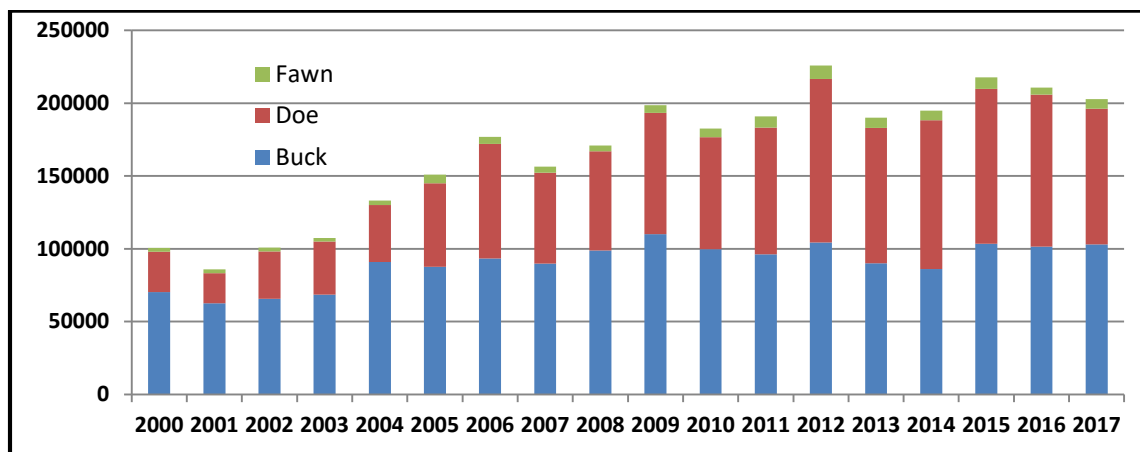


Figure 2. Estimated amount of deer meat harvested from this herd unit from 2000-2017. Assumes an average yield of 45 lbs. of meat per buck, 30 lbs. per doe and 12 lbs. fawn harvested.

Population

High white-tailed deer harvest in recent years (2013-2017; 5-year mean=6,026) suggests this population is robust. The integrated population spreadsheet models developed for white-tailed deer populations with postseason classification data does not work with the available data from this herd unit. Under all three possible model scenarios, it simulates a negative population. As such, we don't have a functioning population simulation model.

Assuming hunters harvest approximately 30% of the total population in recent years, this population would be near 19,800 deer postseason (Fig. 3). Assuming hunters harvested 10% of the available bucks, this population would be about 22,900 white-tailed deer postseason based on 2017 buck harvest (Fig. 3). These are relatively broad, generic estimates but demonstrate that this white-tailed deer population is doing very well.

We believe we have reduced this population through increased harvest over the past decade. We harvested an average of 5,837 white-tailed deer annually (average of: 2,208 bucks; 3,089 does; 540 fawns) during the 2008-2017 hunting seasons.

Periodic outbreaks of viral hemorrhagic diseases have also contributed to reduced numbers. We documented a significant outbreak of epizootic hemorrhagic disease (EHD) in 2013, resulting in white-tailed deer mortality across the herd unit. Based on landowner and hunter reports, the level of mortality was localized, and likely varied from ~10% - 70% of local populations. This is supported by the 17% decrease in the 2013 harvest under similar harvest seasons.

Other mortality factors influencing population dynamics in this herd unit include deer-vehicle collisions, predation, fences and weather.

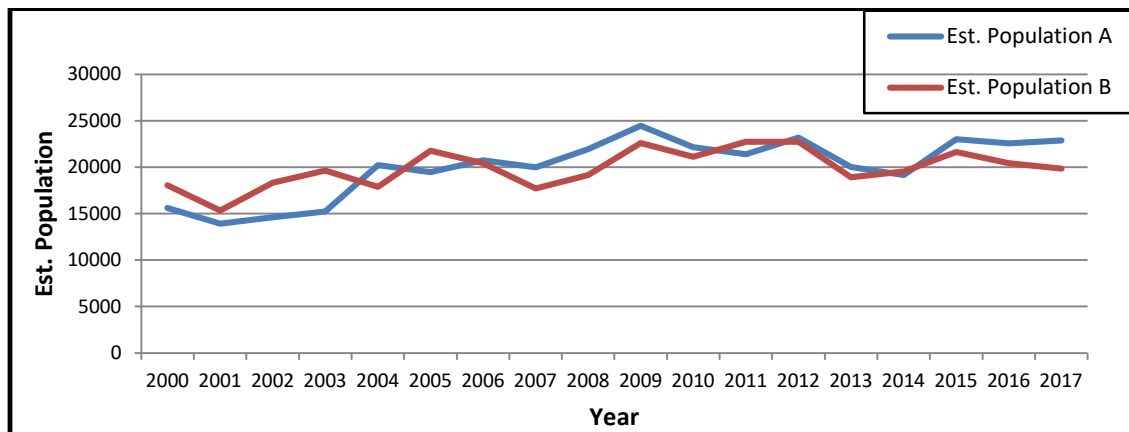


Figure 3. Estimated Powder River white-tailed deer population based on estimated harvest rates during the 2000-2017 hunting seasons. The estimated Population A (blue line) is based on harvesting 10% of available bucks. The estimated Population B (red line) is based on total harvest being 15-30% of total population.

Management Summary

The regular hunting season for white-tailed deer has generally been concurrent with mule deer seasons during October, as well as continuing for white-tailed deer through November. An archery pre-season runs the month of September in all hunt areas. Firearm seasons for antlerless

white-tailed deer have been extended as early as September 1 and as late as December 15 to provide additional opportunities to harvest deer as well as address damage concerns of landowners.

Most white-tailed deer hunting is on private land within this herd unit. Access for antlered harvest is generally through payment of a trespass fee or outfitted hunts, especially for nonresident hunters. Access for antlerless harvest is generally easier, with several landowners on a publically available list allowing free access. Resident hunters seem to rely on various personal relationships (e.g., work, church, family) with landowners to gain access.

Type 6 (doe or fawn deer) licenses, when restricted in a portion of an area, were renumbered as Type 7 licenses, except in Area 33. This in response to direction to standardized license types statewide when possible. The Area 33 Type 6 license will become a Type 7 for the 2019 season.

We created a Type 7 (doe or fawn deer) in both Areas 17 and 18 for the 2018 season. This license is designed primarily to address concerns with mule deer on private lands, but there will likely be some white-tailed deer harvested on these licenses.

We increased the Area 19 Type 8 (doe or fawn white-tailed deer) licenses from 50 to 75 for the 2018 season. This is in response to landowners who wish to harvest additional antlerless deer on private lands.

We estimate a harvest of about 6,000 white-tailed deer in 2018, similar to recent years. Buck deer have recovered well following the 2013 EHD outbreak. Landowners and hunters report a lot of 4-year old bucks in the population. Antlerless harvest continues to be strong. We may be near our maximum harvest level. Several landowners have developed a core group of hunters and aren't taking new hunters. Hunters new to this region have been having a harder time finding access, even for antlerless harvest. Increases in CWD prevalence in this herd unit may also discourage hunters from harvesting deer.

We are likely lowering this population in some areas through harvest, but with the numerous refuges available that do not allow hunting, it will be difficult to bring the overall population down to desired levels. Managers will continue to work with individuals and subdivisions to develop safe hunting opportunities.

We increased the nonresident Region C deer quota by 100 to 2,300 licenses for the 2018 season. Region C contains Hunt Areas 17-19, 23, 26, 29 and 31. Nonresident deer hunters often target mule deer as most can hunt white-tailed deer in their home state. White-tailed deer harvest ($n=1,977$) in Region C hunt areas accounted for about 33% of the total harvest in this herd unit in 2017.

We maintained the nonresident Region Y general license deer quota at 1,800 licenses for 2018. Region Y contains Hunt Areas 24, 25, 27, 28, 30, 32, 33, 163 and 169. These hunt areas accounted for 67% of the white-tailed deer harvest in this herd unit during 2017. Hunt Area 24 alone accounted for almost half (46%; $n=2,758$) of the total white-tailed deer harvest (Fig. 4). Hunt Area 24 had the second highest white-tailed deer harvest in Wyoming. Only Hunt Area 2 in the Black Hills Herd Unit had more white-tailed deer harvest.

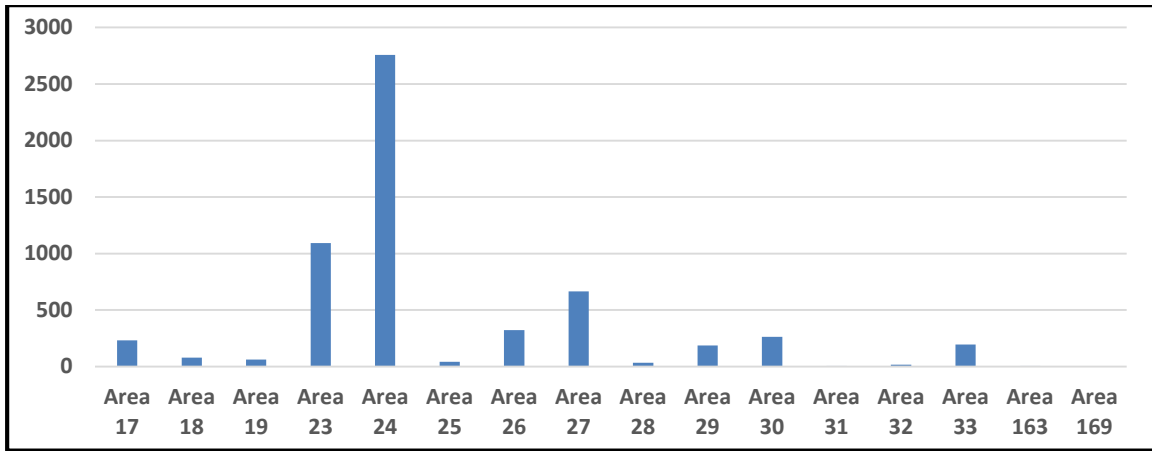
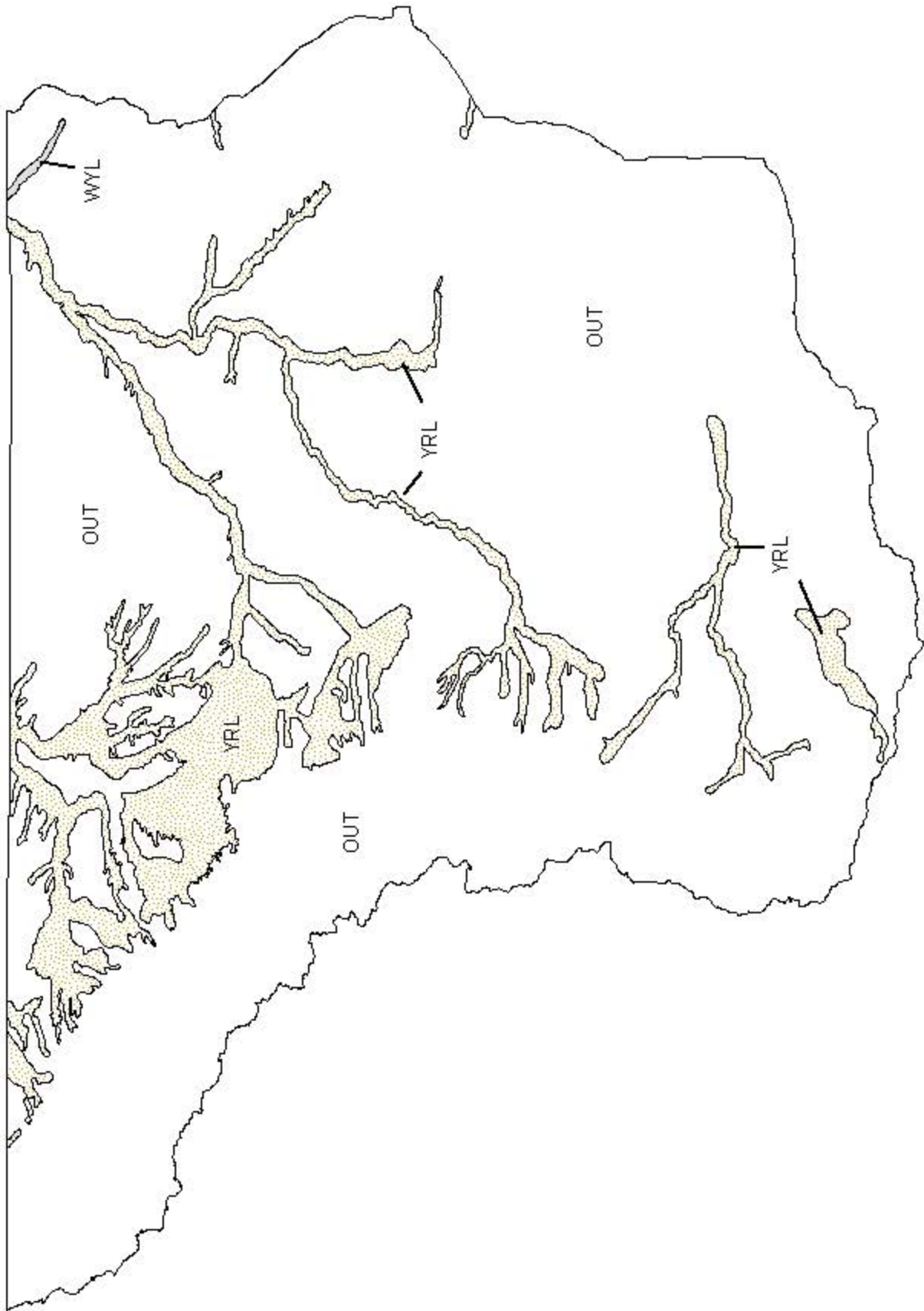


Figure 4. Estimated 2017 harvest by hunt area in the Powder River white-tailed deer herd unit.

Chronic Wasting Disease (CWD) was first detected in this herd unit in 2002. We have tested a total of 1,327 white-tailed deer in this herd for CWD, with 55 testing positive. This includes both hunter harvested ($n=1,262$) and targeted ($n=55$) white-tailed deer. We have also tested 4,929 mule deer from the same hunt areas, with 59 positive deer. In 2017, 94 white-tailed deer were tested with 17 positives (18.1%) and 154 mule deer were tested with 21 positives (13.6%). The prevalence of CWD appears to be increasing in both deer species in the Sheridan Region. This could have population level affects in coming years.



White-tailed Deer (WT303) - Powder River
HA 17, 19, 23-33, 163, 169
Revised 4/87