

2016 - JCR Evaluation Form

SPECIES: White tailed Deer
 HERD: WD706 - BLACK HILLS
 HUNT AREAS: 1-6

PERIOD: 6/1/2016 - 5/31/2017
 PREPARED BY: JOE SANDRINI

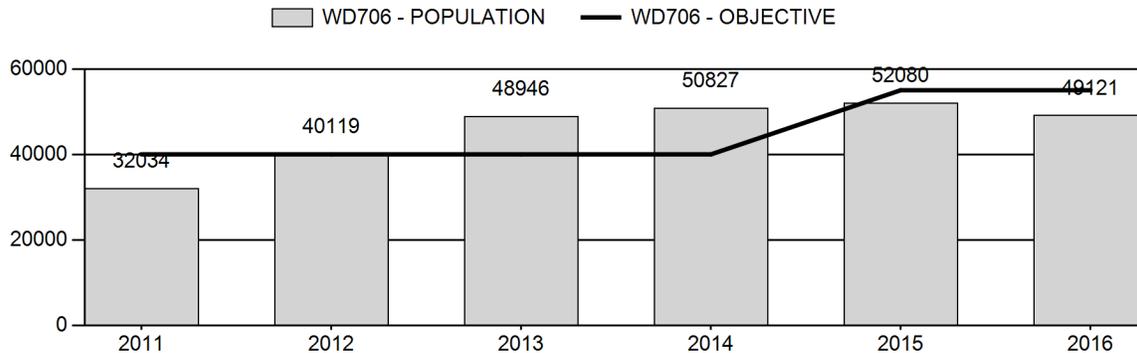
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	44,801	49,121	52,558
Harvest:	4,233	6,772	6,870
Hunters:	6,903	9,764	9,800
Hunter Success:	61%	69%	70 %
Active Licenses:	7,341	10,596	10,700
Active License Success:	58%	64%	64 %
Recreation Days:	29,918	39,499	40,000
Days Per Animal:	7.1	5.8	5.8
Males per 100 Females	27	32	
Juveniles per 100 Females	73	68	

Population Objective (± 20%) :	55000 (44000 - 66000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-10.7%
Number of years population has been + or - objective in recent trend:	9
Model Date:	02/22/2017

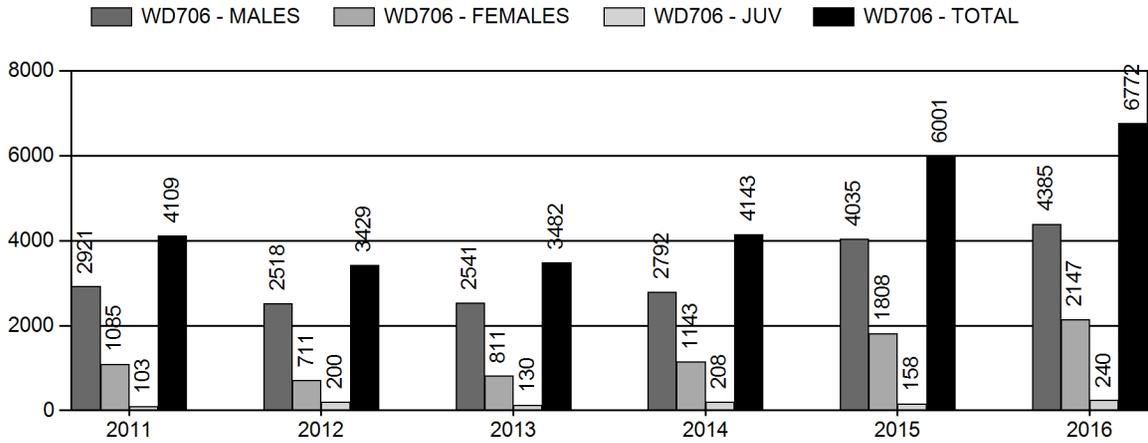
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	8.8%	8.8%
Males ≥ 1 year old:	41.0%	40.4%
Total:	13.2%	12.6%
Proposed change in post-season population:	2.3%	+7.0%

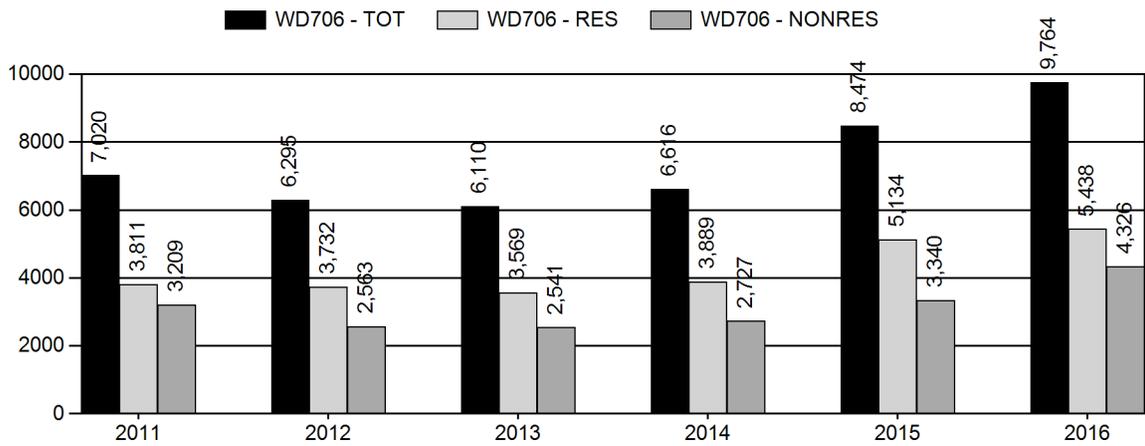
Population Size - Postseason



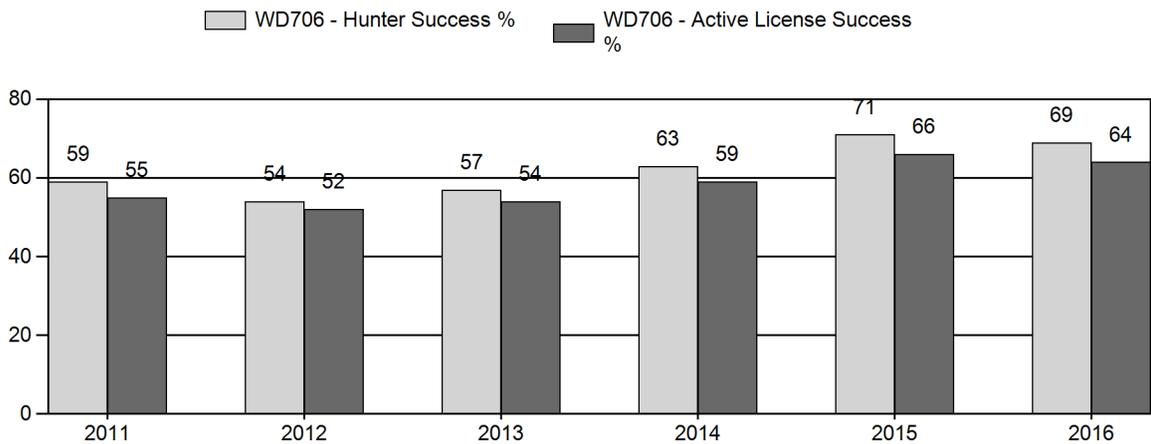
Harvest



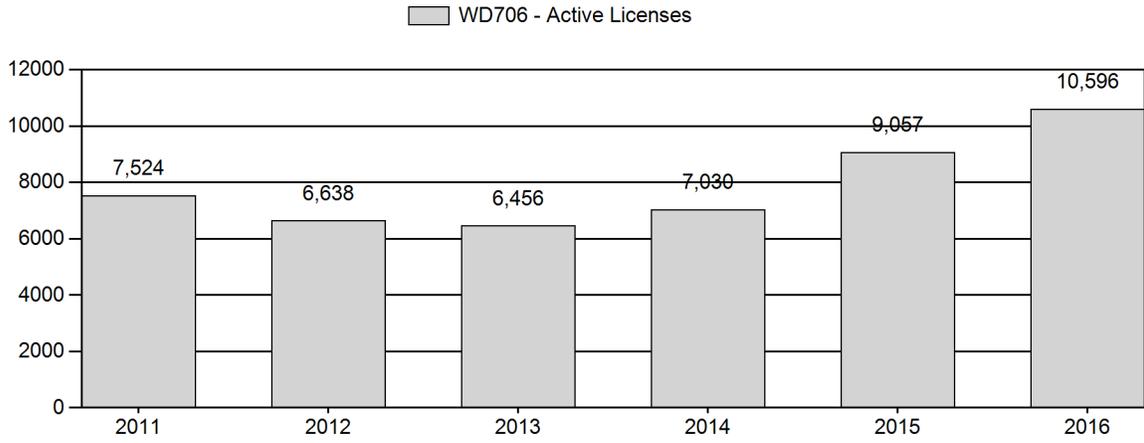
Number of Active Licenses



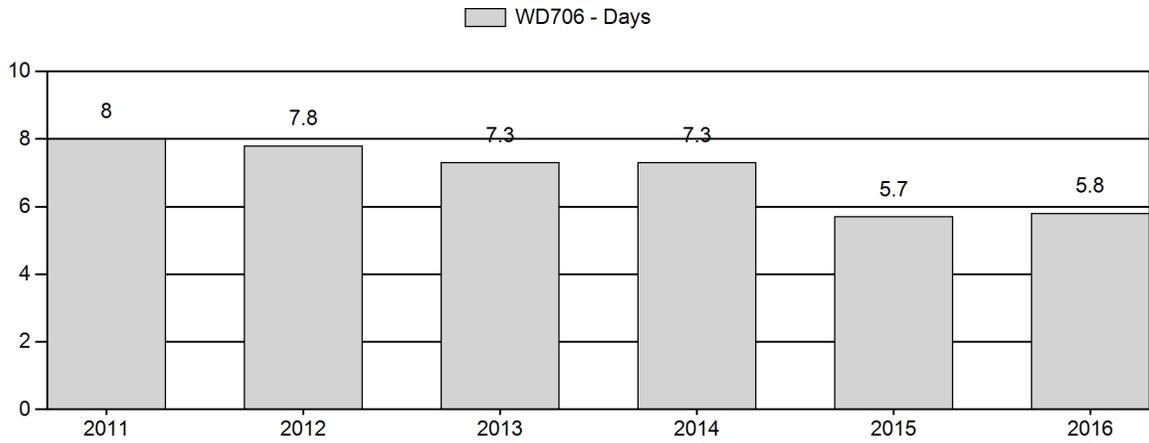
Harvest Success



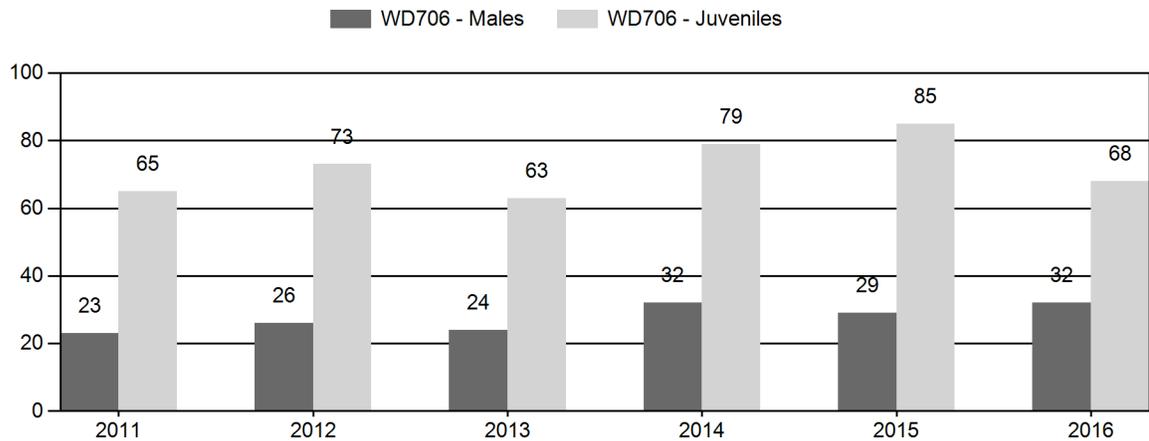
Active Licenses



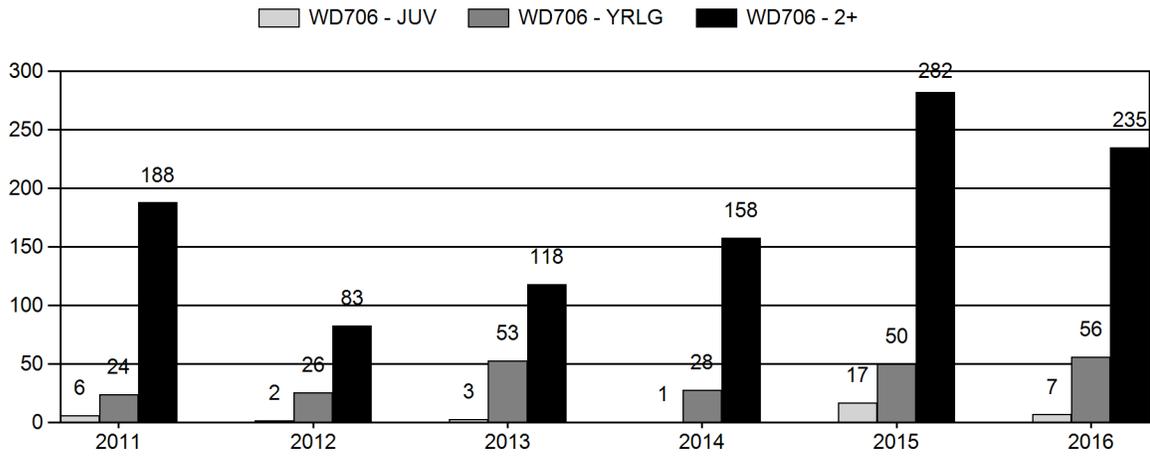
Days Per Animal Harvested



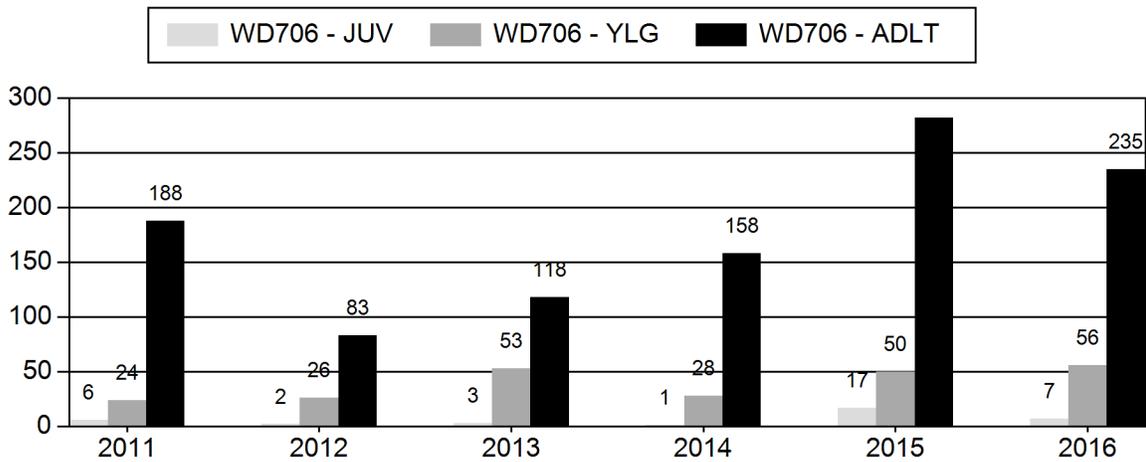
Preseason Animals per 100 Females



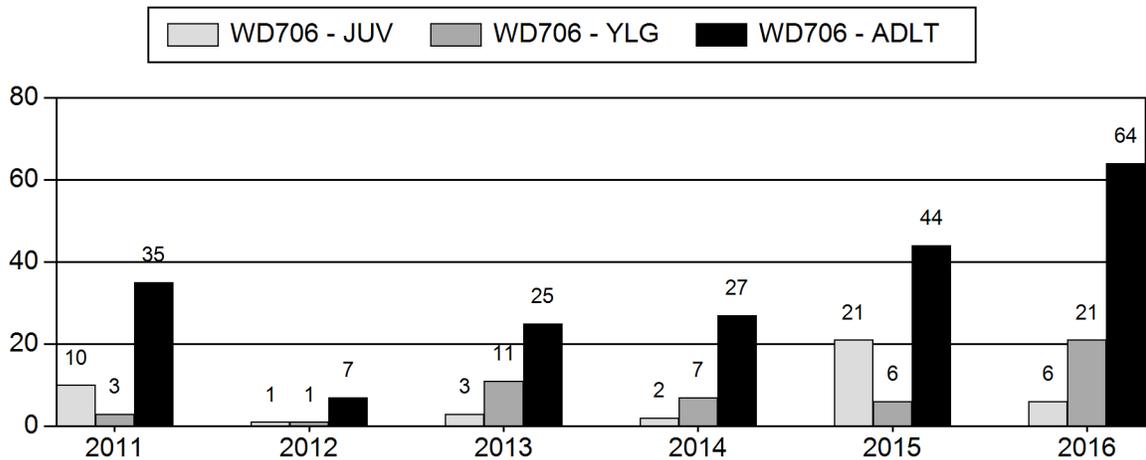
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2011 - 2016 Preseason Classification Summary

for White tailed Deer Herd WD706 - BLACK HILLS

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	36,554	48	149	197	12%	856	53%	559	35%	1,612	1,278	6	17	23	± 0	65	± 0	53
2012	43,891	93	143	236	13%	919	50%	675	37%	1,830	1,590	10	16	26	± 0	73	± 0	58
2013	52,709	163	153	316	13%	1,303	53%	827	34%	2,446	1,232	13	12	24	± 0	63	± 0	51
2014	55,385	111	198	309	15%	980	47%	778	38%	2,067	1,888	11	20	32	± 0	79	± 0	60
2015	58,681	157	212	369	14%	1,276	47%	1,079	40%	2,724	2,132	12	17	29	± 0	85	± 0	66
2016	56,571	169	224	393	16%	1,216	50%	825	34%	2,434	1,464	14	18	32	± 0	68	± 0	51

**2017 HUNTING SEASONS
BLACK HILLS WHITE-TAILED DEER HERD (WD706)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
1		Nov. 1	Nov. 30		General	Antlered white-tailed deer off private land; any white-tailed deer on private land
1	7	Nov. 1	Nov. 20	200	Limited quota	Doe or fawn valid on private land
1, 2, 3	8	Nov. 1	Nov. 30	3,500		Doe or fawn white-tailed deer valid on private land
2		Nov. 1	Nov. 30		General	Antlered deer off private land; any deer on private land
2	6	Nov. 1	Nov. 30	500	Limited quota	Doe or fawn valid on private land
3		Nov. 1	Nov. 30		General	Antlered deer off private land; any deer on private land
4		Nov. 1	Nov. 20		General	Antlered deer off private land; any deer on private land, except the lands of the State of Wyoming's Ranch A property shall be closed
4	6	Nov. 1	Nov. 20	300	Limited quota	Doe or fawn valid on private land
5		Nov. 1	Nov. 20		General	Antlered deer off private land; any deer on private land
5	6	Nov. 1	Nov. 20	150	Limited quota	Doe or fawn
6		Nov. 1	Nov. 20		General	Antlered deer off private land; any deer on private land
Archery		Sep. 1	Sep. 30			Refer to license type and limitations in Section 2

Region A Nonresident Quota: 4,500

SUMMARY OF CHANGES IN LICENSE NUMBER

Hunt Area	License Type	Quota change from 2016
1	7	<i>see MD751</i>
1,2,3	8	none
2	6	<i>see MD751</i>
4	6	<i>see MD751</i>
5	6	<i>see MD751</i>
Herd Unit Totals	8	none
	<i>Region A</i>	<i>None (see MD751)</i>

Management Evaluation

Current Management Objective: 55,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~ 49,100

2017 Proposed Postseason Population Estimate: ~ 52,600

2016 Hunter Satisfaction: 81% Satisfied, 13% Neutral, 6% Dissatisfied

HERD UNIT ISSUES: In 2015, the management objective of the Black Hills White-Tailed Deer Herd Unit was revised to a post-season population of 55,000 white-tailed deer. Prior to this revision, an objective of 40,000 had been in place since 1983. The herd continues to be managed under the Department’s “Recreational Management Strategy,” which calls for 24 to 44 bucks per 100 does pre-season.

Over the years, modeling this population has been extremely difficult and frustrating. This is due to substantial interstate movement of deer, wide fluctuations in observed fawn:doe ratios, large changes in doe harvest, regular outbreaks of epizootic hemorrhagic disease virus (EHDV), mountain lion predation, a high level of vehicle-deer collisions, severe weather events, and low and irregular visibility of bucks during classifications. Consequently, the population model is thought to be of low quality and estimates produced by the model should be viewed cautiously. Because of this, and the fact that much of the herd unit is comprised of private property, management of this herd has been based heavily on perceptions of deer numbers relative to landowner tolerance.

The Black Hills White-Tailed Deer Herd unit is located primarily within Crook and Weston Counties in northeastern Wyoming and encompasses about 3,140 mi² of occupied habitat. Seasonal range maps for this herd were updated in 2004, and currently 335 mi² are delineated as crucial winter range. Dominant land uses in the herd unit include livestock grazing and forage crop production. Most forested lands are actively managed for timber production and harvest. There is some extraction of minerals, primarily bentonite and oil. The majority of white-tailed deer are found in the eastern two-thirds of this herd unit and within the Belle Fourche River drainage where habitat is most favorable.

Approximately 79% of the land within this herd unit is privately owned. The largest blocks of accessible public land are found on the Black Hills National Forest in Hunt Areas (HA) 2 and 4, Thunder Basin National Grasslands in HA 6, and BLM lands in HA 1. Due to the late timing of deer hunting season in the Black Hills relative to other areas in Wyoming and the potential to harvest a whitetail on public land, this herd unit is extremely popular with resident hunters (hosting over 5,400 resident hunters in 2016). Its proximity to the upper Midwestern United States and availability of sympatric mule deer hunted concurrently also make it very popular with non-residents as well (over 4,300 in 2016). Access fees for hunting are very common on private land, and many holdings have been leased to outfitters. Consequently, accessible public lands are subject to very heavy hunting pressure, probably the highest in the State. Due to limited access for hunters to private land, keeping the growth of this herd in check is difficult when habitat and weather conditions are favorable.

Whitetails are the most numerous deer species in HA's 2 and 4, whereas more equal proportions or greater numbers of mule deer occupy HA's 1, 3, 5, and 6 depending upon habitat type. A high proportion of white-tailed deer in the herd unit reside on private land. This results in their management being strongly influenced by landowner sentiments. Field personnel report white-tailed deer numbers (primarily north of I-90) are now close to or exceeding local tolerance. A survey of about 450 Black Hills landowners at the end of 2014 revealed half of the respondents (52%) having whitetails on their property believed their numbers to be "about right;" while just over a third (35%) reported their numbers to be "too low;" and only 13% felt whitetail numbers were "too high." More recently, as this population has rebounded, fewer landowners are asking to see more deer on the landscape, hunter satisfaction has increased, and more landowners would like to reduce white-tailed deer numbers.

WEATHER: The second half of the last decade saw a transition from persistent drought to decent growing season moisture, while about average winter conditions persisted most years. This white-tailed deer population peaked during that time and then began to decline. The weather may have contributed to the decline as peak populations coincided with the last few years of an eight year drought, sending high populations into poor forage winters. This resulted in some detected mortality in late winter and early spring - most notably during the 2010-11 winter, which was harsh. More recently, severe drought plagued the Black Hills throughout 2012, and a class III drought beset the much of the herd unit during the primary growing season in 2016. Both of these transient droughts resulted in very poor forage production and led to several large wildfires. However, the inter-drought period provided growing seasons with temperatures and rainfall generally above average. This resulted in good to excellent forage growth from 2013 through 2015. Fall and winter weather over that same timeframe was characterized by normal to above average temperatures and average to below normal precipitation. However, coming on the heels of the 2016 drought, more normal to severe winter weather was again experienced. See <http://www.ncdc.noaa.gov/cag/> for detailed weather information.

Based upon weather, habitat conditions and deer numbers, it is likely white-tailed deer entered the 2014-15 and 2015-16 winters in good to excellent condition. In addition, winter weather those years resulted in excellent over-winter survival, as indicated by pre-season yearling buck ratios about 30% above average in both 2015 and 2016. The changes witnessed in bio-years 2014 & 2015 were a reversal of what was experienced as this herd declined from 2007 to 2011 before beginning to rebound in 2012.

HABITAT: Ponderosa pine (*Pinus ponderosa*) is the dominant overstory species on forested lands. Quaking aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), and bur oak (*Quercus macrocarpa*) stands are also present. Many areas dominated by deciduous trees are in late successional stages. Important shrubs include Saskatoon serviceberry (*Amelanchier alnifolia*), Oregon grape (*Berberis repens*), common chokecherry (*Prunus virginiana*), and wild spiraea (*Spirea betulifolia*). Non-timbered lands in this portion of the herd unit are used to produce agricultural crops such as winter wheat (*Triticum aestivum*), alfalfa hay (*Medicago sativa*), or mixed-grass hay.

FIELD DATA: Preseason age and sex classifications are conducted in this herd unit during the second half of October each year along standardized routes. Most of these routes have been used for over 40 years. Since the 1980's, fawn production and survival has been generally below that observed in most white-tailed deer herds, and at times fluctuated dramatically. The underlying cause is thought to be related to poor nutrition and body condition of does. However, over the last decade observed fawn:doe ratios have generally improved and fluctuations diminished (Figure 1), likely a result of vegetative responses to fire enhancing forage quality and quantity.

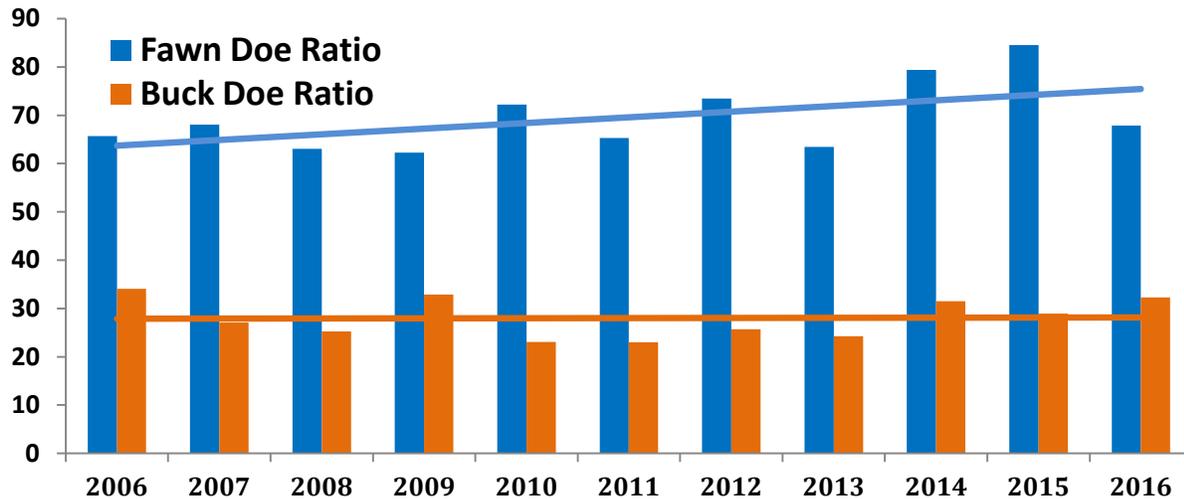


Figure 1. Observed, preseason fawn:doe and buck:doe ratios in the Black Hills White-Tailed Deer Herd (2006-2016).

This herd's observed, preseason buck:doe ratios are at the lower end of the Department's recreational management criteria. However, it should be noted that classifications are made outside the rut, and because whitetails are secretive we have always modeled this herd's preseason buck:doe ratio about 30% above observed values. This corrective factor was determined from historical modeling efforts with POP-II and the inflation in buck:doe ratios needed to get those models to run given harvest levels of bucks. Additionally, there have been occasional years when observed buck ratios inexplicably jumped about 30% (something attributed to intermittently enhanced visibility of bucks). Overall, preseason buck:doe ratios the past ten years have been generally stable (mean₍₀₇₋₁₆₎ = 27:100; std. dev = 3.8). This stability is thought to be a result of substantial reductions in buck hunting pressure when this population declined and non-hunting mortality increased. The recent, observed increases in the preseason buck:doe ratio have probably been due to a combination of transient, enhanced visibility and increased fawn production and survival.

HARVEST DATA: In the Black Hills, deer management entails regulating both mule deer and whitetail harvest under general license season structures across a variety of habitats, with serious deference given to landowner desires. Historical analysis of harvest information suggests hunter number has the greatest impact on buck harvest. Therefore, buck harvest has been regulated by altering non-resident hunter participation via changes in the Region A quota, while resident buck hunter participation can only be limited by shortening the season - notably by inclusion or removal of the Thanksgiving Day weekend and the days following in those hunt areas north of I-90. This alteration of season length impacts resident hunter participation by encouraging or curtailing the late season influx of hunters during a period when buck deer are highly vulnerable to harvest. For example, when the 30-day white-tailed deer hunting season was reinstated in these hunt areas during 2015 & 2016, resident hunter numbers increased about 40% above the average number witnessed the five preceding years when shorter seasons were in place.

With conservative hunting season structures in place between 2010 and 2013, harvest of both antlered and antlerless whitetails dropped. After 2014, as this herd began to recover, doe/fawn license issuance was increased and buck harvest climbed with increases in the Region A quota and resident hunter participation. As a result, annual harvest has increased 63% since 2014. Additionally, after a five year period of fairly consistent harvest success, both hunter success and active license success climbed in 2014 and 2015, then leveled off in 2016. Overall, harvest statistics strongly support the current population model's projection that this population peaked in 2007, declined substantially, and has since increased.

Hunting seasons between 2010 and 2014 reduced annual harvest of whitetail bucks about 30% from that experienced during the traditional November season the preceding four years. Comparing these time periods, resident harvest of white-tailed bucks dropped about 20%, while non-resident harvest of white-tailed bucks dropped closer to 40%. As mentioned above, resident hunter numbers have increased substantially since 2014, as the white-tailed deer hunting season was extended to the entire month of November in HA's 1, 2, & 3. Likewise, increases in the Region A quota have put significantly more non-resident hunters on the ground. As a result, white-tailed buck harvest has risen nearly 60% since 2014.

Despite the harvest trends, preseason whitetail buck:doe ratios held fairly stable and deer hunter satisfaction remained essentially unchanged between 2011 and 2013, with about 68% of white-tailed deer hunters reporting they were either satisfied or very satisfied with their Black Hills deer hunt. Satisfaction improved in 2014 as hunter success climbed and effort dropped, with 75% of the white-tailed deer hunters reporting they were satisfied. With continued good success and declines in the effort required to harvest a deer, hunter satisfaction improved to a level just above 80% in both 2015 and 2016.

POPULATION: As noted above, population modeling of this herd has always been very difficult and problem filled. In 2014, the spreadsheet model for this herd was reconstructed and re-initiated after correcting errors detected in the previous model and experimenting with models of various constructions. Of the final three competing spreadsheet models, the Semi-Constant Juvenile / Semi-Constant Adult survival (SCJ SCA) model has continued to be selected each year to estimate this population. In a change from prior years, the present model was set to solve through the projected bio-year (2017) instead of only on years for which actual field data exist. This change lowered the 2016 population estimate somewhat, but allows for consideration of increased mortality during season setting given the more severe winter experienced.

While the Constant Juvenile / Constant Adult survival (CJ CA) model will function with this herd's observed data set, it produces an essentially stable population of about 87,000 deer since 1993, which does not comport at all with field observations or harvest statistics. The AICc of this model is also about double that of the competing models and it most poorly fits observed data. On the other hand, the Time Sensitive Juvenile / Constant Adult survival model (TSJ CA) yields an AICc value about 15% lower than that of the SCJ SCA model and provides best fit of observed buck:doe ration data. However, this model was rejected because in order to get it to function, juvenile survival rates had to be allowed to vary down to 25% in 8 out of 23 years, and it predicts very low (about 33%) survival in four other years. Additionally, this model is not as well correlated with preseason trend count data or harvest statistics. The SCJ SCA model is 72% correlated with preseason trend counts while the TSJ CA model is only 63% correlated (Figure 2). The preseason population estimates produced by the SCJ SCA model are also better correlated with hunter success (87% compared to 57% with the TSJ CA model). Similarly, preseason population estimates of the SCJ SCA model exhibit a 76% inverse correlation with hunter effort, while the TSJ CA model predictions are negatively correlated at only 56%. Finally, the trends produced by the SCJ SCA model are more congruent with field personnel and landowner perceptions. However, this model does indicate a substantial decline in the population in 2009 that was not actually realized until after the 2010/11 winter. Also on the flip side, the SCJ SCA model estimates a mean buck harvest rate of 40% since 2000, while the TSJ CA model produces a mean buck harvest percentage value of 31% (something more tenable). Therefore, due to the variety of factors identified, we consider the chosen model to be of poor quality, but better than the competing models.

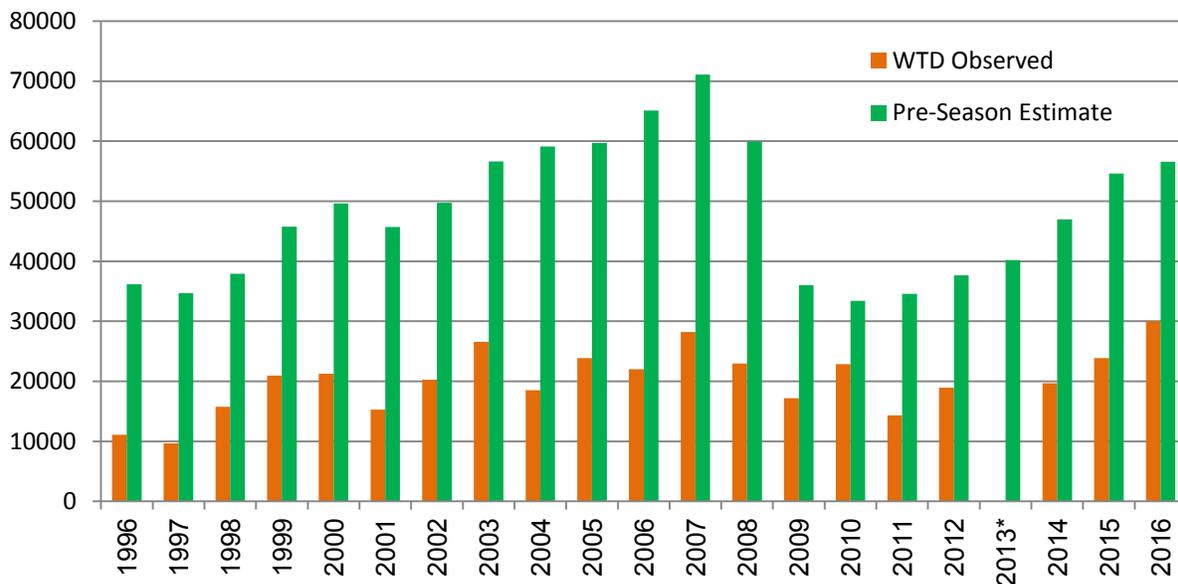


Figure 2. 1996-2016 white-tailed deer, estimated preseason population and trend count data, increased by a factor of 5. Note, trend count not completed 2013.

It should also be noted that the post-season population estimates recorded in the JCR program and presented on page 1 are no longer updated each year, but rather remain fixed following JCR finalization in a given bio-year. Because of this, and the fact that estimates produced by the

models at the beginning and ending years of model construction are the most tenuous and subject to change as more years of data are added, the estimates provided in Figure 3 better reflect recent trends in this herd's population size.

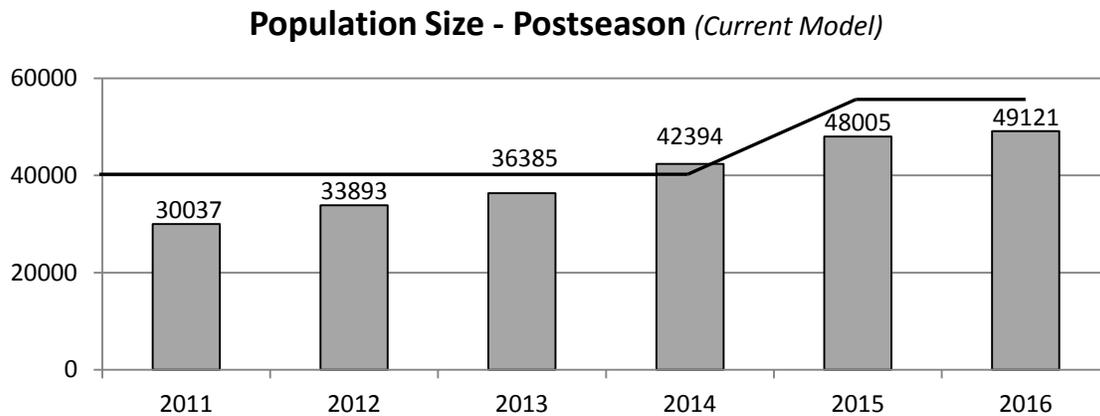


Figure 3. Post-season population estimates produced by the 2016 SCJ SCA model

Based upon the current SCJ SCA model, this population grew 56% between 2001 and 2007. The population then about declined 55% to its low point in 2010, before rebounding 71% through 2016. The 2007 peak, subsequent decline and rebound in the population reflects overall field observations. However, as previously noted, by all accounts this population dropped steadily from 2007 through 2011 – a trend shown one year antecedent in the model's projections. If population estimates produced by the spreadsheet model are close to accurate, then our current objective is near landowner tolerance and yields excellent hunter satisfaction.

During the last substantial population rise, hunting seasons in this herd unit were structured to retard growth, which was only mildly successful. Population growth was reversed in 2007, but that directional change was due primarily to increased non-hunting mortality rather than enhanced harvest. Reductions in survival rates were most ostensibly attributed to increased over-winter mortality and EHDV outbreaks. Between 2007 and 2010, evidence also suggests the mountain lion population in the Black Hills reached historically high levels. As a result, elevated harvest, weather conditions, disease and increased predation acted in concert to reduce this population considerably. In response, hunting seasons were very conservative between 2010 and 2013, which allowed this herd to increase as reproduction and survival improved. As this herd has rebounded significantly over the past three years, hunting seasons again have been liberalized.

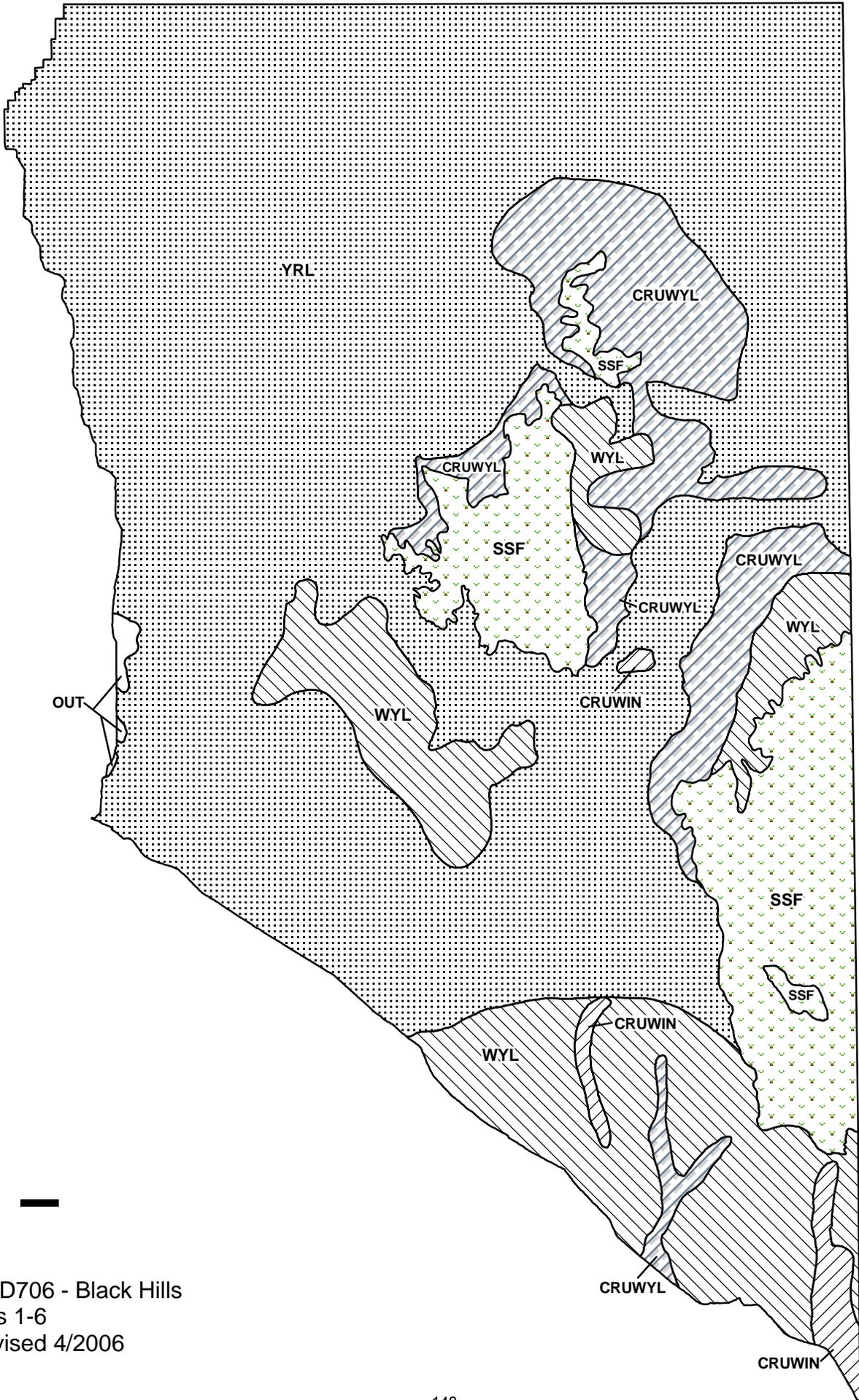
MANAGEMENT SUMMARY: Changes to the 2017 white-tailed deer hunting season in the Black Hills were designed to maintain buck harvest at 2016 levels and increase take of antlerless white-tailed deer slightly. This season structure also maintains the traditional November 30th closing date in Hunt Areas 1, 2, and 3, and that of November 20th in HA's 4, 5, & 6. These structures have been put in place to continue to temper population growth and stabilize the buck:doe ratio with what has likely been increased over-winter mortality compared to the previous two years.

Whitetail buck numbers have improved in recent years based upon classification data and population estimates. As such, there should be a strong cohort of 1 to 3 year-old bucks available for hunters in 2017, along with a fair contingent of 4 & 5 year-old bucks. As such, it seems

prudent to maintain buck harvest even with some increased non-hunting mortality. This will also help maintain non-resident hunter numbers, which is important to affect doe harvest. White-tailed doe harvest needs to be sustained or augmented as well to begin to stabilize this population. It is projected Region A license issuance and continuation of a 30-day season north of Interstate Highway 90 will yield harvest rates similar to 2016, and the buck:doe ratio should drop slightly.

In order to help limit herd growth and allow landowners to be proactive in curbing increases in whitetail numbers, issuance of Type 8 doe/fawn white-tailed deer licenses valid on private land in HA's 1, 2, & 3 has been maintained for 2017 (note, 42% of these licenses remained unsold in 2016). This follows an almost 300% increase in issuance of these license types between 2013 and 2016. Availability of Type 6 & 7 doe/fawn licenses in HA's 1 & 2, which are valid for both mule deer and white-tailed deer on private land, has been increased about 15%; and south of I-90 Type 6 license issuance in HA's 4 and 5 was maintained at 2016 levels.

The 2017 hunting season is expected to yield an estimated postseason population of about 52,600 white-tailed deer, which represents a 7% increase in the current post-season population. However, these projections assume over-winter survival will be average and summer losses to EHDV minimal. Provided the change in population is reached, this herd would be about 4% below objective, and near a number most landowners would like to see at this time while still satisfying hunters.



WTD706 - Black Hills
 HAs 1-6
 Revised 4/2006

2016 - JCR Evaluation Form

SPECIES: White tailed Deer

PERIOD: 6/1/2016 - 5/31/2017

HERD: WD707 - CENTRAL

HUNT AREAS: 7-14, 21-22, 34, 65-67, 88-89

PREPARED BY: WILLOW STEEN

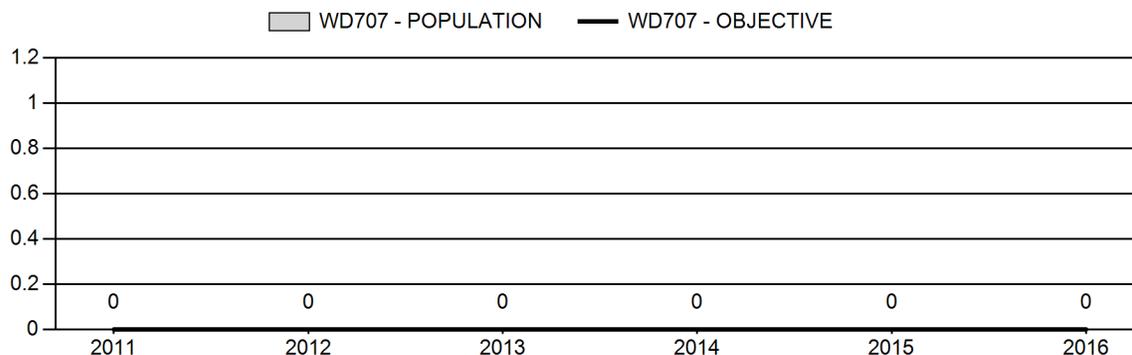
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	0	N/A	N/A
Harvest:	1,143	908	1,200
Hunters:	2,465	2,007	2,200
Hunter Success:	46%	45%	55%
Active Licenses:	2,835	2,253	2,400
Active License Success:	40%	40%	50%
Recreation Days:	12,328	8,248	8,500
Days Per Animal:	10.8	9.1	7.1
Males per 100 Females	35	32	
Juveniles per 100 Females	66	69	

Population Objective (\pm 20%) :	0 (0 - 0)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

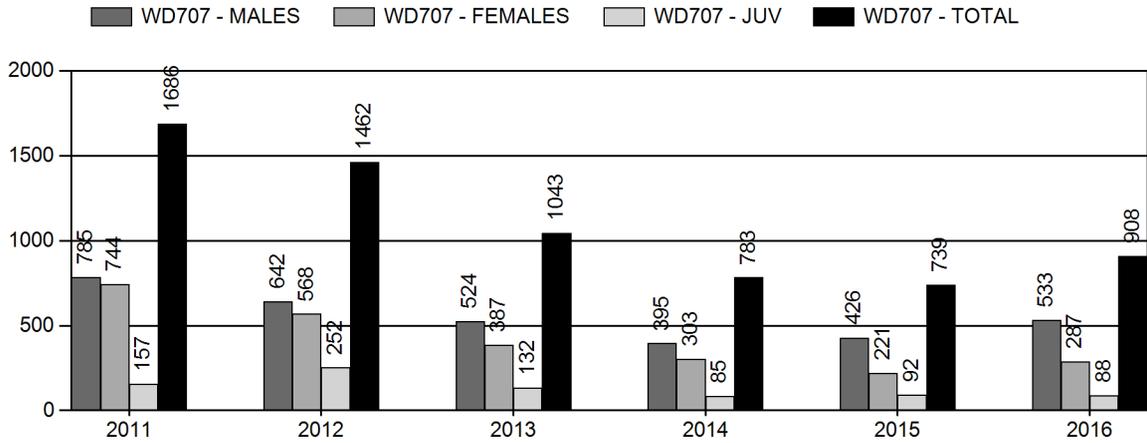
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	0%	0%
Males \geq 1 year old:	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%

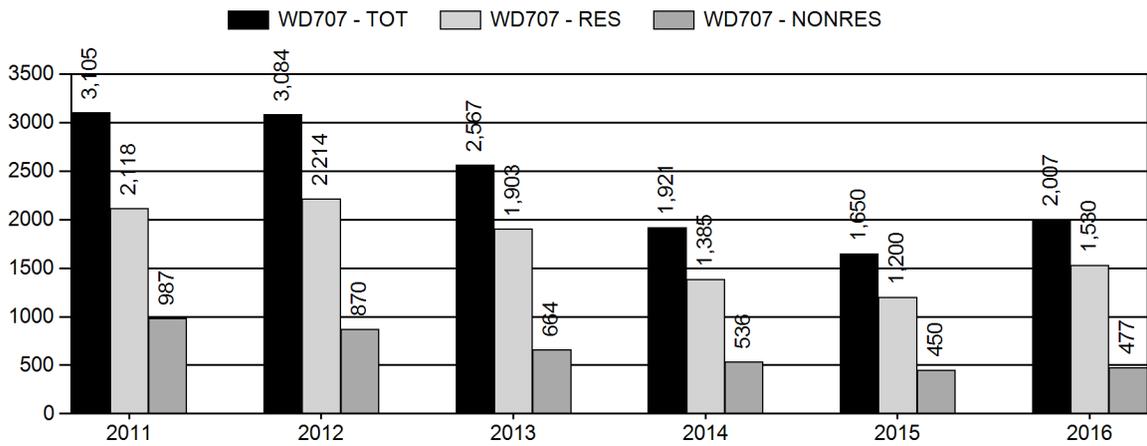
Population Size - Postseason



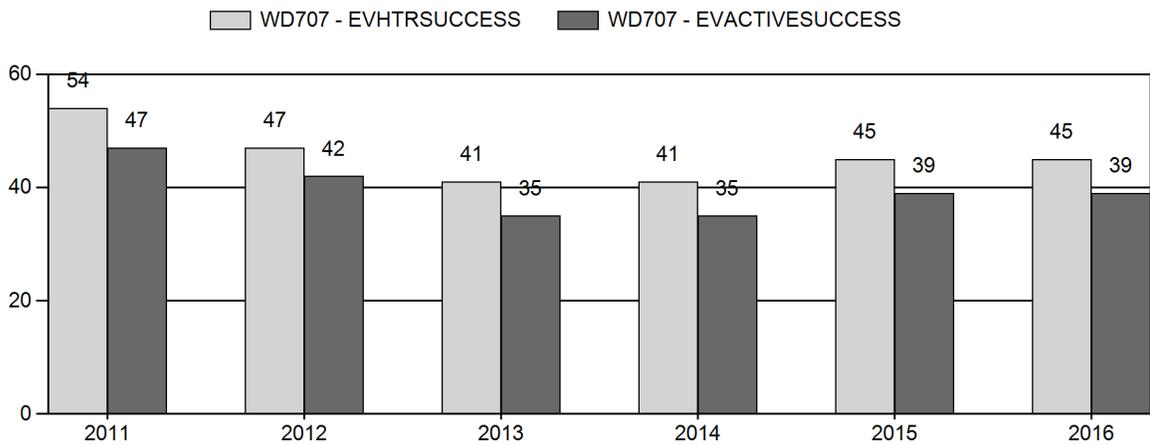
Harvest



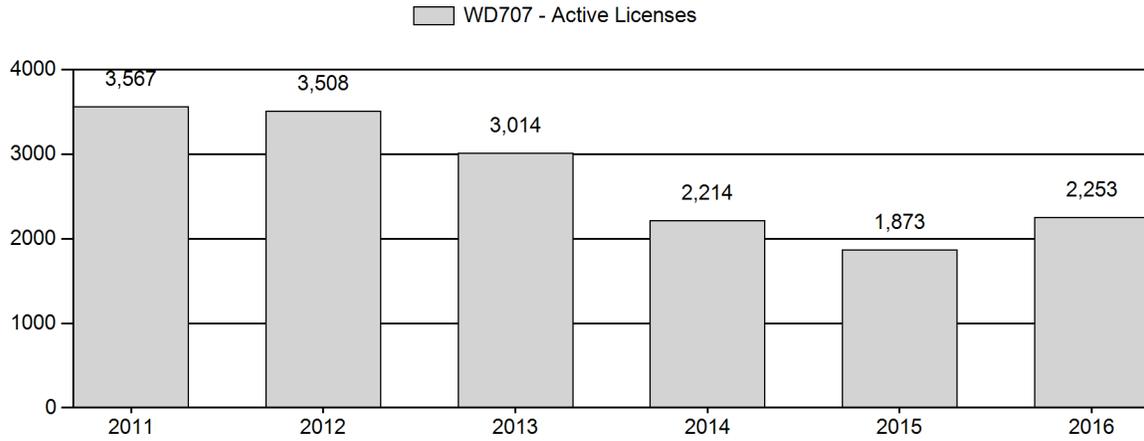
Number of Active Licenses



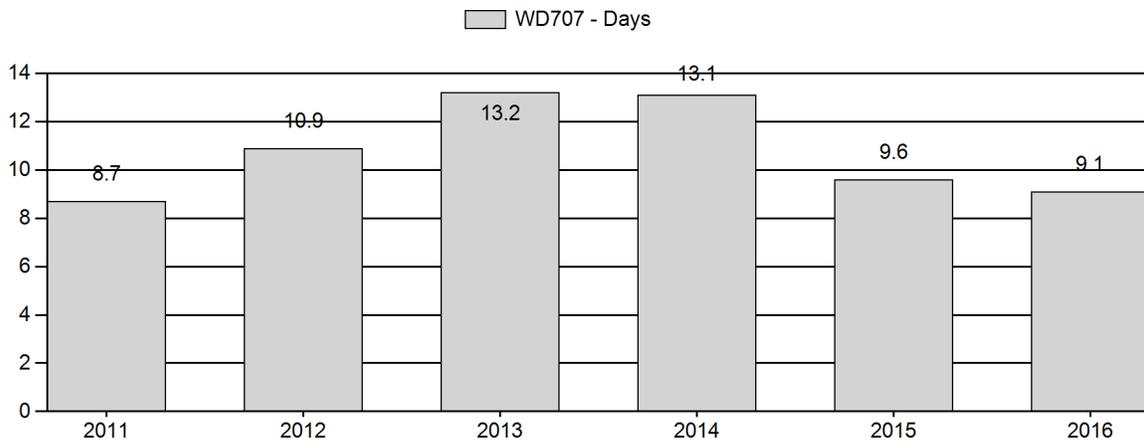
Harvest Success



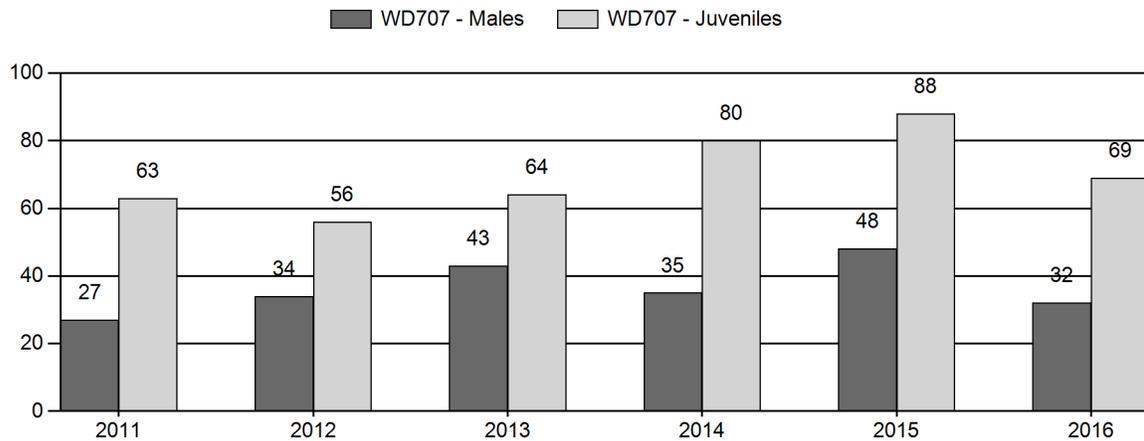
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for White tailed Deer Herd WD707 - CENTRAL

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	0	45	81	126	14%	467	53%	292	33%	885	0	10	17	27	± 0	63	± 0	49
2012	0	54	76	130	18%	381	53%	212	29%	723	0	14	20	34	± 0	56	± 0	41
2013	0	19	61	80	21%	188	48%	121	31%	389	0	10	32	43	± 0	64	± 0	45
2014	0	11	24	35	16%	100	47%	80	37%	215	0	11	24	35	± 0	80	± 0	59
2015	0	48	59	107	20%	223	42%	196	37%	526	0	22	26	48	± 0	88	± 0	59
2016	0	78	127	205	16%	635	50%	436	34%	1,276	0	12	20	32	± 0	69	± 0	52

**2017 HUNTING SEASONS
CENTRAL WHITE-TAILED DEER (WD707)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
10,11,12 13,14	3	Oct. 1	Nov. 30	300	Limited quota	Any white-tailed deer
	8	Oct. 1	Nov. 30	300	Limited quota	Doe or fawn white-tailed deer
		Oct. 16	Nov. 30		General	Any white-tailed deer
21	8	Oct.1	Oct. 31	50	Limited quota	Doe or fawn white-tailed deer valid on private land
22	3	Oct. 1	Nov. 30	75	Limited quota	Any white-tailed deer
	8	Oct. 1	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer
34	3	Oct. 15	Nov. 30	25	Limited quota	Any white-tailed deer
65	3	Oct. 15	Nov. 30	300	Limited quota	Any white-tailed deer, also valid in that portion of Area 66 in Converse County
	8	Oct. 15	Nov. 30	200	Limited quota	Doe or fawn white-tailed deer, also valid in that portion of Area 66 in Converse County
66,88,89	3	Oct. 15	Nov. 30	100	Limited quota	Any white-tailed deer
66,88,89	8	Oct. 15	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer
Archery						Refer to license type and limitations in Section 2

Note: The above season limitations are restricted to only those lines in the Chapter 6 Regulation that directly affect white-tailed deer hunting. Additional general and limited quota seasons occur in hunt areas 7-14, 22, 34, 65-67, 88, and 89 but are not captured here.

Hunt Area	License Type	Quota Change from 2016
21	8	+50
22	3	+25
	8	+25
65	3	+150
	8	+100
66, 88, 89	3	+50
	8	+25
Herd Unit Total	3	+225
	8	+200

Management Evaluation

Current Management Objective: ≥ 20 bucks:100 does postseason

Management Strategy: Recreational

2016 Postseason Population Estimate: NA

2017 Proposed Postseason Population Estimate: NA

2016 Hunter Satisfaction: 68% Satisfied, 22% Neutral, 10% Dissatisfied

The Central White-tailed Deer Herd Unit has a postseason management objective of ≥ 20 bucks per 100 does. No population model exists for this herd unit, as this is not a well-defined or closed population. Managers are unable to obtain adequate classifications over this large herd unit as it is not a budget priority for helicopter surveys and there is poor sightability of white-tailed deer in cottonwood riparian habitats. Access to perform ground surveys is inconsistent and highly variable from year to year as most white-tailed deer inhabit private lands.

Herd Unit Issues

White-tailed deer densities in this herd are highest along major cottonwood riparian communities of the Cheyenne River and North Platte River drainages and on irrigated hay fields in the La Prele Creek, La Bonte Creek, and Casper Creek drainages. Most white-tailed deer habitats in this herd unit are on private lands. Landowners typically have a low tolerance for white-tailed deer, and access to hunt them is generally good. Periodic disease outbreaks (i.e. hemorrhagic diseases, adenovirus, Asian louse, Chronic Wasting Disease) are known to occur within this herd, and can contribute to population declines in localized areas when environmental conditions are suitable. Female harvest in this herd is typically insufficient to curtail growth when the population is high since many Type 8 licenses typically remain unsold each year. Epizootic Hemorrhagic Disease (EHD) often regulates this population given the lack of female harvest.

Weather

In addition to EHD outbreaks, white-tailed deer likely experienced increased mortality in recent years due to the harsh winter conditions of 2010-2011 and the 2012 drought. In addition, such weather conditions were not conducive to good fawn productivity/survival over this time frame. Conditions improved in 2013 with adequate precipitation throughout the growing season and moderate winter conditions. Weather conditions throughout 2014 and 2015 produced above average precipitation, especially during the growing season, which resulted in excellent forage production throughout the herd unit. Improved forage, coupled with low competition for resources due to low white-tailed deer densities, yielded good fawn production. In 2016, above average precipitation was received during the early part of the growing season, leading to good early-season forage production. However, this was followed by hot and dry conditions beginning in June and continuing through the summer and into late fall. These conditions could have contributed to the lower fawn recruitment in 2016 compared to recent years. The 2016-2017 winter has been moderate, with average precipitation and several extreme cold snaps. Snow events and cold snaps were typically followed by warmer weather which exposed forage for wildlife. Therefore white-tail deer should exhibit normal over-winter survival this winter.

Habitat

This herd unit has no established habitat transects that measure growth and/or utilization on shrub species that are preferred browse of white-tailed deer. However, browse quality and availability were relatively high along riparian corridors due to the above average precipitation in 2014 and 2015, and the average precipitation in 2016. Anecdotal observations from field personnel noted good browse and herbaceous forb conditions throughout the herd unit. Many landowners also reported improved conditions for irrigation of hay fields in recent growing seasons.

Field Data

Fawn production is typically good for this herd, with ratios ranging in the 60-70s per 100 does. Observed fawn ratios were above average in 2014 and 2015 at 80 and 88 per 100 does, respectively. The fawn ratio in 2016 was 68, which is more comparable to the previous 5 year average of 70. This herd appears to be rebounding from a low point following disease outbreak, harsh winters in 2010 and 2011, and the severe drought of 2012. While this herd unit will require several more years of improved fawn production and survival before managers can expect any significant increase in population size, the population appears to be increasing.

Buck ratios for the Central White-tailed Deer Herd historically average in the mid 30s per 100 does, but occasionally swell into the 40s or drop into the 20s. In 2016 the observed buck ratio was 32 per 100 does, with 13 of those being yearling bucks. Observed ratios may vary from year to year due to differing levels of effort or success in sampling white-tailed deer during post-season classification surveys. Buck ratios vary widely across the large variety of habitats in this herd unit as well. Additionally, white-tailed deer can be difficult to classify on private lands and in riparian cover, particularly bucks that may be solitary and elusive. Still, observed buck ratios have always met management objectives for this herd by remaining at or above 20 bucks per 100 does. However, postseason classification ratios in this herd should be viewed with caution as sample sizes are typically small and are not well stratified throughout the herd unit. For example, in 2016, about 59% of the deer classified in this herd were found in Area 65. This hunt area has the highest population of white-tailed deer within the herd unit. Over the past 3 years, significantly more white-tailed deer were classified in this herd unit, which is likely due to an increasing population as well as increased sampling effort.

Harvest Data

License success in this herd unit is typically in the 40-50th percentile, and was 45 percent in 2016. License issuance varies greatly between the many hunt areas contained within the herd unit. Hunters can take white-tailed deer on general licenses and also purchase additional limited quota licenses valid for any white-tailed deer or doe/fawn white-tailed deer. In recent years, reductions in limited quota white-tailed deer licenses have been made due to low deer densities, declining hunter success, and few complaints regarding damage on private lands.

White-tailed deer hunting opportunity peaked in 2011 with over 3,100 hunters afield. Since then license issuance has been gradually reduced as the population and hunting access have decreased, resulting in a low of 1,650 hunters afield in 2015. In 2016, there were about 2,000 whitetail hunters in this herd unit, most likely as a response to the increasing population. From 2011-2014, harvest success declined 28% while hunter effort increased 50%, although this trend is reversing as harvest success and hunter effort were improved by 11% and 31%, respectively since 2014. These numbers reflect field personnel's observations that white-tail hunting opportunity is increasing. License increases are proposed for 2016 given the increasing population within many areas.

Population

Currently there is no population model that accurately represents this herd. Therefore, management is based on maintaining postseason buck ratios with a goal of ≥ 20 bucks per 100 does. Observed buck ratios continue to exceed this goal, and harvest increases support field manager's beliefs that this population is recovering from recent declines. The population reached

in low point in 2013, following a harsh winter in 2010/2011, drought in 2012, and epizootic hemorrhagic disease in 2013. Fawn production and recruitment significantly improved beginning in 2014, and the population has been on an upward trajectory for the past 3 years.

Management Summary

Traditional season dates in this herd vary from one hunt area to the next. Generally, white-tailed deer seasons run concurrently with October mule deer seasons, and are extended into November to maximize hunter opportunity and harvest. The 2017 season includes 800 Type 3 licenses, 650 Type 8 licenses, and additional opportunities to harvest white-tailed deer on General, Type 1, and Type 6 licenses. Increased Type 6 and 8 licenses are being offered in Areas 22, 65, 66, 88, and 89. Type 8 licenses were added for Area 21 to address damage issues on private land. Goals for 2017 are to maintain buck ratios, improve hunter opportunity, afford landowners the opportunity to address agricultural damage on private lands if necessary, and allow for more hunting opportunity as a result of population increase.

If we attain the projected harvest of 1,000 white-tailed deer with fawn production/survival similar to the five-year average, buck ratios should be maintained above 20 per 100 does.

**Central White-tailed Deer Herd Unit
(WD707)
Revised May 12, 2010
Hunt Areas 7-15, 21, 22, 34, 65-67, 88, 89**

