

PRONGHORN

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2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR309 - PUMPKIN BUTTES

HUNT AREAS: 23

PREPARED BY: ERIKA PECKHAM

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	23,013	20,582	19,100
Harvest:	2,353	2,297	2,245
Hunters:	2,573	2,441	2,450
Hunter Success:	91%	94%	92%
Active Licenses:	2,681	2,595	2,650
Active License Success:	88%	89%	85%
Recreation Days:	9,219	7,464	7,500
Days Per Animal:	3.9	3.2	3.3
Males per 100 Females	49	48	
Juveniles per 100 Females	74	73	

Population Objective (± 20%) : 18000 (14400 - 21600)

Management Strategy: Private Land

Percent population is above (+) or below (-) objective: 14%

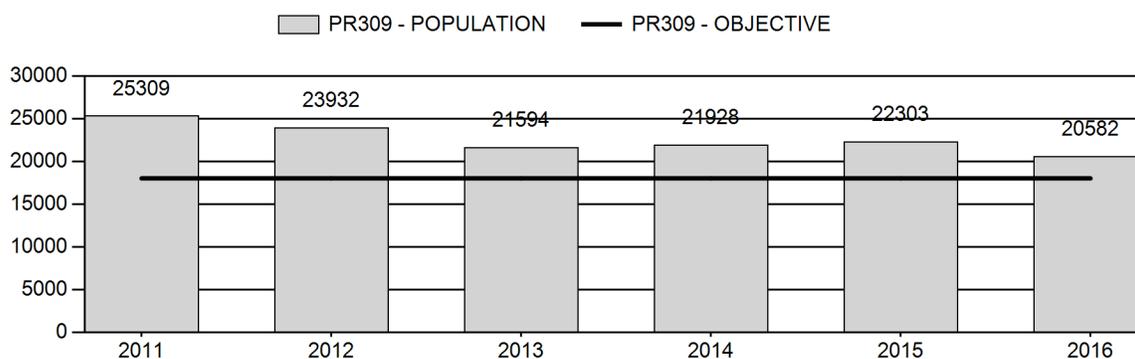
Number of years population has been + or - objective in recent trend: 2

Model Date: 2/6/2017

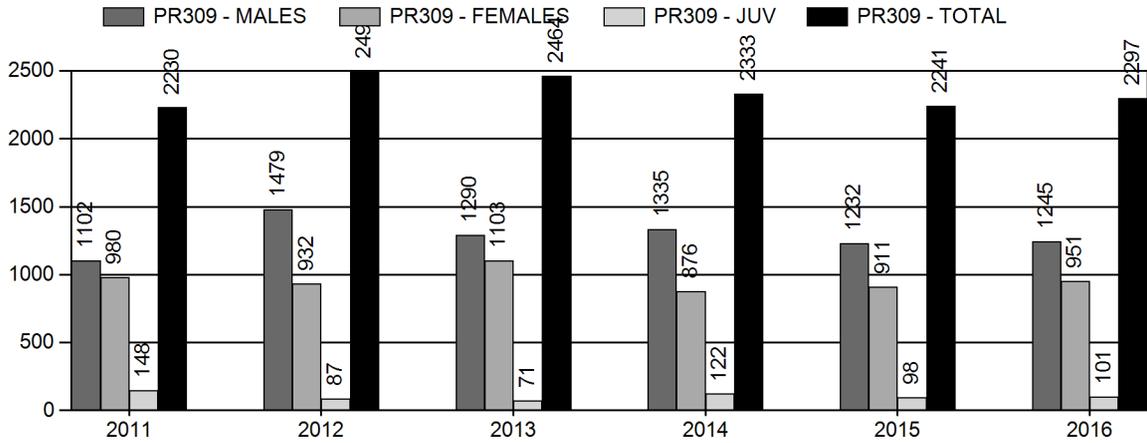
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	8.4%	10.8%
Males ≥ 1 year old:	19.5%	24.6%
Total:	8.4%	10.4%
Proposed change in post-season population:	.75%	7.2%

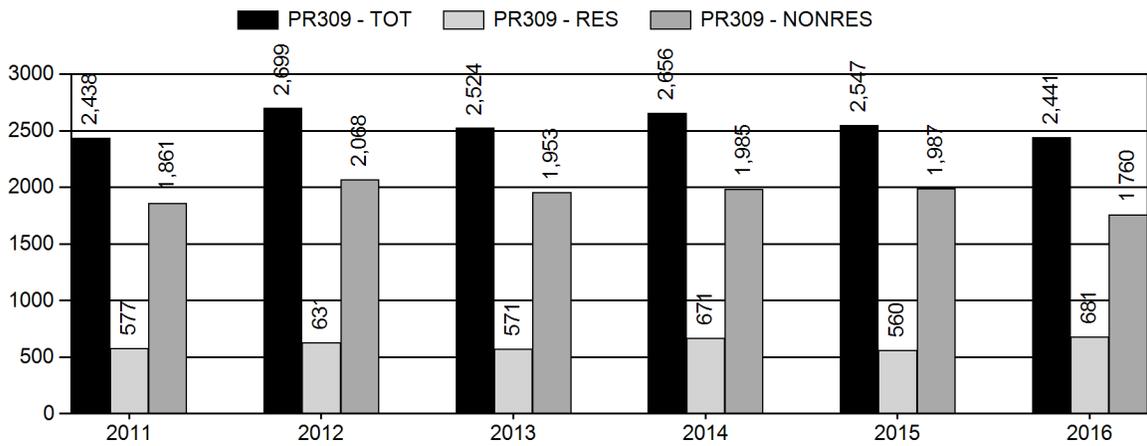
Population Size - Postseason



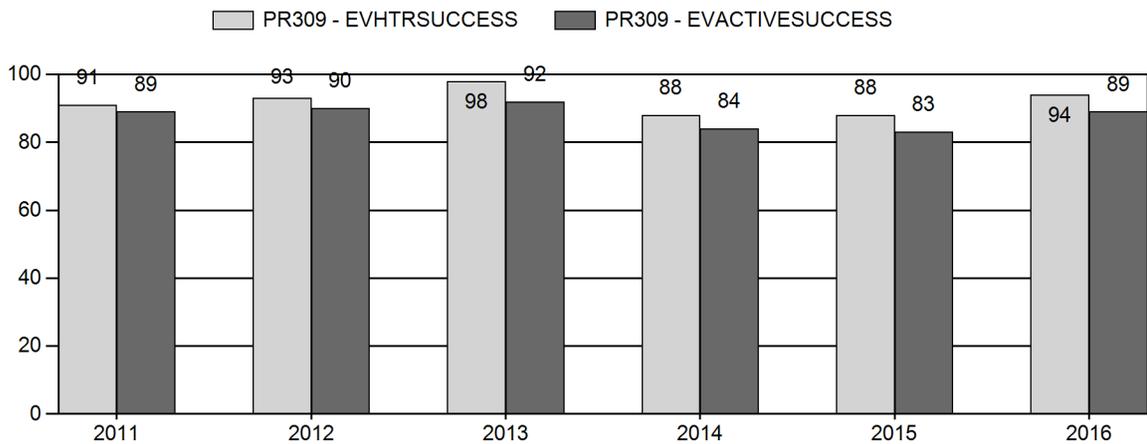
Harvest



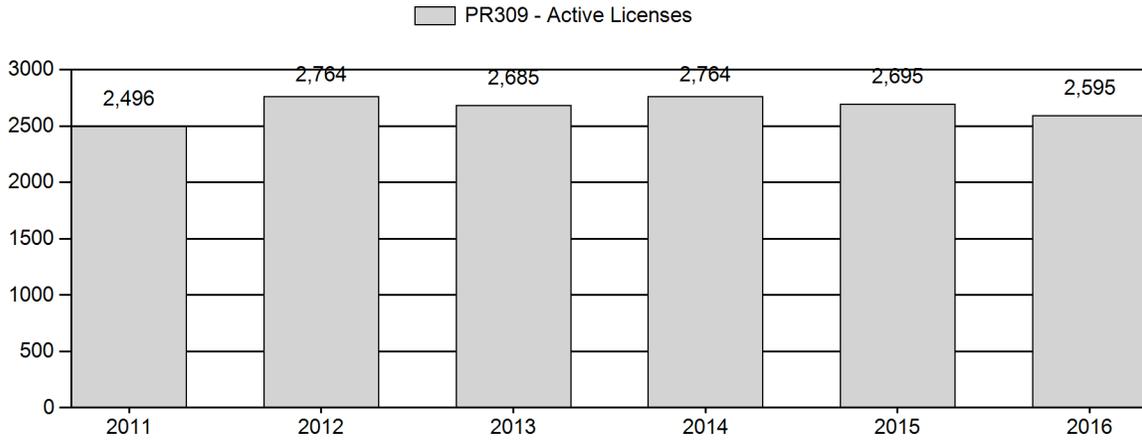
Number of Active Licenses



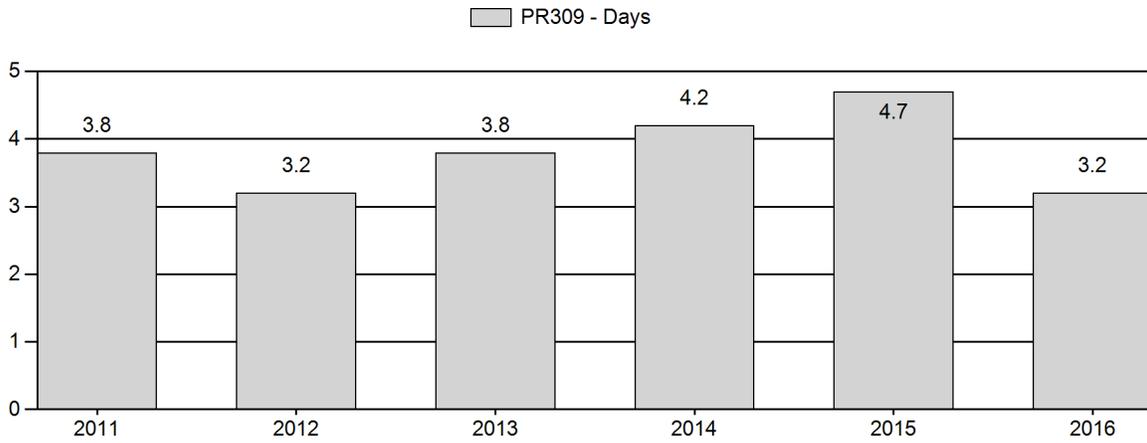
Harvest Success



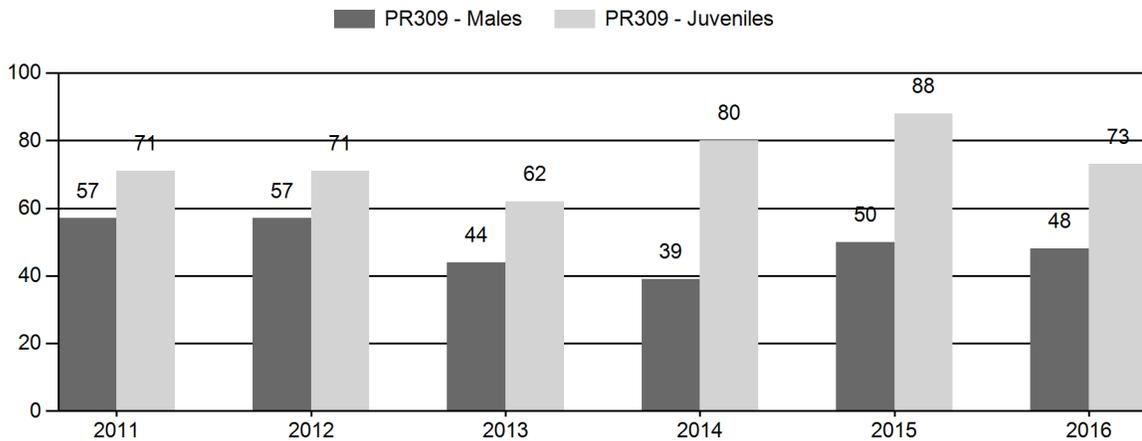
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR309 - PUMPKIN BUTTES

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	27,762	172	284	456	25%	796	44%	563	31%	1,815	2,713	22	36	57	± 5	71	± 6	45
2012	26,685	195	188	383	25%	672	44%	479	31%	1,534	2,748	29	28	57	± 6	71	± 7	45
2013	24,305	183	317	500	22%	1,129	49%	695	30%	2,324	2,050	16	28	44	± 4	62	± 5	43
2014	24,494	134	199	333	18%	853	46%	682	37%	1,868	2,097	16	23	39	± 4	80	± 6	58
2015	24,769	239	290	529	21%	1,063	42%	935	37%	2,527	2,866	22	27	50	± 4	88	± 6	59
2016	20,582	281	360	641	22%	1,328	45%	970	33%	2,939	2,976	21	27	48	± 4	73	± 5	49

**2017 HUNTING SEASONS
PUMPKIN BUTTES PRONGHORN HERD (PR309)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
23	1	Oct. 1	Oct. 31	400	Limited quota	Any antelope
23	2	Oct. 1	Oct. 31	1,400	Limited quota	Any antelope valid on private land
23	6	Oct. 1	Oct. 31	300	Limited quota	Doe or fawn
23	7	Oct. 1	Oct. 31	1,000	Limited quota	Doe or fawn valid on private land

Special Archery Season Hunt Areas	Opening Date	Limitations
23	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
23	1	No Change
23	2	No Change
23	6	No Change
23	7	No Change

Management Evaluation

Current Postseason Population Management Objective: 18,000

Management Strategy: Private Lands

2016 Postseason Population Estimate: ~20,600

2017 Proposed Postseason Population Estimate: ~19,100

2016 Hunter Satisfaction: 91% Satisfied, 5% Neutral, 4% Dissatisfied

Herd Unit Issues

The postseason population objective for the Pumpkin Buttes Pronghorn Herd Unit is 18,000 pronghorn. The management strategy is private lands management. The objective and management strategy were last reviewed and updated in 2015.

The primary issue with achieving adequate harvest in this herd is hunter access, as most of the pronghorn are found on private lands. A second issue, related to the first, is that accessible public lands have been very heavily hunted in past years. Hunters have complained about the

crowded conditions compared to the number of available pronghorn on public lands. There have also been problems with hunters trespassing onto private lands. The hunting season of 2016 was the first year that new license types were issued to attempt to address these issues. The number of licenses valid on public lands was lowered, and private lands only licenses were added.

During the early to mid-2000's, extensive coal bed methane development occurred in the herd unit and resulted in a network of roads and other development associated with the infrastructure required to support coal bed methane extraction. Additionally, beginning roughly around 2013, portions of this herd unit experienced increased activity pertaining to conventional oil well drilling and production, with many wells transitioning from the planning to development stage. Currently, both CBM and conventional oil has tapered off for the time being. In the southern part of this herd unit there is also uranium mining that is occurring. Although this herd unit has experienced various forms of energy development, it still contains excellent pronghorn habitat.

Weather

Weather throughout 2016 and into 2017 was not ideal for optimal rangeland conditions. The growing season was fairly poor with drought conditions noted throughout the area. The winter of 2015-2016 was moderate with not much for snow accumulation, or prolonged snow cover. However, in contrast, the winter of 2016-17 was fairly severe at times. Although this area did not experience the heavy snows that some of the surrounding areas did, there were at times prolonged cold temperatures. The Palmer Drought Index indicates that more than half of 2016 experienced "moderate" or "severe" drought conditions in the Powder River drainage. Additionally, looking at historic temperature information for December and January, records indicate that the 30-year mean low temperature for Gillette in December is 13.2F and 14.5F for January. In contrast, December of 2016 experienced a mean low temperature of 2.5 with January reported as 9.7. These are substantially lower than the 30-year average.

Habitat

There is currently no formal habitat monitoring occurring in this herd unit. Anecdotal observations indicate that drought conditions were experienced in 2016, which did not leave much residual forage going into the fall and winter of 2016. It has been noticed that some private landowners are spraying sagebrush in this herd unit. Whether their goals are to eradicate or just reduce canopy cover of sagebrush is not known, but it is possible for this to have an effect on the distribution of pronghorn in this herd unit.

Field Data

This herd has the potential for rapid growth as has been seen in years past. Historically there have been years where 80+ fawns per 100 does have been classified, though in the more recent past this has not been the case. In 2016 the fawn to doe ratio was 73, down from 88 in 2015. The buck ratio is typically fairly high in this herd unit. Classifications in 2016 yielded an observed buck ratio of 48, which is fairly consistent with the preceding 5-year average of 49. As this is a predominantly private land area, landowner post-seasons surveys are considered. Eighty-six percent of respondents felt that the pronghorn numbers were at objective while 91% of hunters reported being either "very satisfied" or "satisfied".

Harvest

In 2016 there were 3,100 licenses available, comprised of 4 license types. These included 400 Type 1 any antelope, 1,400 Type 2 any antelope, valid private lands only, 300 Type 6 doe/fawn licenses and 1,000 Type 7 licenses doe/fawn, valid private lands only. Just over 2,900 licenses were sold by the season's close. The only license type that did not sell out was the Type 2 license. Hunter success in this herd unit has averaged 92% over the preceding 5 years. In 2016 the overall success rate was 94%. It is felt that the last few years this hunt area received more pressure from hunters unfamiliar with the predominantly private land around Gillette than in preceding years. A high volume of non-resident hunter phone calls were received, with numerous people stating that they did not draw where they typically do. Prior to 2016, there were only Type 1 and Type 6 licenses available. In 2016 the separate public and private land licenses were made available with an emphasis on having plenty of private land only licenses available for landowners to have maximum flexibility in management. The total number of licenses issued was in line with what the population could support. The limited number of licenses available that were valid on public land seemed to create a better quality public lands hunt with less hunter crowding. Overall, comments received from both hunters and landowners were positive. There also was a reduction in trespass issues in this area as a direct result.

Population

The "Constant Juvenile – Constant Adult Mortality Rate" (CJCA) spreadsheet model was chosen to use for the post season population estimate of this herd (AIC value 151). The model appears to generally represent the population and trend of a peak population around 2006 and then declining. The model is considered a fair model. The 2016 post-season population estimate was 20,582.

The last line transect survey was conducted in this herd unit in June of 2016, which resulted in an estimated population of 10,600 pronghorn at that time (end of biological year). It is uncertain why this estimate came out to be so low. Although the standard error is also lower than it has been, it is likely that this estimate is not very accurate as hunter harvest, hunter success, ease of obtaining classification survey sample size and landowner survey results indicate a much higher population. Past line transects were fairly in line with the spreadsheet model. Line transects were flown in 2006 and 2009, with estimates of 32,900 and 18,000, respectively.

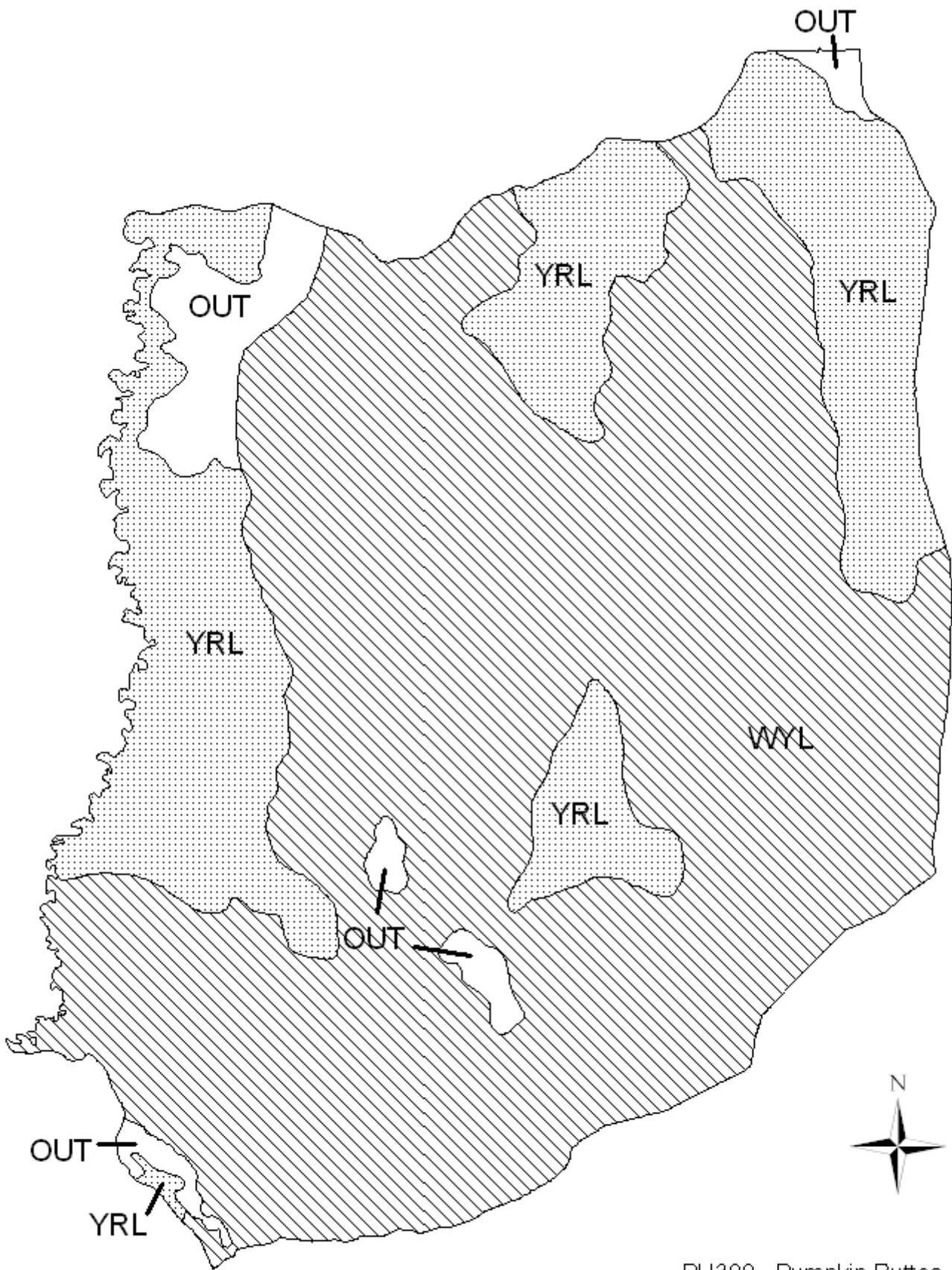
Management Strategy

This herd has experienced an increase in pressure during the last three hunting seasons. As previously stated, hunter phone calls and inquiries increased beginning in 2014 and licenses were sold out by the close of the season in 2014 and 2015. With the new license structure, ~200 Type 2 licenses went unsold in 2016. This would indicate that there were people with no private land access that were previously purchasing Type 1 and Type 6 licenses and then having very limited access.

The 2016 addition of Type 2 any antelope and Type 7 doe/fawn antelope licenses valid only on private land were added while the number of Type 1 and Type 6 licenses allowing harvest on public land was greatly reduced. This strategy has thus far proved to be effective in reducing the pressure on the limited public lands.

The traditional season in this hunt area has been the entire month of October. This season time and length seems to be adequate to allow a reasonable harvest. The majority (86%) of landowners that responded to the survey indicated that they feel pronghorn numbers are around where they should be. According to both the model and field observations and data, this population peaked in 2006 at about 31,000 animals.

If we attain the projected harvest of 2,245 and near normal fawn recruitment, it is projected by the model that the population will slightly decrease.



PH309 - Pumpkin Buttes
HA 23
Revised - 3/87

2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR318 - CRAZY WOMAN

HUNT AREAS: 22, 113

PREPARED BY: DAN THIELE

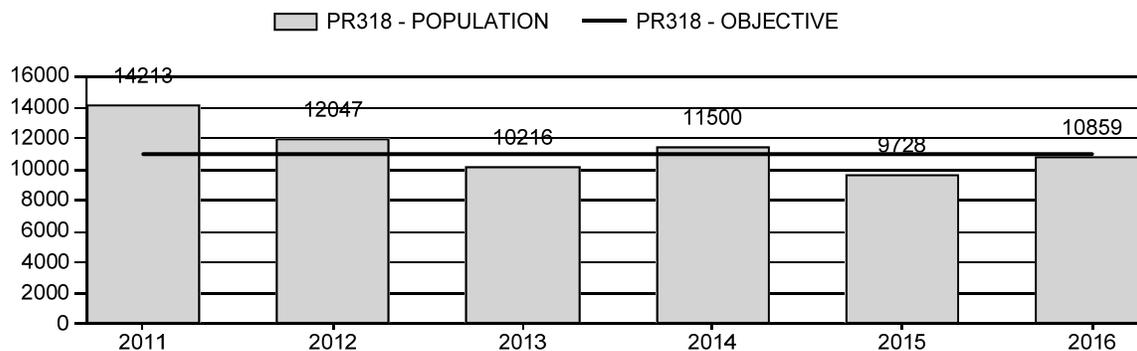
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	11,541	10,859	11,999
Harvest:	1,839	1,639	1,600
Hunters:	1,946	1,915	1,800
Hunter Success:	95%	86%	89 %
Active Licenses:	2,145	2,055	1,900
Active License Success:	86%	80%	84 %
Recreation Days:	6,906	6,730	6,400
Days Per Animal:	3.8	4.1	4
Males per 100 Females	54	50	
Juveniles per 100 Females	89	84	

Population Objective (± 20%) :	11000 (8800 - 13200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-1.3%
Number of years population has been + or - objective in recent trend:	0
Model Date:	2/21/2017

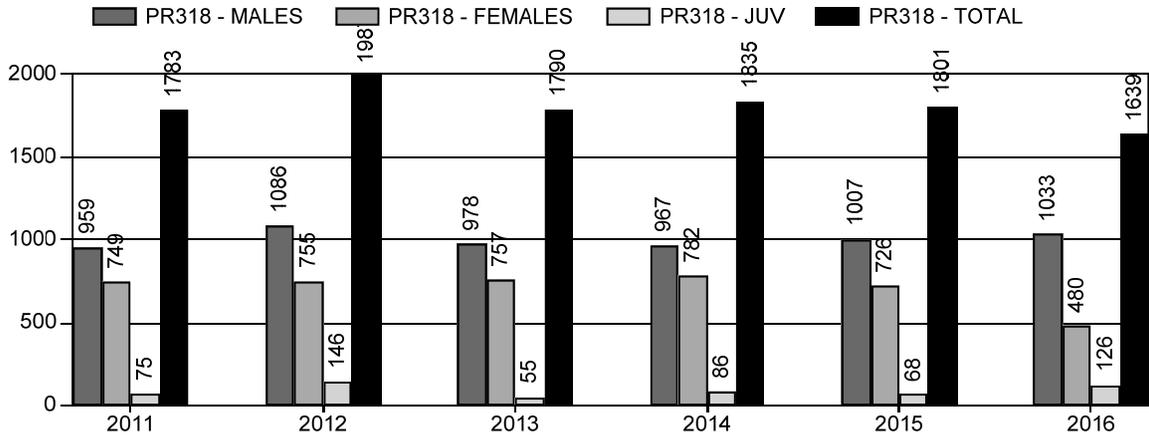
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	9%	10%
Males ≥ 1 year old:	41%	36%
Total:	13%	12%
Proposed change in post-season population:	12%	11%

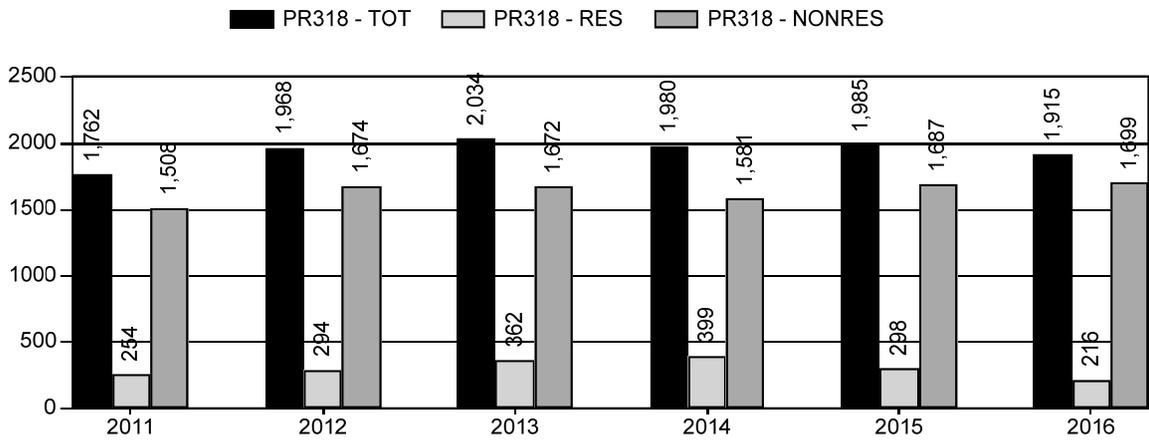
Population Size - Postseason



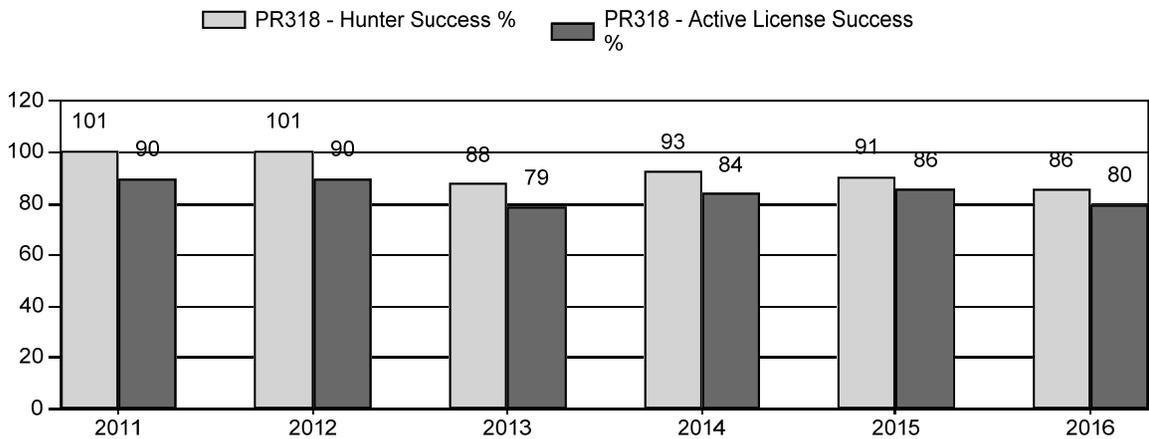
Harvest



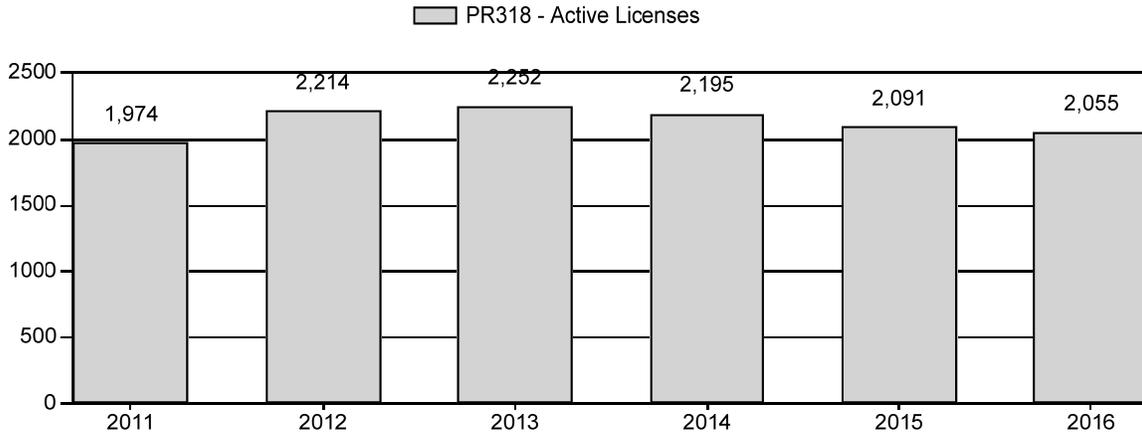
Number of Active Licenses



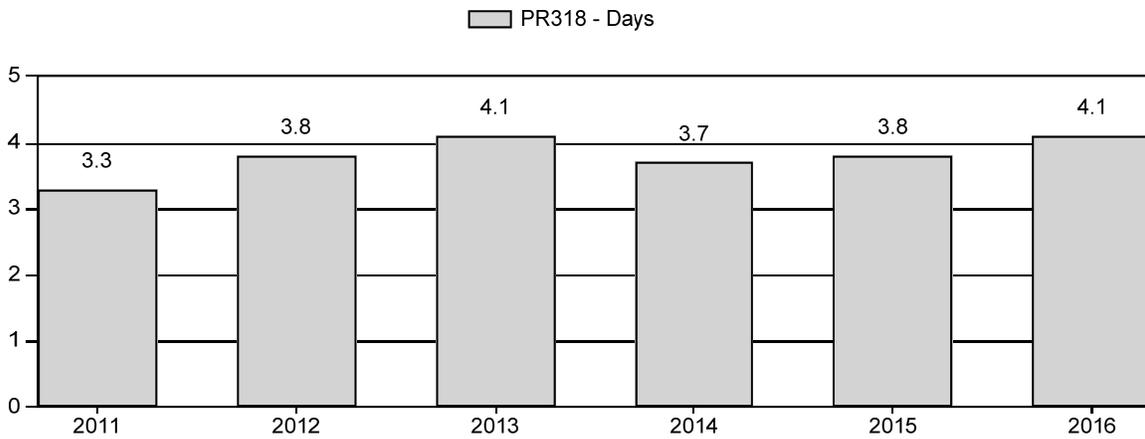
Harvest Success



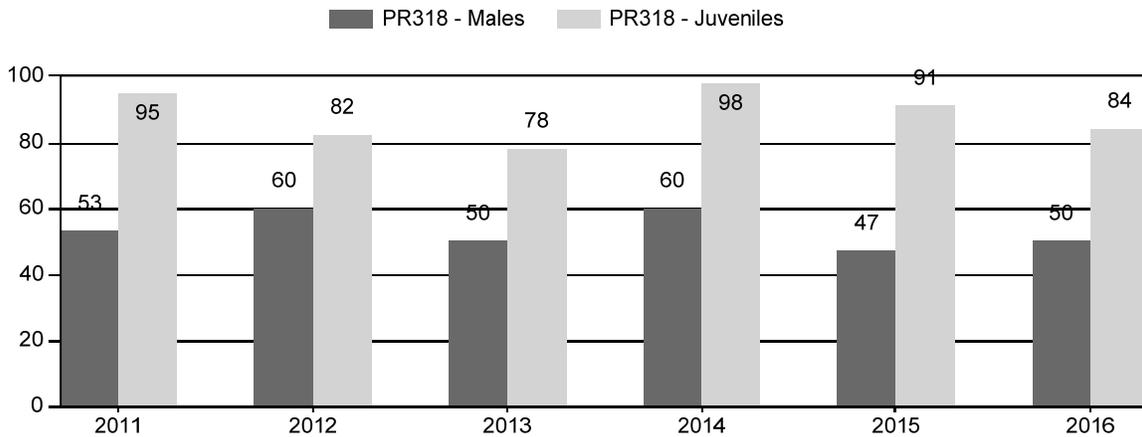
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR318 - CRAZY WOMAN

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	16,175	100	395	495	21%	936	40%	888	38%	2,319	3,889	11	42	53	± 4	95	± 7	62
2012	14,233	172	371	543	25%	911	41%	743	34%	2,197	3,069	19	41	60	± 5	82	± 6	51
2013	12,185	64	344	408	22%	818	44%	635	34%	1,861	2,745	8	42	50	± 5	78	± 6	52
2014	13,518	124	321	445	23%	743	39%	727	38%	1,915	3,790	17	43	60	± 5	98	± 8	61
2015	11,709	173	294	467	20%	989	42%	901	38%	2,357	3,311	17	30	47	± 4	91	± 6	62
2016	12,662	161	364	525	21%	1,044	43%	879	36%	2,448	2,874	15	35	50	± 4	84	± 6	56

**2017 HUNTING SEASONS
CRAZY WOMAN PRONGHORN HERD (PR318)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
22	1	Oct. 1	Oct. 31	1000	Limited quota	Any Antelope
22	6	Sept. 1	Sept. 30	600	Limited quota	Doe or fawn valid on private land north of Crazy Woman Creek
22	6	Oct. 1	Oct. 31		Limited quota	Doe or fawn valid in the entire area
113	1	Oct. 1	Oct. 31	150	Limited quota	Any antelope
113	2	Oct. 11	Oct. 31	150	Limited quota	Any antelope
113	6	Oct. 1	Oct. 31	200	Limited quota	Doe or fawn

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
22, 113	Aug. 15	Sep. 30

SUMMARY OF CHANGES IN LICENSES NUMBERS

Hunt Area	Type	Quota change from 2016
22	6	-200
113		No change
Herd Unit Total	6	-200

Management Evaluation

Current Postseason Population Management Objective: 11,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~10,850

2017 Proposed Postseason Population Estimate: ~12,000

2016 Hunter Satisfaction: 82% Satisfied, 10% Neutral, 8% Dissatisfied

Herd Unit Issues

The Crazy Woman Pronghorn Herd Unit post-season population objective was reviewed in 2013 and revised to 11,000 pronghorn. The management strategy remains recreational management.

Area 22 is largely private land with limited public land hunting opportunities. Therefore, access to hunt is largely determined by landowners. Increased outfitter leasing of ranches typically results in more restrictive access. Area 113 contains a large amount of inaccessible public land. Even with the expansive outfitting industry, at the herd unit level hunters are finding hunting

opportunity and surprisingly good success. This may be due in part to GPS technology that allows hunters to readily identify public and private land boundaries.

Weather

Weather in the area of the Crazy Woman Herd Unit during 2016 was less favorable than the previous two years with average precipitation and slightly warmer temperatures. April 2016 precipitation was 74% above normal but spring precipitation (April-June) was only 81% of normal. The Palmer Drought Index (PDI) for Climate Division 5 (Powder, Little Missouri and Tongue drainages) recorded “moderate drought” conditions for June 2016 but progressed to “severe drought” through July and August before improving to “moderate drought” for the remainder of the calendar year and through March 2017. The PDI improved to mid-range in April due to above normal March (+44%) and April (+145%) precipitation. Winter weather was more severe with above normal December precipitation combined with average temperatures eight degrees colder than normal. Cold weather continued through January with temperatures averaging five degrees below normal until more favorable weather returned in February.

Habitat

There is one Wyoming big sagebrush habitat transect in this herd unit. Production was not measured in 2016. Timely 2016 precipitation provided for average shrub growth and good herbaceous forage production. With the exception of colder weather in December and January, winter conditions were normal so above average pronghorn mortality was not observed. Utilization during the 2016-17 winter was perceived to be light (less than 5% of leaders browsed) as pronghorn and mule deer were dispersed over winter/yearlong range.

Field Data

Classifications in 2016 yielded a fawn ratio of 84:100 and a buck ratio of 50:100. Fawn production and survival decreased from the past two years due to below normal spring precipitation. Even so, the fawn ratio was more than adequate to allow this population to increase slightly given the lower doe/fawn harvest. The fawn ratio was down from the six year high of 98:100 in 2014 and compares to the five year average of 89:100. The 2014 fawn ratio was the highest since 1989. Buck ratios in this herd often exceed the 60:100 threshold designated for special management although high buck ratios are not managed for. Buck ratios equaled or exceeded 60:100 in two of the past six years. The 2016 buck ratio was 50:100, however it was influenced by the very low Area 113 buck ratio of 28:100. This is likely an inaccurate representation of the buck ratio due to an inadequate classification sample. The Area 22 buck ratio was 64:100. Since converting from aerial classification surveys to ground surveys, attaining adequate sample sizes has proved difficult.

The annual postseason landowner survey was conducted following the hunting season with responses showing that 62% of landowners at the herd unit scale are satisfied with current pronghorn numbers. The recent trend shows a strong indication that this population has decreased, reflecting the trend of the population model. A line transect survey flown in 2010 produced an end of year population estimate of 13,163 pronghorn, the highest estimate to date. A June 2016 line transect survey produced a very high estimate that was considered unreliable due to poor distribution of observed groups through the distance bands. Therefore, that estimate has not been used in the model. Hunter satisfaction was high with Areas 22 and 113 hunters reporting 80% and 81% positive responses, respectively.

Harvest Data

The 2016 harvest survey reported the lowest harvest for the six year period due to reductions in the 2015 Area 113 license quotas and low 2016 Area 22 hunter success. Total harvest has trended down while buck harvest has remained relatively stable. Although this is due in part to license quota reductions in Area 113, the low Area 22 Type 6 hunter success (66%) was the primary contributor. Hunter success and active license success were nine and six percentage points below the five year averages. Hunter effort matched the six year high at 4.1 days per animal harvested and was above the five year average. Hunter numbers remained stable under identical license quotas. However, only 77% of Area 22 Type 6 license holders hunted. Interest in hunting northeast Wyoming hunt areas has increased as license quotas have become more conservative in other areas of the state. All licenses sold prior to the October 1st hunting season. Multiple hunter comments were again received from both Area 22 and Area 113 hunters complaining about the lack of access to the parcels of landlocked public land.

Population

This population is estimated at 10,850 pronghorn, putting this herd at the objective of 11,000 pronghorn. This population objective corresponds closely with the 62% of responding landowners who are satisfied with the current population. Fifty-nine percent of Area 22 landowners who responded were satisfied with pronghorn numbers whereas 24% desire more pronghorn and 17% feel numbers are too high. Four Area 113 landowners responded with three satisfied with pronghorn numbers and one wanting more. The population estimate was generated with the EXCEL spreadsheet model. The Semi-Constant Juvenile/Semi-Constant Adult (SCJ/SCA) model was chosen as it produced the lowest AIC value (66) and results are consistent with harvest and landowner survey trends. The model attempts to track four line transect surveys over the last 13 years. The model indicates this population has decreased about 40% from its 2005 high of nearly 18,000 pronghorn and about 10% since 2012. The model trend is reasonable given that harvest statistics suggest more difficult hunting, particularly in Area 22. Widely fluctuating buck ratios due to inadequate classification samples and conversion from aerial to ground surveys likely complicate modeling efforts. Furthermore, line transect survey estimates have been widely variable creating some doubt as to the applicability to the model. The model is considered a fair model due to inadequate classification samples and lack of independent survival estimates.

Management Summary

The population model is considered a fair model as the population trend and estimate appear reasonable. Harvest data, landowner surveys and WGFD field observations confirm the decreasing trend represented in the model. Hunter interest has increased substantially in the last three years resulting in all license types selling prior to the October 1st hunting season opener. In Area 22, hunting has become more difficult in the last five years as hunter success has decreased while hunter effort has increased. The 2015 license quota reductions in Area 113 helped reduce hunter access problems and increase hunter satisfaction and success. Even so, numerous hunter comments were received about the lack of public access to land locked BLM lands. A reduction in the Area 22 Type 6 quota was implemented due to low hunter participation (77%) and low hunter success (66%). If projected harvest is achieved a postseason population of 12,000 pronghorn is expected.

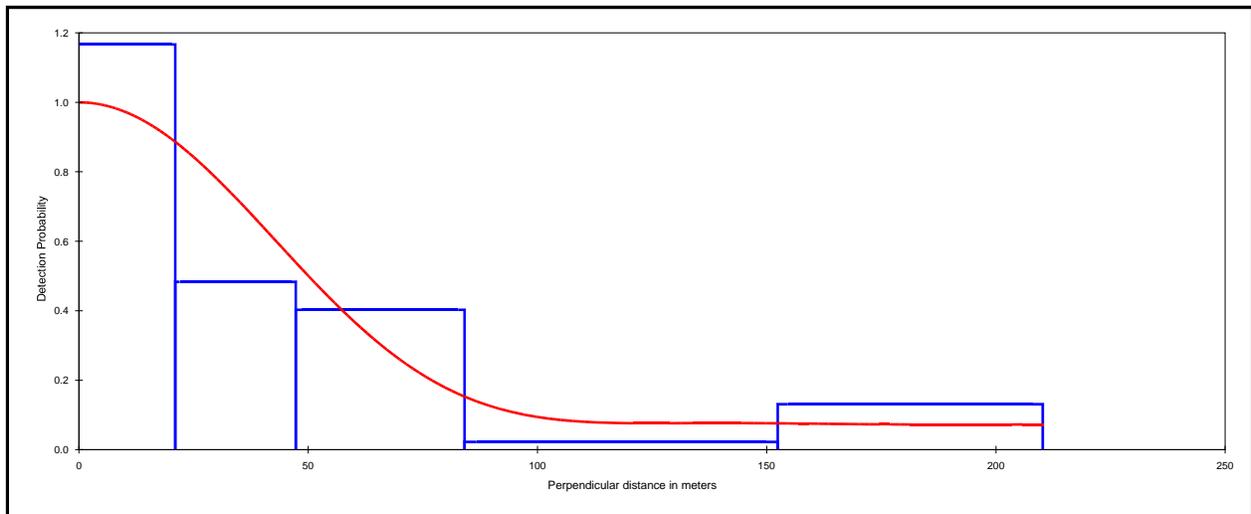
Line Transect Survey

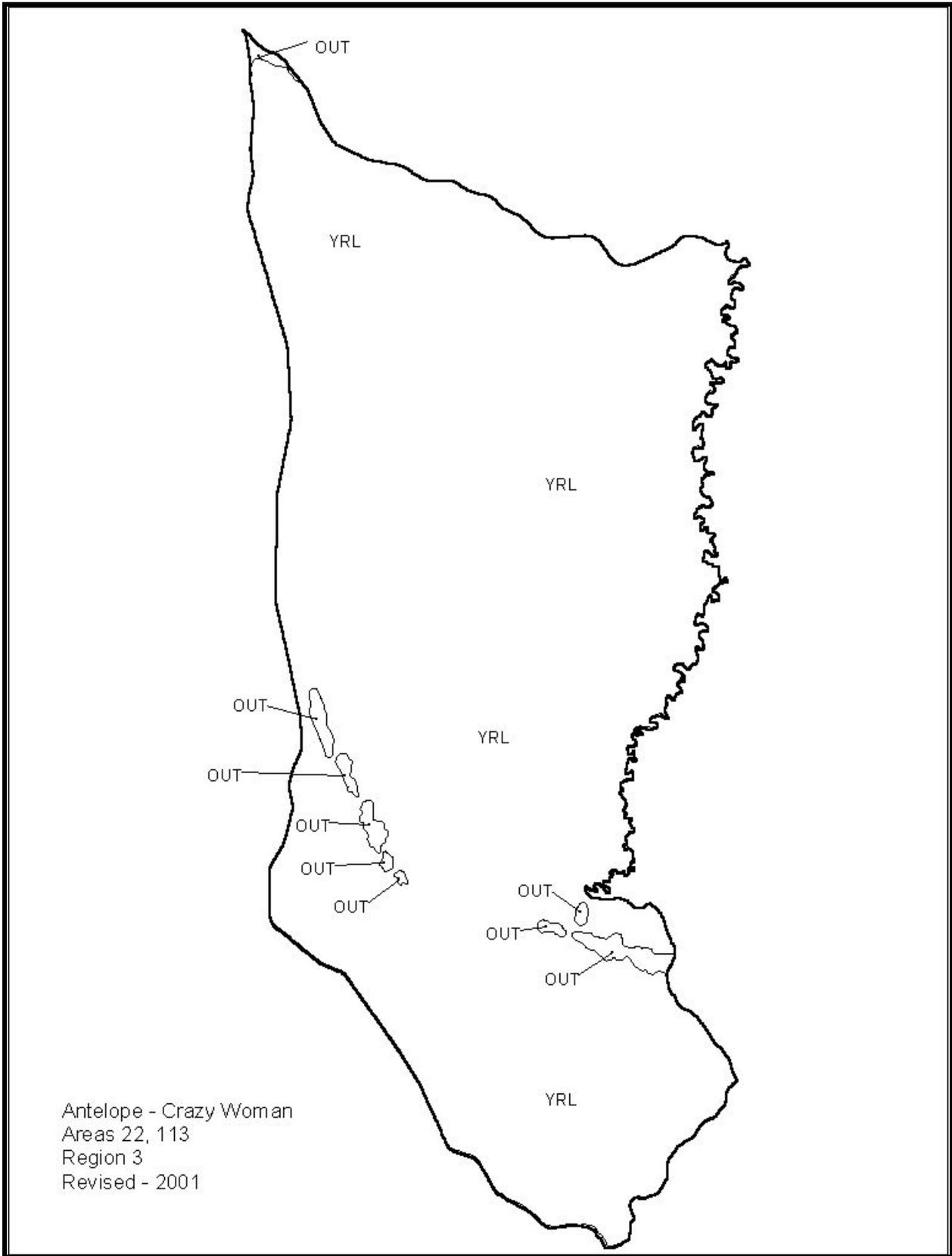
A 2015 end-of-year population estimate for this herd was derived using line transect sampling on June 20 - 22, 2016. The survey was flown by Flightline LFS, Inc. of Gillette, Wyoming using a Husky Aviat with a single observer. Transect beginning and ending locations and group observations including distance band, group size and elevation were recorded using a GPS, radar altimeter and notebook computer interfaced with Bluetooth capabilities.

Twenty-three north-south transects were flown at 5,000 meter intervals. The survey included the majority of the occupied habitat (1,154 mi²). Two-hundred-two groups were observed, 81 in Band A, 42 in Band B, 49 in Band C, 5 in Band D and 25 in Band E. Average elevation was 315 feet. The data were analyzed with DISTANCE 6.0v2.

A population estimate of 14,996 (10,791 – 20,839) pronghorn was obtained using a uniform cosine model which produced the lowest AIC (604). The pronghorn group density was 7.0 groups/mi² and the pronghorn density was 13.1 pronghorn/mi². The percent coefficient of variation for both the population and pronghorn density estimates was 16%. The number of groups observed in Band A was much higher than expected, likely due to the observer missing other band groups or placing them in the incorrect distance band. Therefore, the survey did not produce a reasonable detection probability plot and likely over-estimated the population.

Detection Probability Plot





2016 - JCR Evaluation Form

SPECIES: Pronghorn

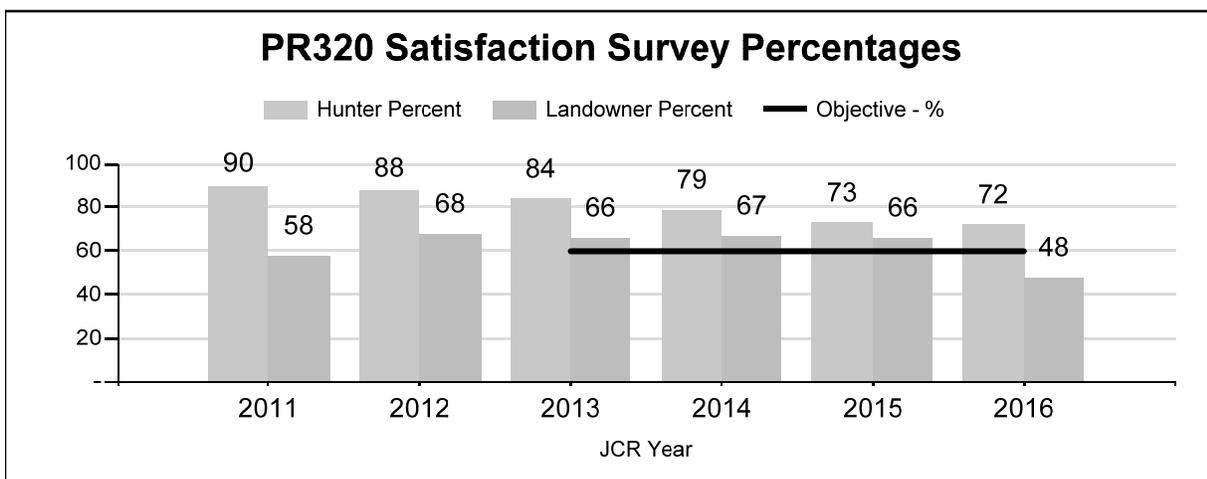
PERIOD: 6/1/2016 - 5/31/2017

HERD: PR320 - HAZELTON

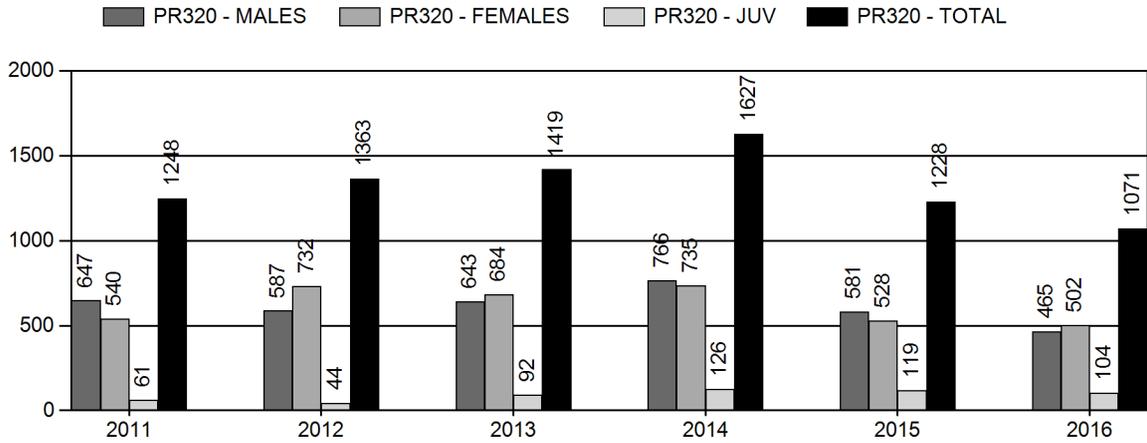
HUNT AREAS: 20, 102

PREPARED BY: DAN THIELE

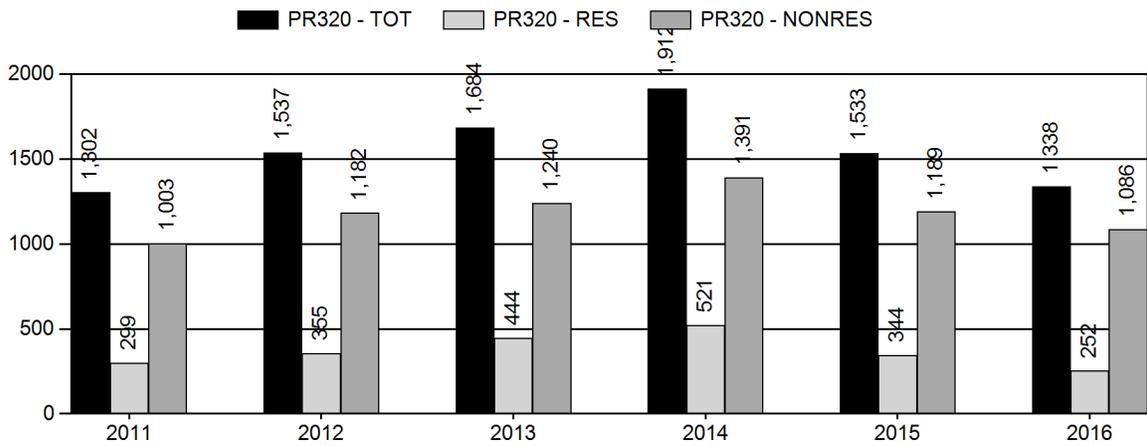
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	82%	72%	75%
Landowner Satisfaction Percent	65%	48%	60%
Harvest:	1,377	1,071	1,100
Hunters:	1,594	1,338	1,300
Hunter Success:	86%	80%	85%
Active Licenses:	1,786	1,490	1,450
Active License Success:	77%	72%	76%
Recreation Days:	6,455	5,064	5,000
Days Per Animal:	4.7	4.7	4.5
Males per 100 Females:	73	78	
Juveniles per 100 Females	93	81	
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:			1



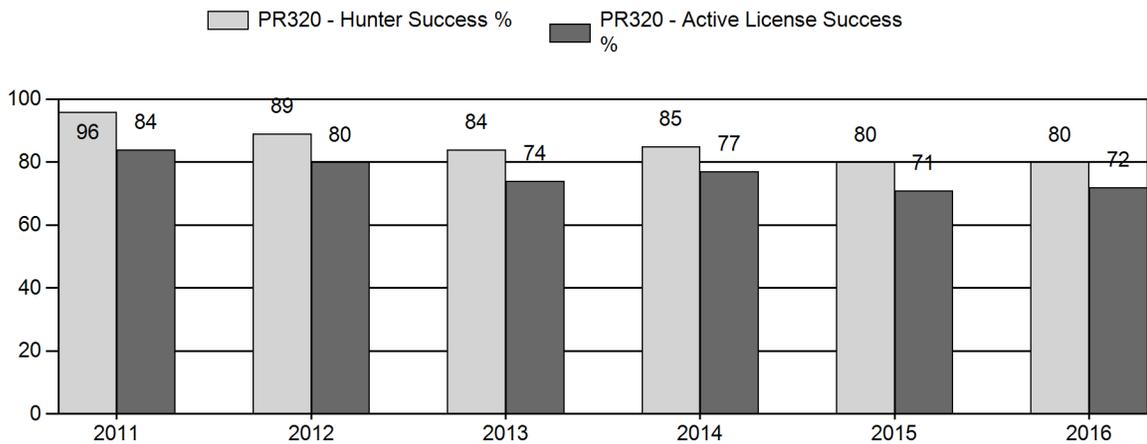
Harvest



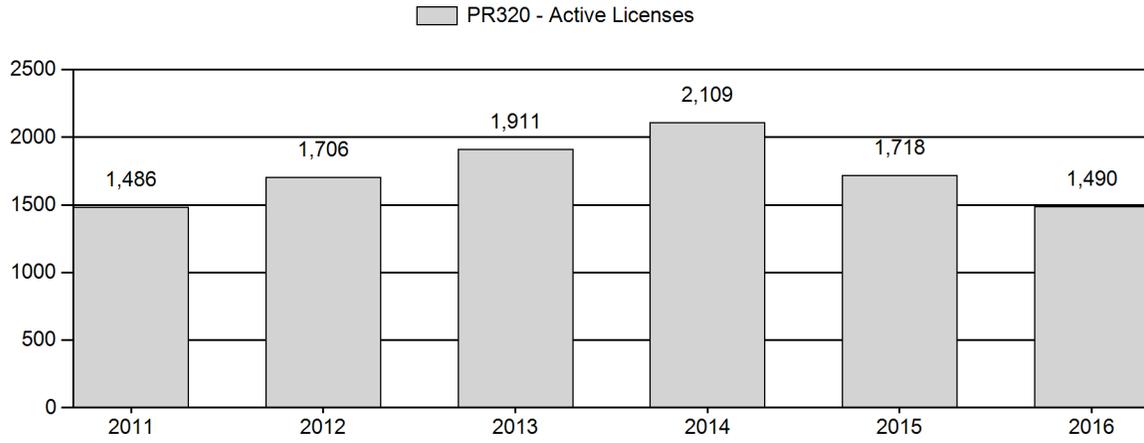
Number of Active Licenses



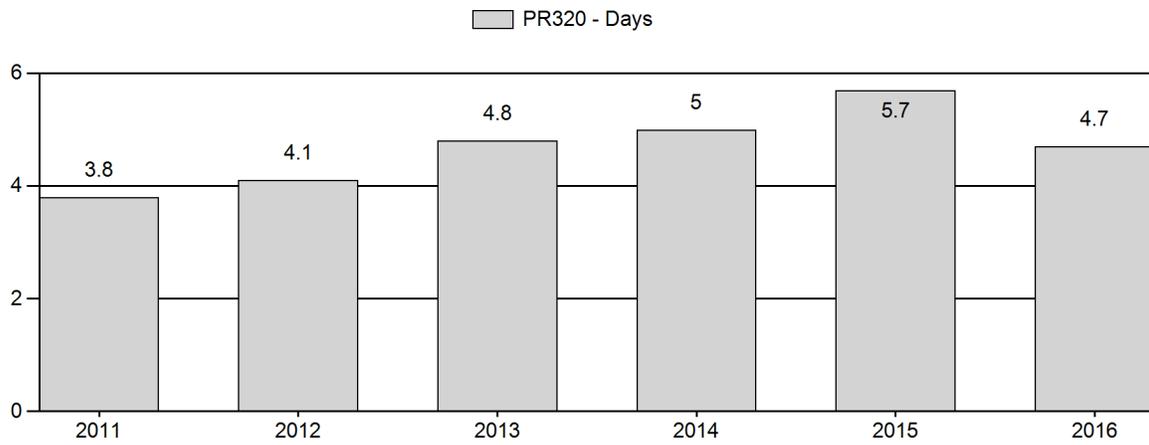
Harvest Success



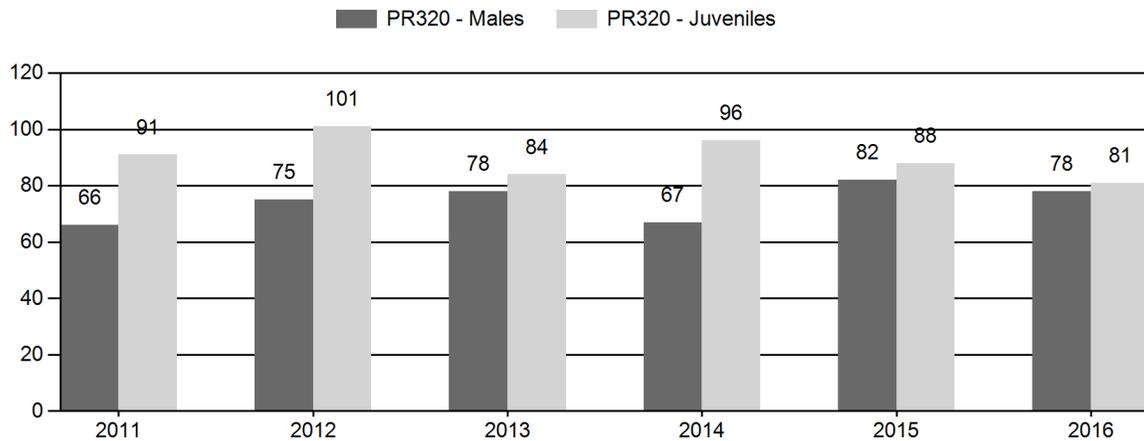
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR320 - HAZELTON

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	6,727	117	362	479	26%	730	39%	666	36%	1,875	5,339	16	50	66	± 12	91	± 14	55
2012	5,718	253	512	765	27%	1,020	36%	1,032	37%	2,817	4,949	25	50	75	± 9	101	± 10	58
2013	0	211	430	641	30%	817	38%	688	32%	2,146	5,131	26	53	78	± 0	84	± 0	47
2014	0	198	465	663	25%	993	38%	949	36%	2,605	3,080	20	47	67	± 0	96	± 0	57
2015	0	193	426	619	30%	753	37%	663	33%	2,035	2,905	26	57	82	± 0	88	± 0	48
2016	0	222	577	799	30%	1,021	39%	826	31%	2,646	2,440	22	57	78	± 0	81	± 0	45

**2017 HUNTING SEASONS
HAZELTON PRONGHORN HERD (PR320)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
20	1	Oct. 15	Nov. 15	500	Limited quota	Any Antelope
20	6	Oct. 15	Nov. 15	500	Limited quota	Doe or fawn
102	1	Oct. 15	Nov. 15	350	Limited quota	Any antelope
102	6	Sep. 1	Sep. 30	350	Limited quota	Doe or fawn valid on private land
102	6	Oct. 15	Nov. 15			Doe or fawn valid in the entire area

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
20, 102	Aug. 15	Oct. 14

SUMMARY OF CHANGES IN LICENSES NUMBERS

Hunt Area	Type	Quota change from 2016
20	1	No change
102	1	-50
	6	-50
Herd Unit Total		-100

Management Evaluation

Current Postseason Management Objective: 60% Landowner/Hunter Satisfaction

Management Strategy: Private Lands

2016 Landowner Satisfaction Survey: 48%

2016 Hunter Satisfaction Survey: 72% Satisfied, 13% Neutral, 15% Dissatisfied

2016 Postseason Population Estimate: ~4,500 (unreliable population model)

2017 Proposed Postseason Population Estimate: ~3,200

Herd Unit Issues

The Buffalo (Hunt Area 102) and Upper Powder River (Hunt Area 20) Pronghorn Herd Units were combined in 2013, adopting a landowner and hunter satisfaction post-season management objective and a private lands management strategy. In 2016, the herd was renamed to “Hazelton” to provide for the maintenance of historical herd data in the JCR program.

This herd unit is predominately private land with limited public land hunting opportunity resulting in a disproportionate amount of hunting pressure on accessible public land. Subdivisions, restrictive access to private land and landlocked public land aggravates this situation. In recent years several ranches have changed ownership resulting in reduced hunting access. Typically, traditional ranching operations are bought by nonresident landowners with more conservative hunting philosophies. Increased outfitter leasing of ranches reduces the number of hunters a given ranch will take. These factors contribute to high buck ratios, difficulty in placing hunters and attaining needed harvest. Additionally, pronghorn are often displaced from ranches that allow hunting to neighboring ranches that take limited numbers of hunters, or no hunters.

Habitat is a combination of sagebrush grassland and grassland habitat with interspersed irrigated hay meadows. With the exception of the southern one-third of Area 20, sagebrush habitat is scattered at best. The population is characterized by high densities of pronghorn with high fawn ratios and high buck ratios. Area 102 and the northern portion of Area 20 are somewhat immune from effects of drought because of irrigated meadows interspersed throughout much of the hunt area. Complaints of crop depredation are common in Area 102.

Weather

Weather in the area of the Hazelton Herd Unit during 2016 was less favorable than the previous two years with average precipitation and slightly warmer temperatures. Spring 2016 precipitation (April-June) was only 81% of normal. The Palmer Drought Index (PDI) for Climate Division 5 (Powder, Little Missouri and Tongue drainages) recorded “moderate drought” conditions for June 2016 but progressed to “severe drought” through July and August before improving to “moderate drought” for the remainder of the calendar year and through March 2017. The PDI improved to mid-range in April due to above normal March (+44%) and April (+145%) precipitation. Winter weather was more severe with above normal December precipitation (+93%) combined with average temperatures seven degrees colder than normal. Cold weather continued through January with temperatures averaging six degrees below normal before more favorable weather returned in February.

Habitat

There are no established habitat transects in this herd unit. However, in an adjacent herd unit production of a Wyoming big sagebrush transect measured in September 2016 averaged 3.4 cm per leader compared to 4.7 cm per leader in 2015 and a 10 year average of 3.2 cm per leader. Timely 2016 precipitation provided for average shrub growth and good herbaceous forage production. With the exception of colder weather in December and January, winter conditions were normal so above average pronghorn mortality was not observed. Utilization during the 2016-17 winter was light (less than 5% of leaders browsed) as pronghorn and mule deer were dispersed over winter/yearlong range.

Field Data

Classifications the last six years show fawn ratios exceeding 80:100 each year although the fawn ratio decreased each of the last two years to the lowest ratio of the six years in 2016 at 81:100. Below normal spring precipitation likely contributed to the lower fawn ratio. The 2016 fawn ratio was well below the five year average of 93:100 but still more than adequate to sustain this population. It should be noted, however, that with the elimination of aerial classifications in

Area 20, fawn ratios showed a notable increase suggesting inaccessible areas with lower fawn productivity are not being represented in the sample. The buck ratio was again very high at 78:100 with a five year average of 73:100. This high ratio is not managed for, but is a result of private land access and outfitted hunting which lead to conservative harvest strategies, thereby justifying the private lands management strategy guiding management of this herd. The classifications should be viewed with caution as the survey samples are consistently statistically inadequate.

Forty-eight percent of responding landowners surveyed following the hunting season indicated that numbers were acceptable while 46% thought numbers were too high. A majority (62%) of landowners in Area 102 felt numbers were too high. The landowner survey over the past several years shows a trend suggesting numbers are stable to decreasing in both hunt areas.

Harvest Data

Total harvest (1,071) decreased 13% following reductions in the Area 20 license quotas last year. Total harvest dropped to the lowest level of the six year period. Even with a 13% reduction in hunter numbers, hunter success (80%) and active license success (72%) did not markedly improve. Hunter effort did improve but remained at 4.7 days/animal harvested indicating that hunting remains difficult. Furthermore, hunter participation rates are lower than desired with only 82% of Area 20 Type 1 and 6 license holders hunting and 76% of Area 102 license holders hunting. Both areas offer very limited public land hunting opportunity and even though pronghorn densities are high, securing private land access ensures a successful hunt. There appears to be increased interest in hunting in this part of Wyoming as license quotas have been reduced in other areas of the state. Hunters unsuccessful in the license draw pick up leftover licenses in northeast Wyoming and take their chances on public lands. Private land access is essential to achieving harvest objectives. All license types sold out before the October 15th hunting season openers.

Hunters responding to the 2016 hunter satisfaction survey reported low hunter satisfaction for Area 20 (69%) and high satisfaction for Area 102 (75%). In Area 20, 26% of hunters expressed some level of dissatisfaction reflecting the 77% active license success.

Population

This herd has a 2016 post-season population estimate of 4,500 pronghorn, down 20% from the 2015 estimate due to a lower fawn ratio. The population estimate was generated with the EXCEL spreadsheet model. The semi-constant juvenile/semi-constant adult (SCJ/SCA) option was chosen as it produced the lowest AIC value (70), although none of the models produced a realistic population estimate or trend. The model suggests a steadily decreasing population from a high of nearly 14,000 pronghorn in 2005 even though fawn ratios have been high in recent years. The model aligns to a 2015 line transect estimate which is driving the population down. It is the first line transect completed for the new herd unit. Although the population is believed to be decreasing, it is unlikely to the extent suggested by the model given the harvest and the private land access in this herd. Excessive winter mortality is not believed to have occurred in recent years. Modeling into 2017 suggests projected harvest will continue to decrease this population. Therefore, the model is considered a poor model. A more accurate population estimate is desirable but not immediately necessary to manage this herd given it is now managed to hunter and landowner satisfaction objectives which are appropriate for this private land herd. Hunter satisfaction has easily exceeded the 60% objective for the four years the new objective

has been in place. The landowner satisfaction survey results showed 50% of respondents are satisfied with the population, below the objective of 60%.

Management Summary

The 2017 hunting season again features the Area 102 Type 6 September season to address landowner concerns with depredation to irrigated hay meadows. This season has increased in popularity and corresponds to a doe/fawn white-tailed deer season because landowners deal with high numbers of both species. A reduction in Area 102 Type 1 and Type 2 license quotas was made due to low active license success (66%) and high hunter effort (5.5 days per animal harvested). Even though Area 20 license holder participation and hunter success was below desired levels, no change was made since reductions were implemented in 2016.

License quotas will be more than adequate to address depredation and herd growth potential if hunter access is available. The opportunity to manage for a lower population is reasonable given depredation concerns and limited sagebrush habitat in the two hunt areas. Private land access will ultimately determine the level of harvest achieved in these hunt areas. The license adjustments in recent years will help alleviate hunter frustration with purchasing leftover licenses in hunt areas with limited public access and high public land hunting pressure.

A harvest of 1,025 pronghorn is projected for the 2017 hunting season if access improves and hunter success increases. Hunter satisfaction should improve with the Area 102 license adjustments but landowners will likely continue to express dissatisfaction with high pronghorn densities on private lands.

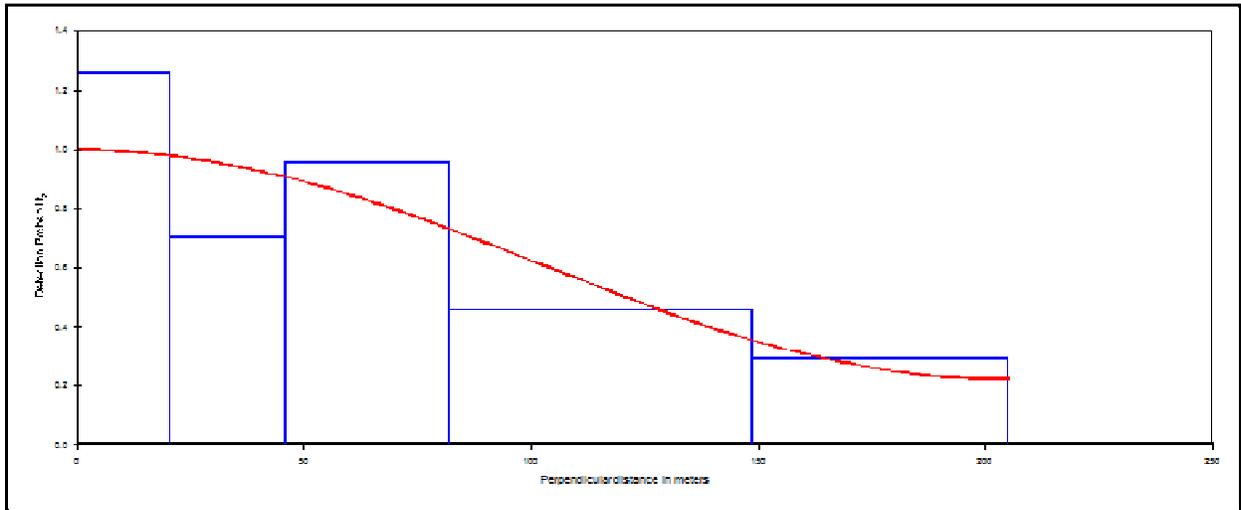
Line Transect Survey

A 2014 end-of-year population estimate for this herd was derived using line transect sampling on June 17 and 19, 2015. This was the first line transect flown in the newly formed herd unit. The survey was flown by Flightline LFS, Inc. of Gillette, Wyoming using a Husky Aviat with a single observer. Transect beginning and ending locations and group observations including distance band, group size and elevation were recorded using a GPS, radar altimeter and notebook computer interfaced with Bluetooth capabilities.

Thirty-seven north-south transects were flown at 3,000 meter intervals. The survey included the majority of the occupied habitat (500 mi²). One-hundred-sixty groups were observed, 33 in Band A, 23 in Band B, 44 in Band C, 39 in Band D and 21 in Band E. Average elevation was 308 feet. Mean group size was 1.5 pronghorn for all distance bands. The data were analyzed with DISTANCE 6.0v2.

A population estimate of 4,230 (3,335 – 5,366) pronghorn was obtained using a uniform cosine model which produced the lowest AIC value (510). The pronghorn group density was 6.1 groups/mi² and the pronghorn density was 8.5 pronghorn/mi². The percent coefficient of variation for both the population and pronghorn density estimates was 12%. The number of groups observed in Band B was lower than expected, likely due to the observer missing groups or placing them in the incorrect distance band. Therefore, the detection probability plot did not fit the histogram as desired and yields suspect results.

Detection Probability Plot



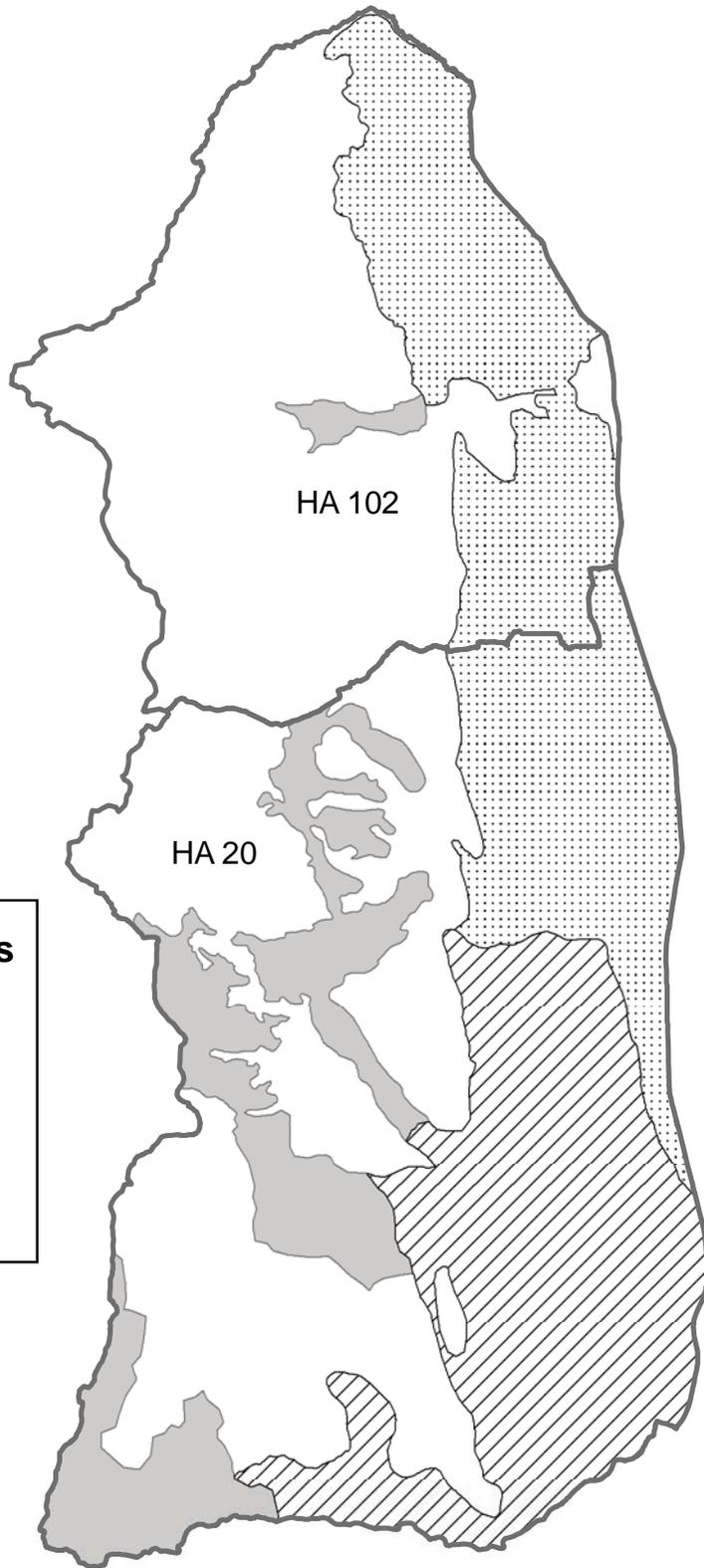


PH 320 - Hazelton
HA's 20, 102
Revised 7/2015

Hazelton Seasonal Ranges

RANGE

	OUT
	SSF
	WYL
	YRL

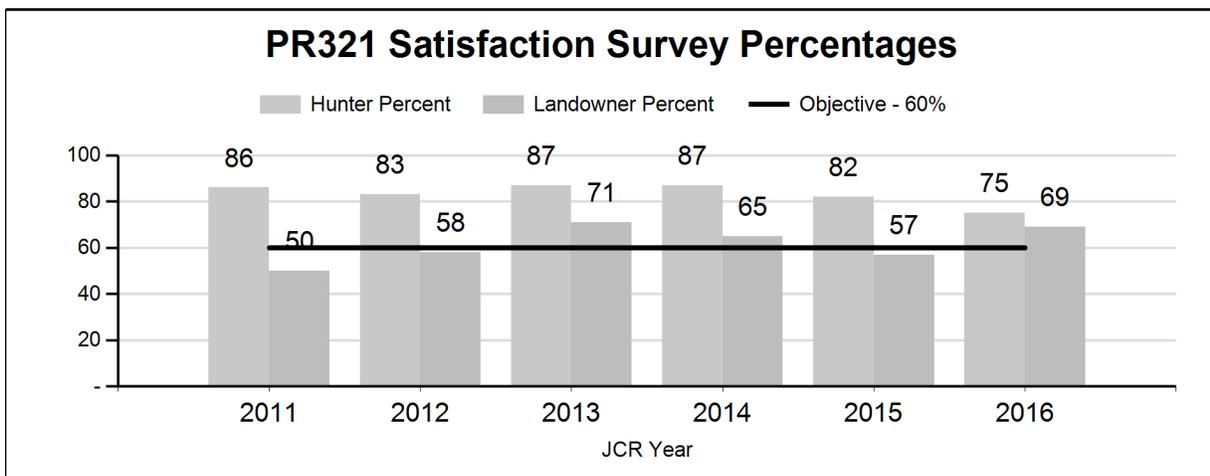


2016 - JCR Evaluation Form

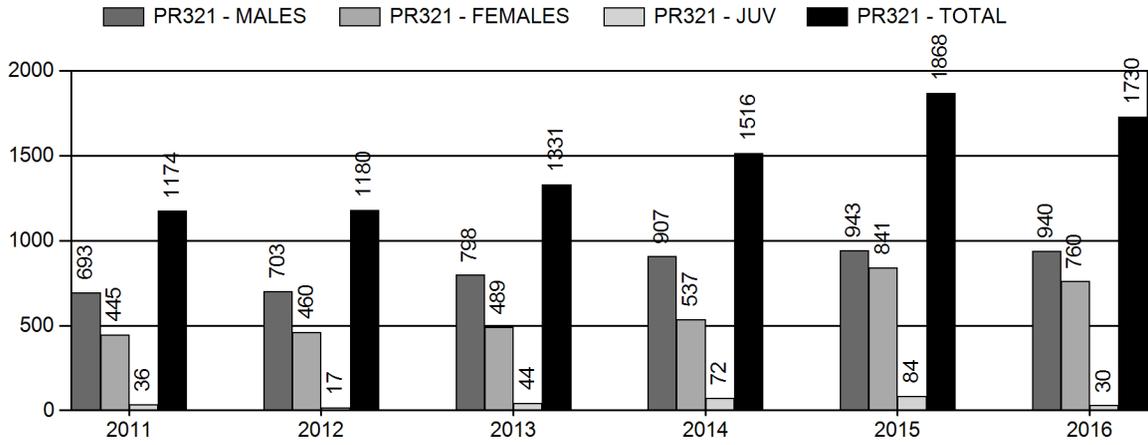
SPECIES: Pronghorn
 HERD: PR321 - LEITER
 HUNT AREAS: 10, 15-16

PERIOD: 6/1/2016 - 5/31/2017
 PREPARED BY: TIM THOMAS

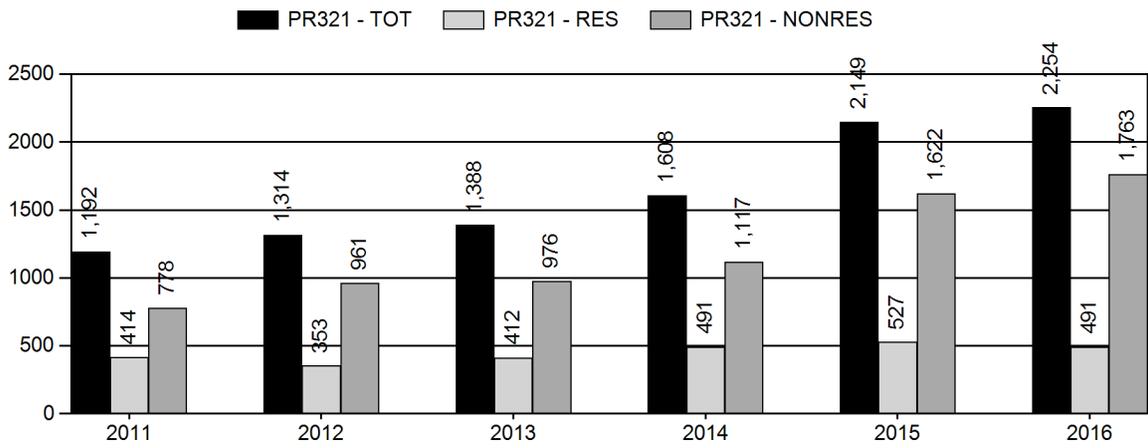
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	85%	75%	75%
Landowner Satisfaction Percent	61%	69%	60%
Harvest:	1,414	1,730	1,750
Hunters:	1,530	2,254	2,250
Hunter Success:	92%	77%	78%
Active Licenses:	1,744	2,469	2,500
Active License Success:	81%	70%	70%
Recreation Days:	5,137	7,766	7,000
Days Per Animal:	3.6	4.5	4
Males per 100 Females:	57	54	
Juveniles per 100 Females	76	64	
Satisfaction Based Objective			60%
Management Strategy:			Private Land
Percent population is above (+) or (-) objective:			12%
Number of years population has been + or - objective in recent trend:			3



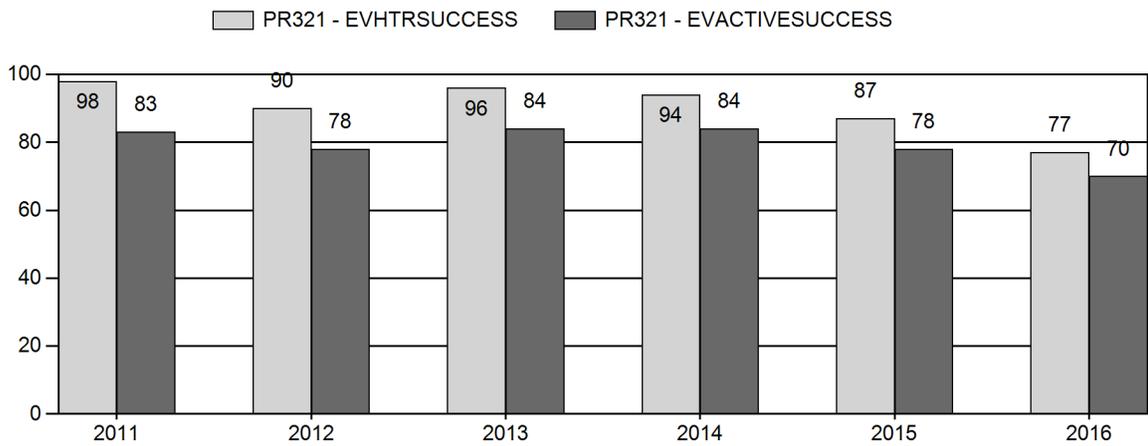
Harvest



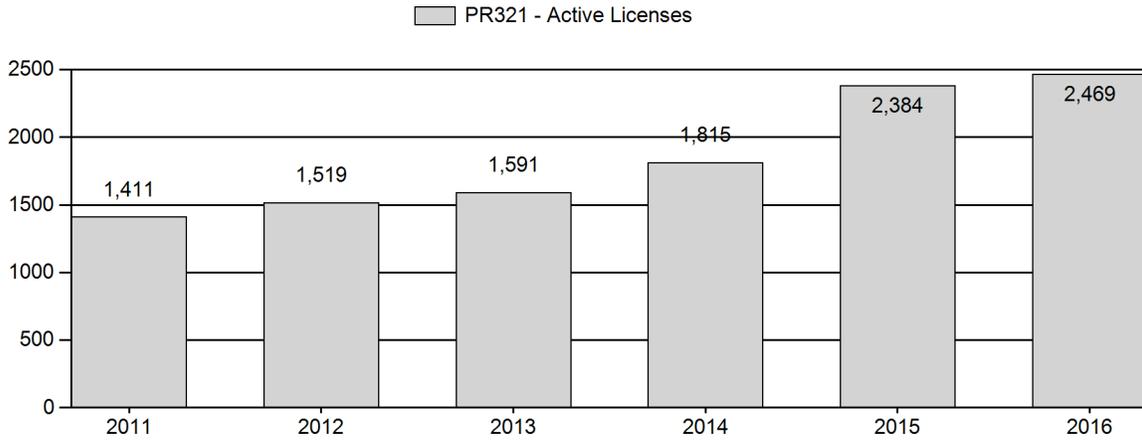
Number of Active Licenses



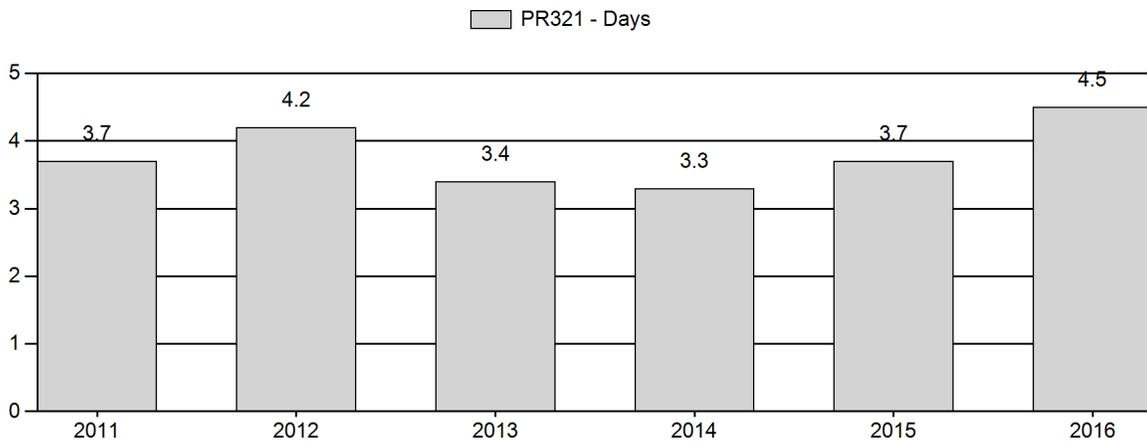
Harvest Success



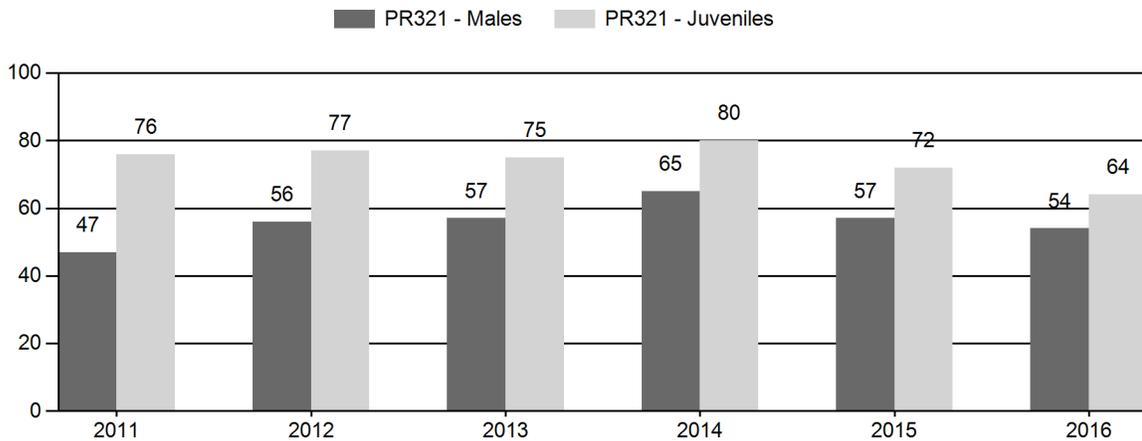
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2017 Preseason Classification Summary

for Pronghorn Herd PR321 - LEITER

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	4,818	69	200	269	21%	567	45%	430	34%	1,266	4,180	12	35	47	± 16	76	± 22	51
2012	4,770	148	245	393	24%	697	43%	536	33%	1,626	4,367	21	35	56	± 15	77	± 19	49
2013	6,789	130	263	393	24%	694	43%	522	32%	1,609	4,498	19	38	57	± 16	75	± 19	48
2014	6,677	165	255	420	26%	650	41%	520	33%	1,590	3,783	25	39	65	± 17	80	± 21	49
2015	0	193	283	476	25%	832	44%	601	31%	1,909	2,534	23	34	57	± 0	72	± 0	46
2016	0	134	281	415	25%	763	46%	485	29%	1,663	1,983	18	37	54	± 0	64	± 0	41

**2017 HUNTING SEASONS
LEITER PRONGHORN HERD (PR321)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
10	1	Oct. 1	Oct. 14	300	Limited quota	Any antelope
	6	Oct. 1	Oct. 31	400	Limited quota	Doe or fawn
15	1	Oct. 1	Oct. 14	600	Limited quota	Any antelope
	6	Oct. 1	Nov. 30	600	Limited quota	Doe or fawn
16	1	Oct. 1	Oct. 14	600	Limited quota	Any antelope
	6	Oct. 1	Oct. 31	400	Limited quota	Doe or fawn

Special Archery Season Hunt Areas	Opening Date	Limitations
10, 15, 16	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
	1	
	6	
Herd Unit Total	1	No Changes
	6	No Changes

Management Evaluation

Current Hunter / Landowner Management Objective: 60% Satisfaction

Secondary Management Objective: Observed ratio of 30 bucks:100 does minimum

Management Strategy: Private Land

2016 Hunter Satisfaction Estimate: 75%

2016 Landowner Satisfaction Estimate: 69%

Most Recent 3-year Running Average Hunters Satisfaction Estimate: 81%

Most Recent 3-year Running Average Landowner Satisfaction Estimate: 64%

Herd Unit Issues

The Leiter Pronghorn Herd Unit is located east of Sheridan and Buffalo in north central Wyoming. Interstate Highway 90 is the western and southern boundary; the Powder River is the eastern boundary; and the Wyoming-Montana state line is the northern boundary. The herd unit contains the Town of Clearmont and the communities of Wyarno, Ucross, and Arvada. It is mostly agricultural lands with some rural residential development near Sheridan and Buffalo, and along U.S. Highways 14 and 16. There are three hunt areas – Areas 10, 15, and 16 – in this herd unit.

The primary management objective for the Leiter Pronghorn Herd Unit is a Hunter and Landowner Satisfaction Objective at 60% or higher, with a secondary management objective of 30 or more bucks observed per 100 does. The management strategy is Private Land Management. The Leiter Pronghorn Herd Unit was created in 2014 when the Clearmont (PR308) and Ucross (PR353) Pronghorn Herd Units were combined. The objectives and management strategy were last revised in 2014.

Industrial scale oil and gas development and outfitting in the herd unit have resulted in restricted hunting access to some private lands. There are very few public land hunting opportunities in this herd unit. The restricted access has made it difficult to attain adequate harvest to regulate pronghorn populations in portions of this herd.

Due to very limited access for pronghorn hunting, we try to balance license allocation between meeting desires of landowners and hunter demand, and having too many leftover licenses, which may give potential hunters the impression there are abundant hunting opportunities in this herd unit.

The Wyoming Women's Antelope Hunt, sponsored by the Wyoming Women's Foundation, was started in 2013 to encourage female participation in hunting. The event is based out of the Ranch at Ucross and occurs primarily within this herd unit.

Weather

Temperature and precipitation data referenced in this section were collected at the Sheridan Field Station (#488160), Clearmont 5SW (#481816) and Leiter 9NE (#485506) weather stations located within this herd unit. Data were reported by the Western Region Climate Center (www.wrcc.dri.edu).

The 2015-16 winter was generally mild and open. Animals should have come out of the winter in good shape. The 2016 spring was early, with warm temperatures in February-April and increased precipitation, especially in April. This allowed for an early start for grasses and forbes, providing high quality forage just prior to and during parturition. Temperatures remained normal to above normal during the summer and fall. Conditions were generally dry during May-July, with increased precipitation during the fall. September saw ~3 times the normal precipitation amount. Winter started in early November with increased snow fall and below average temperatures from late November through January. There were several periods of -20⁰F or more during this time. The December average monthly temperature at the Clearmont 5SW station was 9.5⁰F compared to a normal monthly average temperature of 20.8⁰F. The other weather stations showed a similar, although not as drastic, trend. Conditions moderated in February, with warmer temperatures, giving wintering wildlife a break. April saw several heavy wet snows, which generally melted within a few days. Any animals in poor shape could have died at this time.

While adult wildlife entered the winter in good condition, they faced prolonged severe weather conditions during the early part of the winter. Fawns, being more susceptible to extremely cold temperatures, likely saw below average over-winter survival. We received several reports of winter killed pronghorn around the Sheridan area.

Habitat

This herd unit contains open rangeland dominated by short-grass prairie and big sagebrush, dry land and irrigated crop lands. In the northern part of the herd unit is the Badger Hills which provide limit habitat for pronghorn. As you approach the Powder River, the country becomes more broken and less suitable for pronghorn.

There are three habitat transects located in this herd unit. All of the habitat transects monitor annual growth and utilization of Wyoming big sagebrush communities.

The SR – Buffalo Creek Divide habitat transect is located in the north-central portion of this herd unit on State Trust Lands accessed by the SR-Buffero Creek Road (Sheridan County Road 86). This transect has not been read since 2014.

The Coal Creek habitat transect is located in the central portion of this herd unit, just north of U.S. Highway 14 near Ucross. It is located on State Trust Land accessed by the Coal Creek Road (Sheridan County Road 195). This transect has not been read since 2014.

Petrified Tree habitat transect is located in the south-central portion of this herd unit on BLM land. This transect is accessed off of the Tipperary Road east of Buffero. This transect has not been read since 2012.

Field Data

In August, we conducted herd classification surveys using ground survey techniques. Designated routes were driven along county roads and all observed pronghorn were classified. Starting in 2011, we moved away from aerial classification surveys to ground classification surveys in this herd unit to reduce risk for employees and reduce costs associated with aircraft rentals. In 2016, we classified 1,663 pronghorn, well below the desired sample size of 1,983 pronghorn at the 90% confidence level.

This year, we observed 64 fawns:100 does, lower than the long-term (n=35 years) average of 69 fawns:100 does. This is the first year in 6 years with an observed fawn ratio below 70 fawns:100 does. This was somewhat surprising as the 2015-16 winter was fairly mild and the spring of 2016 was favorable for forage production. Dry and hot conditions during the summer may have adversely affected fawn survival. We did observe some chronic diarrhea (scours) in fawns during classifications, which could have increased summer mortality due to dehydration, resulting in the observed decline in the fawn ratio from 2015. Due to the fact we only classify from county roads, our survey may be biased and not truly representative of the actual population dynamics.

Observed buck to doe ratios averaged 54 bucks:100 does. The buck to doe ratio has averaged 55 bucks:100 does over the long-term (n=35 years). Restricted access to private lands, and very limited accessible public lands, reduces our ability to obtain additional buck harvest, which could easily be sustained in this herd unit based on the observed buck to doe ratio.

Hunter satisfaction decreased in 2016, with 75% of surveyed hunters (n=308) satisfied (41%) or very satisfied (33%). This is the lowest hunter satisfaction during the past five years. Both resident and nonresident hunter satisfaction decreased in 2016, with resident satisfaction decreasing greater, from 88% to 66%, than nonresident satisfaction (81% to 76%). The decline in

hunter satisfaction could be correlated to the decrease in hunter success and increase in effort required to harvest an antelope in 2016. Successful hunters tend to be satisfied hunters. Hunter satisfaction increased slightly in Area 10 (80% to 82%) and decreased in Areas 15 (84% to 76%) and 16 (82% to 69%). Area 10 has the least amount of public land accessible to hunters. The relatively high satisfaction level could be reflective of the fact hunters in this hunt area must hunt private lands while there is some limited accessible public lands in the other two hunt areas. There is some very limited public land and Access Yes Walk-In Area and Hunter Management Area access in this herd unit, which may give some hunters higher than deserved hope of a quality pronghorn hunt.

Harvest Data

In 2016, we essentially sold all allocated licenses in this herd unit, except for 61 Type 6 licenses in Area 10. We increased available licenses in 2016, all in Area 10, in response to continued increased demand for pronghorn hunting. We had already increased licenses in Areas 15 and 16 in 2015. We again saw an increase in demand for antelope licenses in 2016, especially for leftover licenses. We sold 58% (n=870) Type 1 licenses through the draw process and 42% (n=630) as leftover licenses. For Type 6 licenses, we sold 21% (n=282) Type 6 licenses through the draw process and 79% (n=1,057) as leftover licenses. Nonresident hunters continue to dominate the hunting ranks in this herd unit, with 69% of Type 1 licenses and 83% of Type 6 licenses purchased by nonresident hunters.

In 2016, an estimated 2,254 hunters harvested an estimated 1,730 pronghorn, the second highest harvest in 35+ years. While hunter numbers increased 5% from 2015 (which saw a 34% increase over 2014), harvest decreased 7% compared to the 2015 harvest. Hunters averaged about 95% success over the past 10 years, compared to only 77% success reported in 2016. Success as measured by individual license was 70%, the lowest since 1995. Hunter effort, as measured by the number of days hunted per animal harvested, was 4.5 days/animal, a significant increase over recent years and the highest reported effort rate in 30+ years. Significant precipitation during this hunting season may have contributed to reduced success as hunters were less able to access roads into areas to hunt.

Population

The 2016 postseason population estimate was ~8,300 pronghorn, with the population trending downward, likely influenced by the high harvest the past couple of years. This population likely peaked in recent years in about 2014 at an estimated ~13,600 pronghorn. The population is thought to have declined and stabilized near the current population. A line transect survey was conducted during June 2013, which resulted in an end-of-biological-year population estimate of 13,256 pronghorn. The current model estimates a population below the LT point estimate.

The “Time-Specific Juvenile – Constant Adult Survival Rate” (TSJ,CA) spreadsheet model was chosen to estimate the post-season population for this herd. This model had the highest relative Akaike information criterion (AIC) value (147) but the best fit (37) of the three possible models. The population dynamics of this model appear reasonable and consistent with the dynamics observed in the field. The model aligns well with all but one line transect estimate. While we have limited population dynamic data available for this herd, the model does align well with most of the line transect estimates, so we consider this a “good” model.

Landowners, hunters and Department field personnel have noted an increase in this population since about 2010, until this year. Of landowners (n=35) who responded to an annual survey, 69% (n=24) indicated the population was at or near desired levels and most (77%, n=27) suggested similar season strategies for 2017. For the first time in several years, one landowner, in Area 10, thought they had fewer than desired numbers of pronghorn.

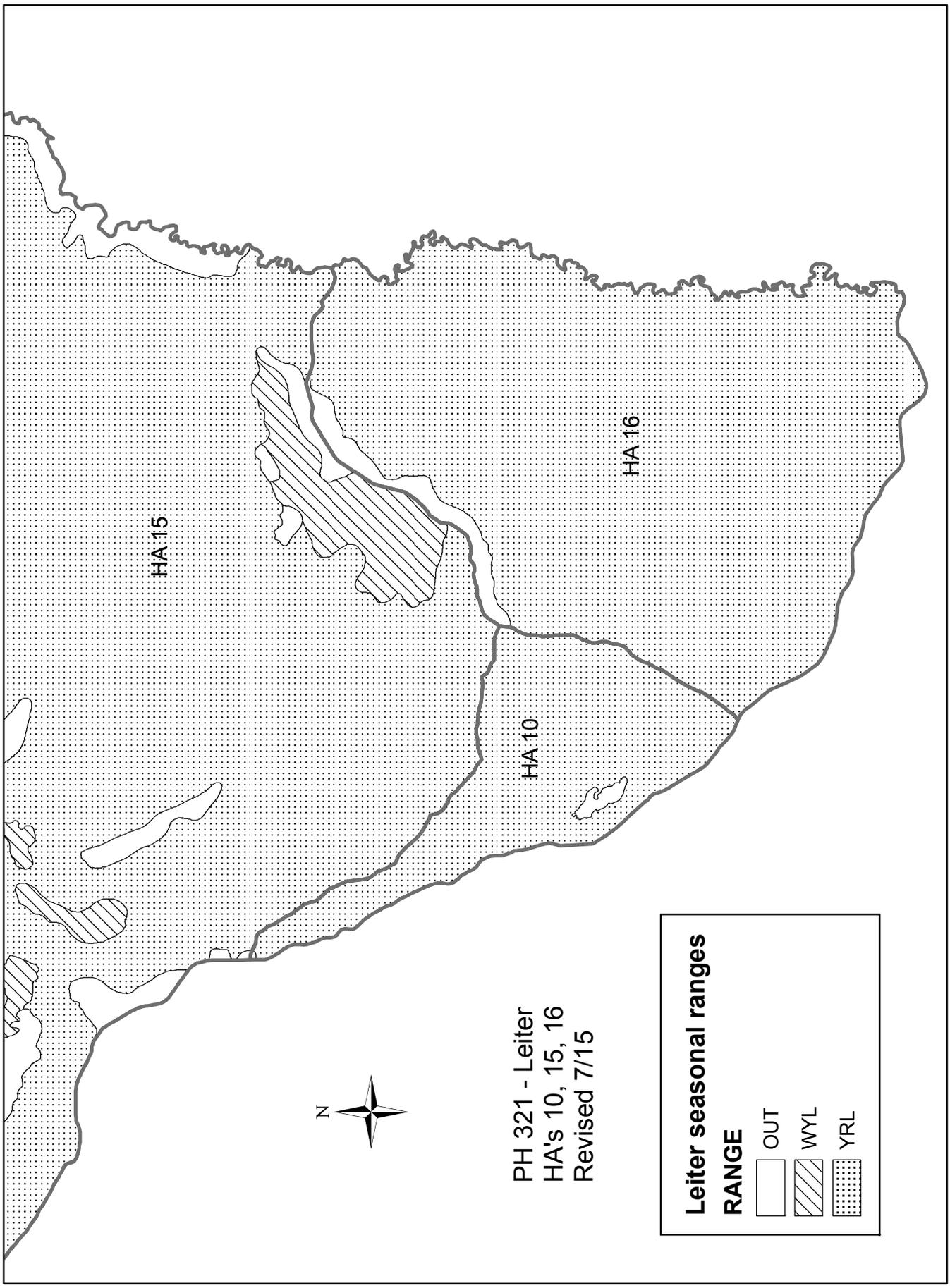
Management Summary

Since the 2003 season, the regular hunting season has ran two weeks (October 1 – 14) for Type 1 licenses, and four weeks (October 1 – 31) for Type 6 licenses. An archery pre-season generally runs August 15 – September 30. In response to requests from landowners in Hunt Area 15, we extended the Area 15 - Type 6 (doe or fawn antelope) season to November 16 for 2016 and to November 30th for 2017.

Hunters in this herd unit are able to purchase two Type 1 (any antelope) licenses and four Type 6 (doe or fawn antelope) licenses, which allows hunters the opportunity to harvest multiple animals. There is limited pronghorn hunting on scattered State Trust and BLM land, as well as one Walk-In Area and one Hunter Management Area in this herd unit. We observe high buck numbers, as measured by buck:doe ratios, observing 54 bucks:100 does during this year's classification surveys. High buck to doe ratios are likely a function of limited access to private lands where the majority of pronghorn occur.

Since we had not sold all of the available licenses since 2006, we reduced the license allocation for the 2014 season to better reflect demand and available opportunity on private lands. This reduction was intended to reduce the perception that there was abundant hunting opportunity because of hundreds of leftover licenses. We saw a significant increase in demand for pronghorn licenses starting in 2014, selling all but 131 Type 6 licenses. We increased licenses for the 2015 season. We again saw a significant increase in demand for licenses and sold all available licenses. The increase in demand for licenses was likely due to reduced licenses across most of Wyoming resulting in a shift in hunters, and increased hunter numbers due to improved economic conditions in mid-western states.

We project a harvest of approximately 1,750 pronghorn in 2017, resulting in an estimated post-season population of about 7,300 pronghorn. These predictions assume below normal fawn survival, and similar license sales and success rates as seen during the 2016 hunting season.



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR339 - NORTH BLACK HILLS

HUNT AREAS: 1-3, 18-19

PREPARED BY: ERIKA PECKHAM

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	12,373	12,707	12,662
Harvest:	778	1,278	1,215
Hunters:	874	1,439	1,550
Hunter Success:	89%	89%	78 %
Active Licenses:	985	1,628	1,700
Active License Success:	79%	79%	71 %
Recreation Days:	3,162	4,738	4,950
Days Per Animal:	4.1	3.7	4.1
Males per 100 Females	36	53	
Juveniles per 100 Females	79	69	

Population Objective (± 20%) : 17000 (13600 - 20400)

Management Strategy: Recreational

Percent population is above (+) or below (-) objective: -25.5%

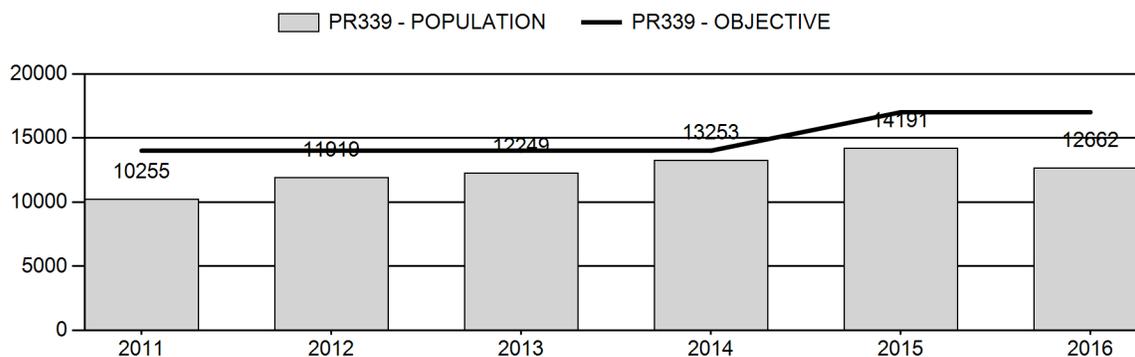
Number of years population has been + or - objective in recent trend: 3

Model Date: 3/23/2017

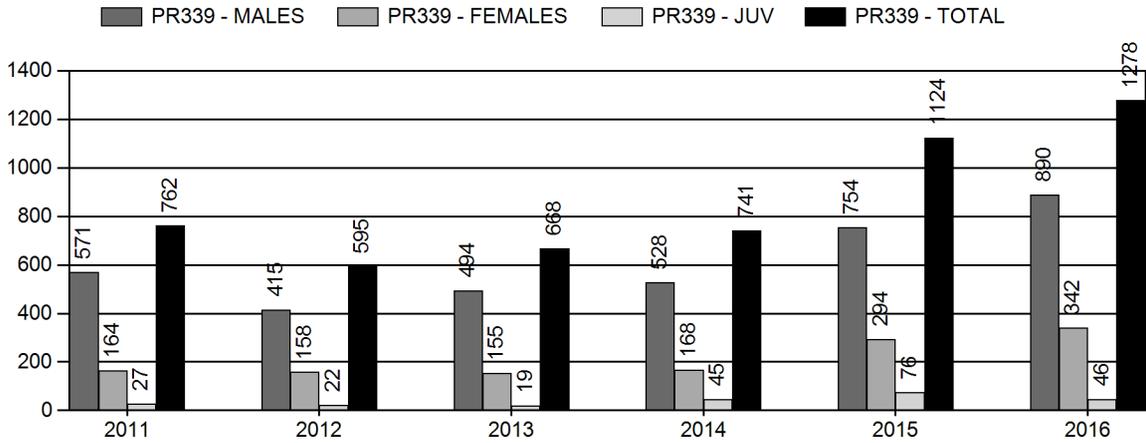
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	5.7%	5.8%
Males ≥ 1 year old:	37.5%	36.4%
Total:	9.4%	8.0%
Proposed change in post-season population:	-1.2%	11.3%

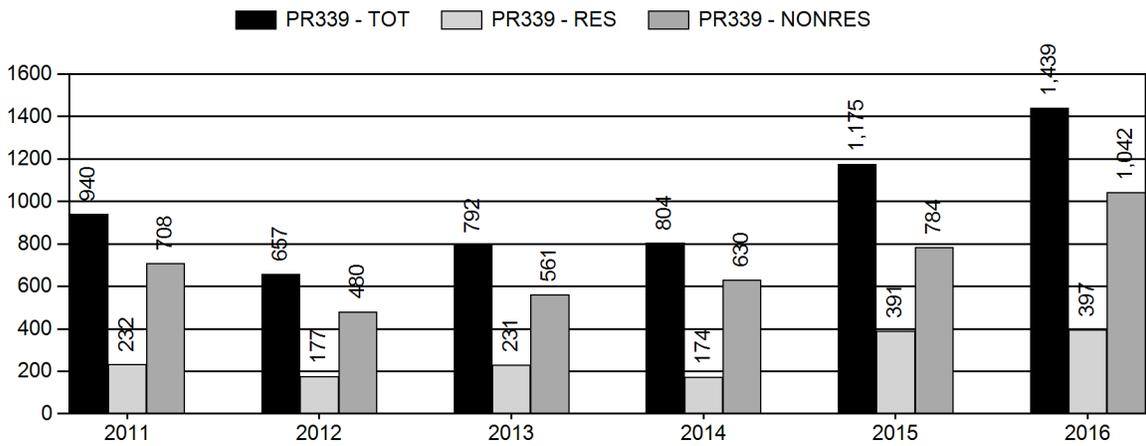
Population Size - Postseason



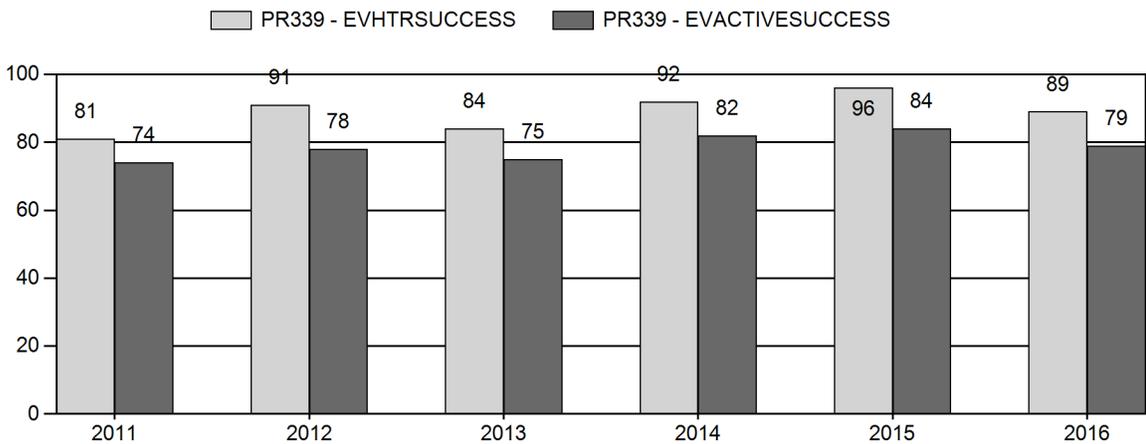
Harvest



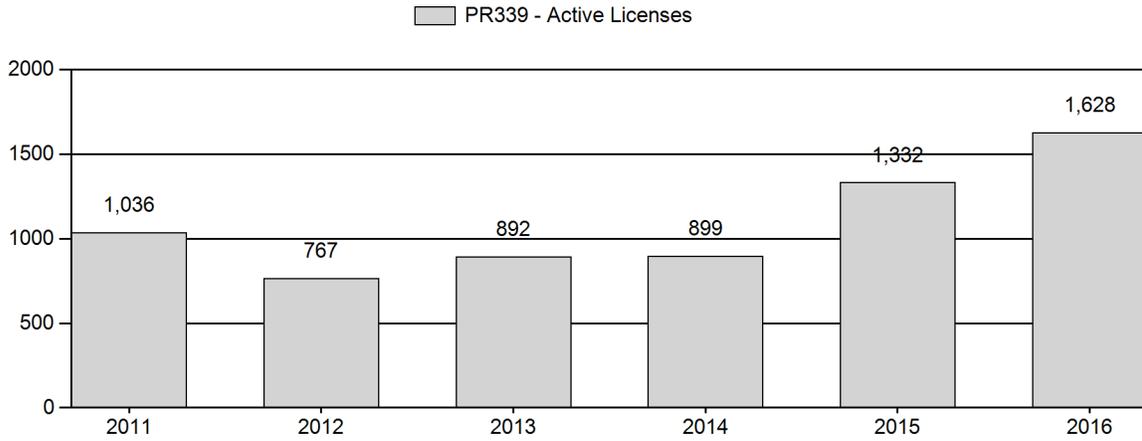
Number of Active Licenses



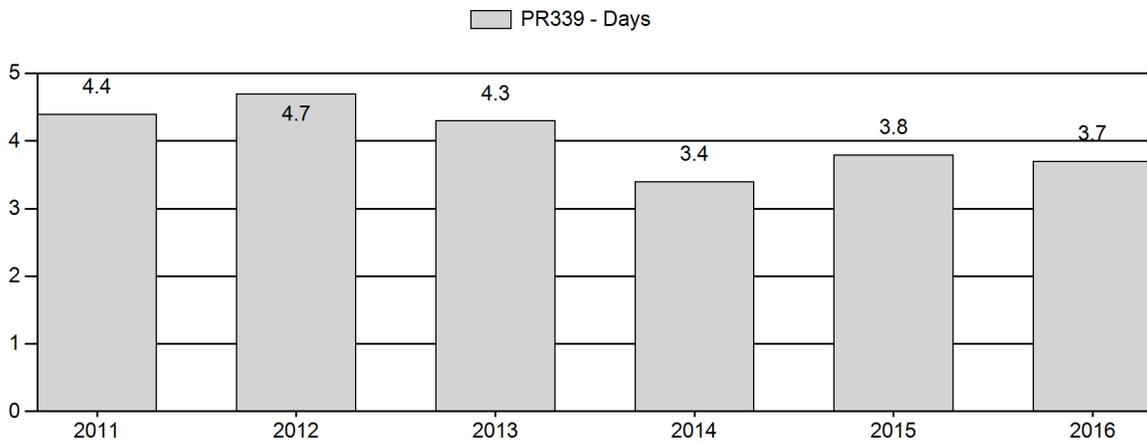
Harvest Success



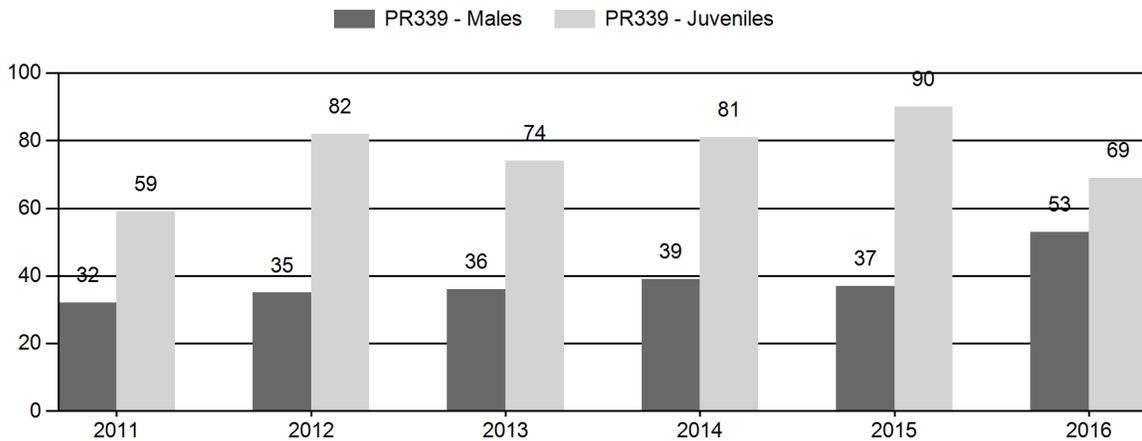
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR339 - NORTH BLACK HILLS

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	11,093	51	137	188	17%	595	52%	353	31%	1,136	1,662	9	23	32	± 4	59	± 6	45
2012	12,574	31	148	179	16%	513	46%	419	38%	1,111	2,330	6	29	35	± 5	82	± 8	61
2013	12,984	75	229	304	17%	841	48%	621	35%	1,766	1,878	9	27	36	± 4	74	± 6	54
2014	14,069	125	258	383	18%	993	45%	808	37%	2,184	2,247	13	26	39	± 4	81	± 6	59
2015	15,427	143	271	414	16%	1,118	44%	1,004	40%	2,536	2,673	13	24	37	± 3	90	± 6	66
2016	14,823	182	378	560	24%	1,056	45%	730	31%	2,346	2,755	17	36	53	± 4	69	± 5	45

**2017 HUNTING SEASONS
NORTH BLACK HILLS PRONGHORN HERD (PR339)**

Hunt Area	Type	Dates of Opens	Seasons Closes	Quota	License	Limitations
1	1	Oct. 1	Nov. 20	300	Limited quota	Any antelope
1	6	Oct. 1	Nov. 20	300	Limited quota	Doe or fawn
2	1	Oct. 1	Nov. 20	200	Limited quota	Any antelope
2	6	Oct. 1	Nov. 20	200	Limited quota	Doe or fawn
3	1	Oct. 1	Nov. 20	300	Limited quota	Any antelope
3	6	Oct. 1	Nov. 20	150	Limited quota	Doe or fawn
18	1	Oct. 1	Oct. 20	150	Limited quota	Any antelope
19	1	Oct. 1	Oct. 20	300	Limited quota	Any antelope
19	6	Oct. 1	Oct. 20	150	Limited quota	Doe or fawn valid on private land

Hunt Special Archery Season Hunt Areas	Opening Date	Limitations
1-3	Sep. 1	Refer to Section 2 of this Chapter
18, 19	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
1	1	No Change
1	6	+100
2	1	No Change
2	6	No Change
3	1	No Change
3	6	No Change
18	1	No Change
19	1	No Change
19	6	No Change

Management Evaluation

Current Postseason Population Management Objective: 17,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~12,700

2017 Proposed Postseason Population Estimate: ~12,700

2016 Hunter Satisfaction: 84% Satisfied, 9% Neutral, 7% Dissatisfied

Herd Unit Issues

The management objective for the North Black Hills Pronghorn Herd Unit is a post-season population of 17,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last reviewed in 2015.

The 2016 post-season population estimate was about 12,700. Currently, the population is estimated to be below the management objective. Although the model does not specifically illustrate this, beginning around 2007 this population started a decline. Issues related to adverse winter and spring weather, and low fawn production were observed in this herd, particularly from 2009-2011. Heavy spring snows and cold spring temperatures in 2009 & 2010 likely reduced fawn and adult survival, particularly in Areas 18 and 19. The last line transect survey was conducted in this herd unit was in June of 2014, producing an end of biological year population estimate of 9,400.

Weather

Weather conditions through parts of 2016 and into 2017 were not favorable to big game populations in this area. The winter of 2015-16 was mild to moderate and did not see much for snow accumulation. In contrast, the winter of 2016-2017 was severe. Beginning in November, there were numerous heavy snowfalls coupled with prolonged cold temperatures. The prolonged cold, and abundant snow created an icy crust on the snow, making foraging difficult. The spring and summer of 2016 also did not do anything to bolster wildlife. Drought conditions were experienced in a large portion of this area, which did not leave much for residual vegetation going into the winter. The Palmer Drought Index indicates that throughout 2016 the Powder River Drainage and Belle Fourche Drainage alternated between mid-range, moderate, and extreme drought.

Habitat

There is currently no formal habitat monitoring in this herd unit. Anecdotal observations showed that range conditions were poor in much of this herd unit. Drought conditions were experienced in much of the area, resultant in a lack of residual growth going into the winter. More in depth habitat monitoring is planned for the growing season of 2017.

Field Data

Classification surveys in 2016 showed a decrease in the fawn to doe ratio at 69:100, down from 90 in 2015. This is lower than the preceding 5 year average of 77:100. This can partially be explained very high fawn production in 2015 and therefore a higher number of non-producing

yearlings on the ground. Although there were drought conditions in much of this herd unit, fawn numbers in some hunt areas were lower than anticipated. Hunt Area 18 had the lowest observed fawn to doe ratio with only 58 fawns per 100 does. Buck to doe ratios have spanned the range of 30-37 the preceding 5 years. 2016 had an observed buck ratio of 53 bucks per 100 does. Buck ratios in the 50's are not uncommon for this herd. Anecdotal field observations of both harvested animals in the field and visual appearance of animals on the ground showed that going into the winter animals were generally in good body condition in spite of the drought conditions. As there is a fair amount of private land in this herd unit landowner surveys are considered. The 2016 survey indicated that 77% of respondents felt the herd was currently at objective. Hunter survey responses indicated that 84% were either "very satisfied" or "satisfied". The relatively high hunter satisfaction indicates many hunters were finding places to hunt and having good success.

Harvest

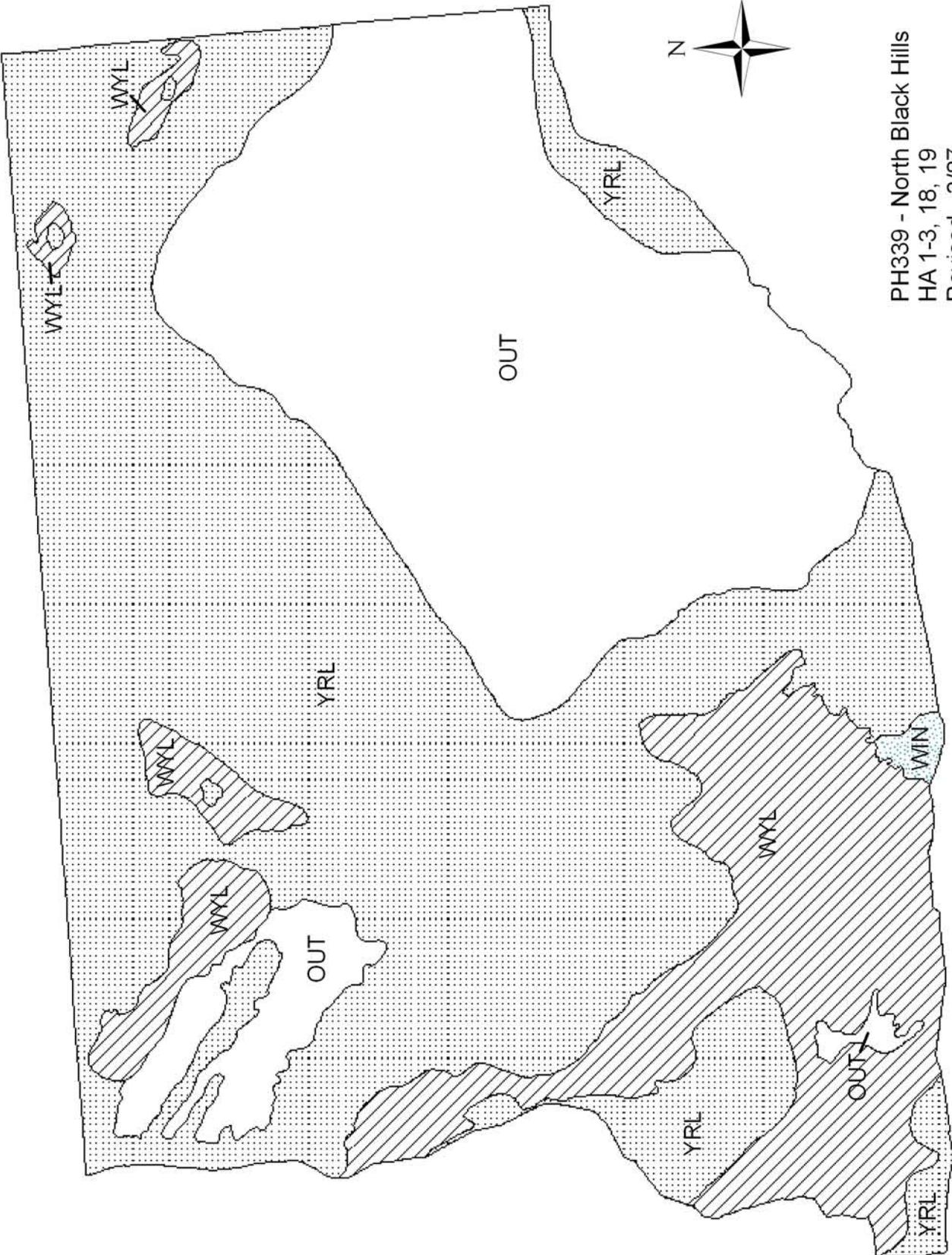
In 2016 there were 1,950 licenses available, 1,250 Type 1 any antelope and 700 Type 6 doe/fawn antelope licenses. All licenses were essentially sold by the season's close. Days per harvested animal decreased to 3.7, down slightly from 2015 and still lower than the preceding 5-year average of 4.1. The decreased days per animal compared to the 5-year average was likely related to the increasing population. Overall hunter success was up to 89% which is the same as the preceding 5-year average.

Population

The "Semi-Constant Juvenile – Semi-Constant Adult" (TSJ-CA) spreadsheet model was chosen to use for the post season population estimate of this herd. This model aligns very well with the independent line transect survey estimates. Although the models were all fairly similar, this model had the lowest relative AIC (183) and appeared to most accurately represent what was occurring on the ground (Fair Model). We conducted line transect surveys in 1995, 1997, 1999, 2002, 2004, 2008, 2012 and 2014 which provided independent population estimates that were similar to the model estimates. The model currently predicts a slight increase in the 2017 post-season population however we will likely need another independent line transect survey population estimate to gauge the impacts of the 2016-17 winter.

Management Strategy

The traditional season in this hunt area has been the entire month of October and part of November in Hunt Areas 1, 2 and 3, and from October 1 to October 20 in Areas 18 and 19. The season time and length seem to be adequate to allow a reasonable harvest. The only change made was an addition of 100 Type 6 licenses in Hunt Area 1. The winter started out very harsh and it was noted that antelope seemed to move into Hunt Area 1. Additional Type 6 licenses will allow for population control in areas where this may be needed. Although the population was trending upwards, the winter of 2016-2017 coupled with drought conditions in 2016 came into play. Licenses in Hunt Areas 1 and 3 had been significantly increased in 2016 and considering all factors, with the exception of Hunt Area 1, changes in license numbers did not seem warranted. If we attain the projected harvest of 1,290 and near normal fawn recruitment, the population is predicted to stay about the same. Based on the population model, we predict a 2017 post-season population of about 12,700.



PH339 - North Black Hills
 HA 1-3, 18, 19
 Revised - 3/87

2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR351 - GILLETTE

HUNT AREAS: 17

PREPARED BY: ERIKA PECKHAM

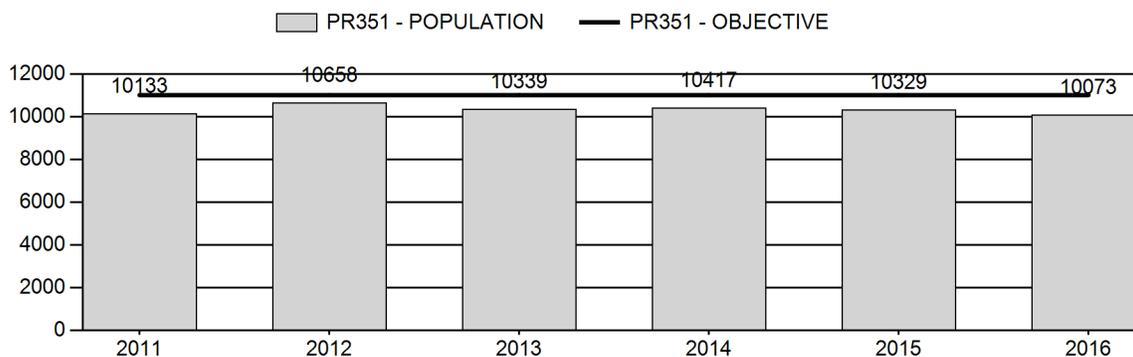
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	10,375	10,073	10,667
Harvest:	1,036	1,096	1,065
Hunters:	1,183	1,290	1,300
Hunter Success:	88%	85%	82 %
Active Licenses:	1,271	1,348	1,350
Active License Success:	82%	81%	79 %
Recreation Days:	3,990	3,877	3,900
Days Per Animal:	3.9	3.5	3.7
Males per 100 Females	42	52	
Juveniles per 100 Females	65	58	

Population Objective (± 20%) :	11000 (8800 - 13200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-8.4%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/10/2017

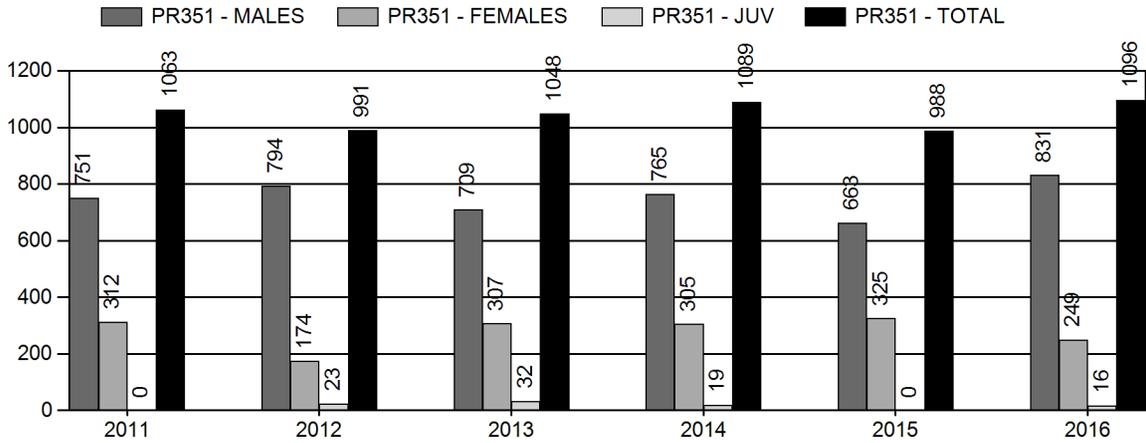
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	7.1%	6.1%
Males ≥ 1 year old:	39.1%	34.6%
Total:	9.5%	9.0%
Proposed change in post-season population:	-9.5%	-9.9%

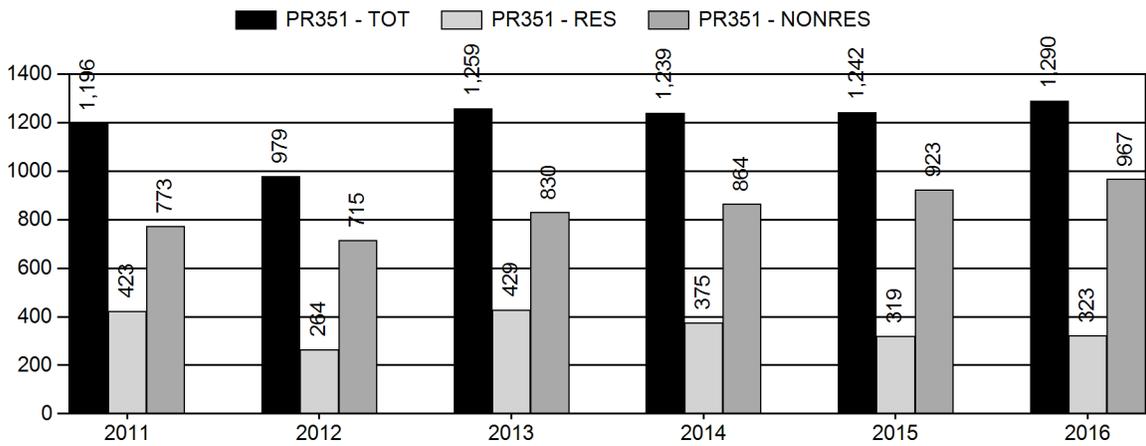
Population Size - Postseason



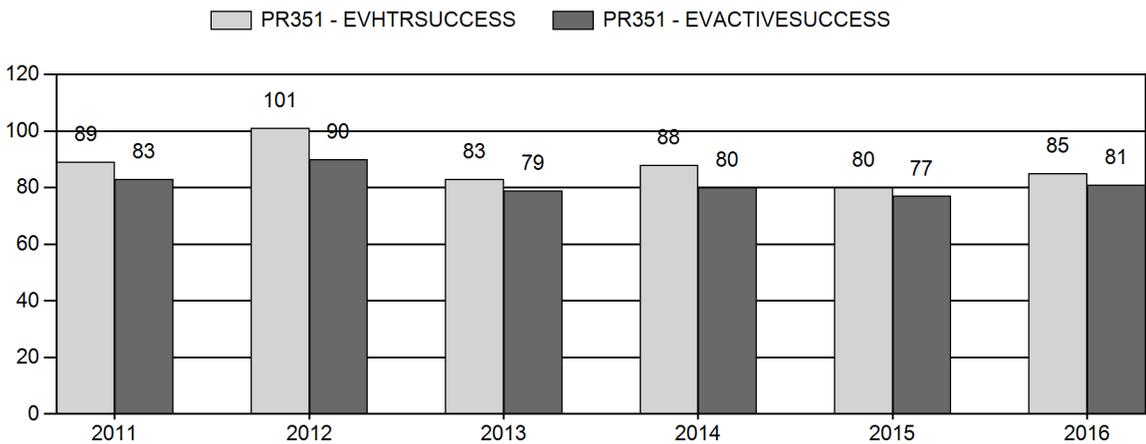
Harvest



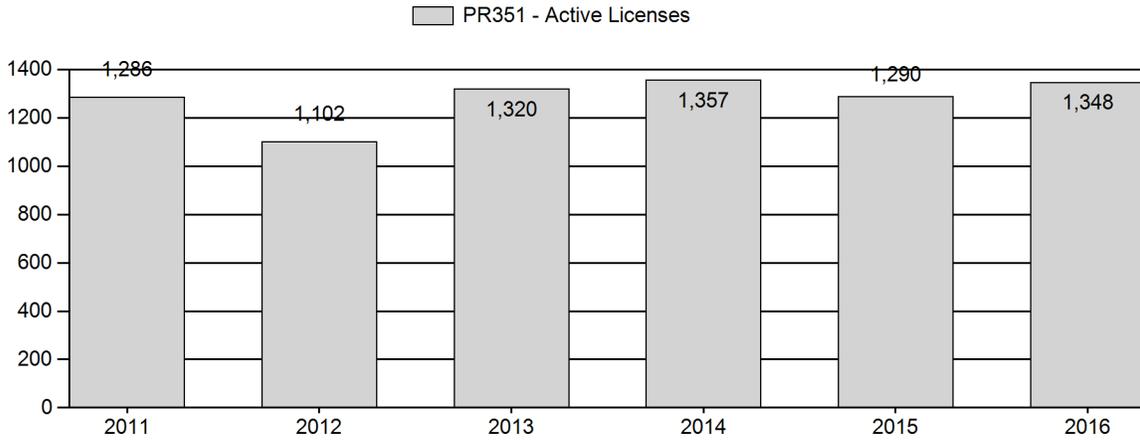
Number of Active Licenses



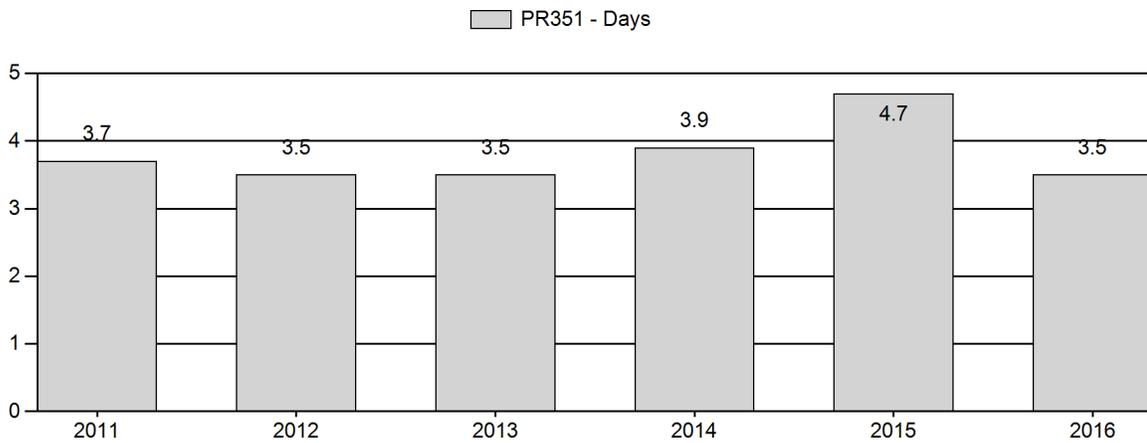
Harvest Success



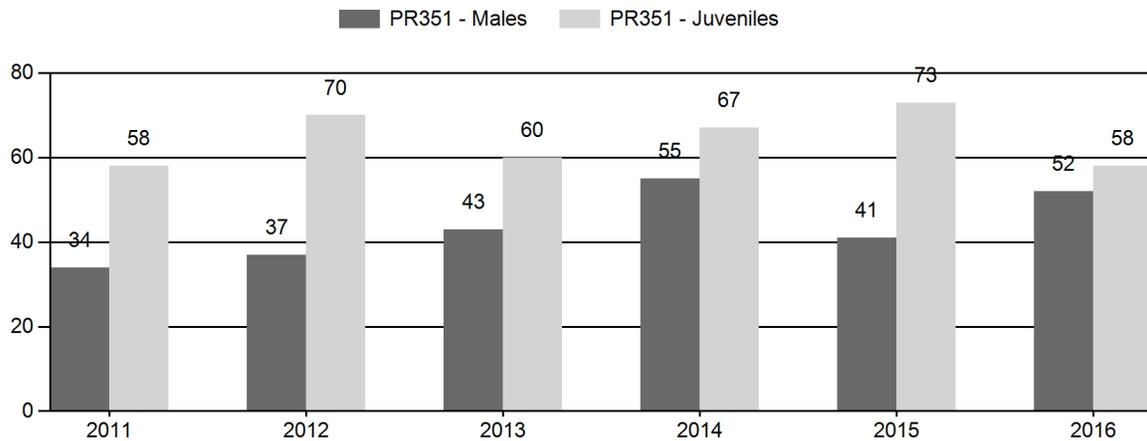
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR351 - GILLETTE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	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	11,302	75	301	376	18%	1,111	52%	640	30%	2,127	1,639	7	27	34	± 3	58	± 4	43
2012	11,758	78	214	292	18%	779	48%	545	34%	1,616	1,970	10	27	37	± 4	70	± 6	51
2013	11,492	175	235	410	21%	950	49%	574	30%	1,934	1,758	18	25	43	± 4	60	± 5	42
2014	11,615	245	299	544	25%	983	45%	661	30%	2,188	1,811	25	30	55	± 4	67	± 5	43
2015	11,416	174	226	400	19%	971	47%	706	34%	2,077	2,297	18	23	41	± 4	73	± 5	51
2016	11,279	121	317	438	25%	835	48%	481	27%	1,754	2,434	14	38	52	± 5	58	± 5	38

**2017 HUNTING SEASONS
GILLETTE PRONGHORN HERD (PR351)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
17	1	Oct. 1	Oct. 31	1,100	Limited quota	Any antelope
17	6	Oct. 1	Oct. 31	400	Limited quota	Doe or fawn

Hunt Special Archery Season Hunt Areas	Opening Date	Limitations
17	Sep. 1	Refer to Section 2 of this Chapter

SUMMARY OF CHANGES IN LICENSE NUMBERS

Hunt Area	Type	Quota change from 2016
17	1	No Change
17	6	No Change

Management Evaluation

Current Postseason Population Management Objective: 11,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~10,100

2017 Proposed Postseason Population Estimate: ~10,700

2016 Hunter Satisfaction: 74% Satisfied, 11% Neutral, 15% Dissatisfied

Herd Unit Issues

The postseason population objective for the Gillette Pronghorn Herd Unit is 11,000 pronghorn. The management strategy is recreational management. The objective and management strategy were last reviewed in 2015.

In years when pronghorn numbers are above objective, the largest issue with achieving adequate harvest in this herd is hunter access. There is very little publicly accessible land in this herd unit. Additionally, with increased hunting pressure in this herd unit, the limited public lands experience overcrowding.

In the past, this herd unit experienced fairly intensive coal bed methane development. In recent years, development and activity has tapered off substantially. The more pressing issue in this herd unit will be proper reclamation. Currently, energy development and associated activity in this herd unit is fairly low.

Weather

Weather throughout 2016 and into 2017 was not ideal for optimal rangeland conditions in this area. Drought conditions were experienced in much of this herd unit. The winter of 2015-2016 was mild with not much for snow accumulation, or prolonged snow cover. In contrast, the winter of 2016-17 was severe with numerous snowstorms and frequent below average temperatures. During this winter snow cover was persistent. With the cold temperatures, icing conditions occurred, making access to the limited forage even more difficult. As a result, over winter survival could have been impacted. The Palmer Drought Index indicates that more than half of 2016 experienced “moderate” or “severe” drought conditions in the Powder River drainage. Additionally, looking at historic temperature information for December and January, records indicate that the 30-year mean low temperature for Gillette in December is 13.2F and 14.5F for January. In contrast, December of 2016 experienced a mean low temperature of 2.5 with January reported as 9.7. These are substantially lower than the 30-year average.

Habitat

There is currently no formal habitat monitoring occurring in this herd unit. It should be noted that various stands of sagebrush in this area appeared to be stressed with overall low vigor. It is unknown for certain what may be the cause of this but is speculated that it may be related to the previous prolonged drought as stressed appearing sagebrush has been noted throughout the general area. These areas are being monitored to see if die-off is imminent or if the plants were stressed and will potentially rebound.

Field Data

Beginning in 2010, this herd has been below objective, with licenses having been reduced accordingly. In 2016 the fawn to doe ratio came in at a surprising 58 fawn per 100 does. Although this area experienced drought conditions, the fawn ratio is lower than was anticipated. A valid explanation for why this may be occurring is lacking. As this is a predominantly private lands area, landowner surveys are considered. The 2016 survey indicates that the respondents were split evenly three ways. One third felt numbers were low, one third felt they were ideal, and the remainder felt there were too many pronghorn. Hunters’ response to the survey indicates that 74% were either “very satisfied” or “satisfied”. This seems fairly in-line with the typically correlated harvest success, which was around 85% in 2016.

Harvest Data

In 2016 there were 1,500 licenses available, 1,100 Type 1 any antelope and 400 Type 6 doe/fawn antelope licenses. As this herd has seemed to be hovering just below objective, it seems that this number of licenses is aligned with what this herd can support, considering the last few years of fawn production. Both license types were sold out by the close of the season. Hunter success in this herd unit has averaged 82% over the preceding 5 years. The overall success rate in 2016 was 85% and hunters averaged 3.5 days to harvest an animal, down from 4.7 in 2015. Total

harvest of 1,096 pronghorn was very near the five year average of 1,036. It is felt that this area has received more pressure from hunters unfamiliar with the area beginning in 2014. A high volume of non-resident hunter phone calls were received, with numerous people stating that they didn't draw where they typically do. As there were plentiful licenses after the draw, people noticed this and likely purchased licenses without having access to private land. It is possible that this brought down the hunter success and adds another factor to consider when making comparisons to past years success rates.

Population

The "Constant Juvenile – Constant Adult Mortality Rate" (CJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC (205), they were all fairly close and this one appeared to most accurately represent what was occurring on the ground (fair model), and made best use of the available information. Although the SCJ, SCA model had the lowest AIC, there were years in which the estimates dipped into negative values. We conducted line transect surveys in 1995, 1998, 2000, 2002, 2008, 2013 and 2016 which provided independent population estimates that were, in most cases, similar to the model estimates.

The last line transect survey was conducted in this herd unit in June 2016, which resulted in an estimated end of biological year population of 6,700 pronghorn at that time. The estimate from the line transect survey flown in 2016 was quite a bit lower than was anticipated. It is uncertain what factors would have played into this.

The 2016 post-season population estimate was about 10,100, a slight decrease from the 2015 post-season estimate. Fawn production was incredibly poor prior to the population drop that hit a low in 2011. From 2008-2010 fawn ratios ranged from 38-43 fawns per 100 does. This was likely in response to several unfavorable winters and drought conditions preceding and partially during this time span. Additionally, the population hit a high point in 2006. In 2007 the population started a decline, hitting a low in 2011. High numbers, above objective, followed by difficult winters and drought likely contributed to this precipitous drop. Since 2011 the population has been in a slow upward trend. The observed fawn:doe ratio for 2016 was 58:100. As stated previously, although drought conditions were experienced, it was not expected that the fawn ratio would be this low.

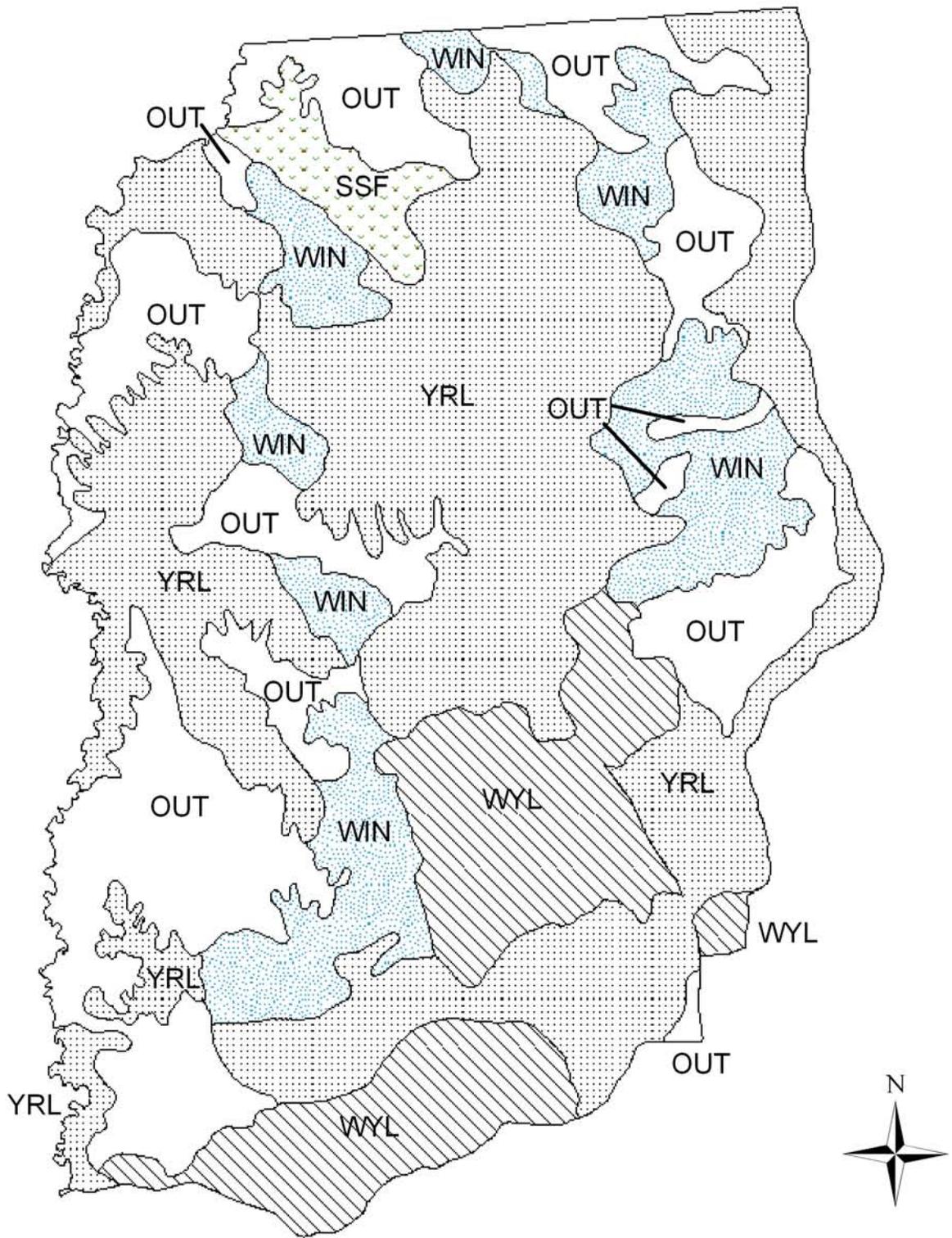
Management Strategy

Having adequate licenses available is imperative to keep harvest up on this herd when numbers warrant. In 2016 there were 1,500 licenses available, 1,100 Type 1 and 400 Type 6. Both Type 1 and Type 6 licenses were sold out before the close of the season. In speaking with hunters, it seemed that many people who had historically drawn licenses in other hunt areas did not draw them this year. This has been occurring for the past few years. It is thought that this may have been a factor in increased license sales for this hunt area in recent years.

The traditional season in this hunt area has been the entire month of October. This season time and length seems to be adequate to allow a reasonable harvest. The number of licenses available for 2017 was unchanged. The majority (53%) of respondents state they would like to see the same season as 2016.

Due to landowner comments, hunter comments and the visible overcrowding of limited public lands, other herd units in this region have recently added a private lands only license type and have restricted the number of licenses available for public lands. Going into the future this strategy should be evaluated for the Gillette Herd Unit.

If we attain the projected harvest of 1,065 and much improved fawn recruitment, the population is anticipated to grow slightly and is projected to be close to objective. Based on the population model, we predict a 2017 post-season population of about 10,700.



PH351 - Gillette
 HA 17
 Revised - 3/87

2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR352 - MIDDLE FORK

HUNT AREAS: 21

PREPARED BY: DAN THIELE

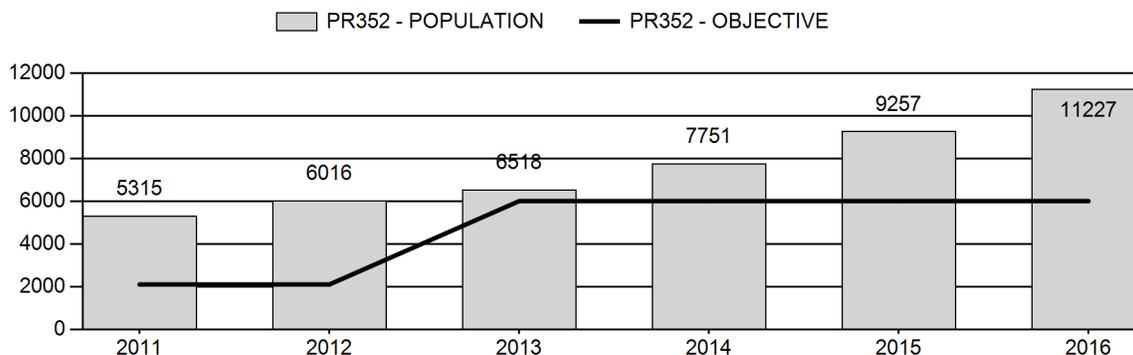
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	6,971	11,227	12,600
Harvest:	787	504	525
Hunters:	946	594	600
Hunter Success:	83%	85%	88 %
Active Licenses:	1,029	644	675
Active License Success:	76%	78%	78 %
Recreation Days:	3,999	1,988	2,000
Days Per Animal:	5.1	3.9	3.8
Males per 100 Females	63	53	
Juveniles per 100 Females	86	96	

Population Objective (± 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	87%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/21/2017

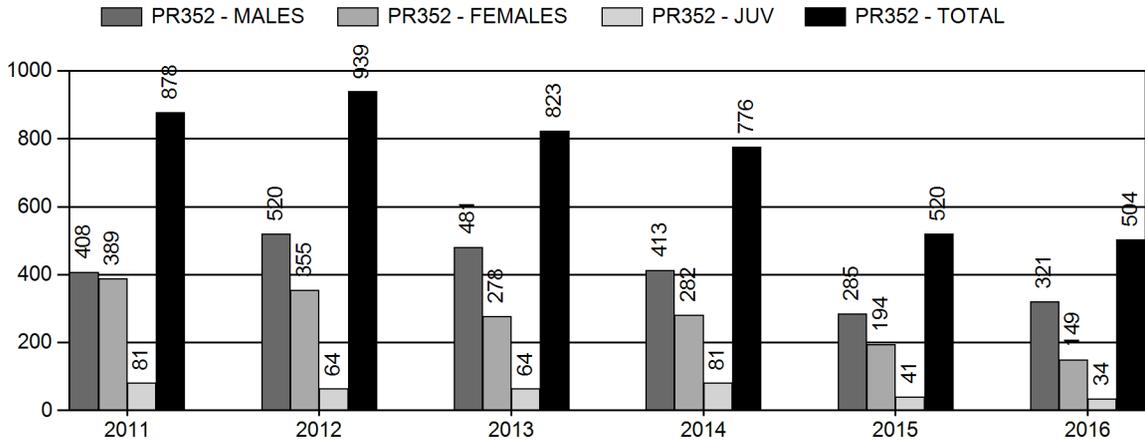
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	5%	4%
Males ≥ 1 year old:	13%	9%
Total:	6%	4%
Proposed change in post-season population:	21%	12%

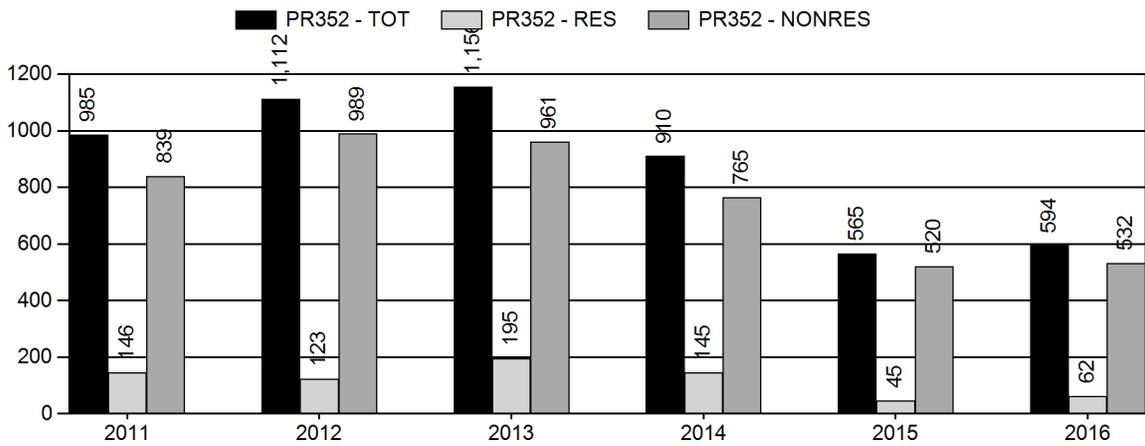
Population Size - Postseason



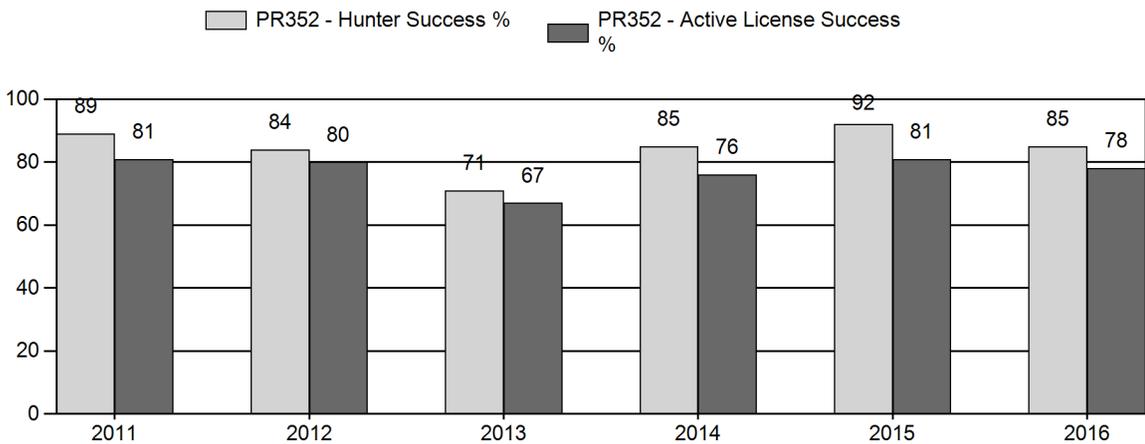
Harvest



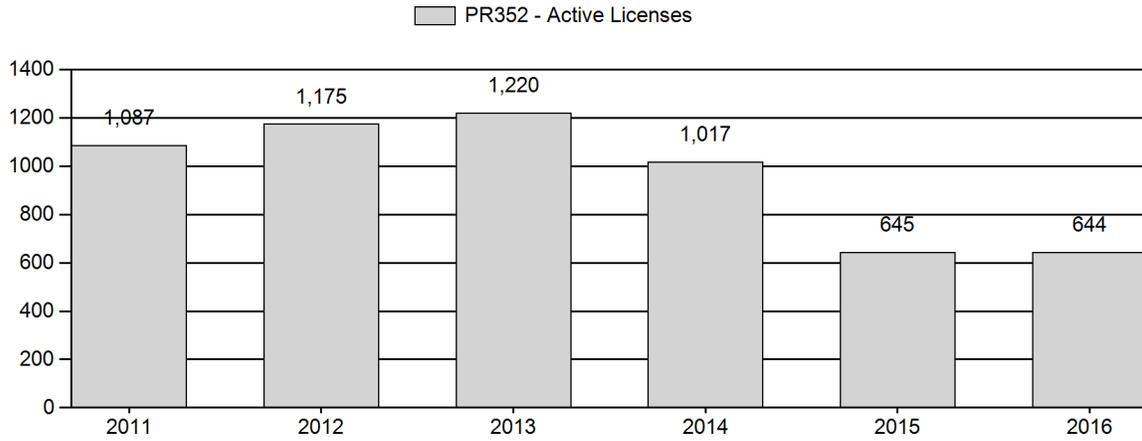
Number of Active Licenses



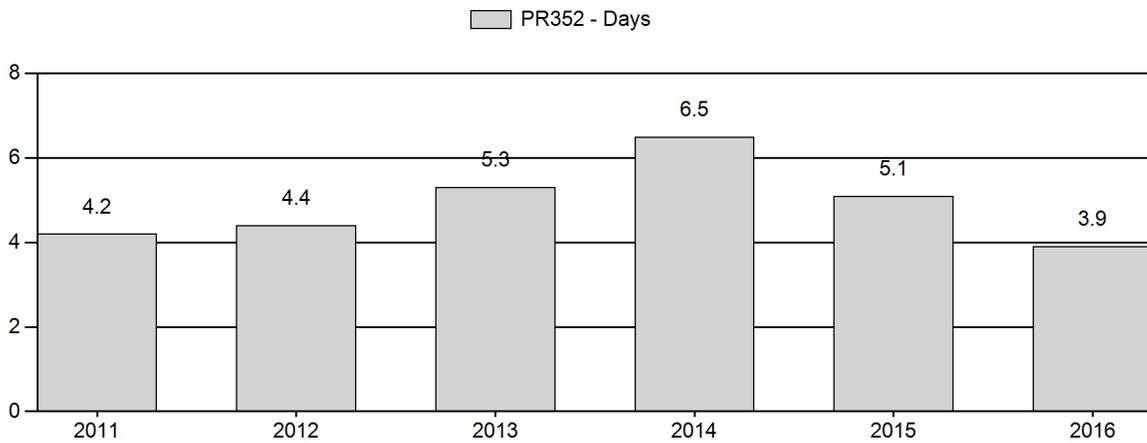
Harvest Success



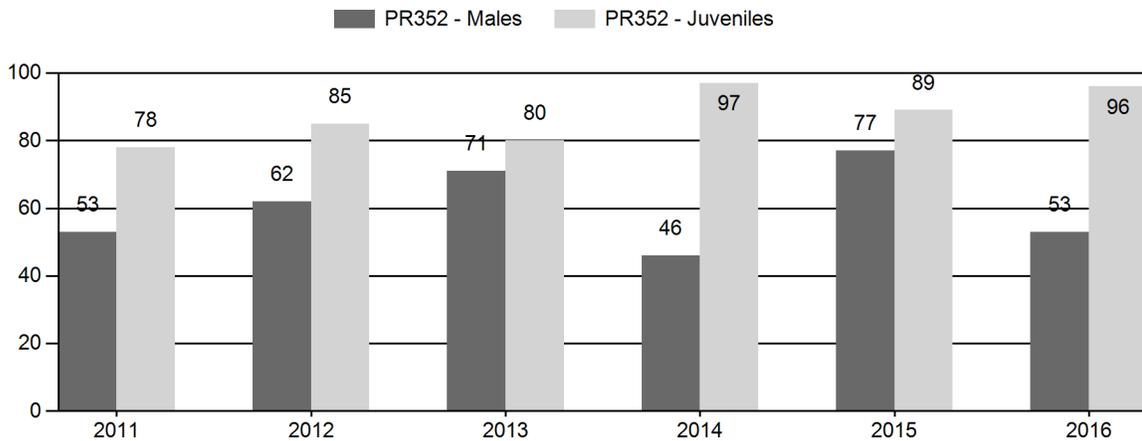
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR352 - MIDDLE FORK

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	6,281	39	130	169	23%	321	43%	249	34%	739	2,305	12	40	53	± 8	78	± 10	51
2012	7,049	84	142	226	25%	362	40%	309	34%	897	2,824	23	39	62	± 8	85	± 10	53
2013	7,423	85	280	365	28%	513	40%	412	32%	1,290	2,490	17	55	71	± 7	80	± 8	47
2014	8,605	43	122	165	19%	355	41%	346	40%	866	3,317	12	34	46	± 7	97	± 11	67
2015	9,829	96	162	258	29%	336	38%	298	33%	892	3,123	29	48	77	± 10	89	± 11	50
2016	11,781	74	118	192	21%	364	40%	349	39%	905	3,546	20	32	53	± 7	96	± 11	63

**2017 HUNTING SEASONS
MIDDLE FORK PRONGHORN HERD (PR352)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
21	1	Oct. 15	Oct. 31	450	Limited quota	Any Antelope
21	6	Oct. 15	Oct. 31	300	Limited quota	Doe or fawn

Special Archery Season Hunt Area	Season Dates	
	Opens	Closes
21	Aug. 15	Oct. 14

SUMMARY OF CHANGES IN LICENSES NUMBERS

Hunt Area	Type	Quota change from 2016
21		No change
Herd Unit Total		No change

Management Evaluation

Current Postseason Population Management Objective: 6,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~11,200 (unreliable population model)

2017 Proposed Postseason Population Estimate: ~12,600

2016 Hunter Satisfaction: 83% Satisfied, 11% Neutral, 6% Dissatisfied

Herd Unit Issues

The Middle Fork Pronghorn Herd Unit post-season population objective was reviewed in 2013 and revised to 6,000 pronghorn. The management strategy remains recreational management.

Area 21 extends from Interstate Highway 25 west to the Bighorn Mountain divide. Antelope densities are highest in the eastern section of the hunt area and lower on the mountain slope. The southeast corner of the hunt area and the mountain slope have large amounts of public land but the majority of the hunt area is private. Many public lands are inaccessible due to landownership patterns. Hunting on private land is controlled by outfitters and landowners who charge trespass fees and take a limited number of hunters. This causes a disproportionate amount of hunting pressure on accessible public lands. In many cases, the outfitted hunting which takes place on private land limits access as well as the ability to achieve adequate doe/fawn harvest.

Weather

Weather in the area of the Middle Fork Herd Unit during the 2016 biological year was less favorable than the previous two years with average precipitation and slightly warmer

temperatures. April 2016 precipitation was 74% above normal but spring precipitation (April-June) was only 81% of normal. The Palmer Drought Index (PDI) for Climate Division 5 (Powder, Little Missouri and Tongue drainages) recorded “moderate drought” conditions for June 2016 but progressed to “severe drought” through July and August before improving to “moderate drought” for the remainder of the calendar year and through March 2017. The PDI improved to mid-range in April due to above normal March (+44%) and April (+145%) precipitation. Winter weather was more severe with above normal December precipitation (+93%) combined with average temperatures seven degrees colder than normal. Cold weather continued through January with temperatures averaging six degrees below normal before more favorable weather returned in February.

Habitat

There is one Wyoming big sagebrush habitat transect in this herd unit. Production measured in September 2016 averaged 3.4 cm per leader compared to 4.7 cm per leader in 2015 and a 10 year average of 3.2 cm per leader. Timely 2016 precipitation provided for average shrub growth and good herbaceous forage production. With the exception of colder weather in December and January, winter conditions were normal so above average pronghorn mortality was not observed. Utilization during the 2016-17 winter was light (less than 5% of leaders browsed) as pronghorn and mule deer were dispersed over winter/yearlong range.

Field Data

Preseason classification efforts again failed to achieve an adequate sample based on the estimated population size. The survey yielded a fawn ratio of 96:100, the second highest ratio for the six year period and above the five year average of 86:100. Mild winter weather and timely spring precipitation is credited for the high 2016 ratio. The buck ratio was 53:100, down from 77:100 in 2015 but well above the 46:100 observed in 2014. The five year average is 63:100. The large variation and inconsistent trend is likely due to inadequate classification samples.

Postseason landowner surveys indicate that the population has decreased over the last six years. Following the 2016 hunting season, 90% of landowners were satisfied with pronghorn numbers while 10% reported there were too many pronghorn. The last line transect survey was flown in 2012 resulting in an end of year population estimate of 4,200 pronghorn, well below the 6,200 pronghorn estimated in 2006. The hunter satisfaction survey showed 83% of hunters in 2016 were either satisfied or very satisfied, unchanged from 2015. The reduction in license quotas combined with high fawn ratios the last two years likely contributed to the favorable response.

Harvest Data

Harvest for the six year period peaked in 2012 at 939 pronghorn which was also the highest harvest since at least 1985. The 2012 buck harvest matched the 1985 high of 520 bucks. Doe/fawn harvest reached a new high in 2011. Harvest decreased for the fourth year running but was relatively unchanged (-3%) from 2015 under identical hunting seasons. The Type 1 and Type 6 license quotas were each reduced 200 licenses in 2015 due to lower pronghorn numbers, low hunter success and an increasing trend in hunter effort. For the second year both license types sold out in the draw. However, active license success decreased seven percent due to a

15% decrease in Type 6 hunter success (66%). This low success is not readily explained, especially given the herd's high fawn ratio. Conversely, hunter effort decreased from 5.1 days per animal to 3.9 days per animal suggesting better hunting. The high hunter satisfaction and generally positive hunter comments suggest the 2015 license quota reductions provided a better hunting experience.

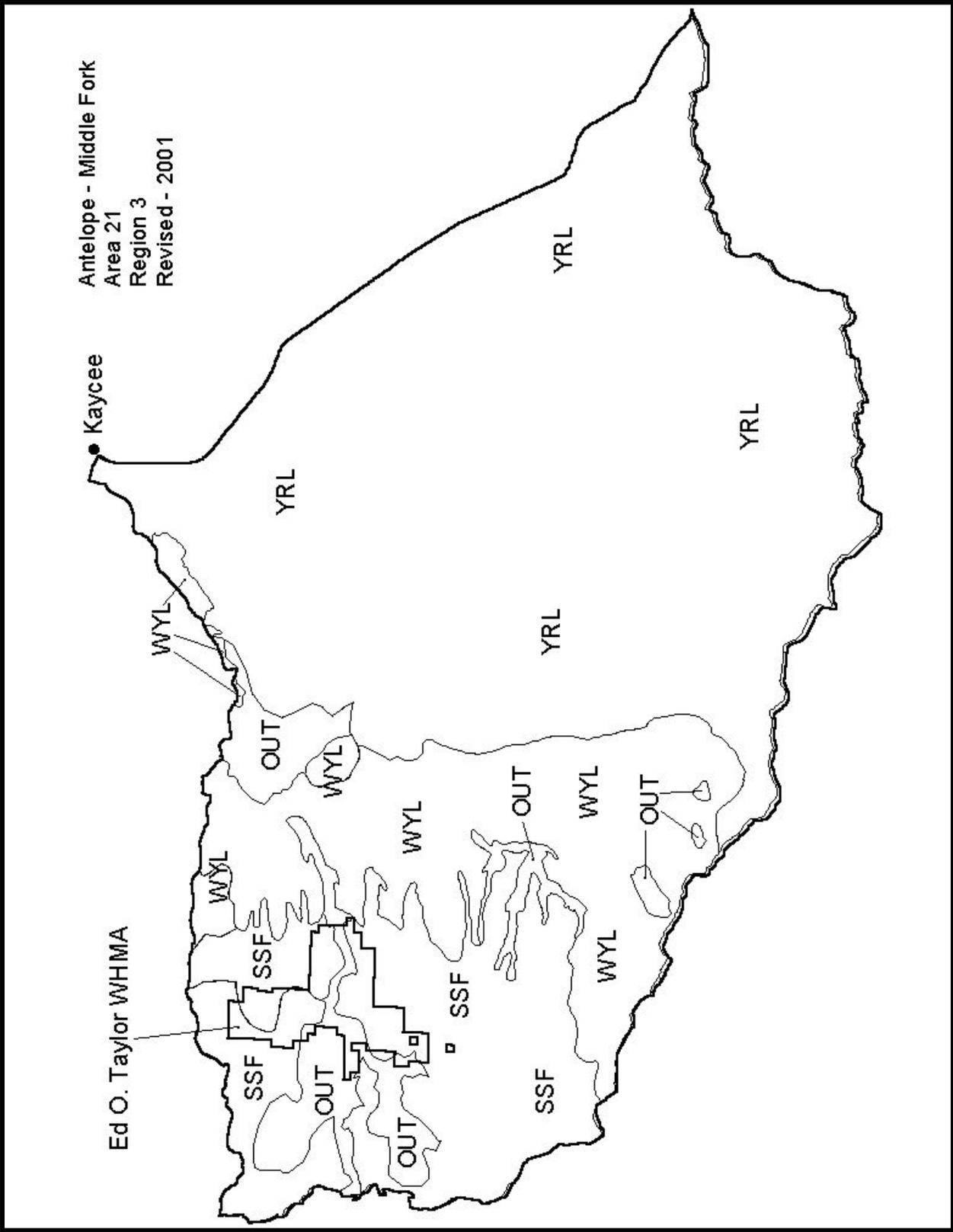
Population

This population is estimated at about 11,200 pronghorn putting this herd well above the revised population objective. The population estimate was generated with the EXCEL spreadsheet model. The Semi-Constant Juvenile/Semi-Constant Adult (SCJ/SCA) model was chosen as it produced the lowest AIC value (114). The model attempts to track eight end-of-year population estimates generated by line transect surveys over the last 20 years, the last obtained in 2012. The 2006 (6,375 \pm 1,949) estimate was the highest to date but the model does not align through its confidence interval. The 2012 estimate (4,194 \pm 630) was 35% lower with a much narrower confidence interval. This was the first of the surveys flown using the one observer technique. The model indicates this population has more than doubled since 2007 and shows little influence from the record high harvest several years ago. This contradicts harvest statistics and anecdotal observations. Inadequate classification samples and the fluctuating buck ratios likely contribute to the questionable model outputs. It is more likely this population decreased through 2013 and then increased the last two years with the high fawn ratios, although much less than the model suggests.

The population model's increasing trend conflicts with the harvest data, landowner surveys and field observations which suggest a stable to slightly increasing population. Harvest data clearly showed decreasing hunter success and increasing hunter effort through 2014, reflective of tougher hunting conditions due to lower pronghorn numbers. Given that the record 2012 harvest did not dampen the model's growth rate it is difficult to put much credibility in the outputs. Therefore, the model is considered a poor model.

Management Summary

No hunting season changes were made for 2017 after license quotas were adjusted in 2015 to address low hunter success and high hunter effort. Harvest and active license success are expected to remain relatively stable for the upcoming hunting season. If expected harvest is achieved a postseason population estimate of 12,600 pronghorn is projected. However, managers expect this population to actually remain stable with this level of harvest.



2016 - JCR Evaluation Form

SPECIES: Pronghorn

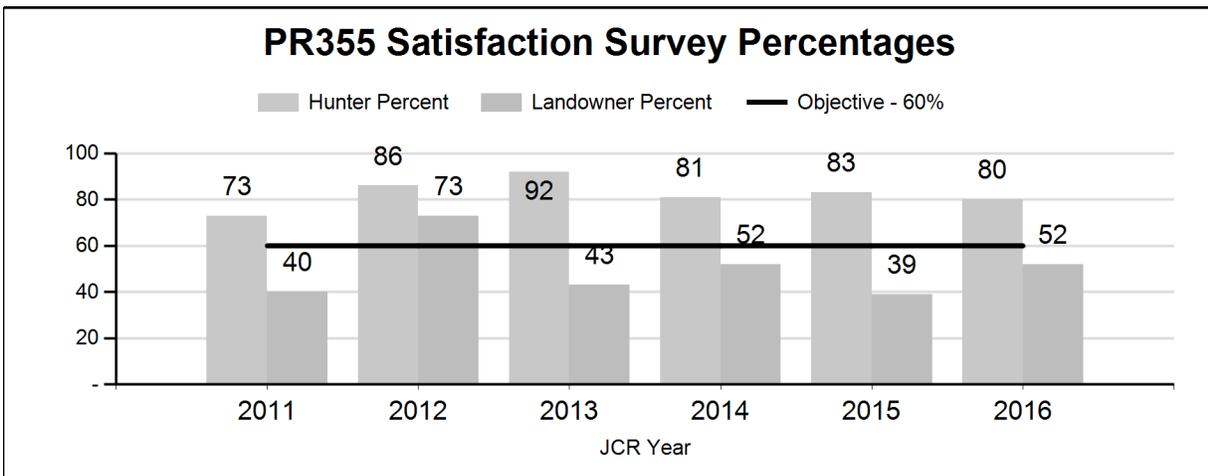
PERIOD: 6/1/2016 - 5/31/2017

HERD: PR355 - BECKTON

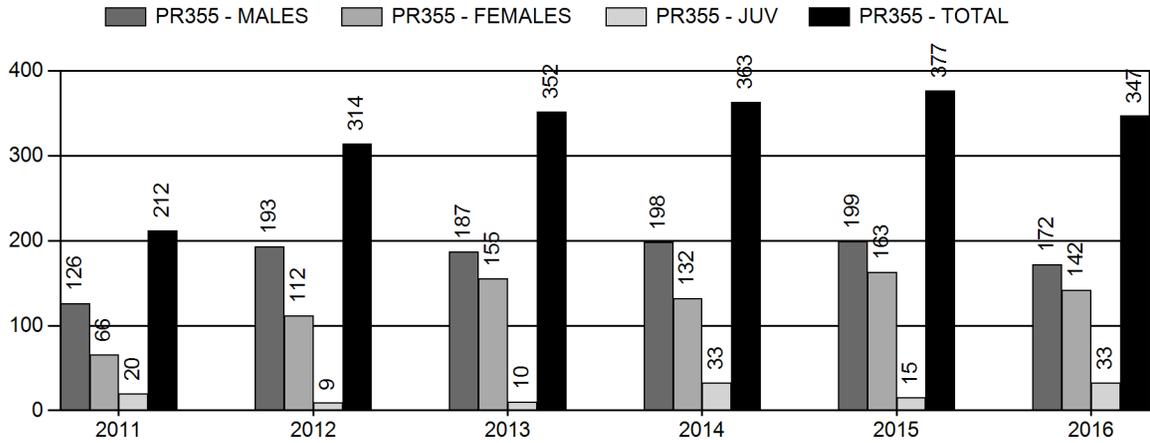
HUNT AREAS: 109

PREPARED BY: TIM THOMAS

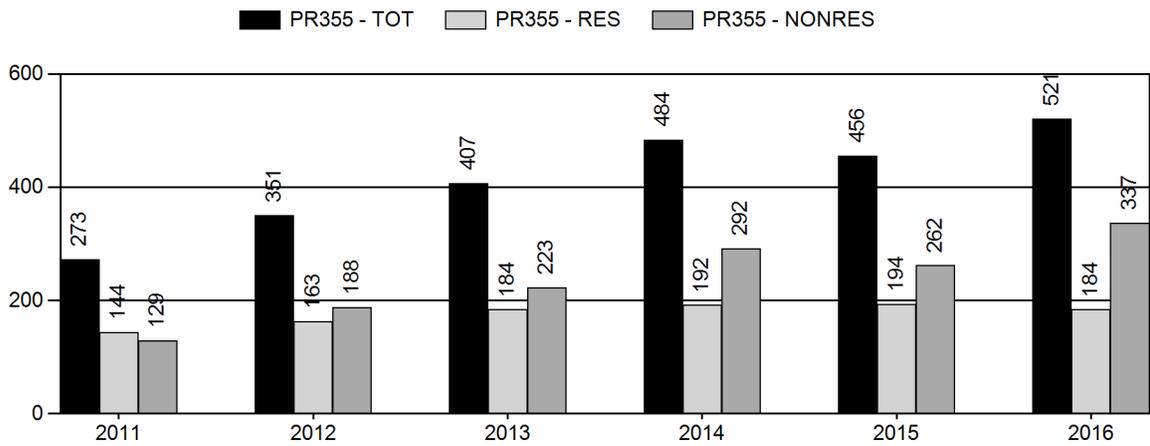
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	83%	80%	80%
Landowner Satisfaction Percent	50%	52%	60%
Harvest:	324	347	350
Hunters:	394	521	525
Hunter Success:	82%	67%	67%
Active Licenses:	448	558	550
Active License Success:	72%	62%	64%
Recreation Days:	1,542	1,597	1,600
Days Per Animal:	4.8	4.6	4.6
Males per 100 Females:	38	32	
Juveniles per 100 Females	43	58	
Satisfaction Based Objective			60%
Management Strategy:			Private Land
Percent population is above (+) or (-) objective:			6%
Number of years population has been + or - objective in recent trend:			4



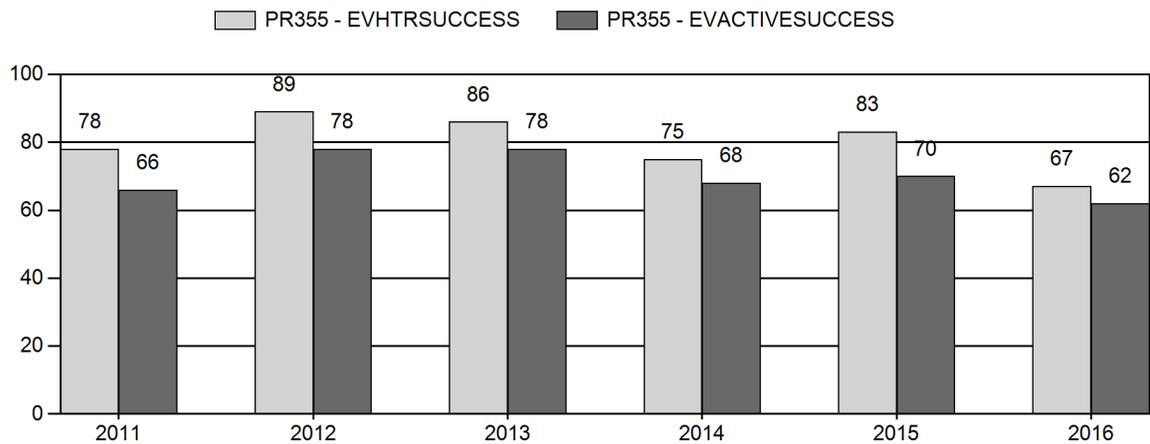
Harvest



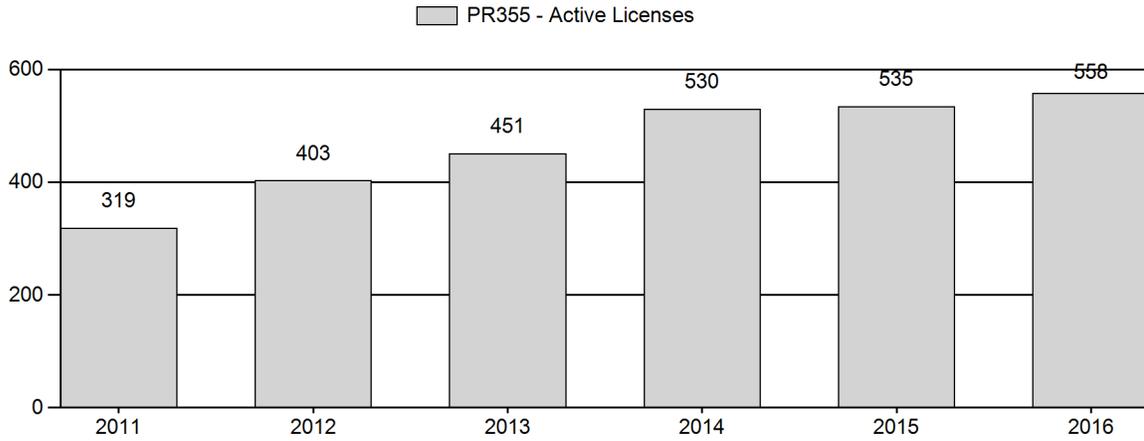
Number of Active Licenses



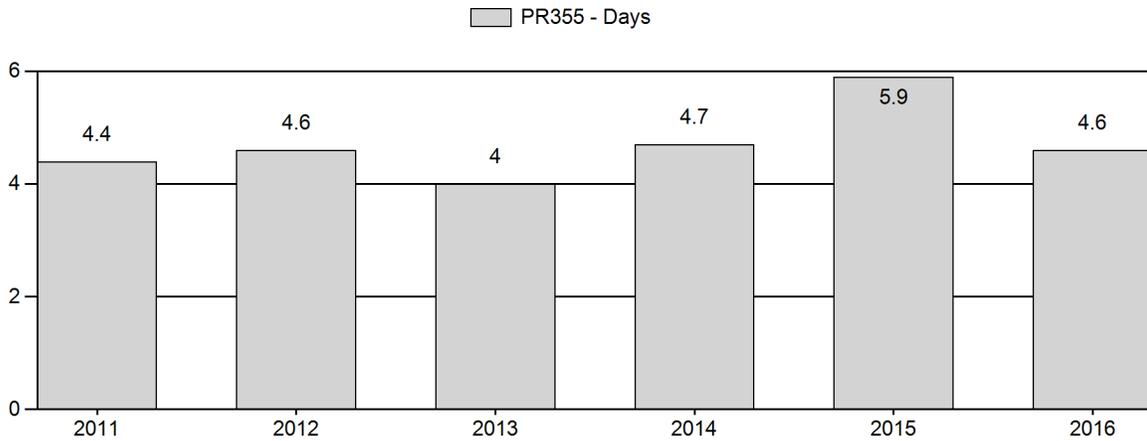
Harvest Success



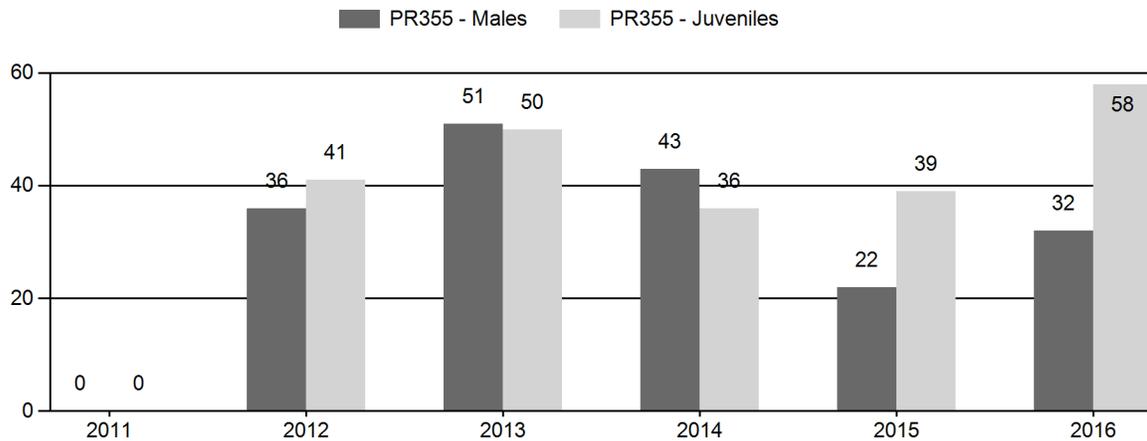
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR355 - BECKTON

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	1,523	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	1,428	18	34	52	20%	145	56%	60	23%	257	623	12	23	36	± 9	41	± 9	30
2013	1,851	16	38	54	25%	105	50%	53	25%	212	792	15	36	51	± 13	50	± 13	33
2014	1,521	7	16	23	24%	53	56%	19	20%	95	815	13	30	43	± 17	36	± 15	25
2015	0	8	12	20	14%	92	62%	36	24%	148	660	9	13	22	± 0	39	± 0	32
2016	0	25	45	70	17%	221	53%	128	31%	419	992	11	20	32	± 0	58	± 0	44

**2017 HUNTING SEASONS
BECKTON PRONGHORN HERD (PR355)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
109	1	Sep. 15	Nov. 30	350	Limited quota	Any antelope
	6	Sep. 15	Nov. 30	350	Limited quota	Doe or fawn

Special Archery Season Hunt Areas	Opening Date	Limitations
109	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
109	1	
	6	
Herd Unit Total		No Changes

Management Evaluation

Current Hunter / Landowner Management Objective: 60% Satisfaction

Secondary Management Objective: Observed ratio of 30 bucks: 100 does minimum

Management Strategy: Private Land

2016 Hunter Satisfaction Estimate: 80%

2016 Landowner Satisfaction Estimate: 52%

Most Recent 3-year Running Average Hunters Satisfaction Estimate: 81%

Most Recent 3-year Running Average Landowner Satisfaction Estimate: 48%

Herd Unit Issues

The Beckton Pronghorn Herd Unit is located west of Interstate Highway 90, north of South Piney Creek and off national forest, along the foothills of the Bighorn Mountains. This herd unit contains the towns of Story, Big Horn, Sheridan, Ranchester and Dayton, as well as significant rural-residential development. This herd unit contains one hunt area, Area 109.

The primary management objective for the Beckton Pronghorn Herd Unit is a Hunter and Landowner Satisfaction Objective at 60% or higher, with a secondary management objective of 30 or more bucks observed per 100 does. The management strategy is Private Land Management. The objectives and management strategy were last revised in 2014.

The majority of this herd unit is private lands, much of it developed as rural residential areas or small acreage ranchettes. There are few public land hunting opportunities available in this herd unit. The restricted access has made it difficult to attain adequate harvest to regulate pronghorn populations in portions of this herd unit. Rural residential development limits safe hunting opportunities in portions of this herd unit. Outfitting on some larger ranches also limits non-outfitted hunting opportunity. There are several Access Yes Walk-In Areas and one Hunter Management Area in this herd unit that do provide some public hunting opportunity.

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 2015-16 winter was generally mild and open. Animals should have come out of the winter in good shape. The 2016 spring was early, with warm temperatures in February-April and increased precipitation, especially in April. This allowed for an early start for grasses and forbes, providing high quality forage just prior to and during parturition. Temperatures remained normal to above normal during the summer and fall. Conditions were dry during May-July, with increased precipitation during the fall. September saw almost 3 times the normal precipitation. Winter started in early November with increased snow fall and below average temperatures from mid-November through January. There were several periods of -20⁰F or more during this time. December monthly average temperature was ~9⁰F below normal and January monthly average temperature was ~6⁰F below normal. Conditions moderated in February, with warmer than normal temperatures, giving wintering wildlife a break.

While adult wildlife entered the winter in good condition, they faced prolonged severe weather conditions during the early part of the winter. Fawns, being more susceptible to extremely cold temperatures, likely saw below average over-winter survival. We received several reports of winter killed pronghorn around the Sheridan area.

Habitat

There are no habitat transects within or near this herd unit. This herd unit is located along the foothills of the Bighorn Mountains and contains open rangeland dominated by short-grass prairie and big sagebrush, dry land and irrigated crop lands, and numerous rural subdivisions.

Two new invasive annual grasses – medusahead (*Taeniatherum caput-medusae*) and ventenata or wiregrass (*Ventenata dubia*) have been found in this herd unit. These invasive annuals, along with the already established annuals cheatgrass or downy brome (*Bromus tectorum*) and Japanese brome (*Bromus japonicus*), reduce habitat quality over time by out competing more desirable forage plants. Also, fire frequency may increase, decreasing the shrub component, such as big sagebrush, on the landscape.

Field Data

In August, biologists and wardens conduct herd classification surveys using ground survey techniques. Designated routes are driven along county roads and all observed pronghorn are classified. This is generally considered a low priority herd unit when prioritizing workloads, often resulting in low sampling effort and small sample sizes. In 2016 we classified 419 pronghorn, almost 3 times more than in 2015, but still well below desired sample size of 992 at the 90% confidence level.

Fawn production, as measured by the observed fawn:doe ratio, has exceeded 60 fawns per 100 does only once (i.e. 2010) in the past 13 years, suggesting this herd is not likely to grow quickly, even with limited harvest. With small sample sizes, it can be difficult to make reasonable extrapolations based on these data. While we have continued to increase harvest in this herd

unit, the population appears to have at least remained steady and distribution continues to expand. This suggests the low observed doe:fawn ratio may be biased and not representative of the true population.

The observed buck to doe ratio can be highly variable between years in this herd unit, likely due to bias associated with small sample sizes. We observed 32 bucks:100 does, an increase from 22 bucks:100 does observed in 2015. Over the past 10 years, the observed buck to doe ratio has varied from 22-61 bucks:100 does, with an average of 43 bucks:100 does. Based on the 3-year running average we are over the minimum of 30 males:100 females to satisfy the secondary management objective in this herd unit. We will monitor buck numbers over the next years and make efforts to maintain or increase samples size during the 2017 classification surveys.

Hunter satisfaction has remained high, with 80% of surveyed hunters (n=93) satisfied or very satisfied in 2016. The relatively high hunter satisfaction level reflects Department personnel efforts to advise perspective hunters of the limited access opportunities and the need to make arrangements for access prior to purchasing a license.

Nonresident hunter satisfaction this year (85.3%) was similar to that reported in 2015 (85.3%). We saw a continued increase in the demand for leftover antelope licenses since 2014. Only 64% of resident hunters were satisfied or very satisfied with their hunting experience in this herd unit in 2016, likely indicative of limit access for resident compared to non-resident hunters.

Harvest Data

We have sold all available licenses in this herd unit for the past 4 years, something we had not done during 2006-2012. We maintained Type 1 (any antelope) license numbers in the 2014-2016 seasons to monitor the participation rate. The participation rate for Type 1 licenses did increase from 75% in 2014 to 85% in 2015 to 87% in 2016. Hunters seem to be either finding access to private lands or taking advantage of the limited public land and Access Yes hunting opportunities available in this herd unit.

An estimated 521 hunters harvested an estimated 347 pronghorn, a decrease in harvest from the previous 3 years, which all set harvest records. Harvest decreased 8% in 2016 compared to 2015, despite a 12% increase in hunters and a 4% increase in active licenses. Pooled hunters success was 67%, the lowest in 25 years and well below the past 10 year mean of 86%. Hunters with a Type 1 (any antelope) license had a higher success rate (65%) than Type 6 (doe or fawn) license holders (59%), which is not surprising as hunters tend to focus on harvesting a buck before a doe if they possess both licenses. Hunter effort, as measured by the number of days hunted per animal harvested, was 4.6 days/animal, a significant decrease from 2015 (5.9 days/harvest), but similar to effort expended during the 2010-2014 hunting seasons (4.0-4.7 days/harvest).

These data are somewhat contradictory in that low success usually corresponds to higher effort rates. Hunters in general were less successful in 2016, but those that were successful harvested their animal relatively quickly. Success could have been influenced by increased fall precipitation which may have limited access in some areas of the herd unit. Hunters that hunted during more favorable weather conditions and/or had access to private land may have been more successful with less effort.

We continue to harvest relatively high buck numbers from this herd unit, with 172 bucks harvested this year. During the past 10 years, we have averaged 162 bucks harvested annually, and 1,617 bucks total. We may be reducing buck numbers below desired levels with the current rate of buck harvest. Observed buck ratios and buck harvest will be monitored to assure we maintain at least 30 bucks per 100 does in this herd unit.

Population

We changed the management objective for this herd unit from a postseason population objective to a hunter / landowner satisfaction objective. Due to this herd’s small size, both in numbers and geographically, we have never flown a line transect survey in this herd unit. A trend count was last conducted in May 1999, when 382 pronghorn were counted and resulted in an estimated 1,500 pronghorn (25% sightability estimated).

We do have a spreadsheet population simulation model for this herd unit. We only have harvest and classification data from this herd unit. Classification data is collected somewhat sporadically in this herd unit, and is likely biased due to low sampling effort, small sample sizes, and sampling protocol (i.e., sampling only along public roads). Modeling parameters, specifically juvenile survival rates, are set wider than recommended to make this model work reasonably.

The “Constant Juvenile – Constant Adult Survival Rate” (CJ,CA) spreadsheet simulation model was chosen to estimate the post-season population for this herd. This model had the lowest relative Akaike information criterion (AIC) value (93), but had a worst fit (84) of the three possible models. It also seemed to better model manager’s perceptions of population dynamics in this herd unit. Since we have limited management data, small survey sample size, sporadic data collection, and no independent population estimate for this herd unit, we consider this a “poor” population model.

Landowners who responded (n = 23) to an annual survey indicated pronghorn populations were ‘at’ (52%) or ‘above’ (48%) desired levels (Fig 1); and suggested similar (70%) or more liberal (30%) hunting season strategies as in recent years.

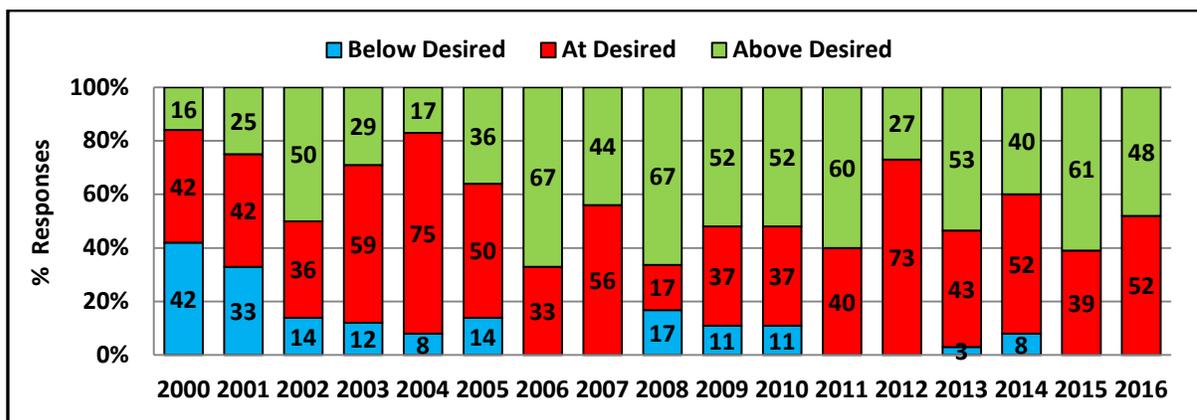


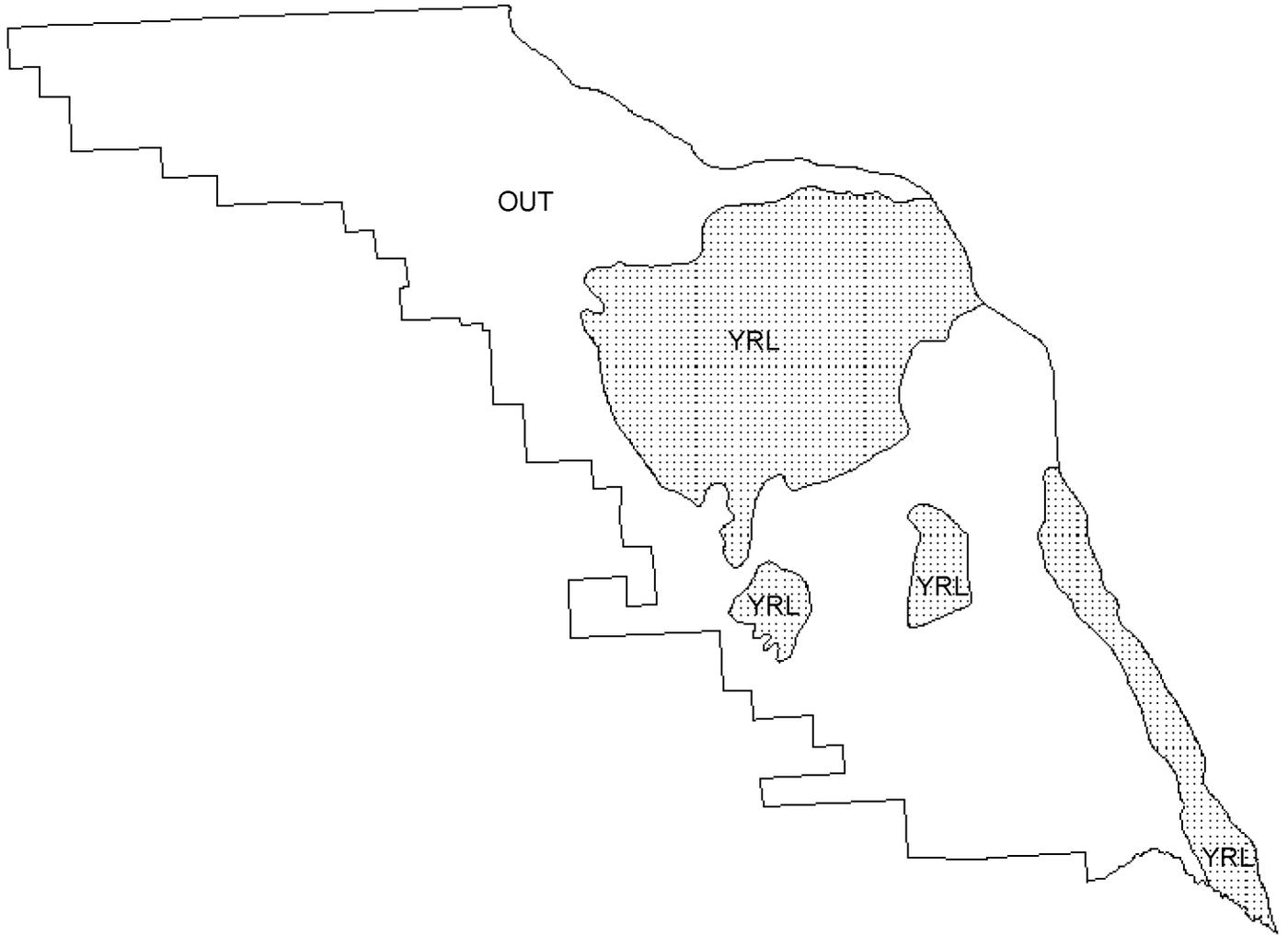
Figure 1. Relative landowner perceptions of pronghorn antelope populations on their property in the Beckton Antelope Herd Unit, by percentage. Desired level is a subjective expression of individual landowner tolerance of pronghorn. Sample sizes some years were as low as 6 responses.

Management Summary

The regular hunting season in this herd unit traditionally runs 10 weeks (September 15 – November 30) for both Type 1 and Type 6 licenses, with an archery pre-season August 15 – September 14. Hunters in this herd unit are able to purchase two Type 1 (any antelope) licenses and four Type 6 (doe or fawn antelope) licenses, which allows hunters the opportunity to harvest multiple animals. There is limited pronghorn hunting on scattered State Trust Lands, as well as three Walk-In Areas and one Hunter Management Area. We commonly observe high buck numbers, as measured by buck:doe ratios, averaging 44 bucks:100 does over the long-term (n=30 years). This is likely a function of limited access to private lands where the majority of pronghorn occur. We may be reducing buck numbers due to high harvest rates in recent years.

We project a harvest of approximately 350 pronghorn in 2017, resulting in an estimated post-season population of about 1,350 pronghorn. These predictions assume below normal fawn survival, as well as similar license sales and success rates for the 2016 hunting season. Due to our inability to successfully place hunters on private land where a lot of pronghorn live, our ability to manage this population towards desired objectives (i.e. higher landowner satisfaction) with hunting is very limited.

We maintained the same number of licenses for 2017. We have some concern about the current level of buck harvest as well as our ability to place additional buck hunters so we maintained those licenses (i.e. Type 1) at current levels. The participation rate on Type 6 licenses was only 72% and success was only 64%. Without additional access to private lands for doe hunters, we are reluctant to increase these licenses. Also, we would like to see the affects of this winter on the population before increasing or decreasing licenses.



PH355 - Beckton
HA 109
Revised - 4/87