

2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR745 - RATTLESNAKE

HUNT AREAS: 70-72

PREPARED BY: HEATHER O'BRIEN

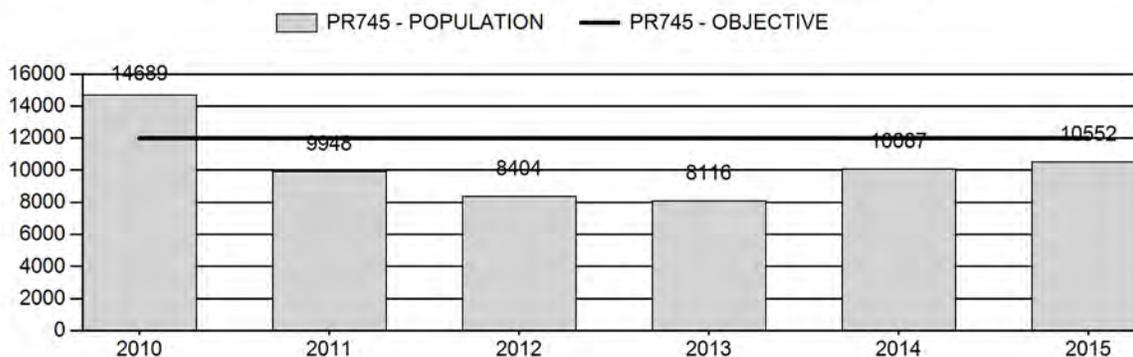
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	10,249	10,552	10,469
Harvest:	1,825	328	330
Hunters:	1,945	358	360
Hunter Success:	94%	92%	92 %
Active Licenses:	2,140	395	390
Active License Success:	85%	83%	85 %
Recreation Days:	6,497	1,090	1,200
Days Per Animal:	3.6	3.3	3.6
Males per 100 Females	57	43	
Juveniles per 100 Females	54	84	

Population Objective (± 20%) :	12000 (9600 - 14400)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-12.1%
Number of years population has been + or - objective in recent trend:	5
Model Date:	02/08/2016

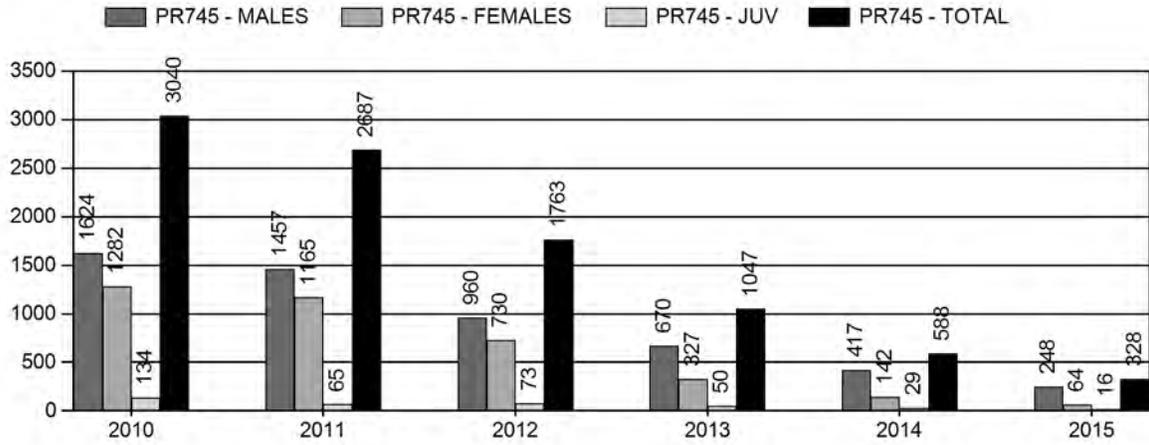
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.5%	1.5%
Males ≥ 1 year old:	13.1%	11.7%
Juveniles (< 1 year old):	0.4%	0.4%
Total:	3.1%	3.0%
Proposed change in post-season population:	+14.9%	-0.8%

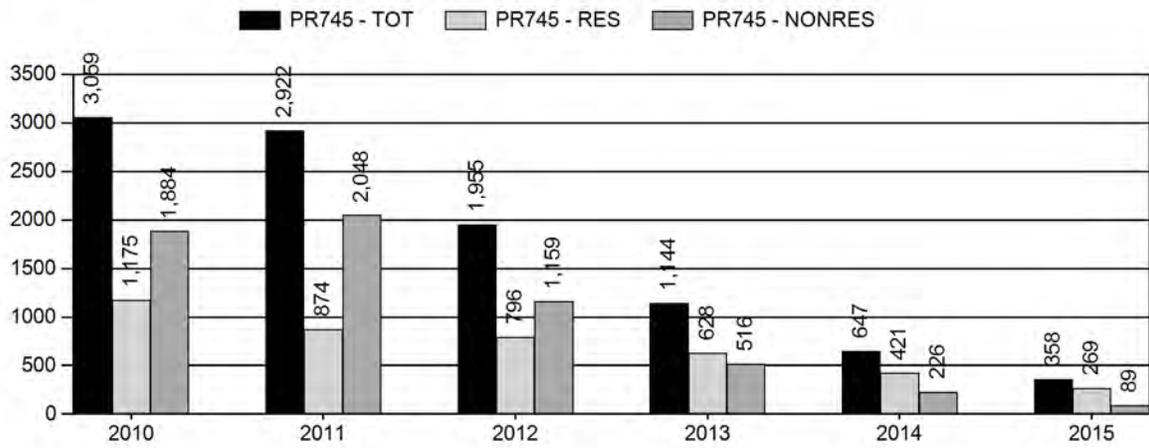
Population Size - Postseason



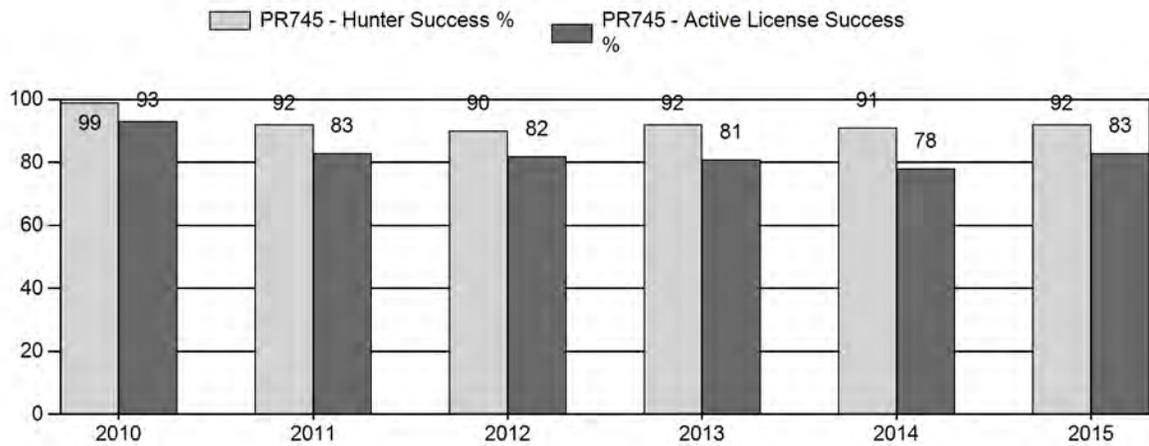
Harvest



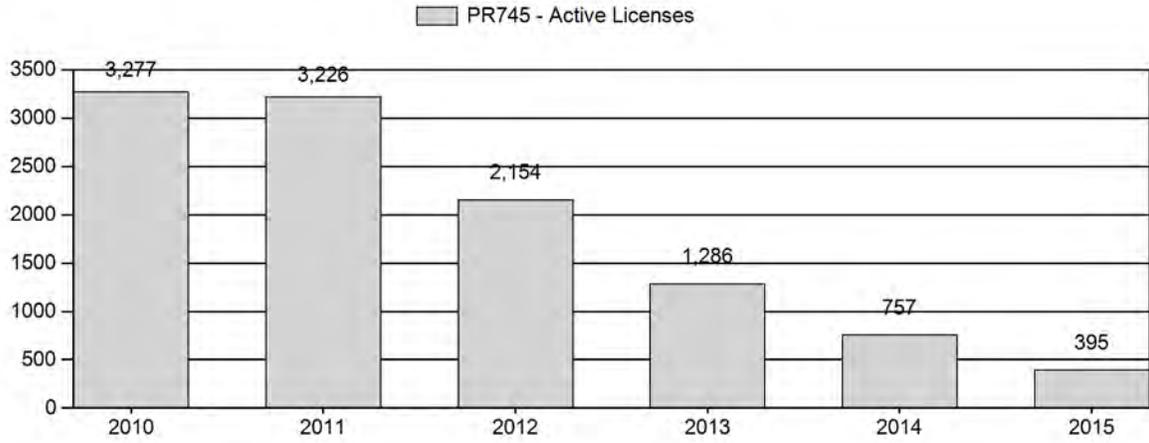
Number of Hunters



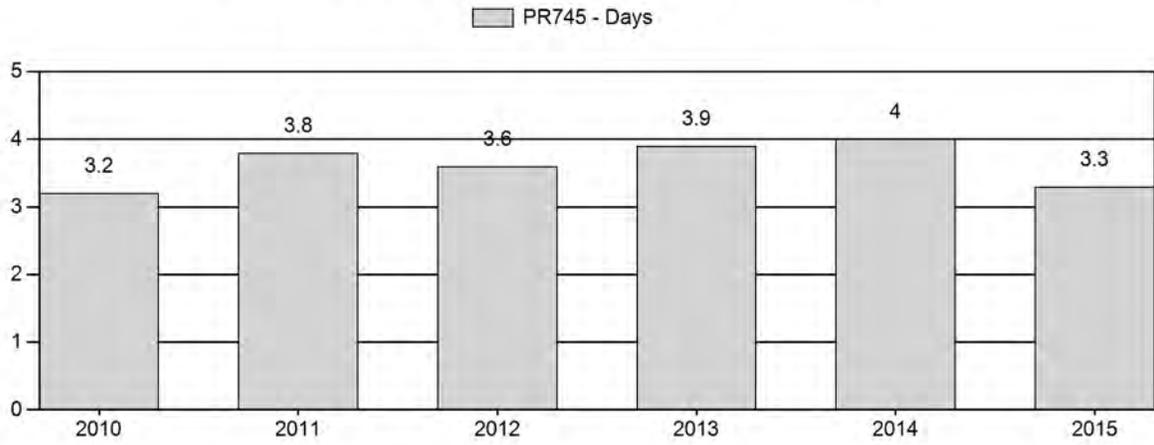
Harvest Success



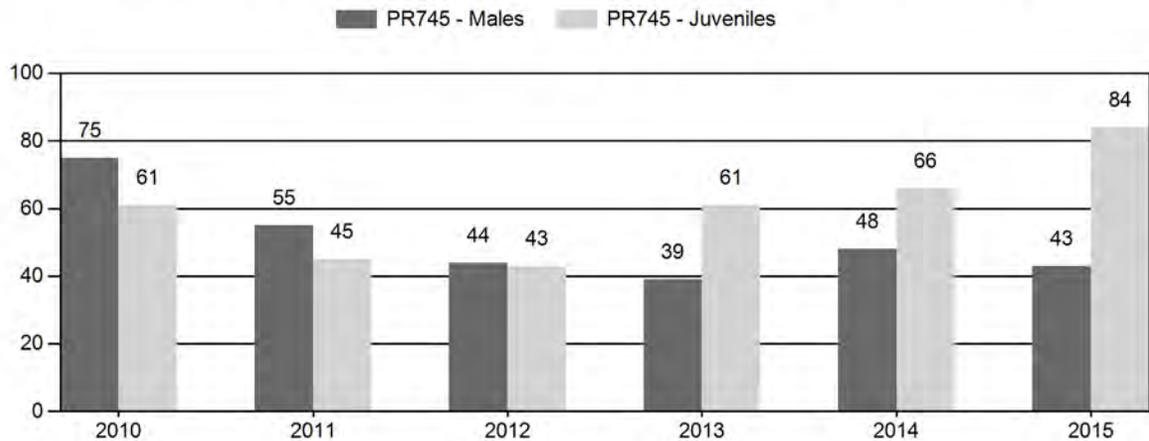
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2010 - 2015 Preseason Classification Summary

for Pronghorn Herd PR745 - RATTLESNAKE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	18,033	271	933	1,204	32%	1,599	42%	970	26%	3,773	2,827	17	58	75	± 4	61	± 4	35
2011	12,938	195	683	878	27%	1,607	50%	721	22%	3,206	1,616	12	43	55	± 3	45	± 3	29
2012	10,343	82	209	291	24%	662	53%	285	23%	1,238	1,140	12	32	44	± 5	43	± 5	30
2013	9,268	45	199	244	20%	624	50%	381	31%	1,249	1,901	7	32	39	± 5	61	± 6	44
2014	10,921	111	191	302	22%	634	47%	416	31%	1,352	1,734	18	30	48	± 5	66	± 6	44
2015	10,913	160	243	403	19%	947	44%	796	37%	2,146	2,231	17	26	43	± 4	84	± 6	59

**2016 HUNTING SEASONS
RATTLESNAKE PRONGHORN HERD (PR745)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
70	1	Sep. 15	Oct. 31	25	Limited quota	Any antelope
	2	Sep. 15	Oct. 31	25	Limited quota	Any antelope valid on private land
	7	Sep. 15	Oct. 31	25	Limited quota	Doe or fawn antelope valid on private land
71	1	Sep. 15	Oct. 31	75	Limited quota	Any antelope
	6	Sep. 15	Oct. 31	25	Limited quota	Doe or fawn antelope
72	1	Sep. 15	Oct. 31	250	Limited quota	Any antelope
	6	Sep. 15	Oct. 31	25	Limited quota	Doe or fawn antelope
Archery		Aug. 15	Sep. 14			Refer to license type and limitations in Section 2

Hunt Area	Type	Quota change from 2015
70	1	-25
	2	+25
	6	-25
	7	+25
71	1	no change
	6	no change
72	1	no change
	6	no change
Total	1	-25
	2	+25
	6	-25
	7	+25

Management Evaluation

Current Management Objective: 12,000

Management Strategy: Special

2015 Postseason Population Estimate: ~10,500

2016 Proposed Postseason Population Estimate: ~10,500

2015 Hunter Satisfaction: 90.6% Satisfied, 8.0% Neutral, 1.4% Dissatisfied

The Rattlesnake Pronghorn Herd Unit has a post-season population management objective of 12,000 pronghorn. The herd is managed using the special management strategy, with a goal of maintaining preseason buck ratios between 60-70 bucks per 100 does. The objective and management strategy were formerly reviewed in 2015. A line transect survey was conducted in May 2014 to be used in conjunction with the formal objective review.

Herd Unit Issues

Hunting access within the herd unit is moderate, having some large tracts of public land as well as Walk-In Areas and a Hunter Management Area. Traditional ranching and grazing are the primary land use over the whole herd unit, with scattered areas of oil and gas development. Hunt Areas 70 & 71 are dominated by private lands. License issuance is typically maintained at a higher level relative to pronghorn densities in Area 70 to address damage issues on irrigated agricultural fields. Periodic disease outbreaks (i.e. hemorrhagic diseases, *Clostridium spp.* infections) are possible in this herd and can contribute to population declines when environmental conditions are suitable. However, there were no reported or confirmed cases of disease outbreak in pronghorn within the Rattlesnake Herd during 2015.

Weather

The winter of 2010-2011 was severe throughout the herd unit, resulting in very high mortality of pronghorn across all age classes. Severe drought conditions persisted from spring 2011 through winter 2012, which had a negative impact on pronghorn reproductive success and fawn survival. The spring and summer of 2013 were cool with significant precipitation, yet habitat conditions appeared to remain poor for much of the growing season. Fawn production was also lagged behind and remained poor, as doe pronghorn nutritional condition was slow to recover from the effects of the 2012 drought. Heavy precipitation during the fall of 2013 caused a beneficial late green-up that provided improved forage for pronghorn entering the winter season. The 2013-2014 winter brought temperature and precipitation conditions near the recent 30-year average, and the growing season of 2014 brought a much-needed break in drought conditions. The spring and summer of 2014 produced much-improved range conditions that benefitted pronghorn, and fawn production began to improve. The winter of 2014-2015 was mild with good overwinter survival of pronghorn, while the spring and summer of 2015 were slightly above average in terms of precipitation and range condition. Fawn production finally increased to above average in 2015, as range conditions and nutritional status of does were much improved. The fall of 2015 was very dry, but winter thus far has had the potential to be hard on pronghorn. Deep persistent snow with hard crusting is likely to impact overwinter survival of pronghorn in some areas within this herd unit, particularly in areas where lighter winds do not consistently move and drift snow to expose forage. For detailed weather data see <http://www.ncdc.noaa.gov/gac/time-series/us>.

Habitat

This herd unit has no established habitat transects to measure production and/or utilization on shrub species that are preferred browse for pronghorn. Anecdotal observations and discussions with landowners in the region indicate that summer and winter forage availability for pronghorn was good in 2015. Herbaceous forage species were observed to be in good condition in 2015 compared to previous years, and pronghorn appeared to be more widely distributed across suitable habitat.

Field Data

The Rattlesnake Pronghorn Herd grew rapidly from 1998-2005 and was well above objective prior to the winter of 2010-2011. Harsh winter conditions in 2010-2011 combined with severe drought dropped this herd unit below management objective, and license issuance since then has become extremely conservative. Improved moisture and favorable weather conditions appeared to have helped fawn production and survival the past three years, as the fawn ratio improved from 2013-2015. Still, fawn production for the Rattlesnake Herd did not improve in 2013 & 2014 as much as in adjacent herds. This suggests the carrying capacity for the herd unit was still suppressed despite improved precipitation. Native habitats were likely still recovering from the very high pronghorn numbers of 2004 to 2011 and prolonged drought conditions. Fawn ratios finally increased in 2015 to 84:100 does – a level of production which has not been observed within the herd unit since 2005.

Buck ratios for the Rattlesnake herd historically range from the mid 40s to mid 70s per 100 does. Buck ratios are most commonly in the upper 50s, just below the lower limit for special management. In more recent years, buck ratios have dropped to the mid-40s as a result of low fawn recruitment and high harvest pressure on a diminishing population. In 2013, the buck ratio for the Rattlesnake Pronghorn Herd reached a 22-year low of 39:100 does. Since then buck ratios have improved. In 2014 the buck ratio was 48:100 does - a result of reduced harvest pressure and improved overwinter survival. The buck ratio dropped slightly in 2015 to 43:100 does despite very conservative hunting seasons. Harvest pressure on bucks combined with mediocre recruitment of fawns may have contributed to this stagnating buck ratio. While it can be difficult to maintain buck ratios in this herd within the range of special management due to differing management strategies for Area 70 versus Areas 71 and 72, hunters have developed high expectations for buck numbers and quality within this herd. This population will thus be managed conservatively to increase buck ratios within special management parameters while also increasing the overall population toward objective.

The 2015 post-season population estimate was approximately 10,500 and trending slightly upward from 2014 estimates. This herd unit did not have a functional population model until 2012, when a spreadsheet-based modeling system replaced the program POP-II to simulate herd dynamics. Prior management decisions for this herd were made using a combination of classification data, harvest statistics, observations of field personnel, and comments from hunters and landowners regarding pronghorn numbers. Line transect surveys were also conducted in 1998, 2000, 2003, 2007, and 2014 to provide end-of-year population estimates. The 2014 survey yielded good results with a reasonable standard error which aligns well with the population model. The current population model is considered to be of fair quality, as personnel believe there is significant interchange with the adjacent Beaver Rim Herd Unit that is not accounted for in the model. Managers evaluated a merged dataset of the Rattlesnake and Beaver Rim Herds in 2015. However, the combined model did not show adequate enough improvements in predicting population size or trend to merit combining the two herds.

Harvest Data

License success in this herd unit is typically in the 90th percentile. Despite drastic reductions in license issuance, success declined from 2011-2014 to near the 80th percentile. At the same time hunter days increased, indicating pronghorn were more difficult for hunters to find and harvest. In 2014, active license success reached a 12-year low of 78%, hunter days reached a 17-year high, and reported hunter satisfaction for the Rattlesnake Herd Unit was the lowest in the state. Following further reductions in license issuance in 2015, harvest success for active licenses improved back to the 80th percentile and harvest days dropped to 3.2, which is more typical for this herd unit. Hunter satisfaction also improved markedly, from 68% in 2014 to 91% in 2015. Despite improved fawn production, managers will again recommend a very conservative harvest prescription in 2015 with the goal of maintaining hunter satisfaction while increasing buck ratios, harvest success, and the overall population.

Population

The “Time-Specific Juvenile Survival – Constant Adult Survival” (TSJ,CA) spreadsheet model was chosen for the post-season population estimate of this herd. This model seemed most representative of the herd, as it selects for low juvenile survival in the years when managers agree that overwinter fawn survival was very poor – particularly in 2010-2012. The simpler models (CJ,CA and SCA,CA) select for higher juvenile survival rates across years, which does not seem feasible for this herd given its very slow rate of growth. All three models follow a trend that is plausible; however the CJ,CA model shows an extremely high buck harvest percentage in 2011, and the SCA,CA model shows a 2006 population peak that seems unrealistic. None of the models track very well with the three early line transect estimates, but all three models align very well with the 2013 line transect estimate. While the AIC for the TSJ,CA

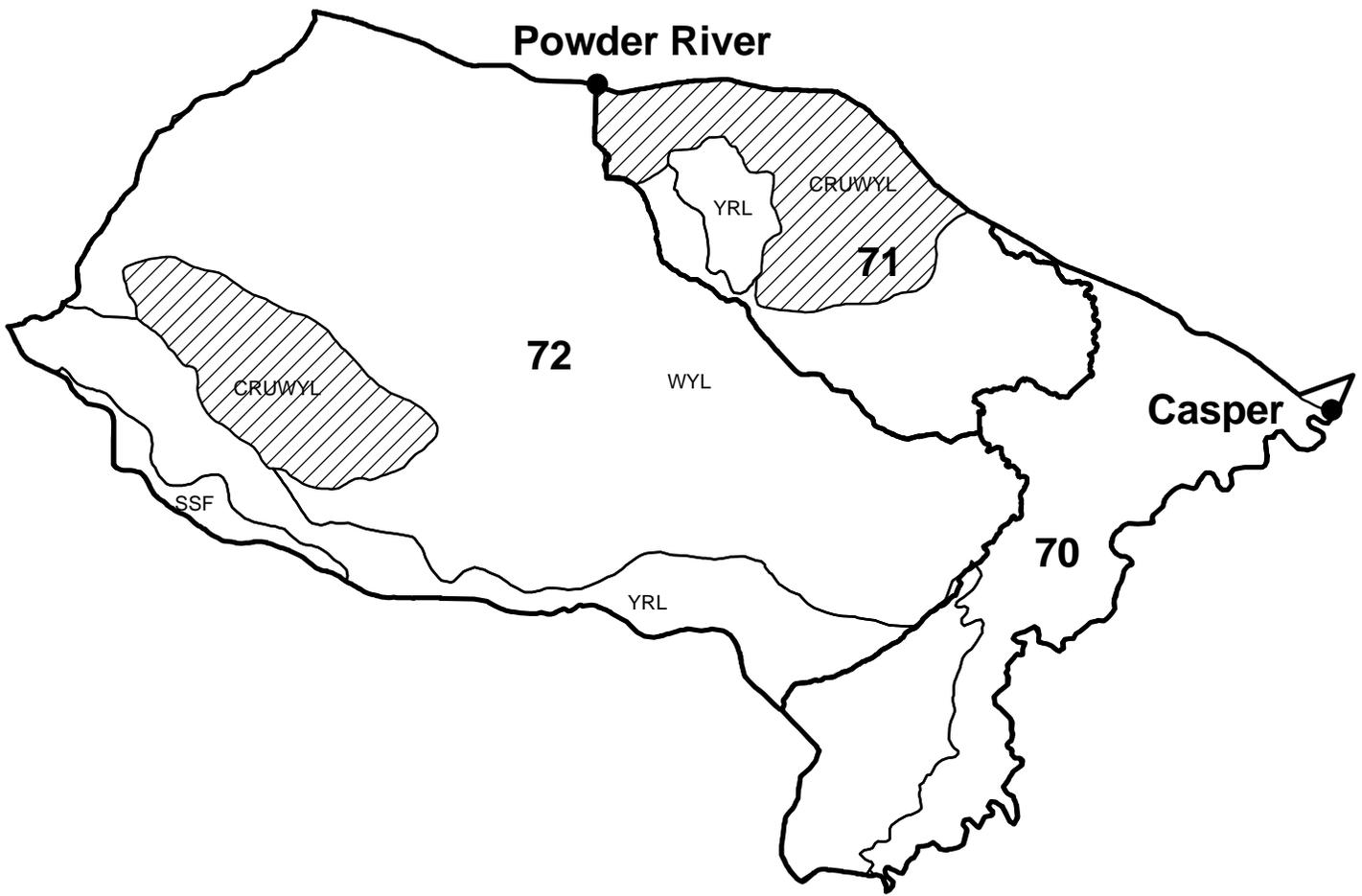
model is the highest of the three, it is only due to year-by-year penalties on juvenile survival and is still well within one level of power in comparison to the AICs of the simpler models. The TSJ,CA model appears to be the best representation relative to the perceptions of managers on the ground and follows trends with license issuance and harvest success. Overall the current model is considered fair in quality as a representation of herd dynamics.

Management Summary

Traditional season dates in this herd unit run from September 15th through October 31st. We recommend the same season dates for 2016, maintaining extremely conservative license issuance in all hunt areas to. Area 70 doe/fawn licenses formerly ran through November 30th when license issuance was much higher. Doe/fawn licenses in Area 70 Type 6 licenses will be valid through October 31st to coincide with all other season dates in the herd unit, since license numbers are low and November seasons are not currently warranted. Hunters in Area 70 have also voiced concerns regarding an imbalance of harvest pressure on public lands in Area 70. To address this matter, license issuance will be divided into Type 1, 2, and 7 licenses, with Type 2 and 7 licenses valid on private land only. The 2016 season includes a total of 375 any-antelope and 75 doe/fawn licenses. Goals for 2016 are to maintain or increase pronghorn numbers towards objective, improve buck ratios consistent with special management strategy, and maintain or increase hunter success.

If the projected harvest of 330 pronghorn is achieved and fawn production/survival is moderate in 2016, this herd should remain near its current population size. If fawn production/survival is good or excellent, this herd should increase. The predicted 2016 post-season population estimate for the Rattlesnake Pronghorn Herd size assuming moderate fawn production/survival is approximately 10,500 animals, which is 12% below objective.

Antelope - Rattlesnake
Hunt Areas 70,71,72
Casper Region
Revised 4/88



2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR746 - NORTH NATRONA

HUNT AREAS: 73

PREPARED BY: HEATHER O'BRIEN

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	11,363	15,422	13,796
Harvest:	929	779	1,350
Hunters:	1,077	846	1,500
Hunter Success:	86%	92%	90 %
Active Licenses:	1,132	859	1,500
Active License Success:	82%	91%	90 %
Recreation Days:	3,588	4,328	5,500
Days Per Animal:	3.9	5.6	4.1
Males per 100 Females	50	52	
Juveniles per 100 Females	58	89	

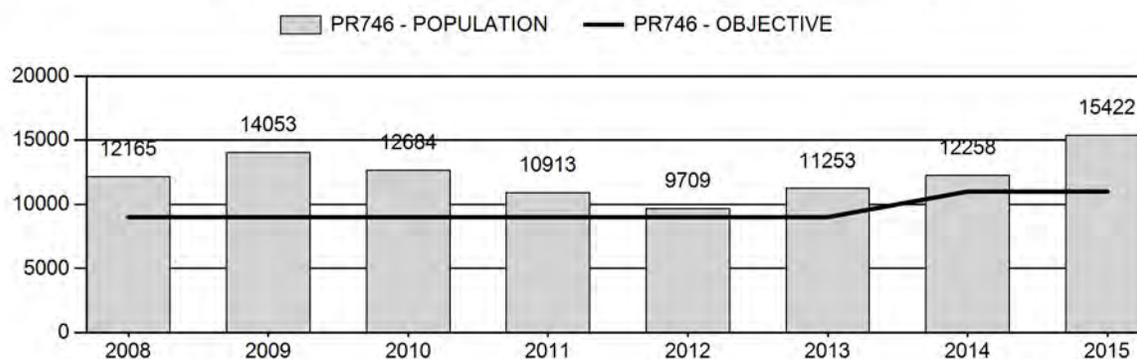
Population Objective (± 20%) :	11000 (8800 - 13200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	40%
Number of years population has been + or - objective in recent trend:	3
Model Date:	02/17/2016

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

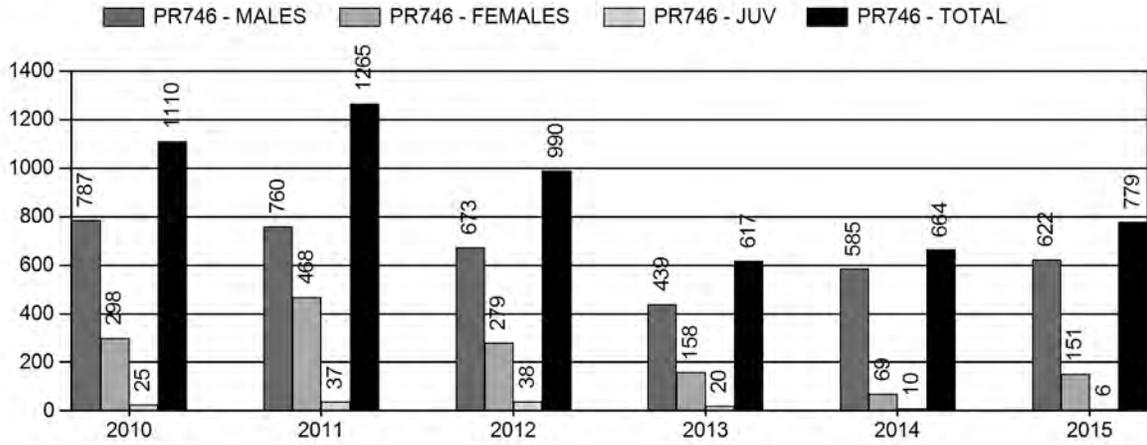
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2.5%	8.5%
Males ≥ 1 year old:	19.6%	24.3%
Juveniles (< 1 year old):	0.1%	0.5%
Total:	4.8%	8.8%

Proposed change in post-season population: 25.8% -10.5%

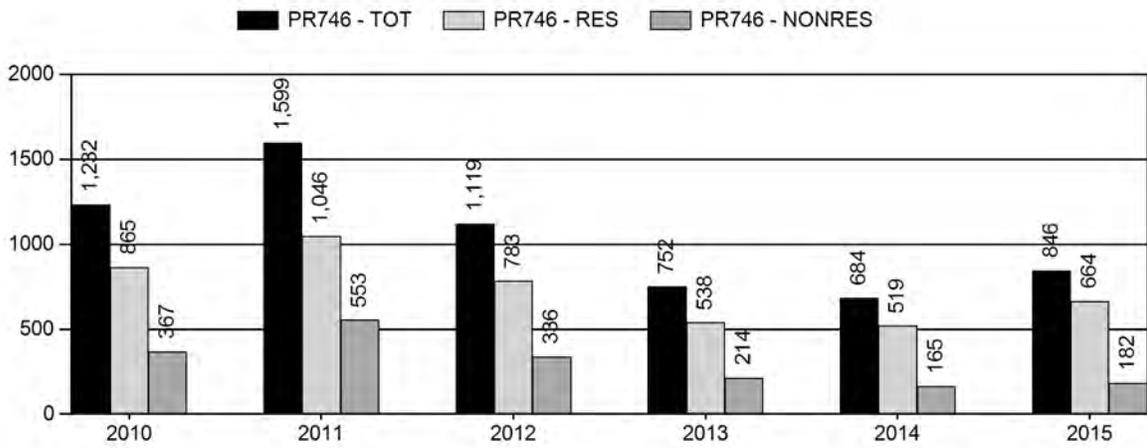
Population Size - Postseason



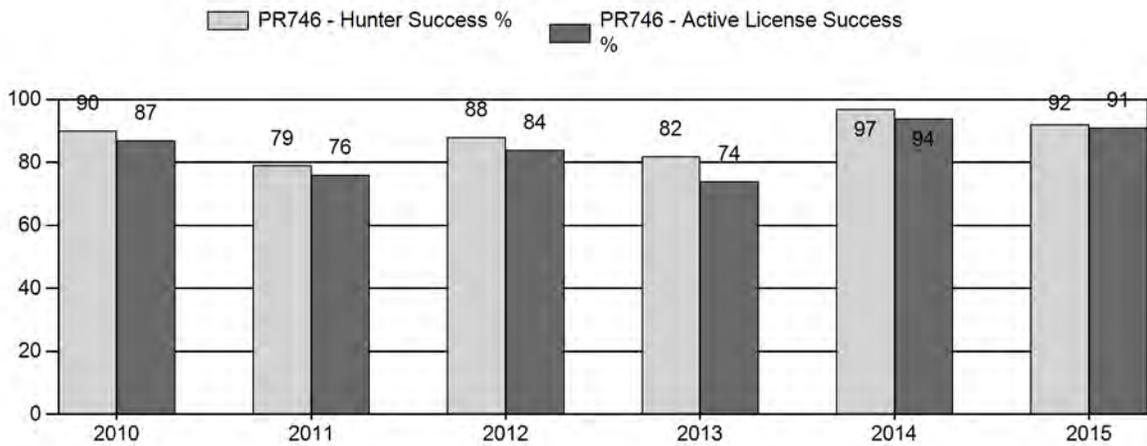
Harvest



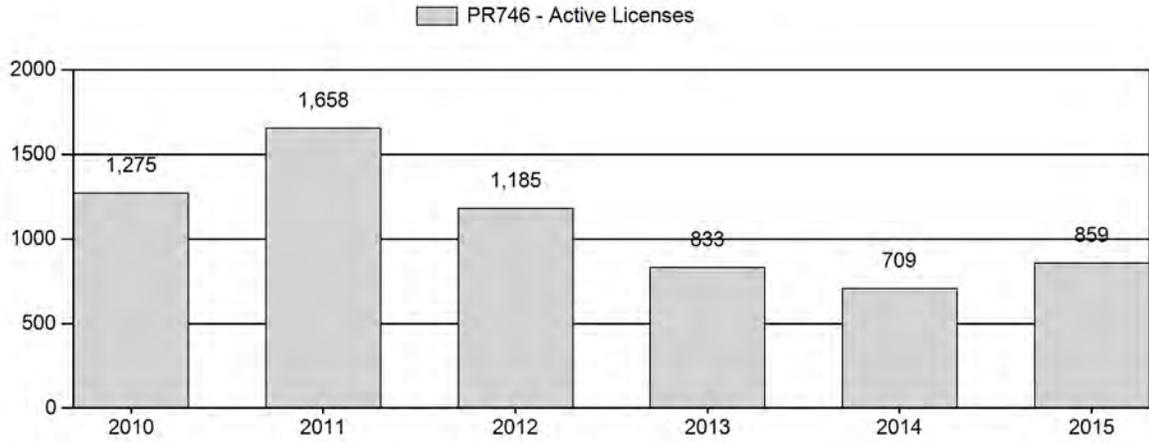
Number of Hunters



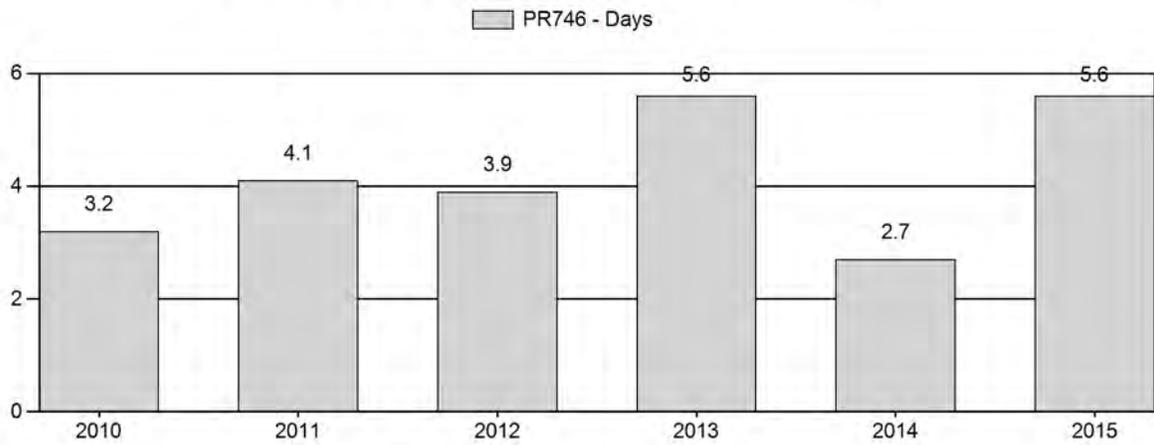
Harvest Success



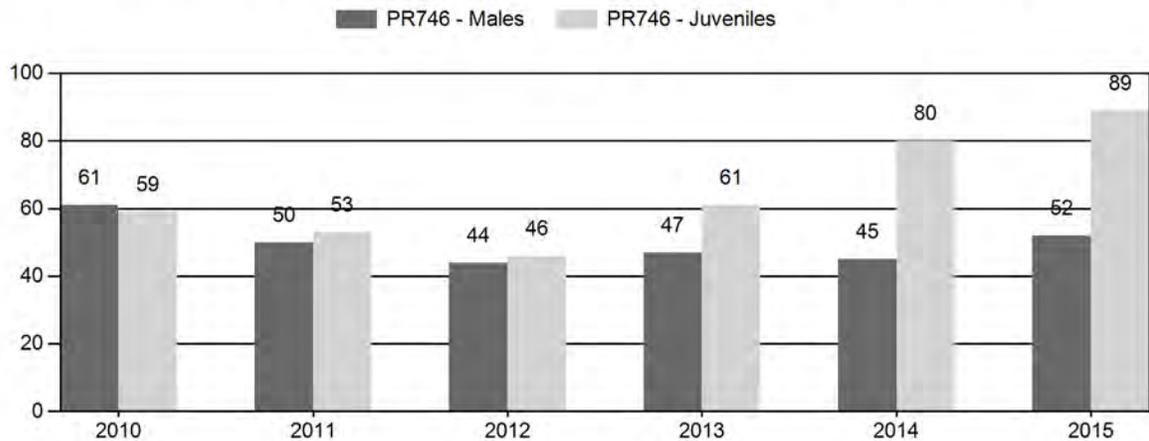
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2010 - 2015 Preseason Classification Summary

for Pronghorn Herd PR746 - NORTH NATRONA

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
2010	13,905	172	392	564	28%	932	46%	552	27%	2,048	1,988	18	42	61	± 5	59	± 5	37
2011	12,323	119	540	659	25%	1,322	49%	697	26%	2,678	2,129	9	41	50	± 3	53	± 4	35
2012	10,798	127	190	317	23%	713	53%	327	24%	1,357	1,843	18	27	44	± 5	46	± 5	32
2013	11,932	69	318	387	23%	817	48%	497	29%	1,701	1,832	8	39	47	± 4	61	± 5	41
2014	12,988	85	210	295	20%	650	44%	520	35%	1,465	1,915	13	32	45	± 5	80	± 7	55
2015	16,279	215	268	483	21%	936	42%	835	37%	2,254	2,729	23	29	52	± 4	89	± 6	59

**2016 HUNTING SEASONS
NORTH NATRONA PRONGHORN HERD (PR746)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
73	1	Sep. 15	Oct. 31	900	Limited quota	Any antelope
	6	Sep. 15	Oct. 31	600	Limited quota	Doe or fawn antelope
Archery		Aug. 15	Sep. 14			Refer to license type and limitations in Section 2

Hunt Area	Type	Quota change from 2015
73	1	+100
	6	+350

Management Evaluation

Current Postseason Population Management Objective: 11,000

Management Strategy: Recreational

2015 Postseason Population Estimate: ~15,400

2016 Proposed Postseason Population Estimate: ~13,700

2015 Hunter Satisfaction: 91% Satisfied, 8% Neutral, 1% Dissatisfied

The North Natrona Pronghorn Herd Unit has a post-season population management objective of 11,000 pronghorn. The herd is managed using the recreational management strategy, with a goal of maintaining preseason buck ratios between 30-59 bucks per 100 does. The objective and management strategy were formally reviewed and updated in 2014. Prior to 2014, the herd objective was set at 9,000 pronghorn.

Herd Unit Issues

Hunting access within the herd unit is very good, with large tracts of public land as well as Walk-In Areas available for hunting. The southeastern corner of the herd unit is the only area dominated by private lands. In this area, specific doe/fawn licenses have been added to address damage issues on irrigated agricultural fields in years when landowners agree to allow hunting access. The main land use within the herd unit is traditional ranching and grazing of livestock. Industrial scale developments, including oil and gas development, are limited and isolated within this herd unit. Periodic disease outbreaks (i.e. hemorrhagic diseases, *Clostridium spp.* infections) can impact this herd and contribute to population declines when environmental conditions are

suitable, though there were no reported or confirmed cases of disease outbreak within the North Natrona Herd in 2015.

Weather

The winter of 2010-2011 was severe throughout the herd unit, resulting in high mortality of pronghorn. Severe drought conditions persisted from spring 2011 through winter 2012, which had a negative impact on pronghorn reproductive success and fawn survival. The spring of 2013 was cool with significant precipitation, with average rains over the summer as well. Still, habitat conditions remained poor in portions of the herd that received less spring and summer rain. Heavy precipitation during the fall of 2013 caused a beneficial late green-up that provided improved forage for pronghorn entering the winter season. The 2013-2014 winter brought temperature and precipitation conditions near the recent 30-year average, and the growing season of 2014 brought a much-needed break in drought conditions. The spring and summer of 2014 undeniably produced improved range conditions that benefitted pronghorn, and fawn production improved drastically. The winter of 2014-2015 was relatively mild with good overwinter survival of pronghorn, while the spring and summer of 2015 were slightly above average in terms of precipitation and range conditions improved once again. Fawn production was excellent in 2015, and nutritional status of does seemed to be much improved. The fall of 2015 was very dry, but winter thus far has had the potential to be hard on pronghorn in some areas. Deep persistent snow with hard crusting is likely to impact overwinter survival of pronghorn in some portions of the herd unit; particularly in the eastern and northeastern regions of the herd unit. For detailed weather data see <http://www.ncdc.noaa.gov/gac/time-series/us>.

Habitat

Eight sagebrush transects were established within this herd in 2014 as part of the population objective review. These transects were measured for utilization in spring 2014 and 2015 (see Table 1). Utilization was light to moderate on all eight transects in 2014. In 2015, average utilization was even lighter. Anecdotal observations and discussions with landowners in the region confirm summer and winter forage availability for pronghorn was very good in 2014, and excellent in 2015. Additionally, pronghorn appeared to be widely distributed across suitable habitat in both years. This suggests current pronghorn population size and the revised objective are sustainable given available habitat.

Year	Average Utilization
2014	15.38%
2015	9.50%

Table 1. Average utilization of big sagebrush (*Artemisia tridentata* Nutt. Subsp. *wyomingensis*) for eight transects within the North Natrona Pronghorn Herd unit, 2014-2015.

Field Data

The North Natrona Pronghorn Herd grew rapidly from 1998-2005 and was well above objective prior to the winter of 2010-2011. The severe winter of 2011 resulted in above average mortality and severe drought slowed population growth significantly. By 2012, higher license issuance was no longer necessary to control growth of the herd, and licenses were reduced. Hunter harvest, mortality from harsh winter conditions in 2010-2011, poor fawn production/survival, and severe drought subsequently reduced this herd. Mild winter weather followed by an excellent growing season helped to improve conditions for fawns and lactating does in 2013, 2014, and 2015. Overall precipitation and resulting forage growth were exceptional in 2014 and 2015, and fawn ratios reached a 17-year high in 2015. Overwinter survival of fawns appeared to improve from 2014 to 2015 as well, as evidenced by high yearling buck ratios. As a result, this population has grown rapidly the past three years. Managers have observed higher densities of pronghorn throughout the herd unit, and in 2015 ground-classifications were the highest on record since 2011.

Buck ratios for the North Natrona Herd historically average in the mid-50s:100 does. Buck ratios dropped markedly in 2011 and reached a 15-year low of 44 bucks per 100 does in 2012. The buck ratio held steady in the mid-40s per 100 does for 2013 and 2014 and was 52:100 does in 2015 thanks to high yearling buck recruitment. Typically buck ratios for the herd unit are easily maintained within the target range for recreational management. Ultimate management goals are to maintain buck ratios within this range to sustain high hunter satisfaction, while continuing to offer exceptional opportunity and good drawing odds via recreational management.

Harvest Data

License success in this herd unit is typically in the 80-90th percentile. Harvest success was lower from 2011-2013 as population size dropped. License issuance was also reduced during the same time period, but did not keep pace with declining pronghorn numbers. In 2014, license issuance was at a 10-year low, but pronghorn numbers also began to recover. Thus, hunters enjoyed much improved harvest success in the 90th percentile, and low average hunter days. As a result, North Natrona hunters expressed the highest percentage of satisfaction in the state for pronghorn in 2014. Hunter satisfaction was also very high in 2015, as harvest success was near 90%, weather conditions were excellent, and hunter crowding was low.

Population

The “Time-Specific Juvenile Survival - Constant Adult Survival” (TSJ,CA) spreadsheet model was chosen to use for the post-season population estimate of this herd. This model seemed the

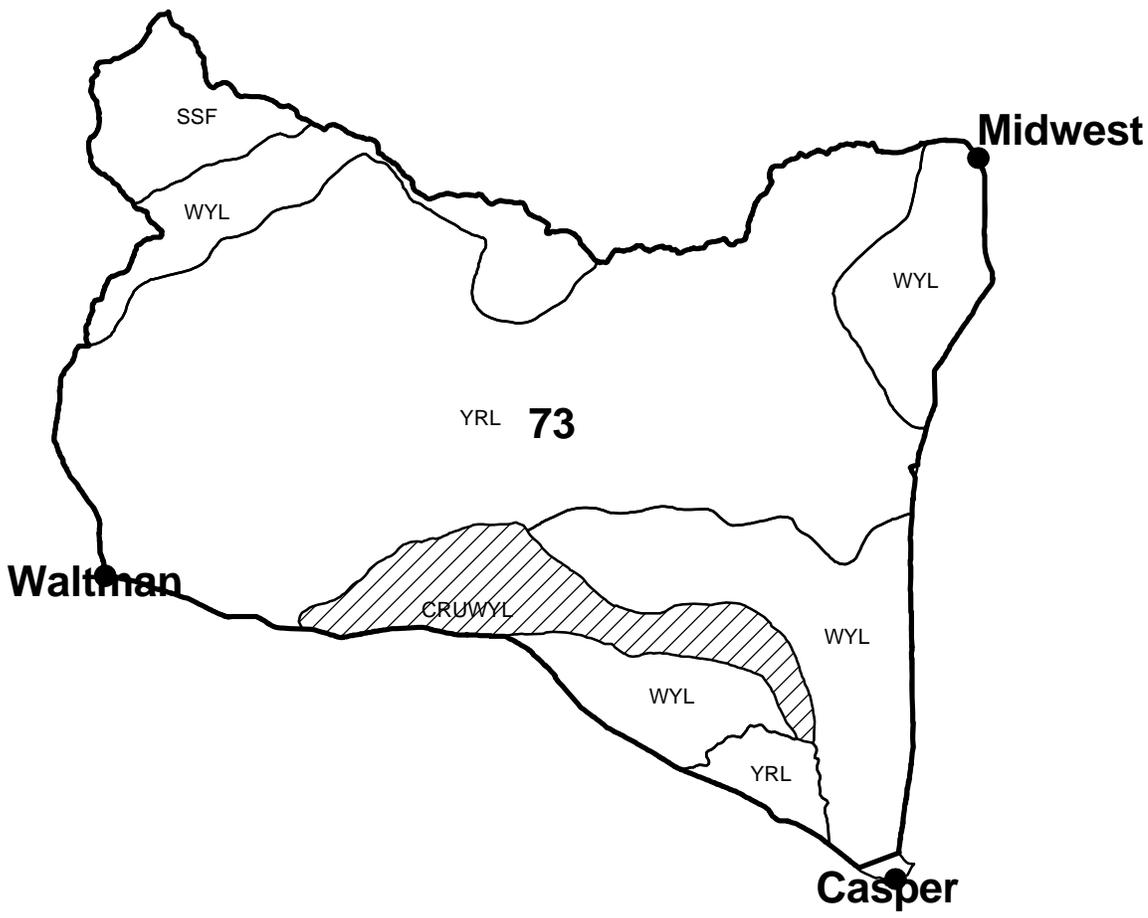
most representative of the herd, as it selects for higher juvenile survival during the years when field personnel observed mild winter conditions, particularly from 2003-2008 when drought conditions persisted and overwinter precipitation was minimal. The simpler models (CJ,CA and SCJ,CA) select for a very low juvenile survival rate and a very high adult survival rate across years, which does not seem feasible for this herd. All three models follow a trend that seems representative for this herd unit. The three models each align partially to four line-transect estimates – each model aligning through some but not all line-transect estimate confidence intervals. However, the CJ,CA and SCJ,CA models estimate population peaks in 2009 that are unrealistically high compared to the perceptions of field personnel and landowners at that time. While the AIC for the TSJ,CA model is the highest of the three, it is only due to year-by-year penalties and is still well within one level of power in comparison to the AICs of the simpler models. The TSJ, CA model aligns with two of four line transect estimates, and is very close to the confidence intervals for the remaining two. The 2012 line transect had a wide standard error, and is considered to be an overestimate of population size for that year. However, its addition in the model only changes the current population estimate by about 100 animals. Thus, it was left in the model as it provides an additional estimation point for the model to utilize. While the model does select upper and lower constraints for juvenile survival for several years of simulation, The TSJ,CA model still appears to be the best representation relative to the perceptions of managers on the ground while following trends with license issuance and harvest success. Overall the model is considered to be good in representing dynamics of the herd.

Management Summary

Traditional season dates in this herd run from September 15th through October 31st. Season dates will remain the same for 2016, with increases in Type 1 and Type 6 license issuance to provide additional hunting opportunity and address rapid population growth above objective in the herd. The 2016 season includes 900 Type 1 licenses and 600 Type 6 licenses. The Type 7 licenses specific to private agricultural lands are still unnecessary in 2016, as damage has not been an issue and access on private lands in the southeast portion of the herd unit has been poor. Landowners that normally utilize the Type 7 license can still take hunters with a Type 6 license, should they have a need to control for agricultural damage. Population growth rates increased markedly in 2014 and 2015, and managers need to reduce the herd toward the new objective of 11,000 rather than allowing further growth. Goals for 2016 are to reduce the pronghorn population toward objective, increase opportunity particularly for doe/fawn harvest, and to maintain current buck ratios, hunter success, and hunter satisfaction.

If we attain the projected harvest of 1,350 pronghorn with average fawn production, this herd will be reduced from 40% to 25% above the objective. The predicted 2016 post-season population size of the North Natrona Pronghorn Herd is approximately 13,700 animals.

Antelope - North Natrona
Hunt Area 73
Casper Region
Revised 4/88



2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR748 - NORTH CONVERSE

HUNT AREAS: 25-26

PREPARED BY: WILLOW STEEN

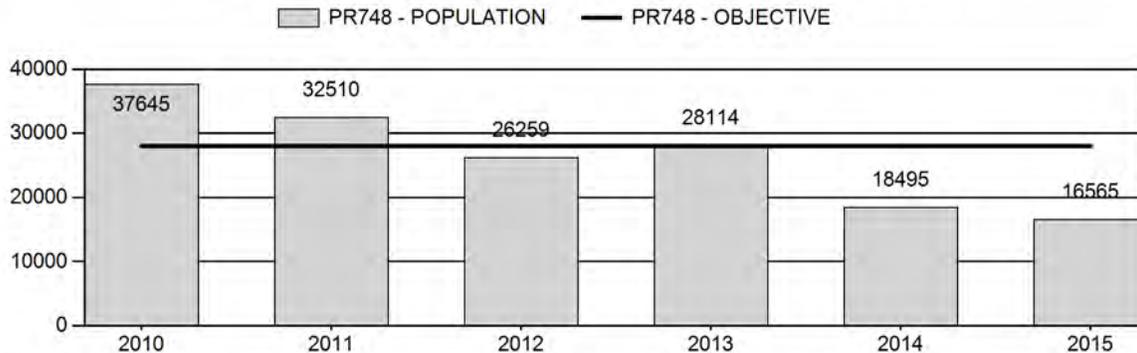
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	28,605	16,565	18,661
Harvest:	2,704	1,652	1,475
Hunters:	3,063	1,734	1,600
Hunter Success:	88%	95%	92%
Active Licenses:	3,216	1,861	1,700
Active License Success:	84%	89%	87%
Recreation Days:	9,863	6,828	6,200
Days Per Animal:	3.6	4.1	4.2
Males per 100 Females	64	50	
Juveniles per 100 Females	70	92	

Population Objective ($\pm 20\%$) :	28000 (22400 - 33600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-40.8%
Number of years population has been + or - objective in recent trend:	5
Model Date:	02/09/2016

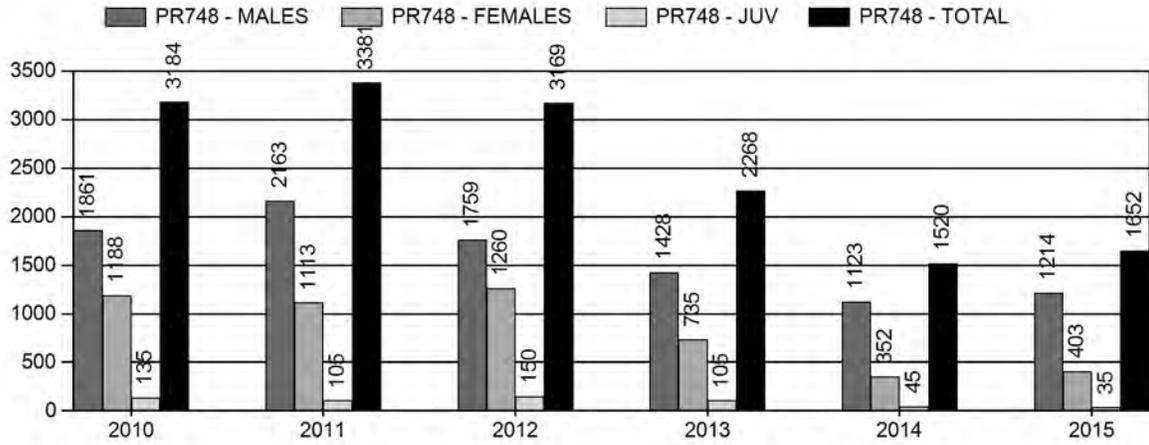
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	5.3%	2.8%
Males ≥ 1 year old:	31.7%	25.0%
Juveniles (< 1 year old):	.5%	.3%
Total:	9.0%	7.3%
Proposed change in post-season population:	-9.9%	-8.0%

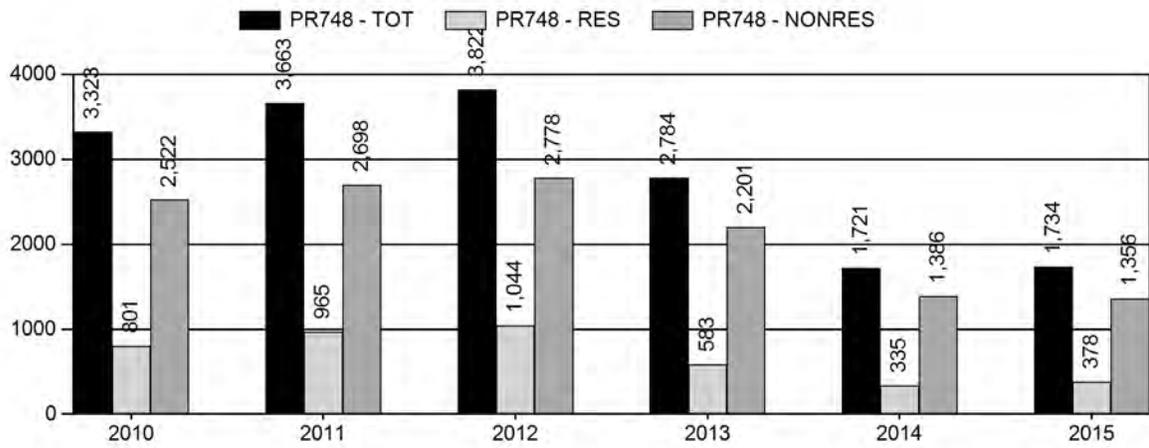
Population Size - Postseason



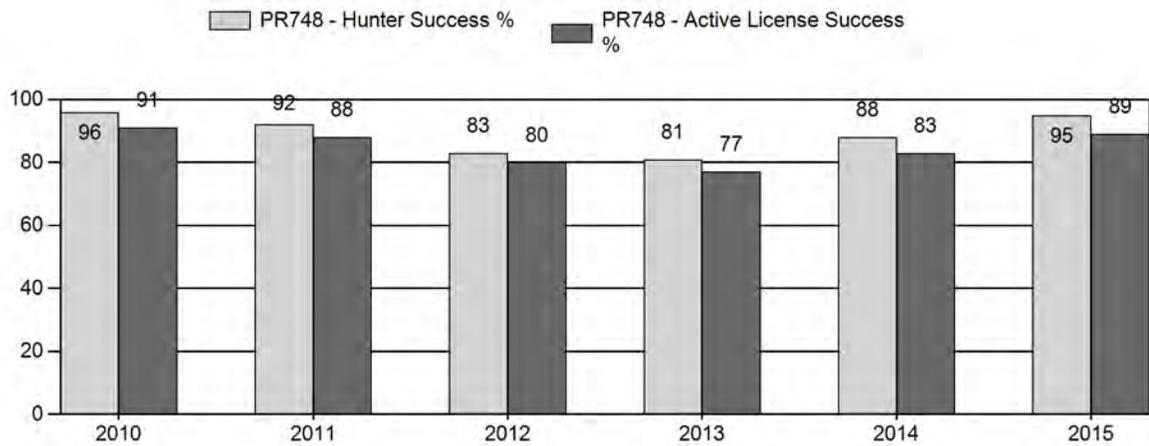
Harvest



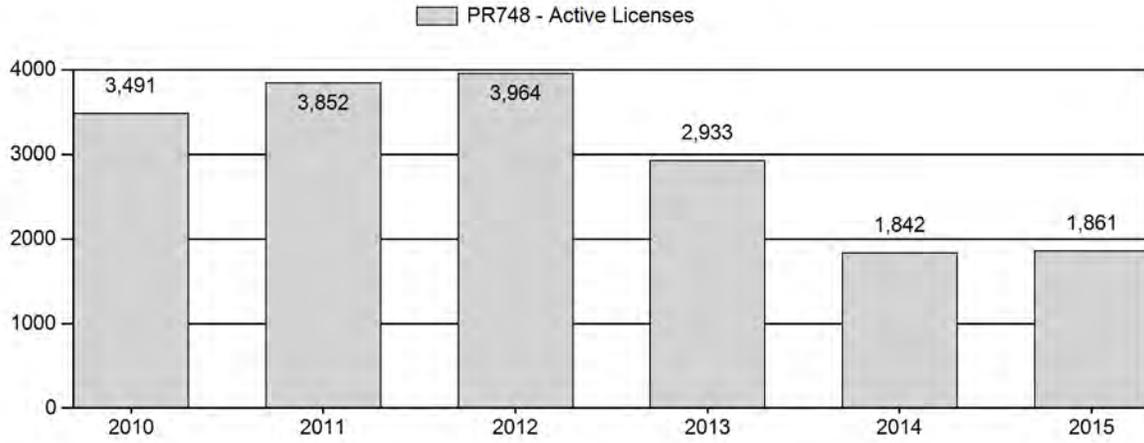
Number of Hunters



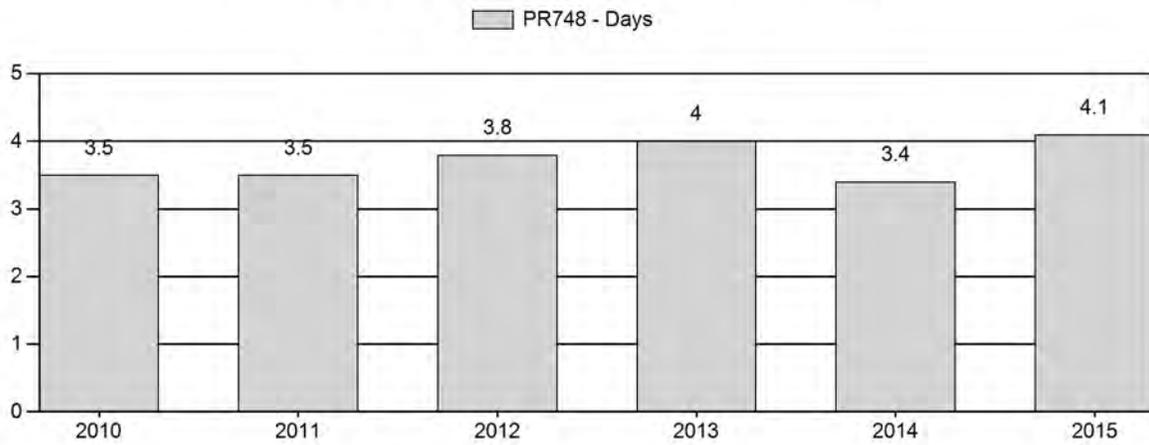
Harvest Success



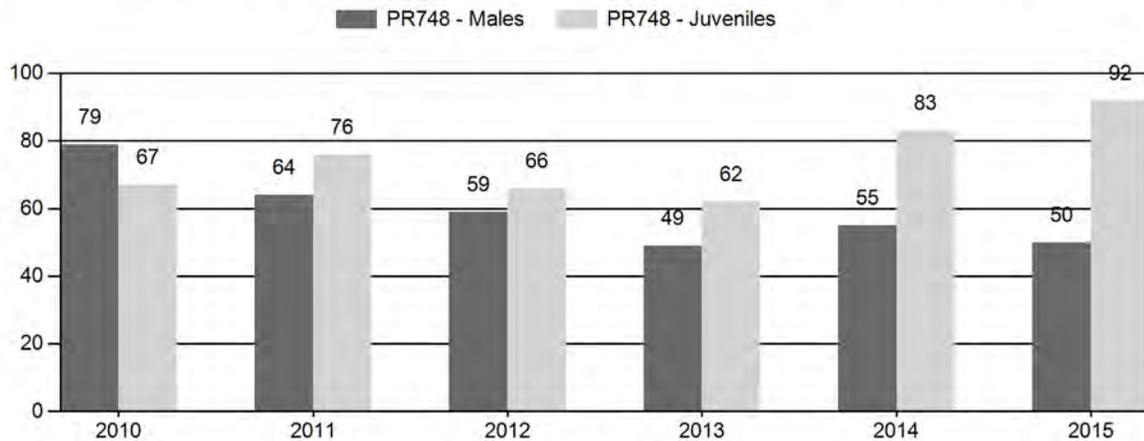
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2010 - 2015 Preseason Classification Summary

for Pronghorn Herd PR748 - NORTH CONVERSE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls Cls Obj	Males to 100 Females				Young to			
		Ylg	Adult	Total	%	Total	%	Total	%		Ylg	Adult	Total	Int	100 Fem	100 Int	100 Adult	
2010	41,148	373	807	1,180	32%	1,490	41%	999	27%	3,669	3,160	25	54	79	± 5	67	± 4	37
2011	36,229	93	480	573	27%	895	42%	683	32%	2,151	3,105	10	54	64	± 5	76	± 6	47
2012	29,745	82	253	335	26%	567	44%	376	29%	1,278	3,040	14	45	59	± 7	66	± 7	42
2013	30,608	101	294	395	23%	803	47%	498	29%	1,696	2,059	13	37	49	± 5	62	± 6	42
2014	20,167	121	249	370	23%	669	42%	554	35%	1,593	3,415	18	37	55	± 6	83	± 8	53
2015	18,382	196	251	447	21%	896	41%	820	38%	2,163	3,717	22	28	50	± 4	92	± 7	61

**2016 HUNTING SEASONS
NORTH CONVERSE PRONGHORN HERD (PR748)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
25	1	Oct. 1	Oct. 14	600	Limited quota	Any antelope
	6	Oct. 1	Oct. 14	150	Limited quota	Doe or fawn
26	1	Sep. 24	Oct. 14	900	Limited quota	Any antelope
	6	Sep. 24	Oct. 14	150	Limited quota	Doe or fawn
Archery		Aug. 15	Sep. 30			Refer to license type and limitations in Section 2

Hunt Area	Type	Quota change from 2015
25	6	-50
26	6	-150

Management Evaluation

Current Postseason Population Management Objective: 28,000

Management Strategy: Recreational

2015 Postseason Population Estimate: ~16,600

2016 Proposed Postseason Population Estimate: ~ 18,700

2015 Hunter Satisfaction: 90% Satisfied, 6% Neutral, 3% Dissatisfied

Herd Unit Issues

The North Converse Pronghorn Herd Unit has a post-season population objective of 28,000 pronghorn. This herd is managed under the recreational management strategy, with a goal of maintaining preseason buck ratios between 30-59 bucks per 100 does. The objective and management strategy were last revised in 2015.

Hunting access on public lands is poor within this herd unit, with only small tracts of accessible public land interspersed within predominantly private lands. Two Walk-In Areas provide some additional hunting opportunity, although they are relatively small in size. Primary land uses in this herd unit include extensive oil and gas production, large-scale industrial wind generation, In-Situ uranium production, and traditional cattle and sheep grazing. In recent years, expansion of oil shale development has dramatically escalated anthropogenic disturbance throughout this herd unit. In addition to current development, two large-scale Environmental Impact Statements are currently being developed that are partially within this herd unit. The Converse County and

Crossbow Oil and Gas EIS's combined propose to develop up to 6,000 wells on 1,600 pads over the next 10 years. The cumulative impacts on pronghorn in this herd from the present and planned natural resource development are potentially significant.

Weather

Weather conditions throughout 2015 produced above average precipitation, especially during the growing season, which resulted in excellent forage production for the second consecutive year. These conditions again yielded high fawn production and also likely contributed to good body condition of pronghorn going into winter. The 2015-2016 winter has been moderate to date, with above average precipitation and consistently cold temperatures which have maintained snow cover throughout most of the winter. However, snow accumulations were most likely not significant enough to limit accessibility to forage and therefore pronghorn should exhibit normal over-winter survival this winter.

Habitat

Although there are no habitat transects in this herd unit, habitat conditions were generally excellent throughout 2015 due to above average precipitation and good residual rangeland conditions from 2013 and 2014. This level of precipitation was necessary to rejuvenate habitats and provide better conditions for the long-term productivity of this pronghorn herd following the extreme drought of 2012. Given the relatively low density of pronghorn currently in this herd unit, there may be reduced herbivory pressure, which should also assist in yielding desirable range conditions.

Field Data

It has been increasingly difficult to meet classification sample sizes in this herd unit as aerial surveys have been abandoned for safety reasons and budgetary constraints. The total number of animals classified has markedly decreased since aerial surveys were eliminated in 2011. In 2015, the adequate sample size was 3,200 animals, yet only about 2,200 pronghorn were classified despite intensive ground coverage. However, more pronghorn were classified in 2015 than in several previous years.

Fawn production was significantly improved over the previous 5-year average (70 per 100 does) in both 2014 and 2015 with ratios of 83 and 92, respectively. It should be noted that pre-season fawn ratios are typically higher in this herd compared to all other adjacent herd units. This is thought to be attributed to intensive predator control efforts that are sustained throughout much of this herd unit due to widespread domestic sheep production. However, despite relatively higher pre-season fawn ratios being observed in this herd unit, overall population trend declined through 2010-2013 in this herd to nearly the same extent as adjacent herds. This suggests that while over-summer fawn survival seems to be elevated in this herd, over-winter fawn survival is likely poorer compared to surrounding herds. Several consecutive years of average to above average fawn production and survival will be needed for this population to increase toward objective.

Pre-season buck ratios decreased in 2015 (50 per 100 does) compared to the 5-year average of 61, but are currently in line with management strategy criteria. Historically this herd has retained

high buck ratios exceeding the management strategy maximum due to limited access because of the preponderance of private land and widespread outfitting. Therefore, managers are content with current buck ratios given past challenges with remaining within management criteria. The 2015 yearling buck ratio is 22, which is higher than the 5-year average of 16, as a result of the high fawn productivity and recruitment from 2014. This indicates that there will be a relatively high proportion of adult bucks available for harvest in the near future.

Harvest

Overall harvest has declined in this herd unit as license issuance has decreased in lieu of population decline. The 2015 total harvest of 1,652 was the 2nd lowest total pronghorn harvest obtained in this herd unit over the last 25 years, with the lowest harvest year in 2014 at 1,520 pronghorn harvested. Due to the appropriate adjustments in license issuance according to population size, the 2015 license success was (89%) which is improved over the 5-year average of 84%, and increased for the second consecutive year. The number of days per animal (4.1) in 2015 is comparable to the previous 5-year average of 3.6.

In 2015, 90% of hunters reported being either satisfied or very satisfied with their hunt, indicating a remarkably high level of satisfaction given the lack of public access and population decline. It should be noted that most hunters who speak to Game and Fish personnel are advised to secure access on private land before purchasing a license in areas that have limited public access, or at least be cognizant of the fact that public land availability is extremely limited.

Population

The 2015 post-season population estimate is approximately 16,600 pronghorn, which is 41% below objective. In years past, high fawn productivity coupled with limited access has allowed this herd to exceed the objective very readily. However, this population dropped below objective due to elevated mortality during the relatively severe 2010-2011 winter, and continued to decrease through 2013. Significant reductions in licenses were made in response to population decrease. Poor fawn production in 2012 and 2013 further suppressed this herd, but a significant improvement was realized in 2014 and 2015. Given high fawn productivity, this population was projected to noticeably increase in 2015. However, field personnel and landowner observations indicate this population has stabilized, but has not appreciably increased. This trend of stagnation has also been simulated within the population model. Some landowners reported observations of late summer/early fall pronghorn mortalities in 2015, however these reports came too late for any diagnostic testing to be conducted. Based on these reports as well as some incidences in neighboring herd units, it is likely that this population experienced a greater degree of hemorrhagic disease than normal. Field personnel do not feel that this was an extreme die-off event that dramatically reduced the population, but rather an event that prevented the population from increasing in 2015 as predicted.

The “Time Specific Juvenile – Constant Adult” (TSJ-CA) spreadsheet model was chosen for the post-season population estimate of this herd. All three models had similar relative AIC values. The TSJ-CA model most accurately represented population trend based on field personnel and landowner perceptions. This model is considered to be of fair quality and tracks well with observed pre-season buck ratios. However, this model has not been anchored to past end-of-year

abundance estimates as multiple past Line Transect surveys have yielded unusable results with widely fluctuating point estimates and high coefficients of variation.

Management Strategy

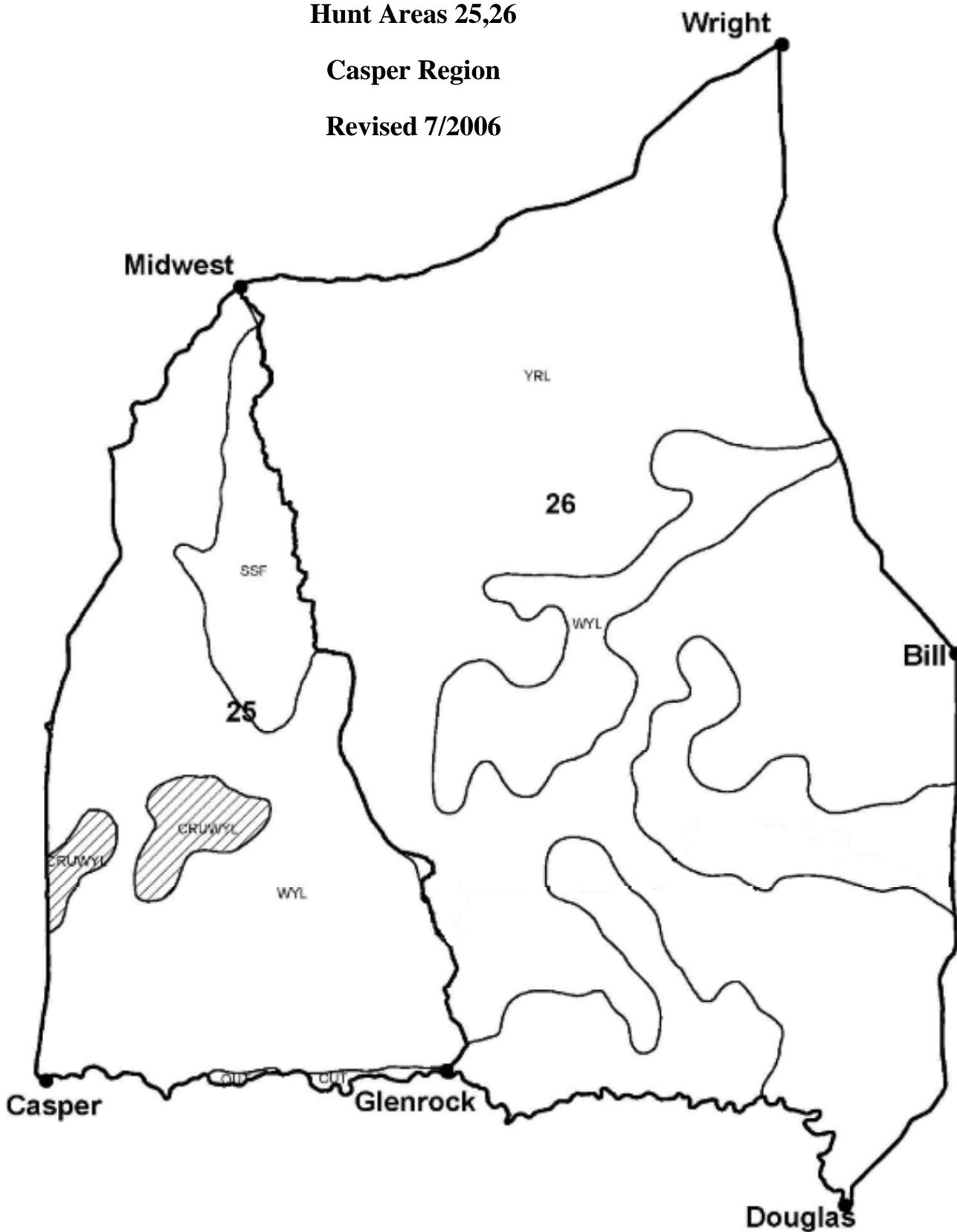
The traditional season dates in this herd unit are from October 1 to October 14 in Hunt Area 25 and from September 24 to October 14 in Hunt Area 26. These season dates have typically been adequate to meet landowner desires while accommodating a reasonable harvest. For 2016, herd unit-wide Type 1 license issuance was maintained at 1,500 licenses, but Type 6 licenses were reduced by 50 in Hunt Area 25 and 150 in Hunt Area 26. Maintaining relatively low harvest pressure on both males and females is warranted given this population is below objective and has stagnated. However, given the current size of this population as well as the size of the herd unit which also includes some high density pronghorn areas along the North Platte River, managers felt pronghorn numbers were sufficiently high to warrant some level of continued doe/fawn harvest. If we attain the projected harvest of ~1,500 pronghorn and realize normal fawn recruitment, this population is projected to increase to about 18,700 pronghorn, which is 33% below objective.

North Converse Antelope

Hunt Areas 25,26

Casper Region

Revised 7/2006



2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR750 - BLACK THUNDER

HUNT AREAS: 4-9, 24, 27, 29

PREPARED BY: JOE SANDRINI

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	37,533	37,577	40,250
Harvest:	5,286	3,230	3,900
Hunters:	6,014	3,670	4,430
Hunter Success:	88%	88%	88%
Active Licenses:	6,507	4,029	4,865
Active License Success:	81%	80%	80%
Recreation Days:	20,894	12,538	15,100
Days Per Animal:	4.0	3.9	3.9
Males per 100 Females	52	45	
Juveniles per 100 Females	68	87	

Population Objective (\pm 20%) :	49000 (39200 - 58800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-23.3%
Number of years population has been + or - objective in recent trend:	5
Model Date:	02/01/2016

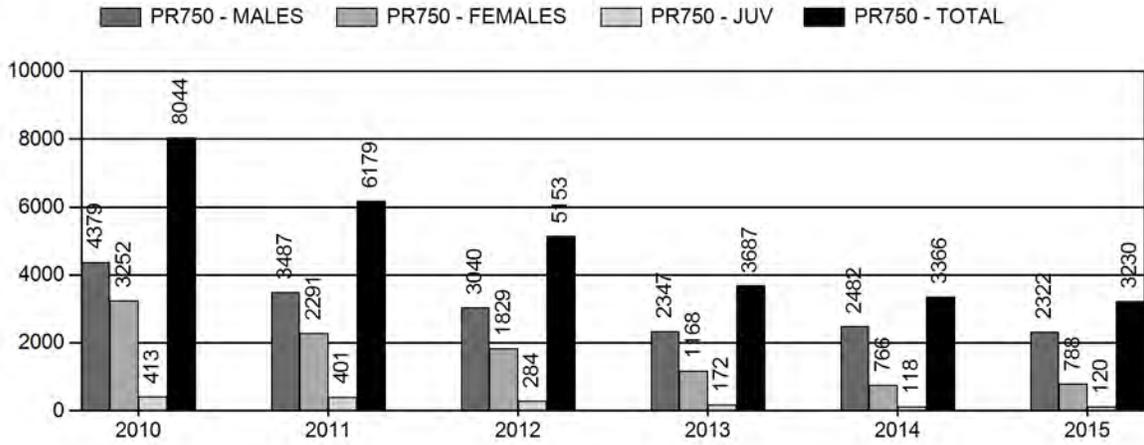
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	4.9%	5.6%
Males \geq 1 year old:	32.2%	31.7%
Juveniles (< 1 year old):	0.9%	1.1%
Total:	8.6%	9.6%
Proposed change in post-season population:	+13.1%	+7.1%

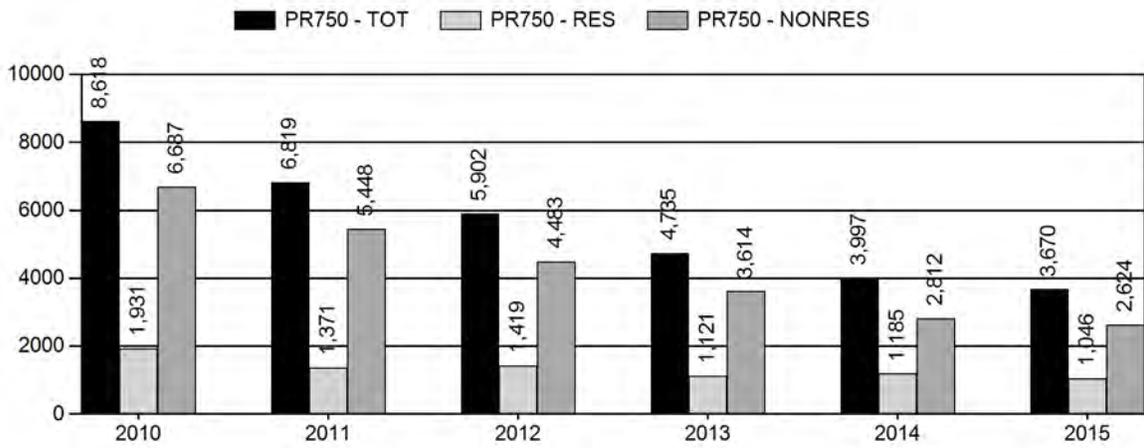
Population Size - Postseason



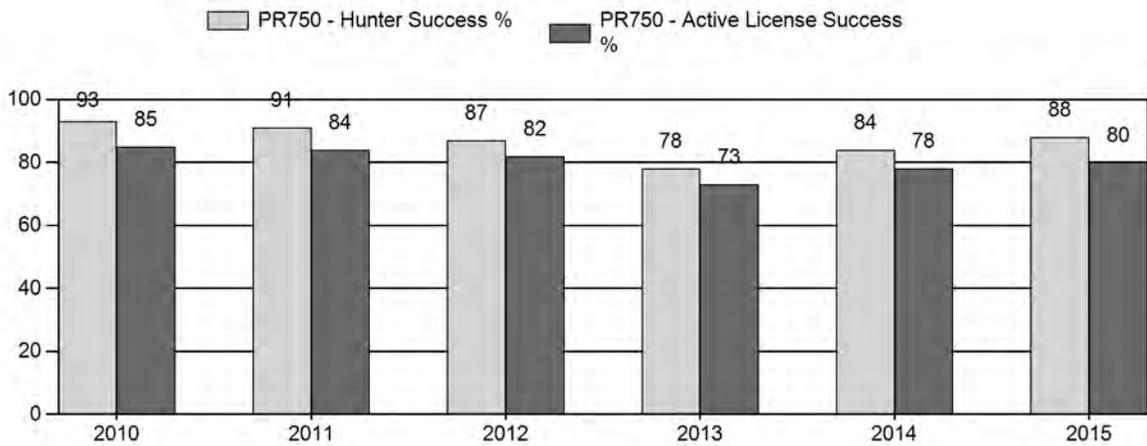
Harvest



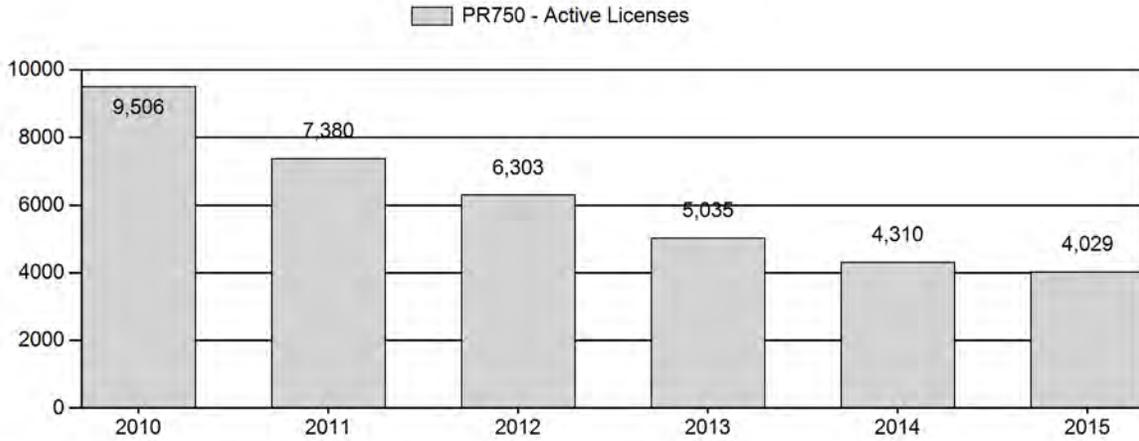
Number of Hunters



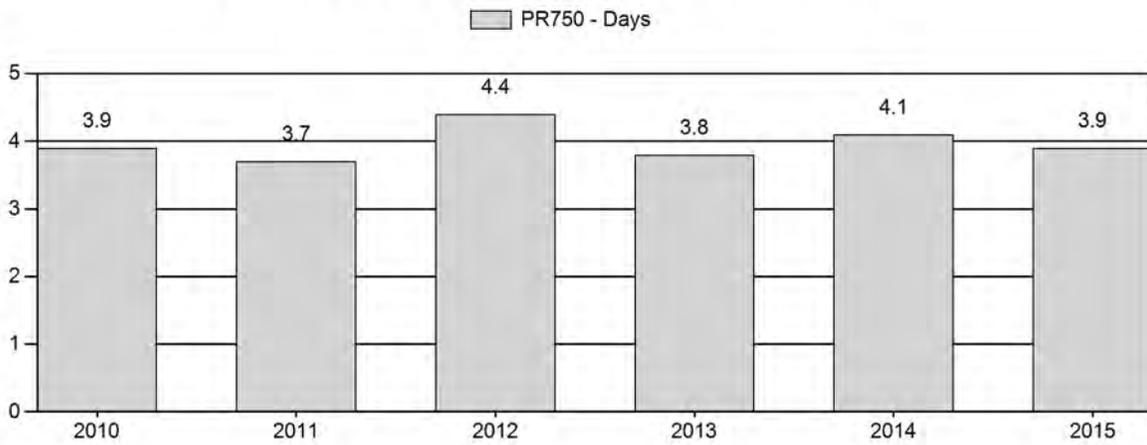
Harvest Success



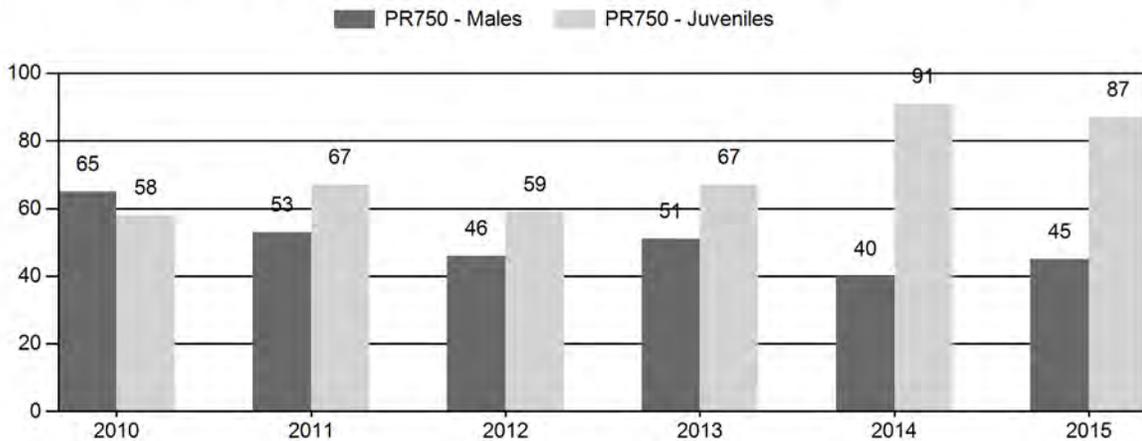
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2010 - 2015 Preseason Classification Summary

for Pronghorn Herd PR750 - BLACK THUNDER

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	74,523	579	1,584	2,163	29%	3,326	45%	1,930	26%	7,419	2,502	17	48	65	± 3	58	± 3	35
2011	38,347	309	1,011	1,320	24%	2,477	45%	1,667	31%	5,464	2,490	12	41	53	± 3	67	± 3	44
2012	34,201	318	617	935	23%	2,022	49%	1,198	29%	4,155	1,962	16	31	46	± 3	59	± 3	41
2013	32,729	315	733	1,048	23%	2,067	46%	1,380	31%	4,495	2,444	15	35	51	± 3	67	± 4	44
2014	36,939	288	582	870	17%	2,197	43%	2,008	40%	5,075	3,888	13	26	40	± 2	91	± 4	65
2015	41,130	482	659	1,141	19%	2,558	43%	2,235	38%	5,934	3,717	19	26	45	± 2	87	± 4	60

**2016 HUNTING SEASONS
BLACK THUNDER PRONGHORN HERD (PR750)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
4	1	Oct. 1	Nov. 20	200	Limited quota	Any antelope
	6	Oct. 1	Nov. 20	200	Limited quota	Doe or fawn
5	1	Oct. 1	Nov. 20	100	Limited quota	Any antelope
	6	Oct. 1	Nov. 20	50	Limited quota	Doe or fawn valid on private land
6	1	Oct. 1	Oct. 15	350	Limited quota	Any antelope; also valid in that portion of Area 8 in Weston County
	6	Oct. 1	Oct. 15	25	Limited quota	Doe of fawn; also valid in that portion of Area 8 in Weston County
7	1	Oct. 1	Oct. 15	450	Limited quota	Any antelope
	6	Oct. 1	Oct. 15	50	Limited quota	Doe or fawn
	7	Oct. 25	Nov. 15	50	Limited quota	Doe or fawn valid on private land
8	1	Oct. 1	Oct. 15	375	Limited quota	Any antelope
9	1	Oct. 1	Oct. 31	700	Limited quota	Any antelope; also valid in that portion of Area 11 in Converse or Niobrara counties
	6	Oct. 1	Oct. 31	650	Limited quota	Doe or fawn; also valid in that portion of Area 11 in Converse or Niobrara counties
24	1	Oct. 1	Oct. 31	700	Limited quota	Any antelope
	6	Oct. 1	Oct. 31	350	Limited quota	Doe or fawn
27	1	Oct. 1	Oct. 15	275	Limited quota	Any antelope
	7	Oct. 1	Oct. 15	50	Limited quota	Doe or fawn valid on private land

(cont. on next page)

29	1	Oct. 1	Oct. 15	125	Limited quota	Any antelope
	2	Oct. 1	Oct. 15	500	Limited quota	Any antelope off national grasslands
	6	Oct. 1	Oct. 15	150	Limited quota	Doe or fawn valid off national grasslands
	7	Oct. 1	Nov. 15	100	Limited quota	Doe or fawn valid south and west of Interstate Highway 25

Hunt Special Archery Season Hunt Areas	Opening Date	Limitations
4, 5	Sep. 1	Refer to Section 2 of this Chapter
6 - 9, 24, 27, 29	Aug. 15	Refer to Section 2 of this Chapter

SUMMARY OF CHANGES IN LICENSE NUMBER

Hunt Area	License Type	Quota change from 2015
4	1	+50
4	6	+125
6	1	+50
6	6	+25
7	1	+100
7	6	+50
7	7	+50
8	1	+75
9	1	+100
27	1	+50
29	1	+25
29	2	+100
29	6	+50
Herd Unit Total	1	+450
	2	+100
	6	+250
	7	+50

Management Evaluation

Current Postseason Population Management Objective: 49,000

Management Strategy: Recreational

2015 Postseason Population Estimate: ~ 37,600

2016 Postseason Population Estimate: ~ 40,300

2015 Hunter Satisfaction: 81% Satisfied, 12% Neutral, 7% Dissatisfied

HERD UNIT ISSUES: The management objective of the Black Thunder Pronghorn Herd Unit is for an estimated, post-season population of 49,000 pronghorn. This herd is managed under the recreational management strategy. The population objective and management strategy were reviewed and adopted in 2014 when this herd was created by combining the Cheyenne River (PR740) and Highlight (PR316) pronghorn herd units. The post-season population objectives of the parent herds were combined to create the current objective for the Black Thunder herd.

The Black Thunder Pronghorn herd unit encompasses much of northeastern Wyoming. Because of the disparity of habitats across the herd unit and the preponderance of private land, this herd unit is managed for recreational hunting. The herd unit encompasses approximately 8,315 mi², of which slightly less than 7,300 mi² are currently delineated as occupied pronghorn habitat. This figure was recently re-evaluated using aerial photography and GIS technology to better quantify unsuitable and unoccupied habitat such as towns, ponderosa pine habitat and active coal mine pits. A revised seasonal range map will be available and put to use beginning in bio-year 2016. Currently, most of the delineated, unoccupied habitat is found in Hunt Areas (HA's) 4 and 5 and generally include a portion of the Black Hills having topographical and vegetative features unsuitable for pronghorn.

Approximately 77% of this herd unit is private land. The remaining 23% includes lands managed by the United States Forest Service (USFS), the Bureau of Land Management (BLM), and the State of Wyoming. Most occupied USFS lands that are publically accessible to hunters are part of the Thunder Basin National Grassland (TBNG) located in HA's 5, 6, 7, 27, and 29, with HA 27 containing the largest amount followed by HA's 7 and 29. The State of Wyoming owns a large parcel of land in HA 9. Remaining public lands are scattered throughout the herd unit, and many are not accessible to the public. Access fees for hunting are common on private land, and many landowners have leased their property to outfitters. Therefore, accessible public lands are subjected to disproportionately heavy hunting pressure.

Major land uses in this herd unit include livestock grazing, oil and gas production, timber harvest, and farming. There are several oil and gas fields which occur primarily in HA's 6, 7, 8, 24 and 29, and development pressure has increased in recent years in HA's 8 and 29. Several large surface coal mines represent a substantial land use within HA's 24 & 27. Farming generally occurs in the southern most portion of the herd unit; but there are a number of wheat, oat, and alfalfa fields near Sundance, Upton, and Gillette. When pronghorn numbers are high, damage to growing alfalfa can become an issue, especially near Sundance and Lusk.

WEATHER: Harsh 2010-11 winter conditions resulted in significant pronghorn over-winter and spring mortality. Subsequent drought through 2012 then contributed to depressed fawn

recruitment and elevated levels of hemorrhagic disease. However, weather conditions in this herd unit have been generally favorable for antelope over the past two years. Spring and summer temperatures were very near long-term averages in 2014 and slightly above average in 2015; while the precipitation received during these same timeframes was just a bit above the long-term average in 2014 and well above normal in 2015. In fact, there was significant flooding along some drainages due to thunderstorms in June of 2015. But, these weather events did not seem to affect pronghorn much. Overall, winter conditions in 2014 and 2015 favored pronghorn. Daily winter temperatures were very close to average in 2014 and above average in 2015. Total precipitation between October and March was above average in 2014 and a bit below normal in 2015 (see <http://www.ncdc.noaa.gov/cag/> for details). In summary, the weather conditions experienced by this herd the past two years resulted in abundant forage and high over-winter survival.

HABITAT: This wide ranging herd unit is largely characterized by stands of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) and silver sagebrush (*Artemisia cana*) interspersed with mid-prairie grasses such as wheatgrasses (*Agropyron* spp.), grama grasses (*Bouteloua* spp.), and needle grasses (*Stipa* spp.). Other areas are dominated by grasslands with less sage influence and more agricultural croplands, notably near the towns of Douglas, Lusk, Gillette, Newcastle, Upton, and Sundance. In addition, there are several major drainages throughout the herd unit dominated by plains cottonwood (*Populus deltoides*) and greasewood (*Sarcobatus vermiculatus*). These drainages include the head waters of the Belle Fourche River in the north and those of the Niobrara River in the south; while most of the Cheyenne River drainage, including Beaver Creek, Black Thunder Creek, Antelope Creek, Old Woman Creek, Hat Creek, Lance Creek, and Lightning Creek, make up the bulk of the herd unit. Steep canyons of the southern and central Black Hills are found in the northeast corner of the herd unit, where vegetation consists of ponderosa pine (*Pinus ponderosa*) and its associated savannah.

Habitat suitability for pronghorn varies greatly throughout the herd unit. Much of the habitat in the northeast portion of the herd unit is marginal, consisting of topography and vegetation not particularly favorable for pronghorn. The west-central portions of the herd unit represent the largest block of contiguous sagebrush habitat. While the eastern and southern sections of the herd unit are dominated more by mid-grass prairie and agricultural lands, but locally do support good numbers of pronghorn.

Habitat disturbance throughout the herd unit is generally high. There are a number of developed oil fields and areas impacted by bentonite and coal mining. In areas dominated by irrigated and dry land farming, historic sagebrush control projects have decreased the amount of sagebrush available for wintering pronghorn. In addition to sagebrush control, livestock grazing practices and wildfires have converted areas once thought to be dominated by Wyoming big sagebrush to more grass, prickly pear and silver sage dominated communities. Yet, pronghorn still winter in some of these locations. Habitat loss and fragmentation is expected to continue and negatively impact this herd. Based upon current exploration and leasing trends, the amount of disturbance caused by mining, and oil & gas activities will continue to increase in HA's 8, 24, 27 and 29. In addition, a large wind farm is planned in HA 29.

After about a decade of collecting annual Wyoming big sagebrush leader growth and utilization data in this herd unit, the Department suspended these efforts. This was because it had been demonstrated annual leader production was generally proportional to the amount of spring and early summer moisture received; while use could be fairly well gauged through causal observation. Over the past two years essentially wet spring and summer conditions have persisted together with low numbers of pronghorn and mule deer on the range. Consequently, observations have shown excellent leader growth and reduced winter use, indicating this population is currently well below carrying capacity and should be permitted to continue to grow towards objective.

FIELD DATA: This population declined significantly between 2010 and 2012, and remained depressed in 2013 before beginning to rebound in 2014. The decline was accentuated by the winter of 2010-2011 and subsequent drought of 2012. Following the severe 2010-11 winter, fawn:doe ratios remained lower than average. This trend in low fawn:doe ratios persisted even with substantially lower populations, which was likely due to drought in 2012 and Epizootic Hemorrhagic Disease (EHDV) in 2013. In 2014, fawn production and survival increased substantially as demonstrated by an observed, pre-season fawn:doe ratio of 91:100, a value of magnitude not seen in a decade. This was followed by a second year of great fawn production and survival in 2015 when the observed fawn:doe ratio was 87:100, even with significant numbers of yearling does in the population. Consequently, the population model for this herd indicates the post-season population increased about 16% in 2014 and 13% in 2015.

Over the last 20⁺ years, annual productivity of this herd, as measured by pre-season fawn:doe ratios (while experiencing cyclic fluctuations) has generally declined (Figure 1). This is thought to be the result of a reduction in habitat quantity and quality intensified by long-term drought, plant succession, aging of sagebrush, and over-browsing by both domestic livestock and wildlife. Between 2008 and 2013 the herd's pre-season fawn:doe ratio trended upwards slightly, but averaged only 62 fawns per 100 does (*std. dev 5.0*). This resulted in a continued population decline, even as hunting seasons became more conservative. As previously mentioned, thanks to excellent fawn production in 2014 and 2015, this population has begun to increase once again.

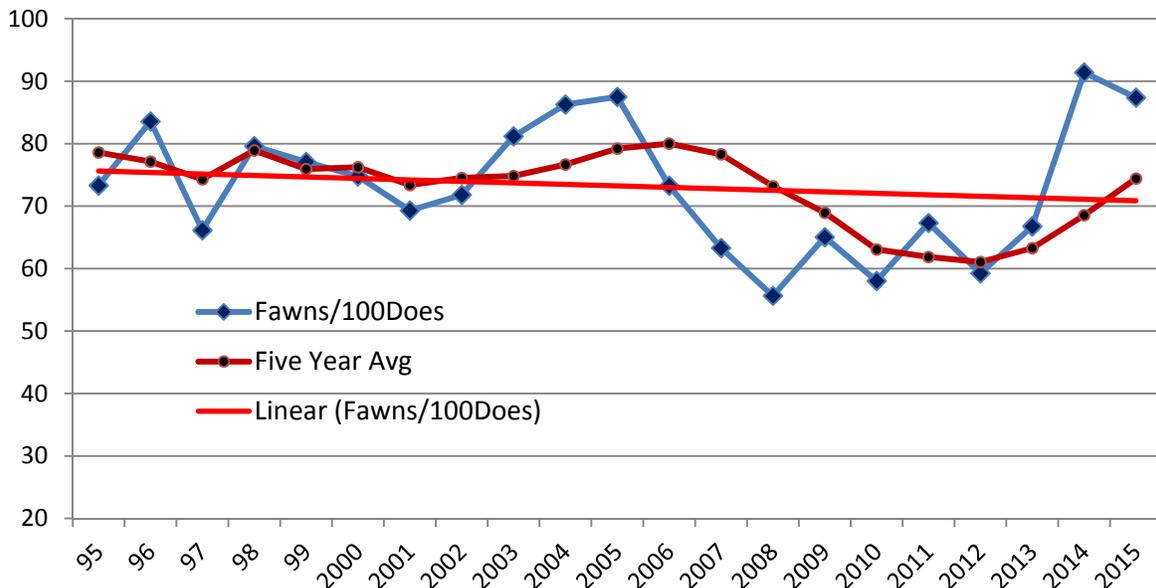


Figure 1: Observed Annual, and Five-Year Average Fawn:Doe Ratios (1991-2015).

As this population grew during the early and mid 2000’s, preseason buck:doe ratios generally rose. Then as this population dropped and the percentage of bucks harvested from the population increased each year, preseason buck:doe ratios declined - dropping to a low of about 40:100 in 2014. However, the observed preseason buck:doe ratio increased to 45:100 in 2015. Given excellent reproduction the past two years and the conservative hunting seasons in place (even with increases in 2016 Type 1 license issuance), the preseason buck:doe ratio is projected to again rise in 2016 to about 48:100, a value near the mid-point of the Department’s recreational management criteria.

HARVEST DATA: Hunter success dropped while effort remained fairly consistent between 2010 and 2013 as this population declined. In both 2014 and 2015, with conservative hunting seasons in place and a growing pronghorn population, hunter success improved each year while hunter effort continued to fluctuate near 4 days per animal harvested. Consequently, after several years of hunter success below that normally observed for pronghorn in the state, in 2015 most hunt areas in the herd unit witnessed a return to hunter success on par with historic levels. Hunter success on doe/fawn licenses ranged from a low of 65% (HA 24 & HA 29 Type 7) to a high of 91% (HA 4). However, hunter success on doe/fawn licenses was still relatively low at 73% in both HA 5 and HA 9. Hunter success on Type 1 and 2 licenses ranged from 71% (HA 5) to 93% (HA 27); and while hunter success was also lower than desired in HA 9 (76%) and HA 24 (73%), it was excellent (87% or above) in the remaining hunt areas.

Although hunter success dropped steadily between 2010 and 2013, the 2014 hunter satisfaction survey revealed herd unit-wide 39% of hunters were very satisfied, and 37% satisfied with their hunt in 2014 - values basically identical to those reported 2012 and 2013. In 2015, hunter satisfaction rose with 45% of the hunters reporting they were very satisfied and 36% stating they were satisfied. The vast majority of hunters in this herd unit are non-residents from states

without pronghorn who, despite what Department personnel consider low pronghorn numbers, are still amazed at the numbers of pronghorn they see and level of success they experience compared to hunting other big game species in their home states.

POPULATION: Following approval of the herd unit combination that created this herd, an official population model was constructed in February, 2015 (see 2015 PR750 JCR for details). The model was then updated with 2015 classification and harvest data. Once again the “Semi Constant Juvenile & Semi Constant Adult” (SCJ SCA) spreadsheet model was chosen to estimate this herd’s population. All three competing models generally simulate a population rise between 2000 and 2006, followed by a decline through 2012 or 2013 and an increase in 2014 and 2015. All three competing models also produce post-season population estimates for 2012 within about 5% of each other and within 10% in 2014 and 2015. The SCJ SCA model exhibited the lowest AICc value, and good fit compared to competing models - with modeled buck:doe ratios not appearing to be over parameterized. As a result, the SCJ SCA model was selected as the preferred model. The magnitude of population trends produced by SCJ SCA model dovetail well with general trends in harvest statistics and the perceptions of local game managers, landowners, and hunters.

Amongst competing models the SCJ SCA model more substantially fits LT estimates. However, it should be noted that while an LT survey was flown in this herd unit during June, 2015, the end of bio-year population estimate produced by that effort (~49,700) was 66% above the currently modeled end of bio-year population estimate, exceeded the post-season population objective of the herd, and was completely unreasonable in relation to historic data. In addition, none of the available models were even able to come close to intercepting the confidence intervals of the estimate. But, supporting model choice, the SCJ SCA model does yield the highest end of bio-year 2015 estimate of all three models. Post hoc revisions to the 2015 LT estimate are planned to be attempted this spring to determine if post survey stratification of observed data and a revised estimate of occupied habitat may render use of these survey data reasonable. It is unknown why the 2015 LT estimate was so high, but it is suspected that it may have something to do with very high densities of antelope being encountered on most lines in the northern one-third and near the southern border of the herd unit, while very low densities were encountered between these areas. This may have been a result of the weather experienced in May and June of 2015, or simple a result of the redistribution of survey lines from previous surveys.

The current model seems to function well because it allows for modeling the increased mortality observed during the severe winter of 2010-2011; and (although it lacks herd specific survival data) estimated juvenile and adult survival rates are reasonable. Consequently, the model is considered fair to good overall because it has 15-20 years of data; ratio data available for all years in the model; at least one sample-based population estimate with standard error; aligns fairly well with observed data; and is biologically defensible.

The Black Thunder pronghorn population is projected to have increased steadily from the late 1990’s through 2006, when it peaked about 60% above objective at ~72,000 pronghorn. During this timeframe, fawn survival was very good with above average fawn:doe ratios observed, while doe/fawn harvest was limited by our inability to sell all available licenses. After its peak in 2006 & 2007, the postseason population declined steadily through 2012 and remained essentially unchanged in 2013, about 42% below objective. Some of this decline was due to increased

harvest following regulatory and license issuance changes that increased doe/fawn licenses sales and acted in concert with enrollment of private lands in our walk-in hunting program to increase hunter access. But more ostensibly, the drop resulted from reduced fawn recruitment due to drought, significant mortality during and following the 2010-11 winter; and increased summer mortality of all age classes due to Epizootic Hemorrhagic Disease (EHDV), and perhaps even some unknown density dependent factor(s).

MANAGEMENT SUMMARY: Hunting seasons since 2012 have been quite conservative in this herd unit, but the 2016 season entails beginning to reverse this strategy as the herd rebounds. Doe/fawn harvest will remain significantly reduced, but continue at a moderate level in several hunt areas. Additionally, any-antelope license issuance is being liberalized in 7 of the 9 hunt areas to allow increased hunting opportunity as the buck:doe ratios rises. In 2016, total harvest in this herd unit should increase about 20% from the levels witnessed over the past two years. With no reductions prescribed in any license types and an increasing population, harvest in all hunt areas should increase to some degree, with the total increase being fairly proportionate to the increase in license issuance.

In HA 9, claims for damage from pronghorn are no longer being submitted, landowners have noted a drop in pronghorn numbers, and harvest success has remained lower than most of the remainder of the herd unit. However, harvest pressure will be maintained here despite being below objective in an effort to continue to limit damage. Similarly, in HA 7 a new, “late season” Type 7 is being introduced to address a specific damage complaint, where migrating pronghorn congregate on irrigated hayfields. In HA 29, as a response to complaints from landowners and hunters about low pronghorn numbers and hunter success on public lands, the bulk of any-antelope licenses will continue to be issued as Type 2, which are valid off national grasslands. Changes made in this hunt area over the past several years have been well received by many landowners and have significantly reduced harvest pressure on public lands in the northern part of HA 29. Following two years of excellent reproduction and survival, plus the high buck:doe ratio observed in this hunt area this past year, the prescribed 25% increase in the number of Type 1 & 2 licenses here is warranted, as is the slight increase in doe/fawn tags valid on private land.

Concerns remain about low pronghorn numbers on public lands, notably on the TBNG in both HA’s 27 and 29. In addition, expansion of the coal mines in HA 27 has recently blocked hunter access to a significant amount of public land in this unit. To address this situation, doe/fawn license issuance in HA 27 will continue to be restricted, and their use limited to private lands. However, Type 1 license issuance has been increased by 50 to allow some increased opportunity with improved buck:doe ratios. In this HA 27, residents hold 80% of the licenses and draw odds for non-residents are some of the most difficult in the state. Active Type 1 license success in HA 27 increased substantially in 2015 after three years in a row of relatively low success, and the percentage of residents reporting they were satisfied or very satisfied returned to 88%, a level not seen since 2011.

Finally, to address landowner concerns along the boundary of HA’s 6 and 8 a change in license limitations allowed hunters with HA 6 licenses to hunt in HA 8 and vice versa the past two years. The boundary between these hunt areas consists of county roads, which antelope frequently

cross. Consequently, over the years some landowners whose properties straddle this boundary requested the ability for hunters to hunt both sides of these roads on a single license. After evaluating the success of this strategy and visiting with effected landowners, this approach is being altered for 2016. HA 8 licenses holders will again be restricted to hunting HA 8 only, while HA 6 licenses holders will be permitted to hunt that portion of HA 8 within Weston County. This alteration will allow some increased harvest in that portion of HA 8 with the highest pronghorn densities (a hunt area without any doe/fawn license issuance) while addressing the desires of specific landowners.

Given average fawn:doe and buck:doe ratios observed over the past 5-years and consistent survival rates combined with a predicted harvest of ~3,900 pronghorn, the 2016 hunting season should allow the post-season population of this herd to grow around 7%, to ~ 40,250 pronghorn, which is 18% below objective.

Black Thunder Pronghorn PR750

