2018 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2018 - 5/31/2019

HERD: PR615 - RED DESERT

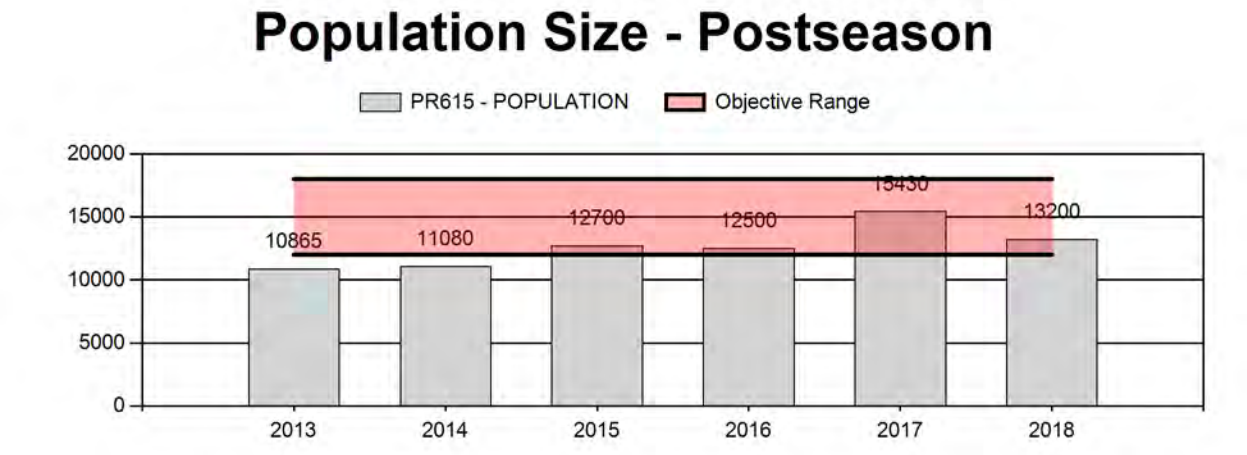
HUNT AREAS: 60-61, 64
PREPARED BY: GREG HIATT

	2013 - 2017 Average	2018	2019 Proposed
Population:	12,515	13,200	14,046
Harvest:	298	408	285
Hunters:	325	399	325
Hunter Success:	92%	102%	88%
Active Licenses:	351	464	325
Active License Success:	85%	88%	88%
Recreation Days:	1,113	1,229	950
Days Per Animal:	3.7	3.0	3.3
Males per 100 Females	57	55	
Juveniles per 100 Females	55	41	

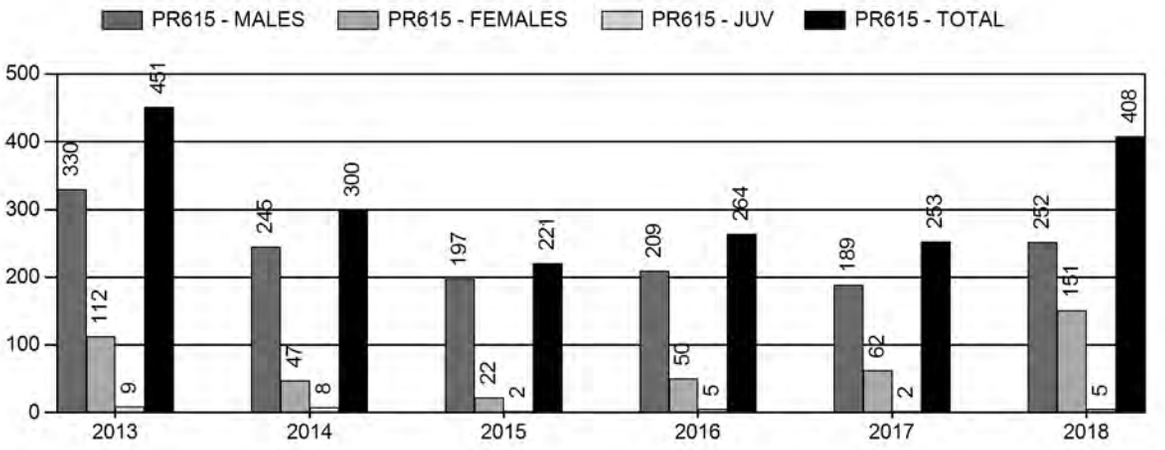
Population Objective (± 20%) :	15000 (12000 - 18000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-12%
Number of years population has been + or - objective in recent trend:	3
Model Date:	2/27/2019

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

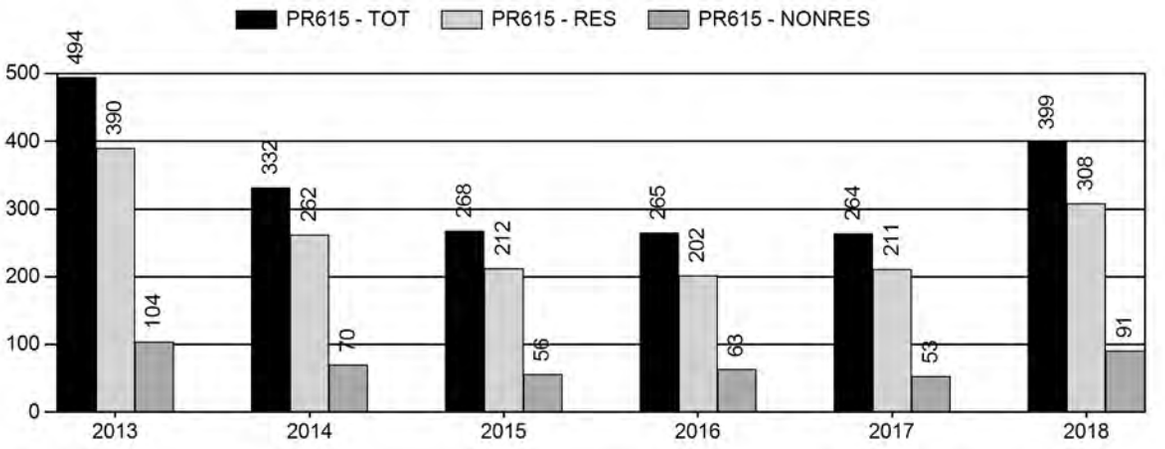
	JCR Year	Proposed
Females ≥ 1 year old:	2.2%	0.9%
Males ≥ 1 year old:	6.1%	5.5%
Total:	3.0%	2.0%
Proposed change in post-season population:	-8.6%	6.4%



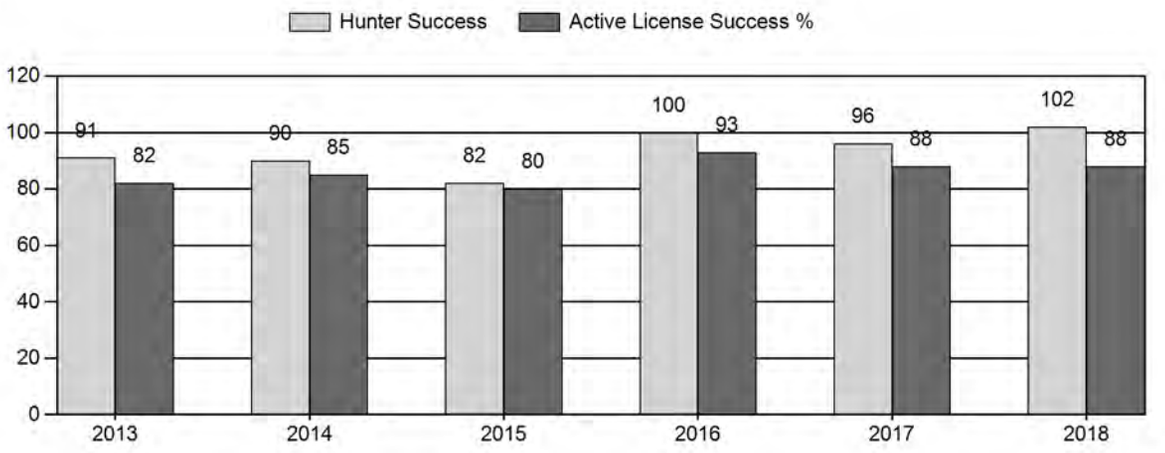
Harvest



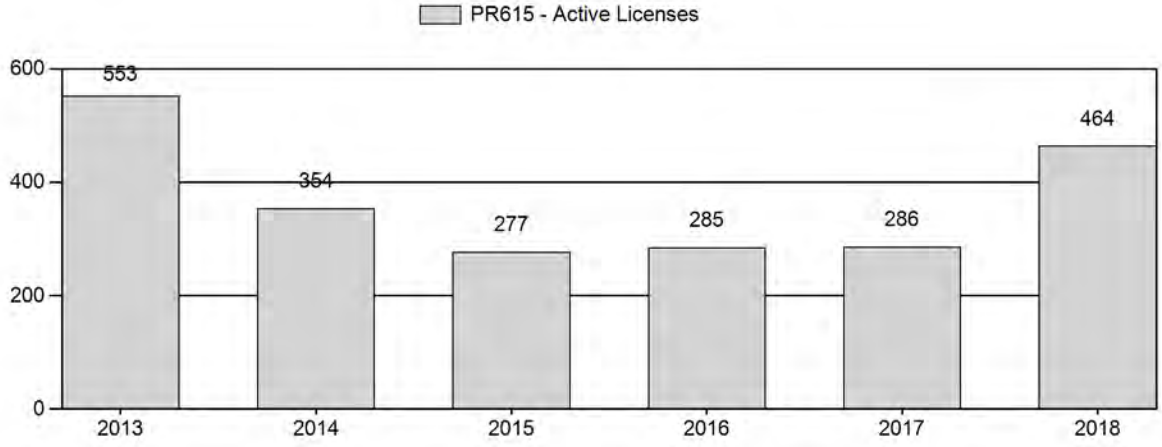
Number of Active Licenses



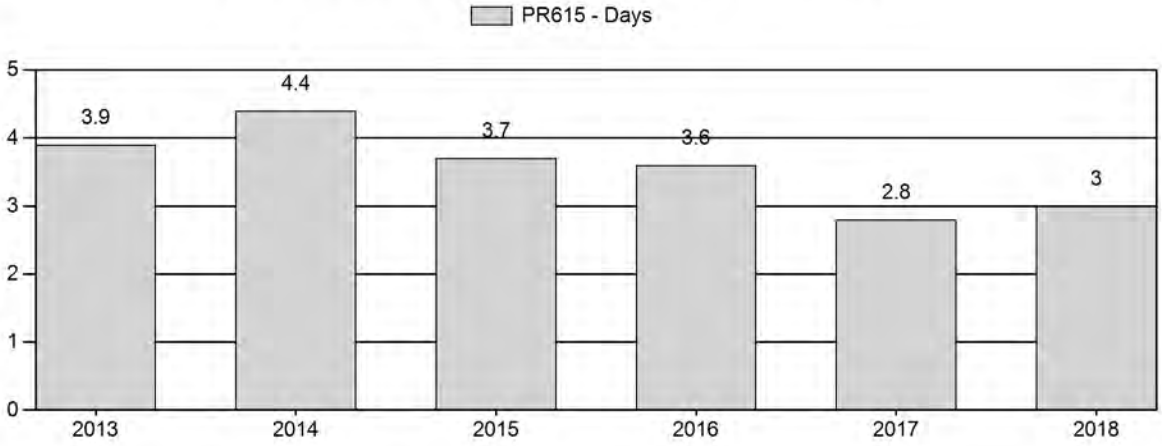
Harvest Success



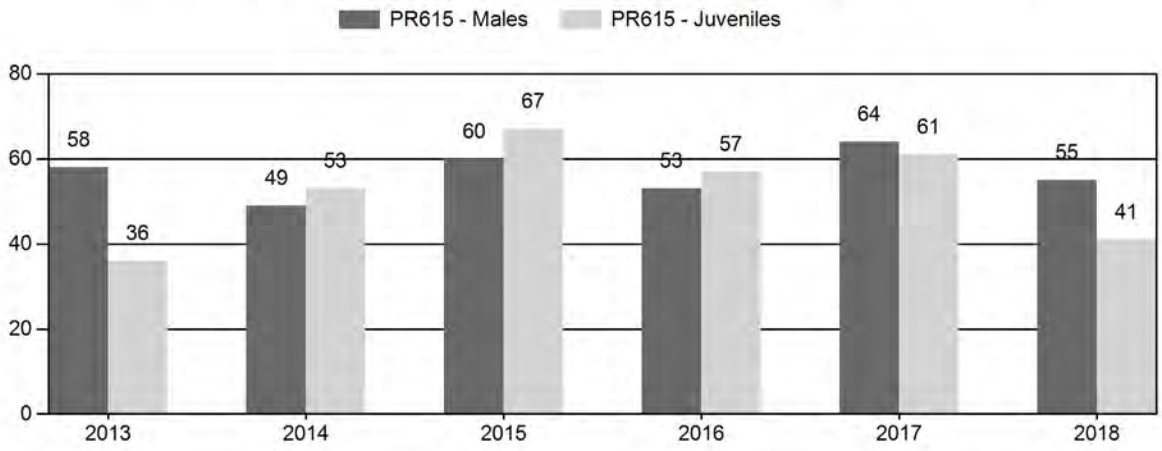
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR615 - RED DESERT

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	11,361	66	809	875	30%	1,517	52%	539	18%	2,931	1,629	4	53	58	± 3	36	± 3	23
2014	11,410	110	519	629	24%	1,285	49%	686	26%	2,600	1,535	9	40	49	± 3	53	± 4	36
2015	12,940	257	697	954	26%	1,585	44%	1,063	30%	3,602	2,267	16	44	60	± 3	67	± 4	42
2016	12,775	265	728	993	25%	1,873	48%	1,067	27%	3,933	1,756	14	39	53	± 3	57	± 3	37
2017	15,708	166	695	861	28%	1,347	44%	827	27%	3,035	2,198	12	52	64	± 4	61	± 4	37
2018	13,650	165	677	842	28%	1,540	51%	633	21%	3,015	1,597	11	44	55	± 3	41	± 3	27

2019 HUNTING SEASONS
RED DESERT PRONGHORN HERD (PR615)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
60	1	Sep. 21	Oct. 31	75	Limited quota	Any antelope
61	1	Sep. 14	Oct. 31	50	Limited quota	Any antelope
64	1	Sep. 21	Oct. 31	150	Limited quota	Any antelope
Archery						
60, 64		Aug. 15	Sep. 20			Refer to Section 2 of this Chapter
61		Aug. 15	Sep. 13			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2018
60	1	0
	6	-50
61	1	-50
	6	-50
64	1	0
	6	-75
Herd Unit Total	**1**	**-50**
	6	**-175**

Management Evaluation
Current Postseason Population Management Objective: 15,000
Management Strategy: Special
2018 Postseason Population Estimate: 13,200
2019 Proposed Postseason Population Estimate: 14,050

Herd Unit Issues

The Red Desert pronghorn herd is managed toward a post-hunt population of 15,000 pronghorn, an objective last reviewed in 2015. Population size is estimated using a spreadsheet model developed in 2012 and last updated in 2019. The herd is in special management, with harvest quotas designed to maintain pre-hunt buck:doe ratios above 60:100.

Historically, access in this herd unit has been good. Much of the unit is public land, and hunters have been able to acquire access to most private lands in the checkerboard. The seasonal

distribution map for the herd has not been updated for many years, and it is likely there are crucial winter habitats, particularly in Area 60, that have not yet been delineated.

Habitat issues in this herd unit include continued gas field development and expansion, coalbed natural gas development, opening and expansion of an *in situ* uranium mine with other mines proposed, and possible development of shale oil. While conversions to wildlife friendly fence designs have occurred, many miles of sheep-tight fence still exist in the herd unit, impeding pronghorn movements and migrations, and increasing losses during severe winters.

Weather

Record precipitation in 2015 produced exceptional vegetative growth, improving fawn survival, and was followed by another wet spring in 2016 and good moisture in early 2017. Fawn production improved in 2015 and 2016 as a result. The summer of 2018 was hot and dry, lowering quantity and quality of forage production and reducing fawn production.

Condition of pronghorn going into the 2018-19 winter is expected to have been less than ideal as a result of the hot, dry summer. The 2018-19 winter had numerous extended periods of bitter cold, continuing through March. Much of the winter range was open and available until heavier snowfalls in February and March, which blanketed the central portion of the herd unit with deep snow. Due to late winter weather, winter losses are expected to have been above average, at least in the southern portions of Areas 60 and 61.

Habitat

Only one shrub transect has been established in this herd unit, on the Chain Lakes WHMA, but was not read in 2018. Many sagebrush plants that had appeared dead from drought in 2013 produced small but viable sprouts of green growth following high precipitation in 2015 and 2016. Shrub production presumably declined again with the hot, dry spring and summer in 2018. While no herbaceous habitat transects are established within this herd unit, herbaceous forage production appeared to be below average due to decreased precipitation and high temperatures.

Habitat losses to uranium development have increased with opening of the Lost Creek *in situ* uranium mine in Area 61, but are not in or near crucial pronghorn ranges. Habitat losses to this industry are expected to increase with proposed expansion in 2019. Habitat losses to gas development have slowed in most fields due to low oil and gas prices, but have expanded in the western portion of the Chain Lakes WHMA.

Use of telemetry data from collared pronghorn does led to proposals to modify some problem sheep-tight fences within the checkerboard, with more than 0.8 miles modified in 2017. An additional 5.5 miles of fence are slated for modification to wildlife friendly designs in 2018-19.

Field Data

Classification sample size in 2018 was essentially unchanged from that of 2017. Within the three hunt areas, however, sample size increased by more than 30 percent from Area 61 and decreased by roughly 25 percent from Area 64.

With drier conditions, fawn production dropped to 41:100 in 2018, well below the five-year average of 55:100. Fawn production declined in all three areas, but was lowest in Area 61 at only 37:100.

The herd buck:doe ratio declined to 55:100 in 2018, failing to meet the special management minimum criterion of 60:100. Buck:doe ratios have failed to meet this standard in three of the past five years. Almost all of the decrease was in the supply of adult bucks, with the yearling buck:doe ratio declining only slightly. Both Areas 60 and 64 met this criterion, at 79:100 and 61:100. The supply of bucks in Area 61 dropped to only 40:100, a record low for this area, with both yearling and adult buck:doe ratios declining.

Harvest Data

Hunter success remained stable in 2018, at 88 percent. Average hunter effort increased slightly to 3 days per animal, but was still the second lowest value in six years. Improved harvest statistics in 2016 and 2017 indicated this herd was recovering from lows seen in 2013-15, but these same data suggest that trend was reversed in 2018, at least for Area 61. Hunter success was poorest in Area 61, at only 81 percent for the Type 1 license holders, while Type 6 hunters enjoyed 96 percent success in that same area. Hunter success increased for both license types in Area 60, while success for Area 64 hunters differed little from 2017. The average days of effort required to harvest an animal improved in Area 60, but increased for both types in Area 64. Hunter effort increased for Type 1 hunters in Area 61, but remained stable for Type 6 hunters. As with classification data, harvest statistics indicate a measurable decline in bucks in Area 61. Despite lower success and increased effort in some areas, hunter satisfaction in this herd rose above 95 percent in 2018, the highest since 2009 (Figure 1.). Hunters were apparently satisfied with the quality of their hunt experiences.

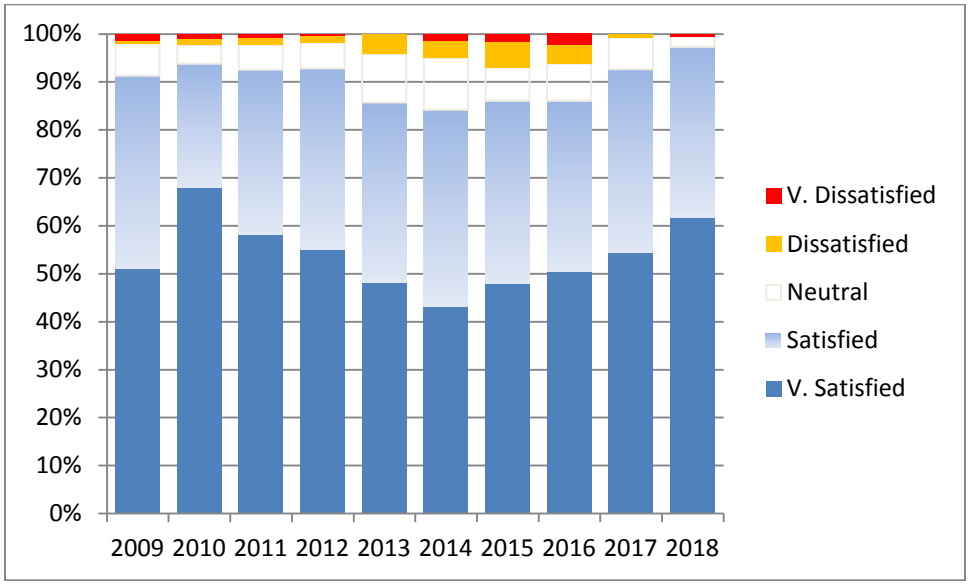


Figure 1. Hunter satisfaction and dissatisfaction for the Red Desert Pronghorn Herd.

Department personnel checked and measured horn length of almost 15 percent of the bucks harvested from this herd in 2018. Area 61 produced the largest buck at 15.75 inches, compared to 15.25 inches from Area 60 and 15.5 inches from Area 64 (Table 1.). Within all the areas neighboring Rawlins, only Areas 53 and 56 produced a larger buck than Area 61, at 16 inches and 16.75 inches. Average length of horns of bucks checked was more than an inch greater than the statewide average for all three areas. Area 61 was tied with Area 60 for the highest proportion of bucks in the harvest that were 14-inches long or longer (50 percent). All three hunt areas had more than double the proportions of ≥14-inch bucks seen in harvests from the rest of the state. Overall, hunters in the Red Desert enjoyed a larger supply of bucks 13 inches long or greater than did most hunters in the rest of the state (Figure 2.). The proportion of hunters harvesting a buck with 15-inch horns or longer was more than four times the statewide average.

Area	Total	Avg	Max	# ≥14"	% ≥14"
60	4	13.75	15.25	2	50
61	10	13.70	15.75	5	50
64	22	13.66	15.5	9	41
Red Desert Herd	36	13.68	15.75	16	44
Statewide	2163	12.50	16.75	385	18

Table 1. Horn lengths of pronghorn bucks checked from the Red Desert herd unit compared to statewide, 2018.

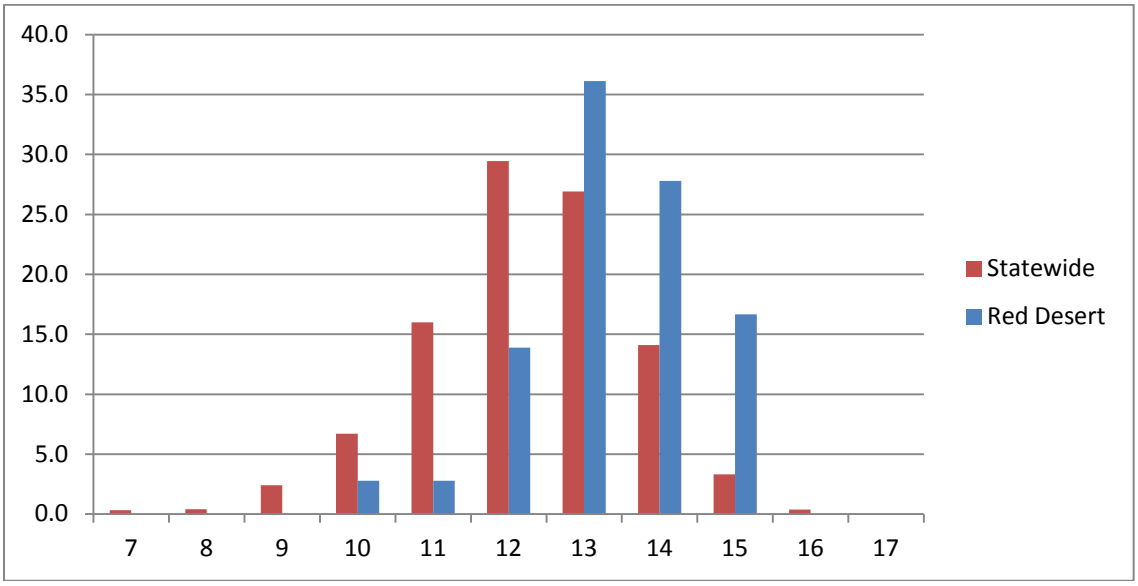


Figure 2. Percentages by horn length of pronghorn bucks checked from the Red Desert herd unit compared to statewide, 2018.

Population

Modeling this herd has been difficult, due to two low line transect estimates in 2001 and 2007, followed by two high estimates in 2010 and 2013. A recent line transect survey flown in May 2017 estimated 12,285 pronghorn in the herd at end-of-year. In an effort to align the model with the more recent independent estimates of herd size, a model was developed that doubles the emphasis on line transect estimates.

The SCA,SCJ spreadsheet model with emphasized line transect data provided the best fit with observed buck:doe ratios while falling well within the confidence interval of the most recent line transect estimate. Annual adult survival was predicted at 92 percent, a reasonable level. Juvenile survival rate were low, at 32 percent. The selected model is considered a "Fair" model of the herd. The CJ,CA and TSJ,CA models each had similar AICc values, but both predicted smaller herd sizes that fell farther from the midpoint of the latest line transect estimate. Fawn production in 2019 was projected to be near the five-year average and the model was run with median juvenile survival in 2019.

The model predicts the herd was at or above objective from 2014 through 2016, but has since dropped below the objective midpoint of 15,000. The herd is estimated to have been 12 percent below objective in 2018. Assuming average winter survival and fawn production, the 2019 pre-hunt population should be slightly larger than in 2018. The decrease in harvest quotas proposed for 2019 should allow the herd to increase towards objective while improving buck:doe ratios in Area 61.

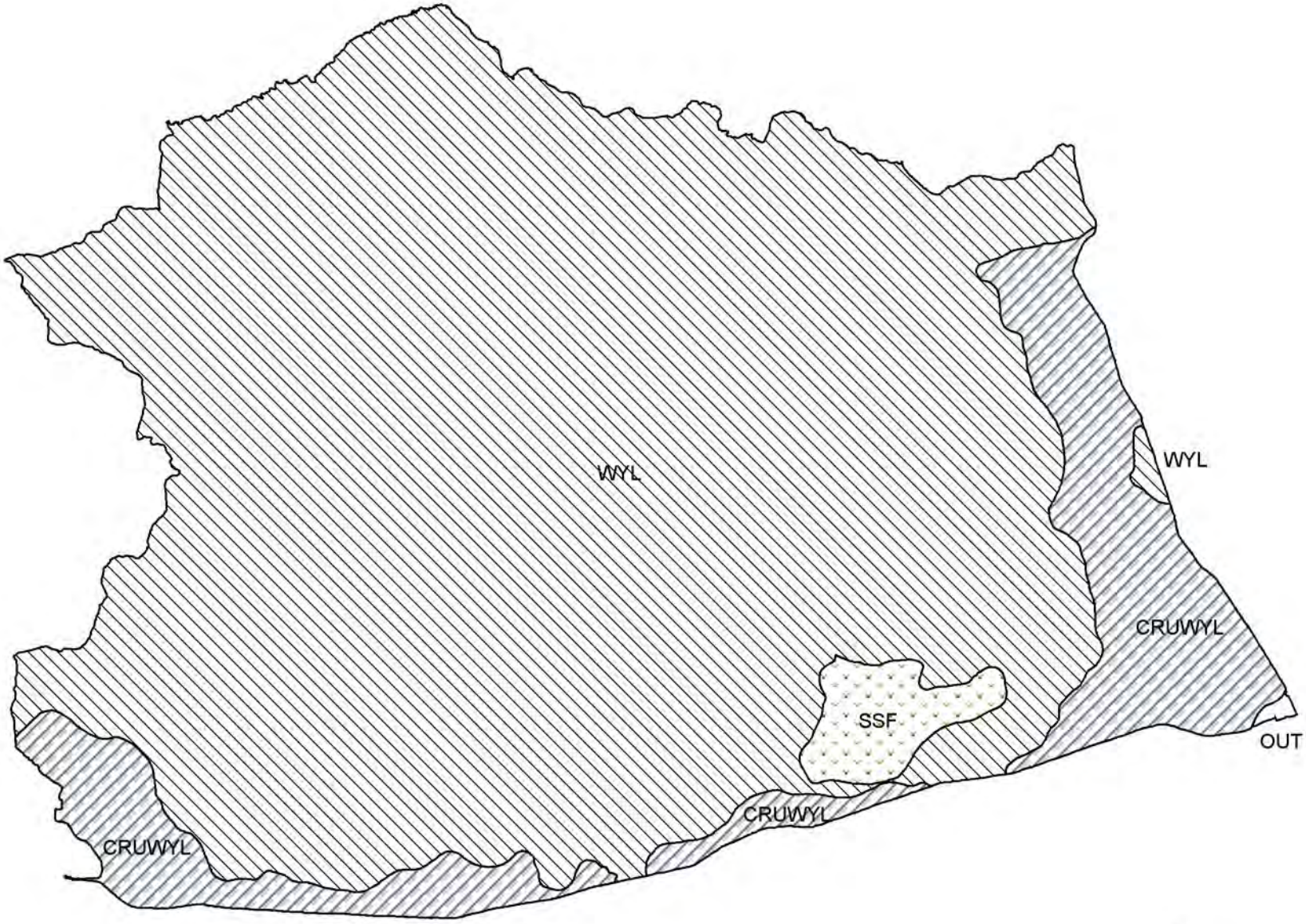
Management Summary

According to the spreadsheet model, the combination of heavy harvests, losses to EHD and extremely poor fawn production in 2012 and 2013 significantly reduced herd size. Improved fawn production beginning in 2015 provided the first increase in herd size in three years, but these gains were partially lost with poor fawn production in 2018.

With the population estimated to below objective size in 2018 and failing to meet the special management criterion, harvests need to decrease for both does and bucks. Type 6 licenses are eliminated in all three areas. Both Areas 60 and 64 had buck:doe ratios that met the special management criterion and no changes in Type 1 quotas for those areas are proposed. The buck:doe ratio in Area 61 significantly failed to meet the 60:100 criterion, and a 50 percent reduction in the Type 1 quota for that area is proposed.

With the projected harvest of roughly 220 bucks, predicted herd size should increase to within 10 percent of objective.

Opening dates are shifted back 6 days to stay on either the second or third Saturday openers, with Area 61 opening with Area 62 and Areas 60 and 64 opening with most of the rest of the Lander Region. Closing dates are the same as in 2018.



PH615 - Red Desert
HA 60, 61, 64
Revised - 3/94

2018 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2018 - 5/31/2019

HERD: PR630 - IRON SPRINGS

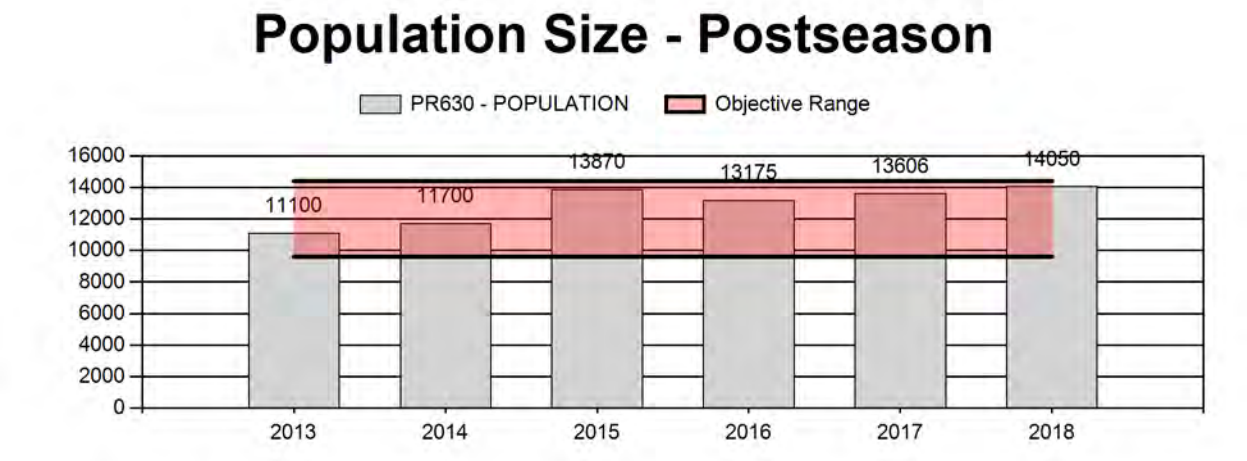
HUNT AREAS: 52, 56, 108
PREPARED BY: GREG HIATT

	2013 - 2017 Average	2018	2019 Proposed
Population:	12,690	14,050	13,868
Harvest:	632	843	885
Hunters:	599	884	1,070
Hunter Success:	106%	95%	83%
Active Licenses:	724	1,026	1,070
Active License Success:	87%	82%	83%
Recreation Days:	2,178	2,955	3,065
Days Per Animal:	3.4	3.5	3.5
Males per 100 Females	50	59	
Juveniles per 100 Females	52	52	

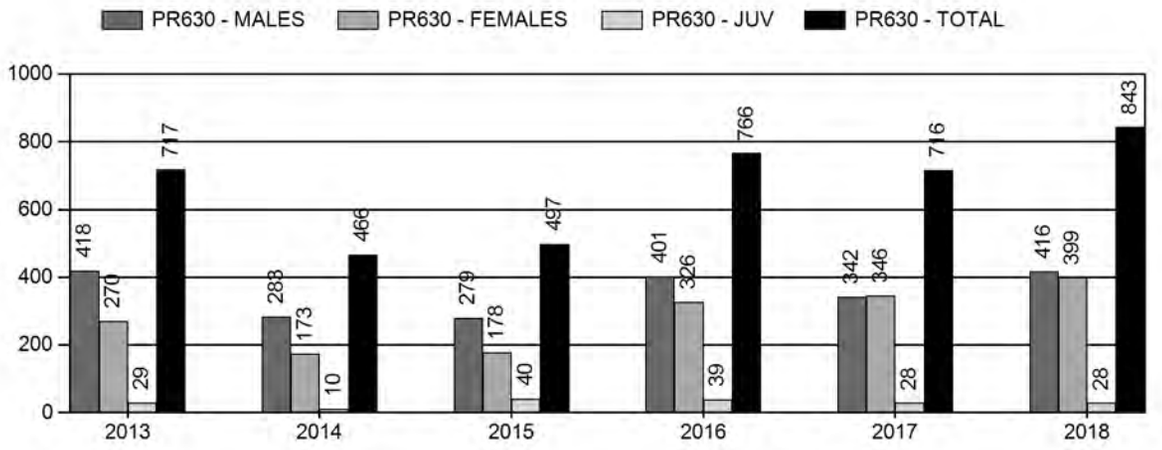
Population Objective (± 20%) :	12000 (9600 - 14400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	17%
Number of years population has been + or - objective in recent trend:	5
Model Date:	1/26/2019

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

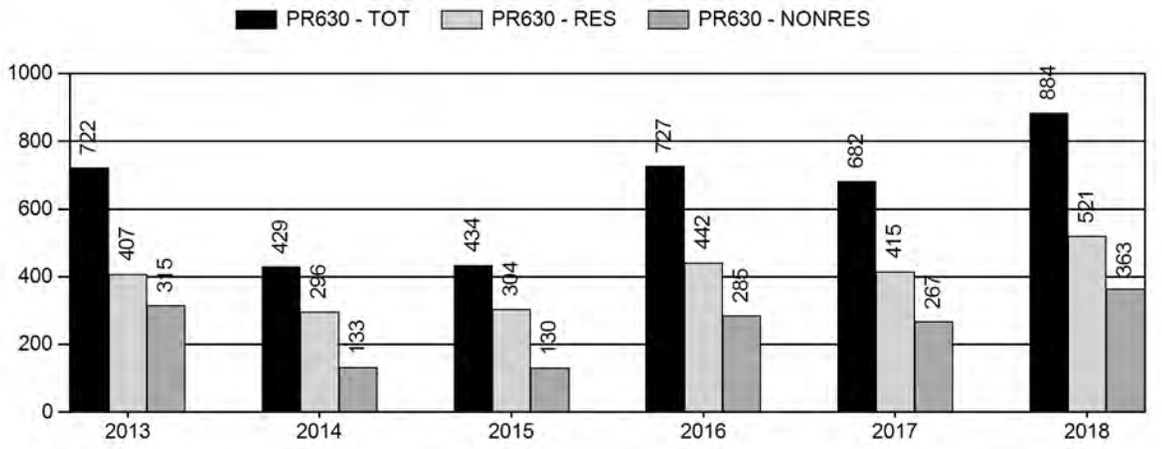
	JCR Year	Proposed
Females ≥ 1 year old:	5.6%	5.6%
Males ≥ 1 year old:	10.1%	10.9%
Total:	5.6%	5.8%
Proposed change in post-season population:	0.6%	-1.2%



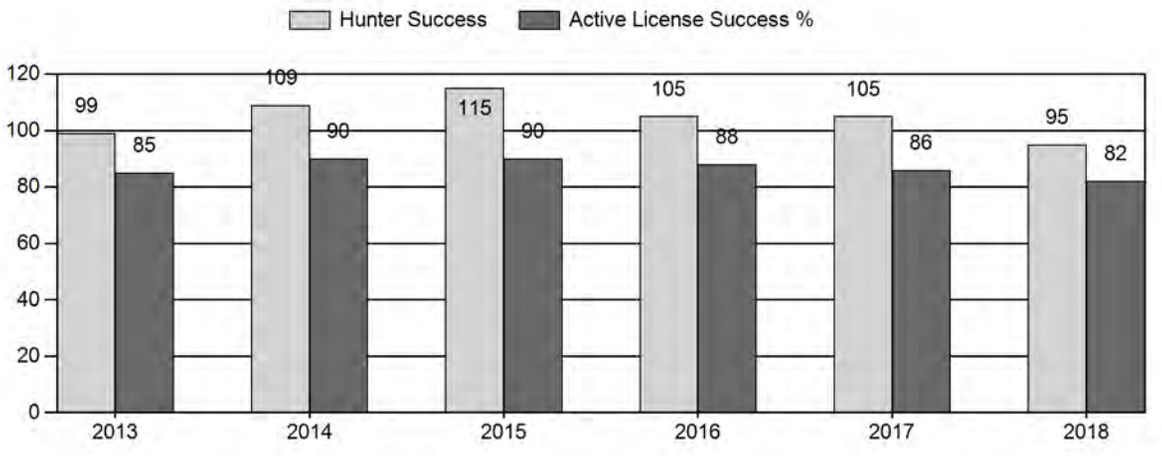
Harvest



Number of Active Licenses



Harvest Success



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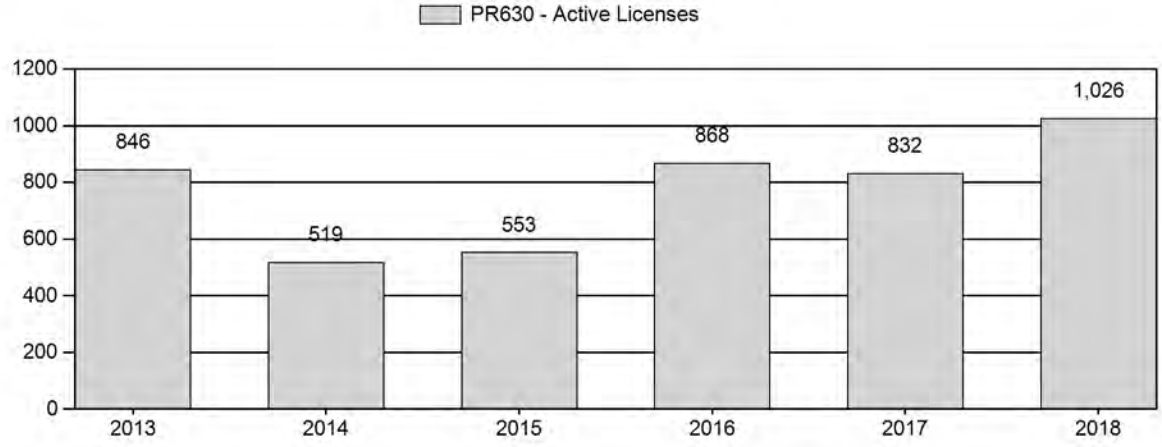
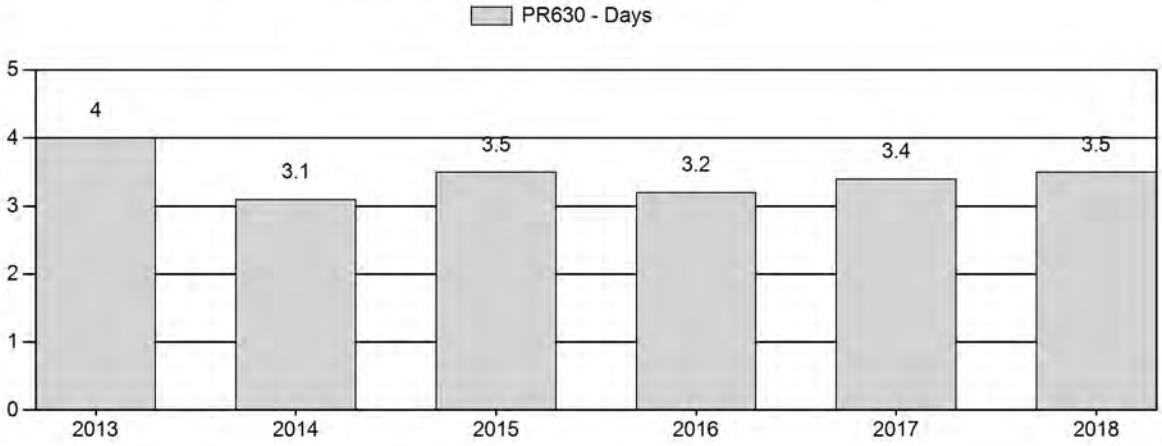
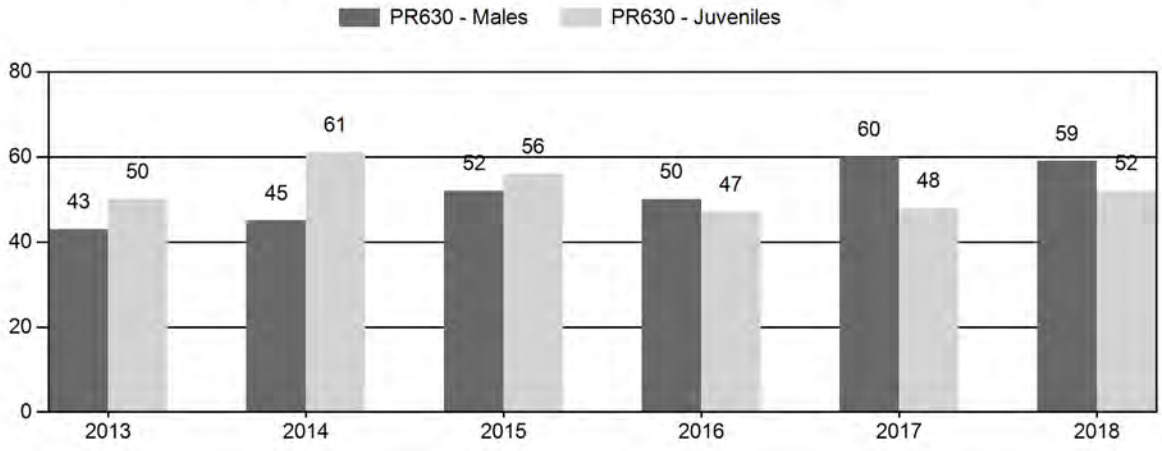


Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR630 - IRON SPRINGS

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	11,900	131	514	645	22%	1,488	52%	746	26%	2,879	1,336	9	35	43	± 3	50	± 3	35
2014	12,200	209	472	681	22%	1,518	49%	928	30%	3,127	1,823	14	31	45	± 3	61	± 4	42
2015	14,400	194	525	719	25%	1,375	48%	775	27%	2,869	1,731	14	38	52	± 4	56	± 4	37
2016	14,015	224	638	862	25%	1,730	51%	816	24%	3,408	1,436	13	37	50	± 3	47	± 3	31
2017	14,393	225	721	946	29%	1,588	48%	769	23%	3,303	1,878	14	45	60	± 4	48	± 3	30
2018	15,000	214	774	988	28%	1,688	47%	882	25%	3,558	1,876	13	46	59	± 3	52	± 3	33

2019 HUNTING SEASONS
IRON SPRINGS PRONGHORN HERD (PR630)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
52	1	Sep. 16	Oct. 31	250	Limited quota	Any antelope
	2	Sep. 16	Nov. 14	200	Limited quota	Any antelope valid south of North Spring Creek
	6	Sep. 16	Oct. 31	200	Limited quota	Doe or fawn
	7	Sep. 16	Nov. 14	200	Limited quota	Doe or fawn valid south of North Spring Creek
56	1	Sep. 20	Oct. 31	50	Limited quota	Any antelope
108	1	Sep. 20	Oct. 31	100	Limited quota	Any antelope
	6	Sep. 20	Oct. 31	100	Limited quota	Doe or fawn
	7	Sep. 20	Nov. 30	100	Limited quota	Doe or fawn valid south of the Bridger Pass Road (B.L.M. Road 3301), east of the Continental Divide and north of the Miller Hill Road (Carbon County Road 505W)
Archery						
52		Aug. 15	Sep. 15			Refer to Section 2 of this Chapter
56, 108		Aug. 15	Sep. 19			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2018
52	1	0
	2	+50
	6	0
	7	0
56	1	0
108	1	0
	6	0
	7	0

Herd Unit Total	**1**	**0**
	2	**+50**
	6	**0**
	7	**0**

Management Evaluation
Current Postseason Population Management Objective: 12,000
Management Strategy: Recreation
2018 Postseason Population Estimate: 14,050
2019 Proposed Postseason Population Estimate: 13,870

Herd Unit Issues

The Iron Springs pronghorn herd is managed toward a post-hunt population size of 12,000 pronghorn, an objective last publicly reviewed in 2015. Population size is estimated using a spreadsheet model developed in 2012 and updated in 2019. The herd is in recreational management, with harvest quotas designed to maintain pre-hunt buck:doe ratios below 60:100.

Construction of the proposed Chokecherry and Sierra Madre wind farms, consisting of roughly 1,000 turbines and the associated road networks, could have significant impacts on important habitats in large portions of Areas 56 and 108, as well as the north portion of Area 52. Construction of several large, trans-continental powerlines would cross important winter habitats at the north edge of Area 56.

Access remains an issue in this herd unit, particularly in the checkerboard in association with the proposed Chokecherry and Sierra Madre wind farms. Private landowners have denied recreational access to the vast majority of Area 56 and a significant portion of Area 108 in preparation of the wind farms. The Walk-In program has opened access to large blocks of private land in Area 52 during some years, which helped address concerns over large numbers of pronghorn residing on irrigated croplands during summer and fall, but enrollment has declined as pronghorn numbers were reduced and native range response to increased precipitation reduced damage concerns. High pronghorn numbers during the winter have also been a concern on private lands in a portion of Area 108, but landowner consent for hunter access and addition of the Type 7 licenses with an extended season appears to be addressing that issue.

The seasonal distribution map was last revised in March 1994 and no changes have been made since that review. Observations during winters since 1994 indicate consideration should be given to delineating crucial winter ranges south of Saratoga, southeast of Chokecherry Knob and near Fort Steele. Fences continue to pose barriers to pronghorn movements throughout much of the herd unit, increasing mortality during tough winters. Sheep-tight fences may also contribute to low fawn survival in pastures with limited water sources during dry summers. Through cooperation between landowners and the BLM, and funding through WLCI, several miles of sheep-tight fence have been replaced with wildlife-friendly fencing during recent years.

Small acreages of crucial winter range have been lost to subdivision of deeded lands, primarily in the southern portion of the herd, and along Interstate Highway 80 in Area 56. Increased

subdivision of these habitats, especially if these tracts are fenced, could seriously degrade the quality and utility of some winter ranges and migration routes. Development, partitioning, and fencing of these lands could have more deleterious effects on pronghorn migrations and habitat than some energy developments. Segregating land ownership among dozens of owners also deters recreational use of those divided lands and inter-mixed public lands.

Losses to EHD were confirmed in the South Ferris herd immediately north of Area 56 in late summer 2013 and the disease probably struck pronghorn in this herd as well. A mule deer fawn died of EHD at the southern tip of Antelope Area 108 so it is likely the disease spanned at least through the northern half of the Iron Springs herd unit. This disease may recur if drought conditions return.

Weather

Record precipitation in 2015 produced exceptional vegetative growth, and improved fawn survival in many herds in the southern part of the state, and was followed by another wet spring in 2016 and good spring moisture in 2017. The increase in fawns recorded in other herds was not seen in this herd, in either of the past three years. Many of the does in this herd give birth in high elevation, mesic habitats near the interface with forested habitats. All three years had cold, wet, late spring storms that may have increased fawn losses due to hypothermia. The summer of 2018 was hot and dry, lowering quantity and quality of forage production and again reducing fawn production.

Condition of pronghorn going into the 2018-19 winter is expected to have been less than ideal as a result of the hot, dry summer. The 2018-19 winter had numerous extended periods of bitter cold, continuing through March. Much of the winter range was open and available until heavier snowfalls in February and March. Based upon late winter weather, winter losses are expected to have been near or above average.

Habitat

This herd unit overlaps most of the western half of the Platte Valley Mule Deer herd, and habitats for pronghorn suffer the same low productivity due to overused, decadent shrubs and drought. Treatments designed to improve habitat for mule deer through the Platte Valley Habitat Partnership are likely to improve habitats for pronghorn as well. Recent tebuthiuron treatments on top of Miller Hill in Area 108 and prescribed burns in Area 52 should improve summer ranges for pronghorn, at least in the short term.

Oil and gas drilling activity has tapered off because of low energy prices, but a successful shale oil well a few miles to the east in Area 50 may lead to increased interest within the herd unit. Proposed strip mining of coal in Kindt Basin in Area 56 could damage winter habitats, but is unlikely to occur in the near future because of more competitive coal reserves elsewhere in the state and conflict with the Chokecherry wind farm. Declining interest in developing other coalbed methane resources in southern Wyoming should also preclude development of well fields to extract the methane from these coal seams.

Construction of the 1,000 turbine Chokecherry and Sierra Madre wind farms continued in 2018, with extensive road and pad preparation, primarily in the southeastern portion of Area 108. Erection of the first phase of turbines is expected in 2019, along with road and pad preparation for the second phase. Planned revegetation of the massive road network necessary for this project is likely to improve summer forage for pronghorn, but will permanently remove browse in winter ranges and provide avenues for expansion of noxious weeds, as seen in gas fields to the west. Disturbance during construction may reduce pronghorn use of some habitats. Wind turbines have been shown to reduce soil moisture in their wind shadow and the large number of turbines in arid habitats may remove the benefits gained from revegetation of roads and pads.

Field Data

Classification sample size increased slightly in 2018 and was the largest sample since 2007. Total sample size exceeded the statistically desired sample by almost 90 percent. Most of the increase in sample came from Area 52, but sample sizes in Areas 56 and 108 also increased slightly. Because of restricted access and low pronghorn densities, the sample collected from Area 56 was again nearly insignificant.

Fawn crops in 2016 and 2017 were among the lowest recorded in this herd in twenty years and were attributed to late spring storms which may have increased fawn losses to hypothermia in high, mesic habitats where many of these does go for parturition. With drier spring weather, fawn production improved in 2018 and was near the five-year average, but still below historic norms. As is typical, fawn production was greatest in Area 52 at 59:100 and lowest in Area 56 at only 18:100.

The buck:doe ratio decreased slightly in 2018 from 60:100 to 59:100, meeting the upper limit for recreational management. All of the decline was in Area 108, which dropped to just 35:100. Area 52 again had a buck:doe ratio that exceeded the recreational maximum, rising to 69:100. Sample size in Area 56 was again too small to be useful, but if hunter access continues to be denied after the wind project is constructed, buck:doe ratios will be expected to rise unabated in Area 56 and may cause the herd ratio to exceed the maximum for recreational management without providing any extra bucks for hunters to harvest. The yearling buck:doe ratio was 13:100 for this herd, within the normal range. As is typical, yearling recruitment was highest in Area 52 which usually has the larger fawn crops.

Harvest Data

Overall hunter success declined again in 2018 to 82 percent, the lowest since 2006. As would be expected, the average number of days hunted for each pronghorn harvested increased slightly. Hunter success dropped to 81 percent in Area 52, a record low for that area. Success rose in both Areas 56 and 108. For the separate license types, success was surprisingly highest, at 95 percent, for the Type 1 hunters in Area 56 who have the poorest access. Also surprising was the poor success for Type 1 and 6 hunters in Area 52, who have the ability to hunt all the area available for the more successful Type 2 and 7 hunters, plus the public land in the north portion of Area 52. Many of the Type 1 and 6 hunters were apparently unwilling or unable to make the effort to gain access to private lands in the southern portion of that area.

The high success in Area 56 apparently was a result of increased effort, with the average number of days of effort necessary to harvest an animal rising to 3.4 days. Average effort was higher in Area 52, at 3.8 days, but within the normal range for that area. Of all license types in the herd unit, the average effort was highest for Type 1 license holders in Area 52 at 4.9 days.

Despite lowered success and increased effort in some areas, hunter satisfaction in this herd remained essentially unchanged in 2018 (Figure 1.). Most hunters were still satisfied with the quality of their hunt experiences, with less than five percent dissatisfied.

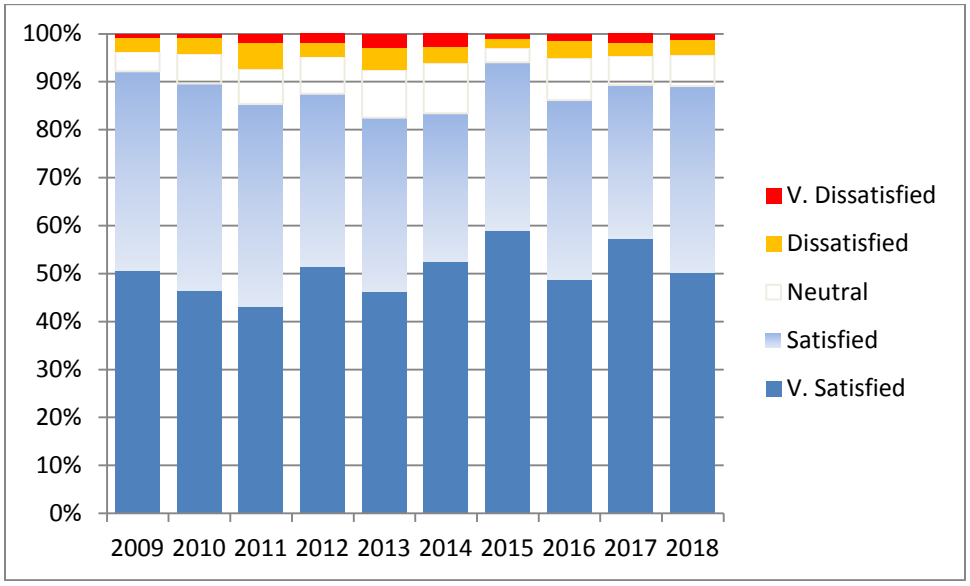


Figure 1. Hunter satisfaction and dissatisfaction for the Iron Springs Pronghorn Herd.

Department personnel checked and measured horn length of 13 percent of the bucks harvested from this herd in 2018. Area 56 produced the largest buck in the sample at 16.75 inches, compared to 14.5 inches from Area 52 and 15.25 inches from Area 108 (Table 1.). The 16.75 inch buck from Area 56 was also the longest buck checked in the entire state. Average length of horns of bucks checked from Areas 52 and 108 were at or near the statewide average, while the average for Area 56 was an inch longer than the statewide average. Of the three areas, Area 56 also had the highest proportion of bucks in the harvest that were 14-inches long or longer, at 36 percent, twice the statewide proportion. Area 52 produced proportionately fewer bucks over 14 inches than the entire state, while the proportion in Area 108 was higher. Overall, hunters in the Iron Springs Herd enjoyed a supply of bucks that was slightly longer than the rest of the state (Figure 2.).

Area	Total	Avg	Max	# ≥14"	% ≥14"
52	14	12.50	14.5	2	14
56	11	13.50	16.75	4	36
108	31	12.77	15.25	8	26
Iron Springs Herd	56	12.84	16.75	14	25
Statewide	2163	12.50	16.75	385	18

Table 1. Horn lengths of pronghorn bucks checked from the Iron Springs herd unit compared to statewide, 2018.

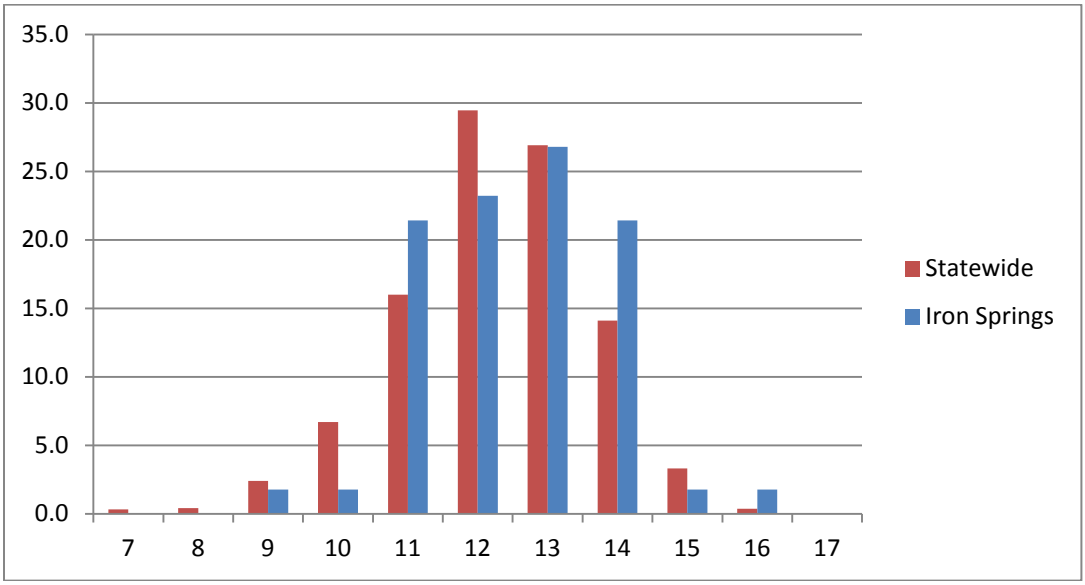


Figure 2. Percentages by horn length of pronghorn bucks checked from the Iron Springs herd unit compared to statewide, 2018.

Population

The spreadsheet model and a line-transect survey flown in spring of 2015 estimated 16,850 pronghorn in this herd, well above the 12,000 objective, and subsequent harvests were increased. A line-transect survey flown in June 2018 found approximately 13,400 pronghorn in the herd, a 20 percent reduction. Incorporating this estimate, along with classification and harvest data, the current model now predicts this herd was about 17 percent above objective in 2018.

After adding 2018 data, the SCJ,SCA spreadsheet model still provided the best fit with observed buck:doe ratios for this herd and all five line-transect estimates. The model was modified to allow lower survival rates in the 2003-04 and 2007-08 winters. It behaved predictably when the 2018 line transect, classification and harvest data were added and is considered a "Fair" model of the herd. Annual adult survival is predicted at 95 percent, a reasonable value. Juvenile survival rates were low but acceptable, at 41 percent. The CJ,CA and TSJ,CA models each had higher AICc values, but the TSJ,CA model did have better fit with observed buck:doe ratios. Both

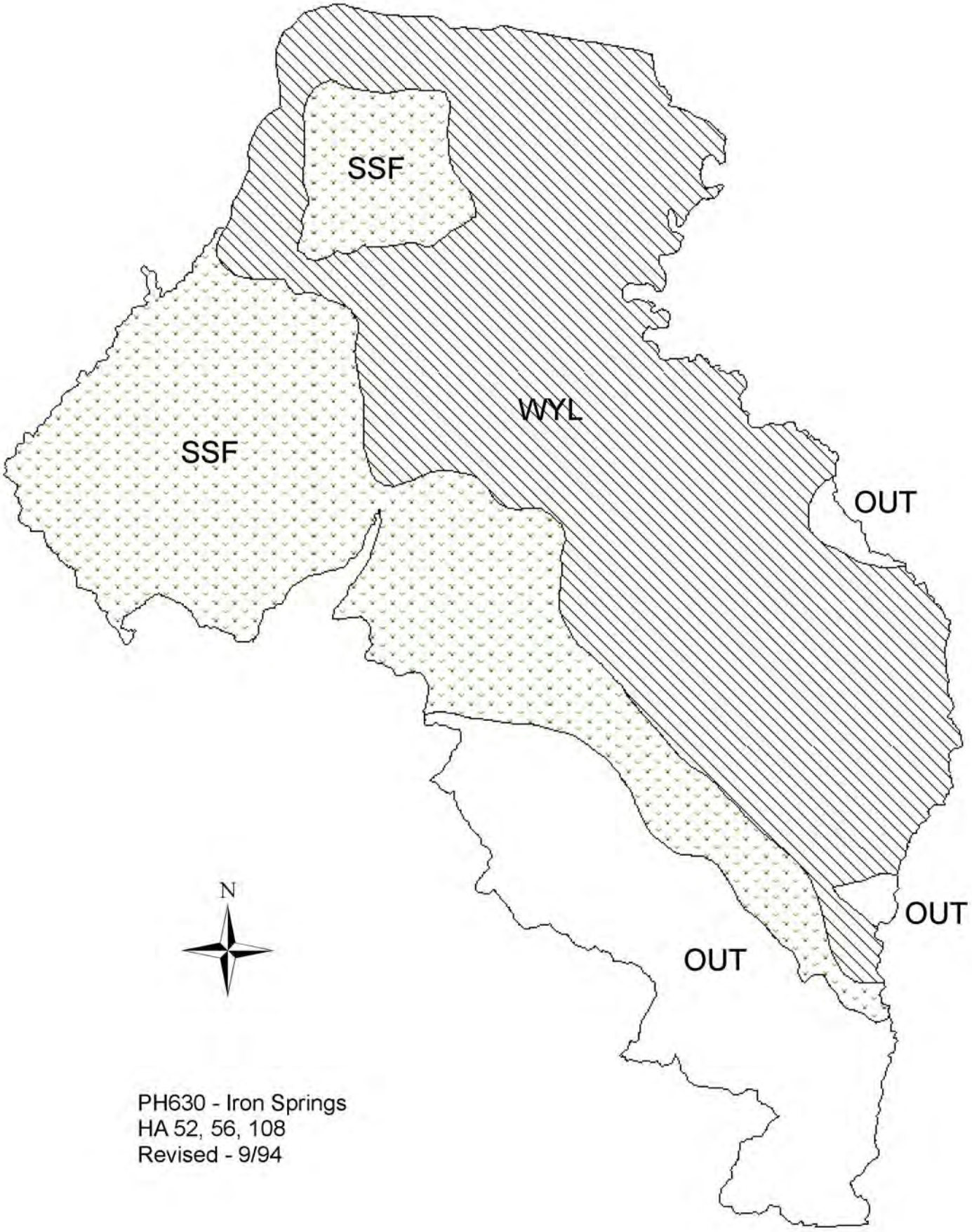
rejected models predicted herd size below the SCJ,SCA model. Fawn production in 2019 was projected near the 5-year average and the model was run using a median juvenile survival in 2019. The model estimates the herd was about 17 percent above objective in 2018 and predicts the projected harvest in 2019 will produce a slight decrease in herd size.

Management Evaluation

With the population estimated to be 17 percent above objective, the slow rate of growth seen in the past seven years and the 20 percent reduction in the most recent line transect survey, no drastic changes in harvest quotas are necessary. Quotas for 2019 are unchanged in Area 56 and Area 108. Quotas for Type 2 licenses in Area 52 are increased to take advantage of the improved supply of bucks in that area, following increases to the other three Area 52 license types in 2018.

If fawn production and survival are near predicted levels, the expected harvest of roughly 455 bucks and 430 does and fawns from the 2019 license quotas should provide a slight decrease in herd size. If either fawn production or survival is lower than expected, or if winter losses are above average in 2018-19, the herd should move closer to objective size.

Opening dates for licenses in Area 52 are the same as in the past six years and coincide with seasons in neighboring Areas 50 and 51. As in the previous six years, the Type 2 and 7 licenses in the southern portion of this area are valid for an additional two weeks into November. The season in area 52 entirely overlaps local deer and elk general license seasons. Opening dates for areas 56 and 108 are the same as in the previous 20 years and coincide with neighboring areas 53 and 55 of the Baggs herd. Closing dates for Areas 56 and 108 are again extended to the end of October, except for the Type 7 licenses in Area 108, which extend to the end of November. Archery seasons use standardized opening dates and close the day before the regular season opens for each area.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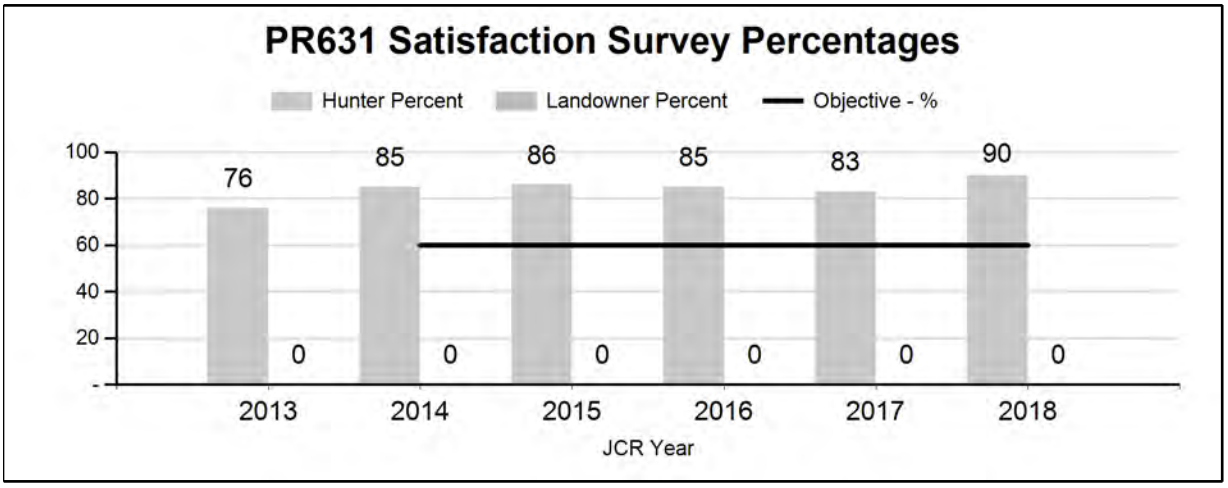
PH630 - Iron Springs
HA 52, 56, 108
Revised - 9/94

2018 - JCR Evaluation Form

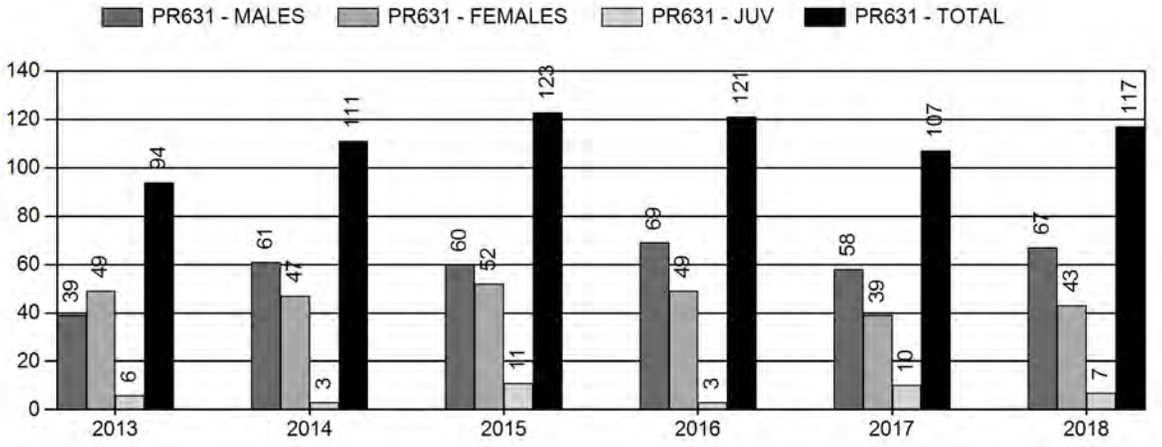
SPECIES: Pronghorn
HERD: PR631 - WIND RIVER
HUNT AREAS: 84

PERIOD: 6/1/2018 - 5/31/2019
PREPARED BY: GREG ANDERSON

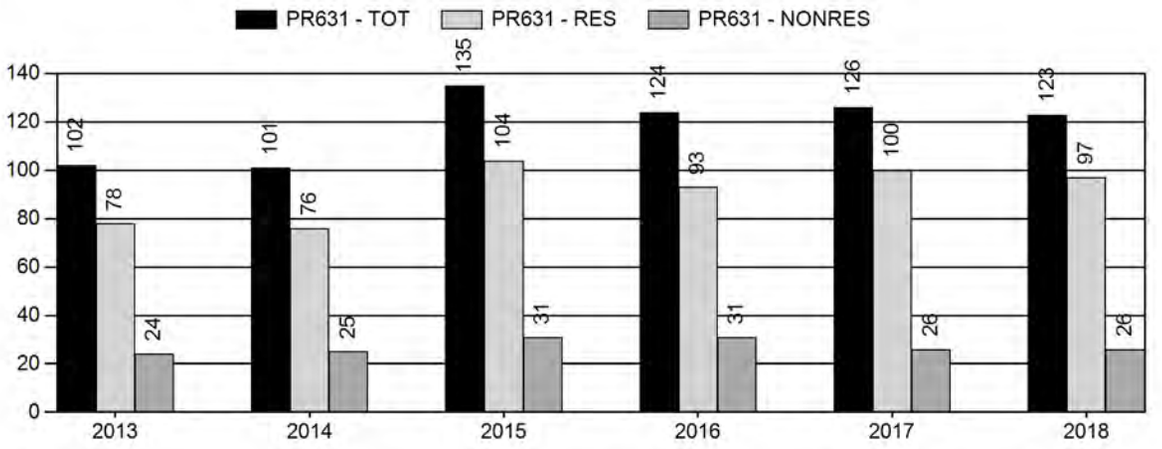
	2013 - 2017 Average	2018	2019 Proposed
Hunter Satisfaction Percent	83%	90%	88%
Landowner Satisfaction Percent	0%	0%	0%
Harvest:	111	117	120
Hunters:	118	123	125
Hunter Success:	94%	95%	96 %
Active Licenses:	148	150	150
Active License Success:	75%	78%	80 %
Recreation Days:	614	675	675
Days Per Animal:	5.5	5.8	5.6
Males per 100 Females:	28	43	
Juveniles per 100 Females	34	51	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			N/A%
Number of years population has been + or - objective in recent trend:			5



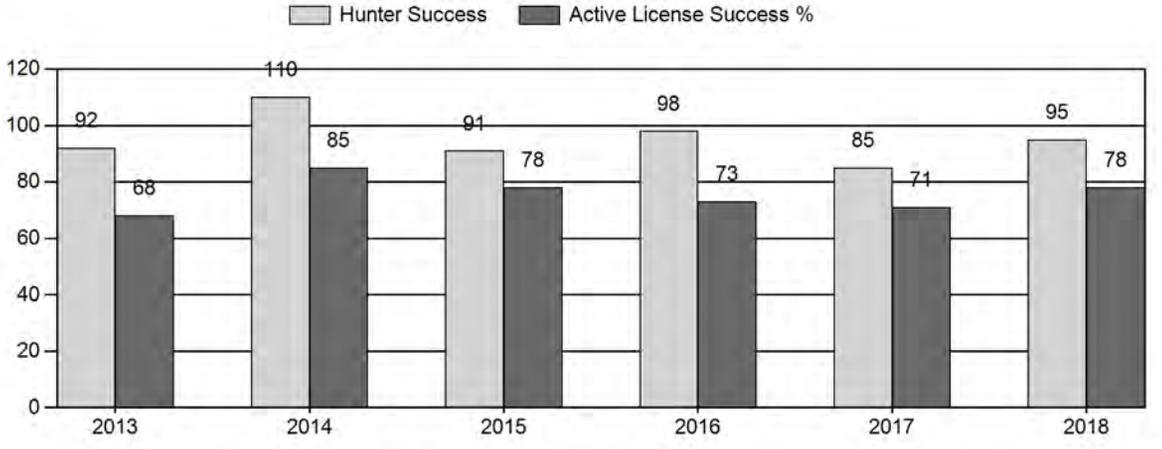
Harvest



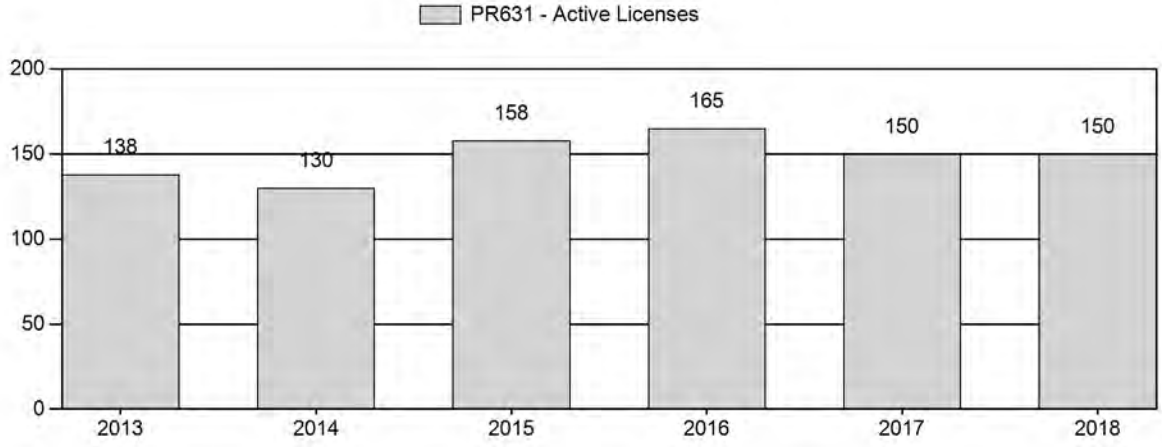
Number of Active Licenses



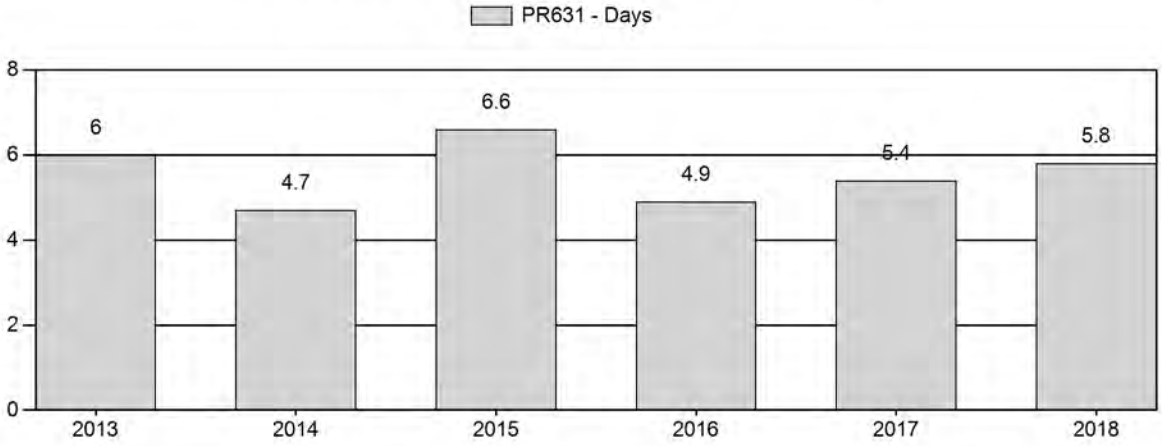
Harvest Success



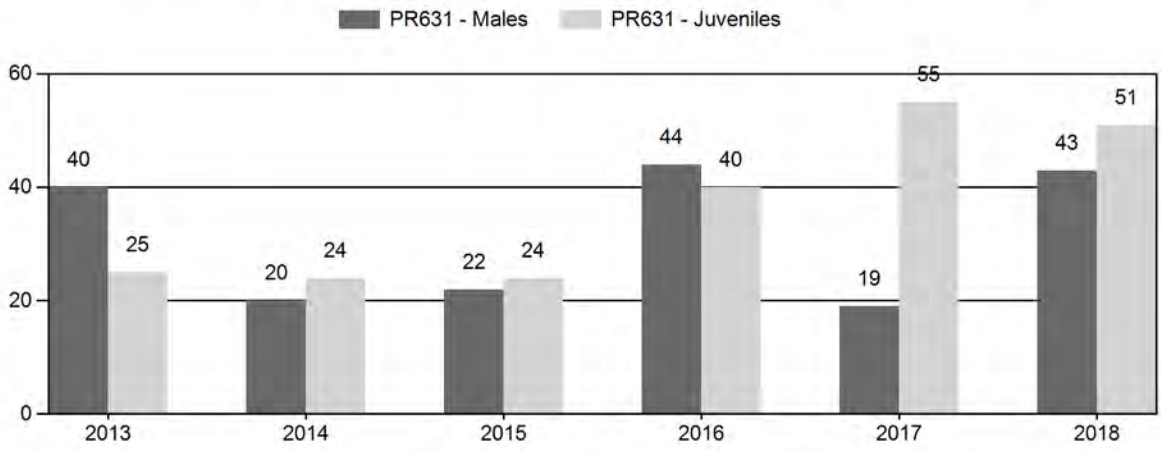
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR631 - WIND RIVER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	0	7	14	21	24%	52	60%	13	15%	86	0	13	27	40	± 0	25	± 0	18
2014	0	7	15	22	14%	110	70%	26	16%	158	0	6	14	20	± 0	24	± 0	20
2015	0	6	21	27	15%	120	68%	29	16%	176	0	5	18	22	± 0	24	± 0	20
2016	0	16	39	55	24%	124	54%	49	21%	228	0	13	31	44	± 0	40	± 0	27
2017	0	7	13	20	11%	104	57%	57	31%	181	0	7	12	19	± 0	55	± 0	46
2018	0	13	31	44	22%	102	52%	52	26%	198	0	13	30	43	± 0	51	± 0	36

2019 HUNTING SEASONS
WIND RIVER PRONGHORN (PR 631)

Hunt Area	Type	Season Dates Opens	Closes	Quota	License	Limitations
84	1	Sep. 21	Oct. 22	100	Limited quota	Any antelope
84	6	Sep. 21	Oct. 22	75	Limited quota	Doe or fawn
Archery						
84		Aug. 15	Sep. 20			Refer to section 2 of this chapter

Hunt Area	Type	Quota change from 2018
Total		

Management Evaluation

Current Hunter Satisfaction Management Objective: Hunter Satisfaction 60%
Management Strategy: Recreational
2018 Hunter Satisfaction Estimate: 90%
Most Recent 3-year Running Average Hunter Satisfaction Estimate: 85%

Management Issues

The Wind River pronghorn management objective was reviewed and updated in 2014. The previous objective of 400 antelope had been in place since 1994. Due to a number of factors it was never possible to accurately estimate the antelope population in this herd. In response, the Department adopted an objective of maintaining 60% hunter satisfaction. Unlike other herd units with a satisfaction objective, the objective for this herd does not include a landowner satisfaction component for reasons outlined in the objective review. In conjunction with hunter satisfaction, this herd is managed for recreational opportunity. Personnel completed an internal assessment of the objective in February, 2019 and determined the existing, 2014 objective is still appropriate for the herd. Hunter satisfaction has been remarkably stable since 2014 averaging 86% over the five year period never dipping below 83% or rising above 90%. During the same period, personnel have not heard any complaints from landowners regarding damage from antelope. Annually, there is very little public comment regarding the season structure which remained unchanged from 2015 through 2018.

Habitat/Weather

This pronghorn population occupies the upper Wind River basin west of the WRR. Much of the habitat throughout the herd unit is marginal or unsuitable. Pronghorn densities are highest on the

east end of the herd unit where they occupy deer and elk winter range throughout the summer months. Some pronghorn winter on bare slopes in the mountain foothills, but many migrate east down the Wind River onto the WRR. Available habitat and climatic conditions seem to be the biggest factors limiting this population.

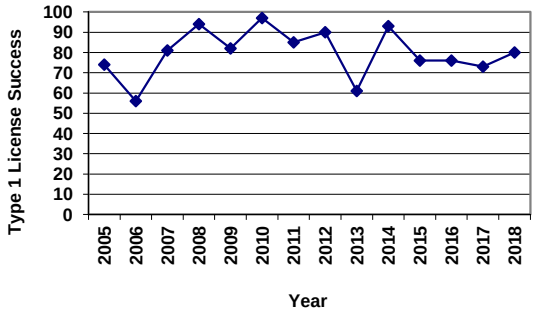
The past year was characterized by mild conditions and good early season vegetation growth throughout the herd unit. Vegetation transects monitored to determine the amount of forage available on elk winter range revealed herbaceous vegetation production was higher than the previous two years. Vegetation did cure early due to warm temperatures and lack of moisture in early summer. No shrub data is collected in the herd unit, but the growing conditions likely resulted in average browse production. Given herbaceous production in 2018 and the amount of residual vegetation the previous few years, feed resources should not have been limited for antelope in 2018. Fall weather was mild followed by average winter conditions in December and January. Snow cover remained low through January. In February, temperatures declined below average resulting in some physiological stress on animals. Overall, winter precipitation in the upper Wind River Basin was 87% of average through February, 2019.

Field/Harvest Data/Population

Classification samples have been collected from the ground and have been low over the past 6 years. Prior to that, classification data was collected aerially and sample sizes were much higher but still inadequate for use in a population model. In 2018 the classification sample was 198 antelope. Terrain, topography, and access to antelope summer range in the herd unit create difficulties and result in small classification samples. That said, the classification sample in 2018 yielded a fawn/doe ratio of 51/100. This level of recruitment is low compared to many antelope herds, but not atypical for this population. The 2018 buck/doe ratio of 43/100 was significantly higher than the 2017 ratio of 19/100. The observed buck/doe ratio tends to be lower than many antelope herds throughout the state and it fluctuates dramatically year-to-year. Much of the fluctuation can be attributed to a combination of low sample size and the fact large bachelor groups inhabit partially timbered areas in early fall and may or may not be observed any given year. The 2018 buck/doe ratio was within the typical range of variation seen in this herd unit and the large jump between the 2017 and 2018 ratios is likely due to low sample size and not a genuine increase in buck numbers. Generally, classification ratios for this herd should be viewed skeptically given the low sample sizes.

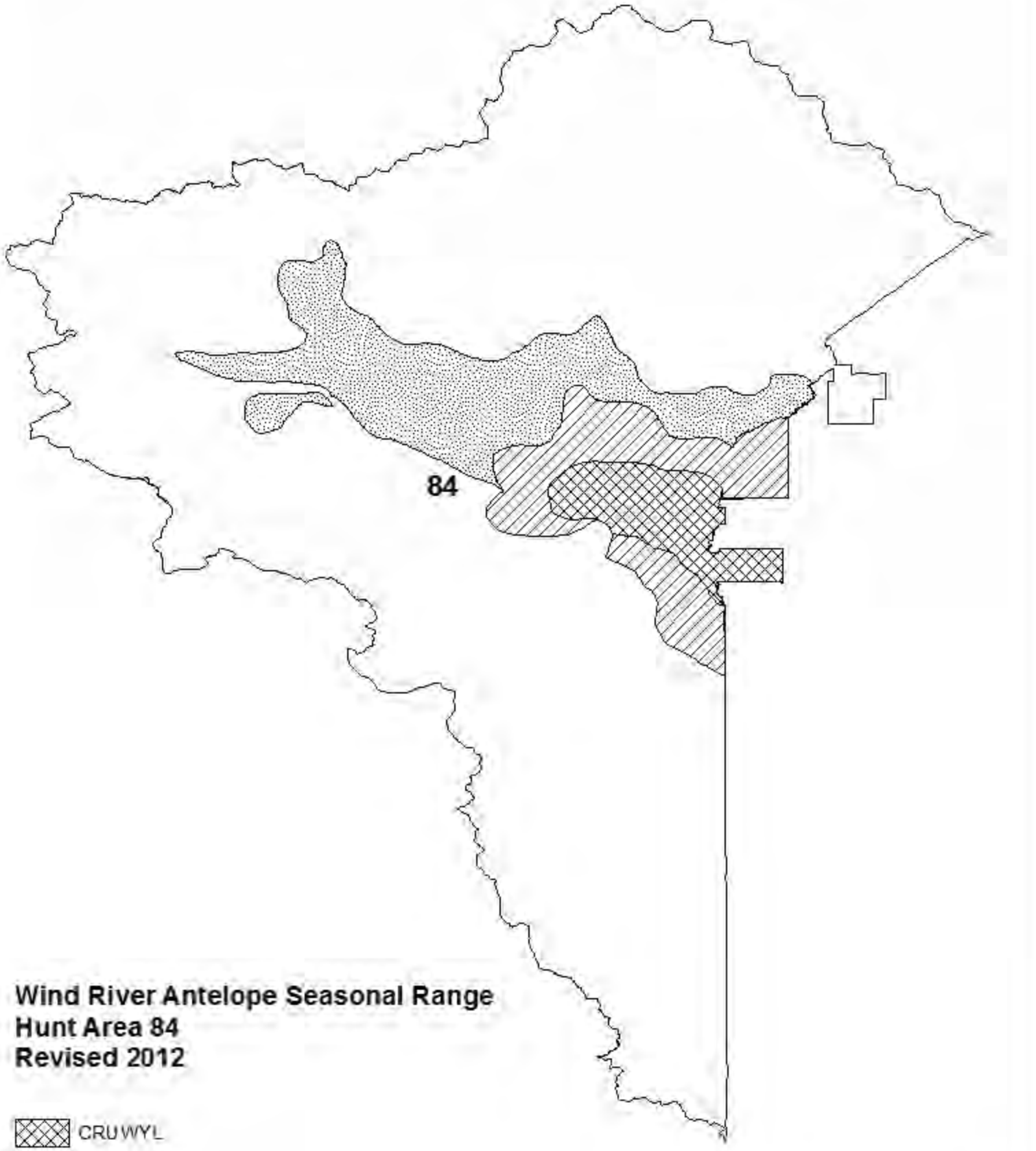
Type 1 license success was 80% in 2018. This success rate was somewhat higher than the previous 3 years but well within the historic range of variability for this herd. The five-year average Type 1 license success was 76% which is very close to the 2018 success rate (Fig. 1). The days/animal for Type 1 licenses was 5.6 in 2018; nearly the same as 5.1 in 2017. These statistics indicate the hunt experience has been very similar the past 4 years. Harvest statistics indicate success has been stable over the past 4 years and hunter satisfaction has shown little variability over the same period.

Figure 1. Type 1 license success in the Wind River Antelope Herd



Management Summary

Given scarce demographic data it is difficult to determine trends in this herd unit. Anecdotally, based on public and personnel observations, it appears this population grew substantially from the middle to end of the past decade. Following a harsh winter in 2010 and extreme drought in 2012 and 2013 it seems the population declined somewhat, then increased again in 2014. Since 2014 personnel observations, classification data, and harvest statistics indicate the population has been stable. Hunter satisfaction has remained virtually unchanged over the past 4 years and personnel have not had any damage complaints. Given indications of a stable population and recreational quality, no changes are proposed for the 2019 hunting season. This will be the fifth consecutive year without a change to the season structure in Hunt Area 84.


84
Wind River Antelope Seasonal Range
Hunt Area 84
Revised 2012
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2018 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2018 - 5/31/2019

HERD: PR632 - BEAVER RIM

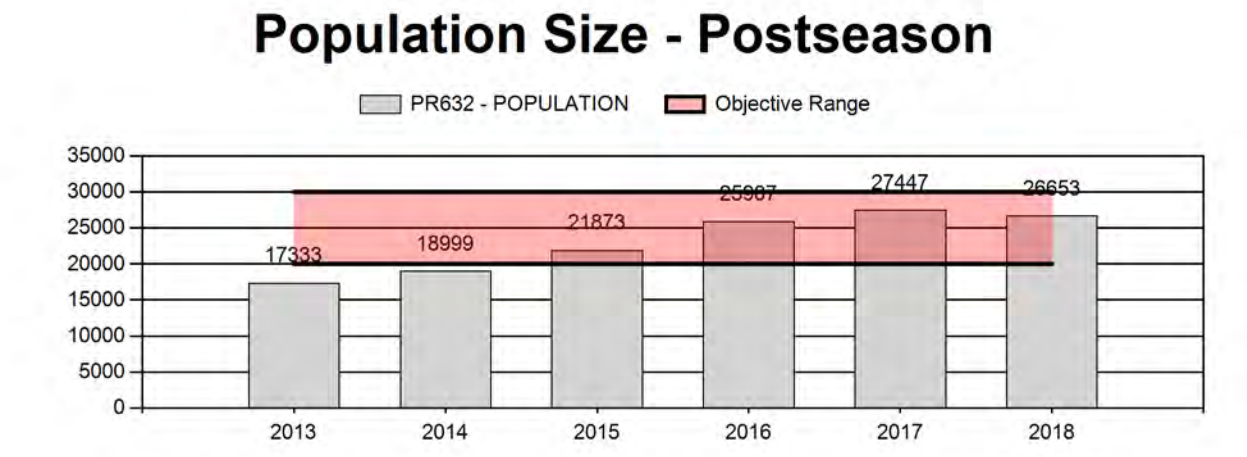
HUNT AREAS: 65-69, 74, 106
PREPARED BY: STAN HARTER

	2013 - 2017 Average	2018	2019 Proposed
Population:	22,312	26,653	24,992
Harvest:	1,198	1,872	2,630
Hunters:	1,284	1,873	2,650
Hunter Success:	93%	100%	99%
Active Licenses:	1,408	2,114	2,925
Active License Success:	85%	89%	90%
Recreation Days:	4,099	5,698	7,500
Days Per Animal:	3.4	3.0	2.9
Males per 100 Females	57	61	
Juveniles per 100 Females	64	56	

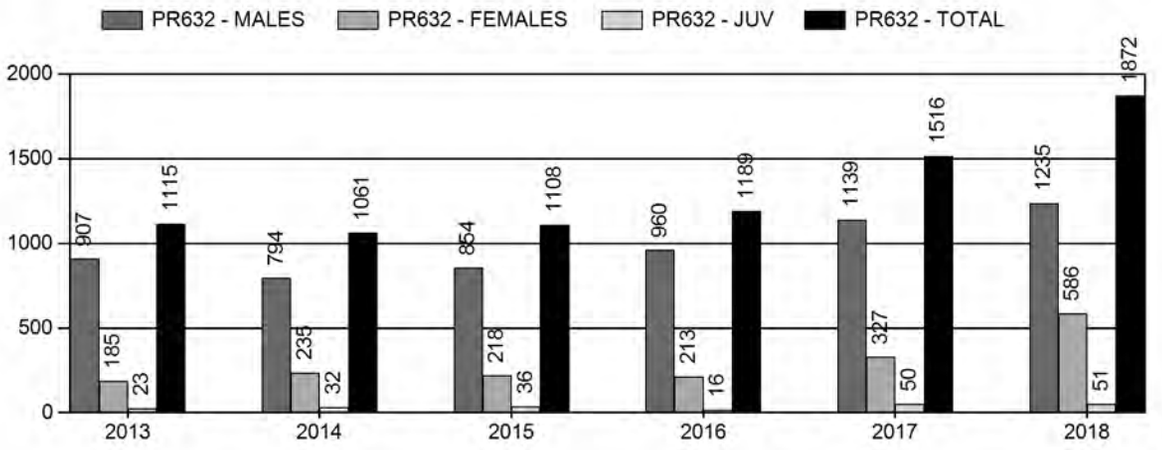
Population Objective (± 20%) :	25000 (20000 - 30000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	7%
Number of years population has been + or - objective in recent trend:	2
Model Date:	02/25/2019

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

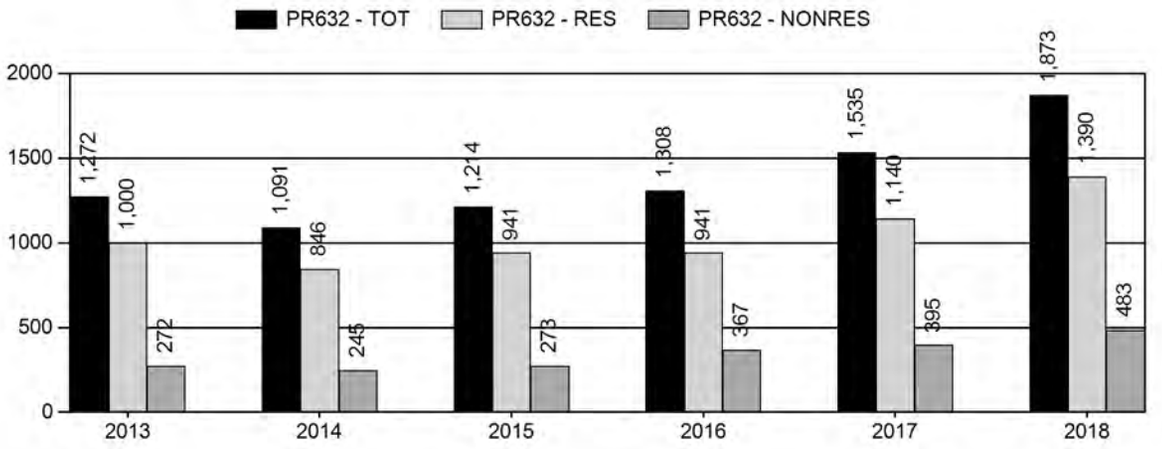
	JCR Year	Proposed
Females ≥ 1 year old:	4.7%	8.3%
Males ≥ 1 year old:	18.3%	24.5%
Total:	6.5%	9.4%
Proposed change in post-season population:	-2.9%	-6.2%



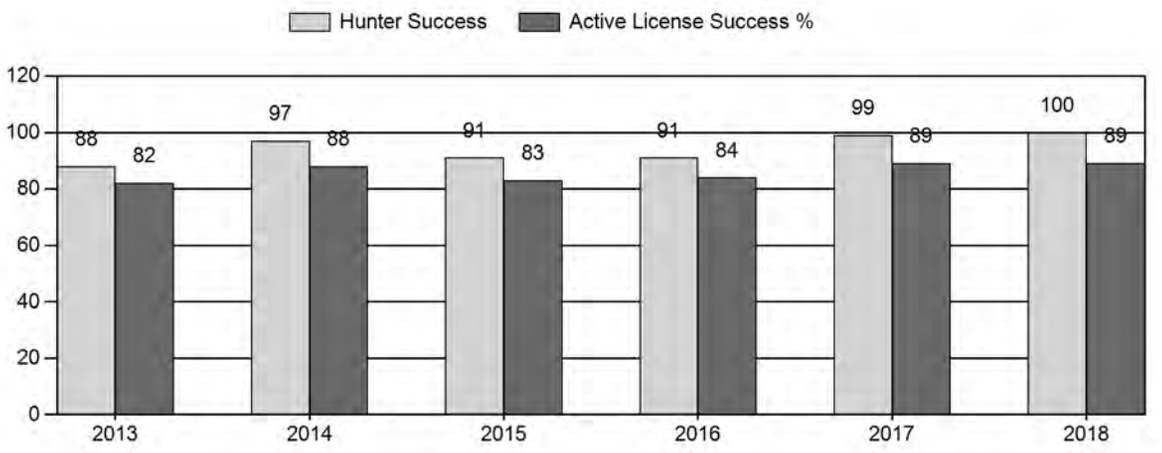
Harvest



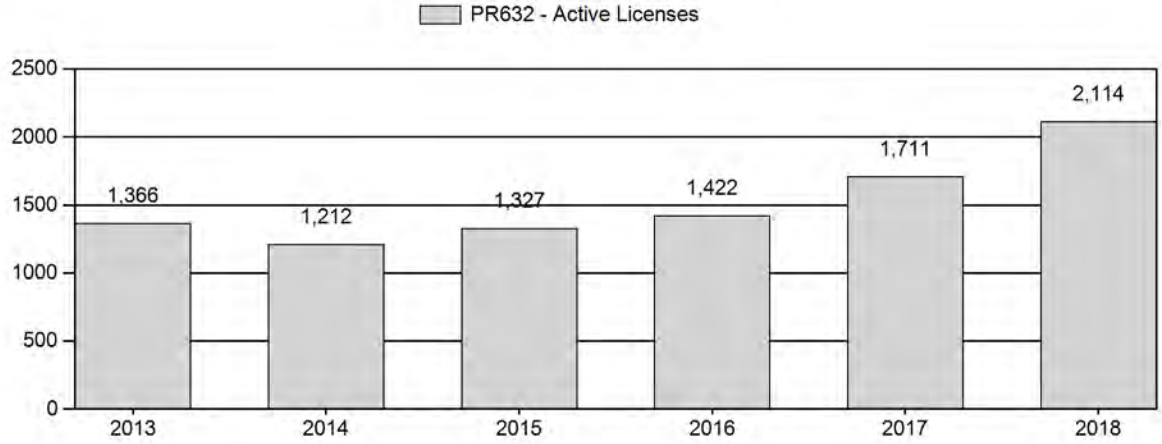
Number of Active Licenses



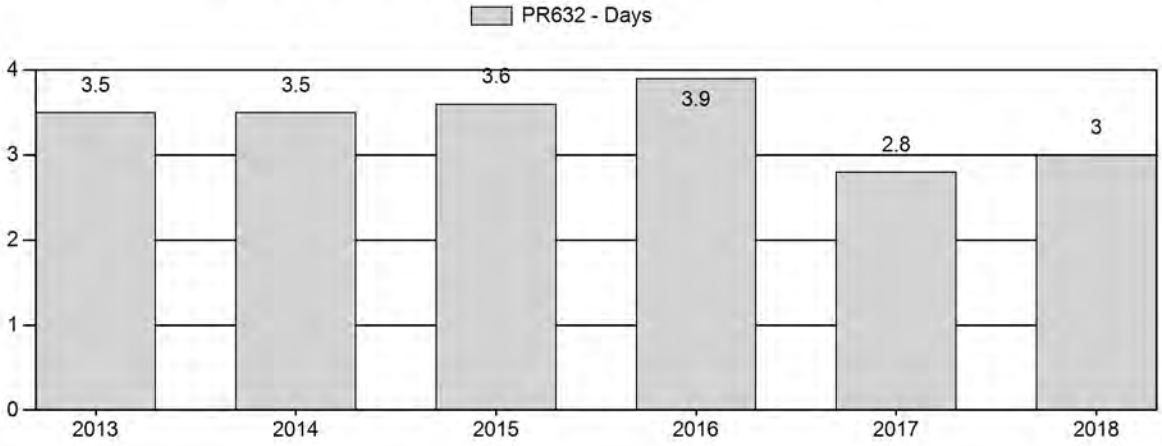
Harvest Success



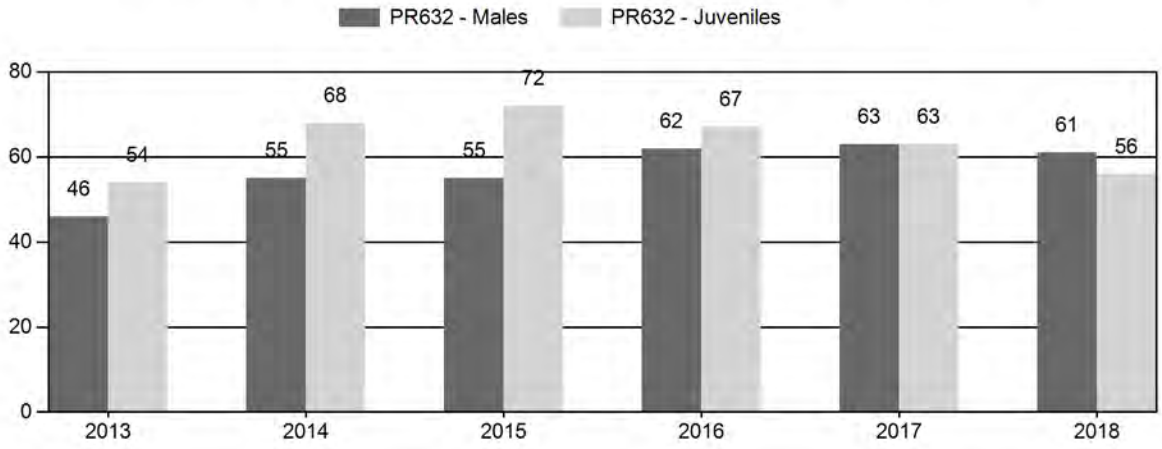
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR632 - BEAVER RIM

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	18,560	149	1,314	1,463	23%	3,199	50%	1,725	27%	6,387	1,608	5	41	46	± 2	54	± 2	37
2014	20,166	419	1,240	1,659	25%	3,003	45%	2,035	30%	6,697	2,408	14	41	55	± 2	68	± 3	44
2015	23,092	572	1,140	1,712	24%	3,087	44%	2,222	32%	7,021	2,279	19	37	55	± 2	72	± 3	46
2016	27,215	937	1,551	2,488	27%	4,001	44%	2,667	29%	9,156	2,516	23	39	62	± 2	67	± 2	41
2017	29,115	912	1,852	2,764	28%	4,389	44%	2,751	28%	9,904	2,311	21	42	63	± 2	63	± 2	38
2018	28,712	788	2,249	3,037	28%	5,018	46%	2,795	26%	10,850	2,131	16	45	61	± 2	56	± 2	35

2019 HUNTING SEASONS
Beaver Rim Pronghorn Herd Unit (PR 632)

Hunt Area	Type	Season Dates Opens	Closes	Quota	License	Limitations
65	1	Sept. 21	Oct. 22	200	Limited Quota	Any antelope
65	6	Sept. 21	Oct. 22	200	Limited Quota	Doe or fawn
65	7	Sept. 1	Nov. 7	100	Limited Quota	Doe or fawn valid north of the Little Popo Agie River, also valid in Area 66 west of the Little Popo Agie River
66	1	Sept. 21	Oct. 22	150	Limited Quota	Any antelope
66	6	Sept. 21	Oct. 22	200	Limited Quota	Doe or fawn
67	1	Sept. 21	Oct. 22	300	Limited Quota	Any antelope
67	6	Sept. 21	Oct. 22	100	Limited Quota	Doe or fawn
68	1	Sept. 21	Oct. 22	400	Limited Quota	Any antelope
68	6	Sept. 21	Oct. 22	150	Limited Quota	Doe or fawn
69	1	Sept. 15	Oct. 31	200	Limited Quota	Any antelope
69	6	Sept. 15	Oct. 31	200	Limited Quota	Doe or fawn
74	1	Sept. 21	Oct. 22	275	Limited Quota	Any antelope
74	6	Sept. 21	Oct. 22	100	Limited Quota	Doe or fawn
106	1	Sept. 21	Oct. 22	200	Limited Quota	Any antelope
106	6	Sept. 21	Oct. 22	150	Limited Quota	Doe or fawn
Archery						
65-69, 74, 106		Aug. 15				Refer to license type and limitations in Section 2

Hunt Area	License Type	Quota Change from 2018
65	1	+50
65	6	+100
66	6	+100
68	1	+50
68	6	+50
69	1	+25
69	6	+75
106	1	+50
106	6	+50
Herd Unit Total	**1**	**+175**
	6	**+375**

MANAGEMENT EVALUATION

Current Post-season Population Management Objective: 25,000
Management Strategy: Special (60-70 bucks/100 does)
2018 Post-season Population Estimate: ~26,650
2019 Post-season Population Estimate: ~25,000

Herd Unit Issues

Habitats are relatively intact with localized energy development and agricultural developments scattered throughout the herd unit, and urban/rural residential development occurring primarily near Lander. This population fluctuated below objective in the 1990s, reached objective in the mid-2000s before declining to a recent low in 2012 due to drought. The population has since increased with improved precipitation and resultant increased fawn survival. The management objective was reviewed in 2015, and the long-term post-season objective of 25,000 pronghorn was retained. The population reached about 26,650 pronghorn post-season 2018, 7% above objective.

Weather

The weather station at the Lander airport reported calendar year 2018 was the 37th warmest year (above normal) out of 127 years of record (1892-2018), 59th wettest year on record with 106% of normal precipitation, 22nd least snowiest year on record with 57.3 inches (63 percent of normal). In addition, 2018 had the 4th least snowiest Spring (March, April, May) on record with only 11.2 inches and the 10th driest September on record (0.05" of precipitation). Most of the growing season (April-June) precipitation fell during April and May, which was followed by a dry, hot summer and a mild fall. Conditions at the Jeffrey City weather station were similar, but with slightly better mid-summer precipitation. The dry conditions in late summer led to sagebrush losing leaves and appearing nearly dead, especially in the winter ranges between Lander and Beaver Rim. Some areas near Lander were also plagued with abnormally high numbers of grasshoppers in summer 2018, which exacerbated the condition of herbaceous and woody vegetation caused by dry conditions.

Winter 2018-19 began with below average snowfall, but higher elevations have reached or exceeded average snowpack since mid-January. Lander has had warmer than average temperatures, with November-February having only a few sub-zero temperature readings.

Habitat

Lander Region personnel conducted several rapid habitat assessments (RHA) in 2018, in shrub, riparian, and aspen habitats. We are targeting mule deer habitats in the South Wind River and Sweetwater herd units with these assessments, but most of the rangeland/shrub assessments, and some of the aspen and riparian assessments are in locations mutually occupied by pronghorn. We have more RHAs scheduled for 2019, for at least 10 each in shrub, aspen, and riparian habitats for each mule deer herd unit. Results of the RHAs completed in 2018 show good species diversity overall, but indicate most habitats are generally in mid to late-seral states, with moderate to severe herbivory. However, the state and condition of all habitat types are concerning, and will likely limit population growth and stability, especially in periods of drought.

Field Data

Pre-season classification surveys are conducted annually using established ground routes, and resulted in a sample of 10,850 pronghorn being observed in August and September 2018, the highest sample collected since 1994 and more than double some samples observed in the 1990s. Pre-season fawn/doe ratios have been favorable for population growth the past few years. However, the 2018 ratio of 56J/100F was an 11% decline from 2017 and is 14% below the previous 5-year average. This decline was in part due to very dry conditions from late June through September 2018. The overall buck/doe ratio declined to 61M/100F in 2018, but remained above the lower end of the special management strategy range for the 3rd consecutive year. The decline was due to reduced recruitment of yearling bucks, which showed a 24% drop to a pre-season ratio of 16YM/100F. With over 3,000 adult bucks

observed, the pre-season adult buck ratio rose to 45AM/100F, the highest since 1994 for both observed adult bucks and adult buck/doe ratio. Fawn/doe ratios varied by hunt area from 42J/100 to 74J/100F, while buck/doe ratios had higher variability between hunt areas, ranging from 50M/100F to 98M/100F. Conservative increases in buck harvest are again recommended for 2019 to continue to provide good opportunity where ample buck/doe ratios exist, and to maintain this herd within the special management strategy range of 60-70 bucks/100 does. With the population being 7% over the post-season objective of 25,000 (but within the ±20% range), doe/fawn harvest will be increased to address some limited damage concerns and to move the population to objective.

Harvest Data

License quotas increased in 2018, which led to a 23% increase in total harvest. All harvest data indicate 2018 was a good year for hunting pronghorn in the Beaver Rim herd unit. Hunter success improved in 2018, with 100% hunter success, along with 89% active license success. Type 1 (any antelope) hunter success ranged from 82% in Hunt Area 65 to 93% in Hunt Areas 66 and 69. Doe/fawn hunters had success rates ranging from of 66% in Hunt Area 65 (Type 7) to 96% in Hunt Area 66. As a whole, it took 3.0 days of hunting for each animal harvested, slightly below the average since 1994. Adjustments to the upcoming 2019 seasons consider these variables, combined with variations in classification data to best fit harvest to individual hunt areas, all while maintaining the herd unit within the population objective and special management strategy range of 60-70 bucks per 100 does.

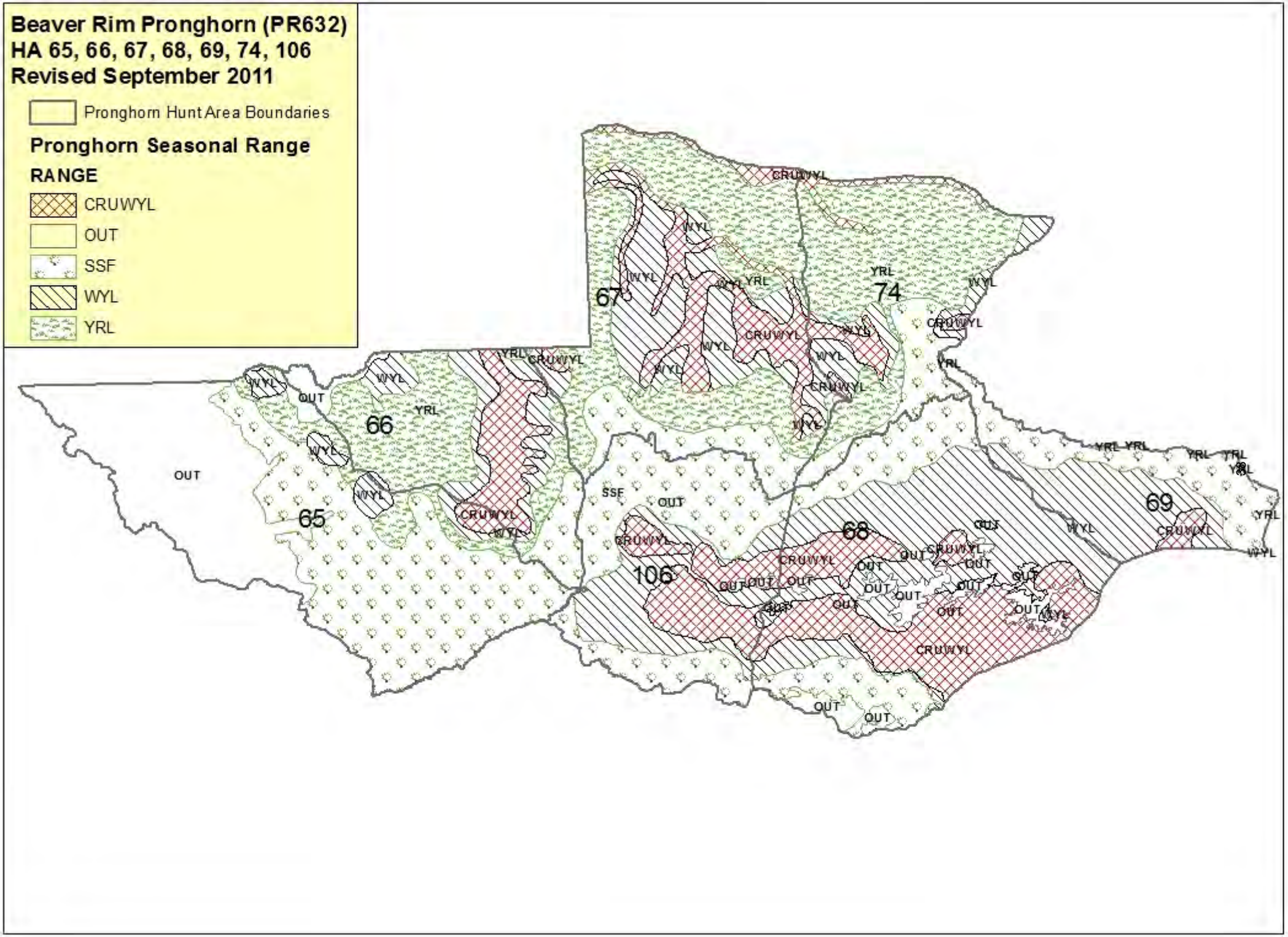
Population

A spreadsheet model was developed for this population in 2012. It has been updated utilizing 2018 pre-season classification and harvest data. Although the TSJ/CA model has lower AICc and fitness values, the (CJ/CA) model was selected for Beaver Rim pronghorn since it more closely tracks with all 8 line-transect (LT) estimates over the past 25 years, the latest of which was conducted at the end of bio-year 2016. As such, we consider the model to be "Good". The end-of-year estimates produced by the model run almost exactly through or very close to 5 of the 8 LT estimates, and through the confidence interval for the other 3 LT estimates. The model also produces post-season population estimates which closely follow trends observed by field personnel and the public. The population was at or slightly below objective for 7 years (2004 – 10), but declined sharply in 2011 and 2012, due to poor fawn recruitment as a result of intense drought. However, with improved fawn/doe ratios since 2014, the model indicates the population has surpassed the current objective, with 26,653 pronghorn post-season 2018.

Management Summary

For 2019, doe/fawn license numbers are being increased in most hunt areas, to control localized private land damage situations and move toward the objective of 25,000 pronghorn. Increases in Type 1 licenses are implemented in 4 hunt areas, to provide additional hunting opportunity where buck/doe ratios are within the special management range. We are expanding the area limitation Area 65 Type 7 licenses to include Area 66 west of the Little Popo Agie River to address growing pronghorn numbers and damage issues there. Especially if yearling buck recruitment rebounds in 2019, the overall buck/doe ratio should remain or increase within the Department's Special Management criteria.

The 2019 seasons outlined should reduce the population slightly to about 25,000 pronghorn, if the growing season weather patterns and fawn production/survival are favorable and winter losses are minimal. The 2019 hunting season includes 1,725 any antelope and 1,100 doe/fawn licenses, and should result in a harvest of at least 2,600 pronghorn.


Beaver Rim Pronghorn (PR632)
HA 65, 66, 67, 68, 69, 74, 106
Revised September 2011
Pronghorn Hunt Area Boundaries
Pronghorn Seasonal Range
RANGE
CRUWYL
OUT
SSF
WYL
YRL
65
66
67
68
69
74
106

2018 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2018 - 5/31/2019

HERD: PR634 - BADWATER

HUNT AREAS: 75

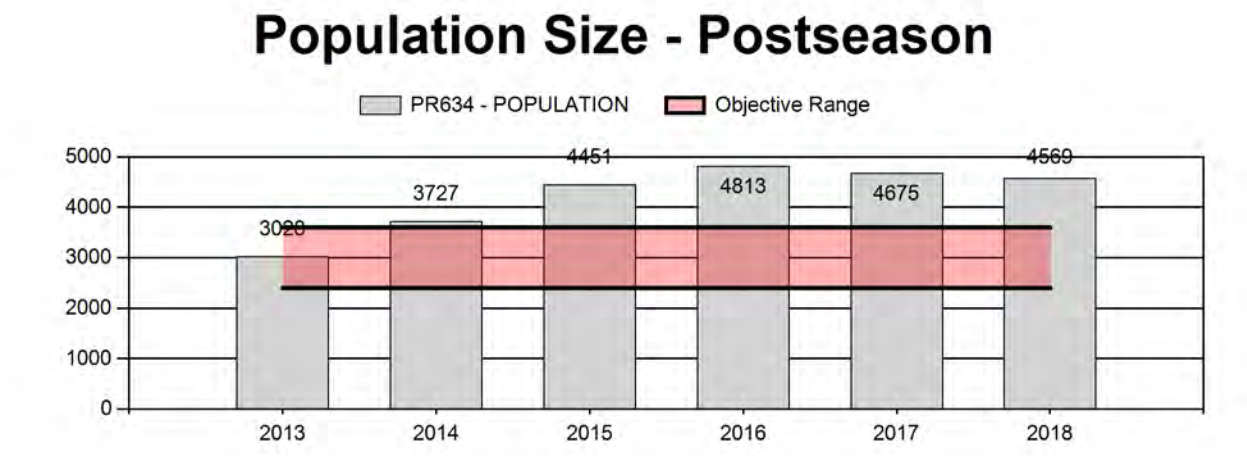
PREPARED BY: GREG ANDERSON

	2013 - 2017 Average	2018	2019 Proposed
Population:	4,139	4,569	4,058
Harvest:	489	762	1,005
Hunters:	497	791	900
Hunter Success:	98%	96%	112 %
Active Licenses:	546	829	1,100
Active License Success:	90%	92%	91 %
Recreation Days:	1,405	1,881	2,200
Days Per Animal:	2.9	2.5	2.2
Males per 100 Females	65	65	
Juveniles per 100 Females	69	59	

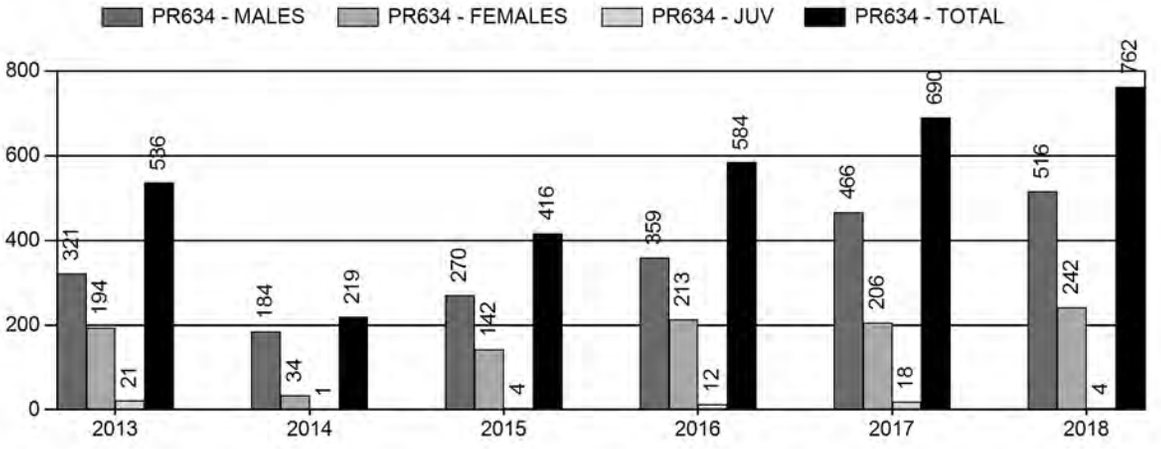
Population Objective (± 20%) :	3000 (2400 - 3600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	52%
Number of years population has been + or - objective in recent trend:	5
Model Date:	2/5/2019

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

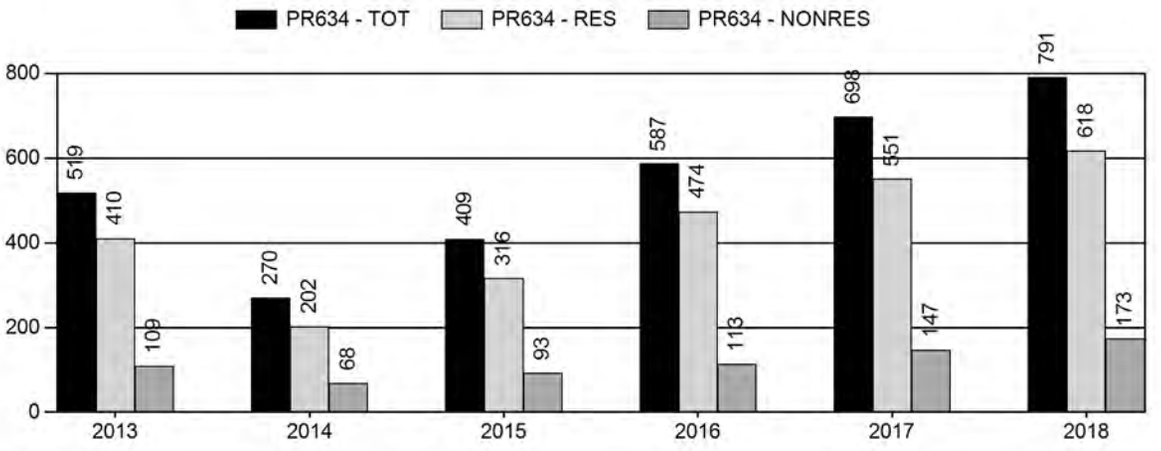
	JCR Year	Proposed
Females ≥ 1 year old:	11%	23%
Males ≥ 1 year old:	42%	47%
Total:	14%	19%
Proposed change in post-season population:	-5%	-11%



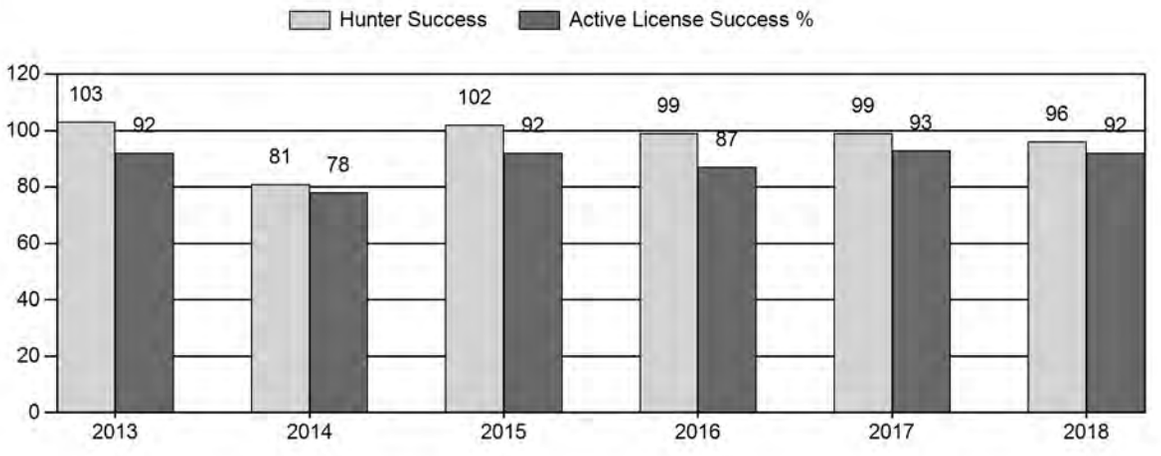
Harvest



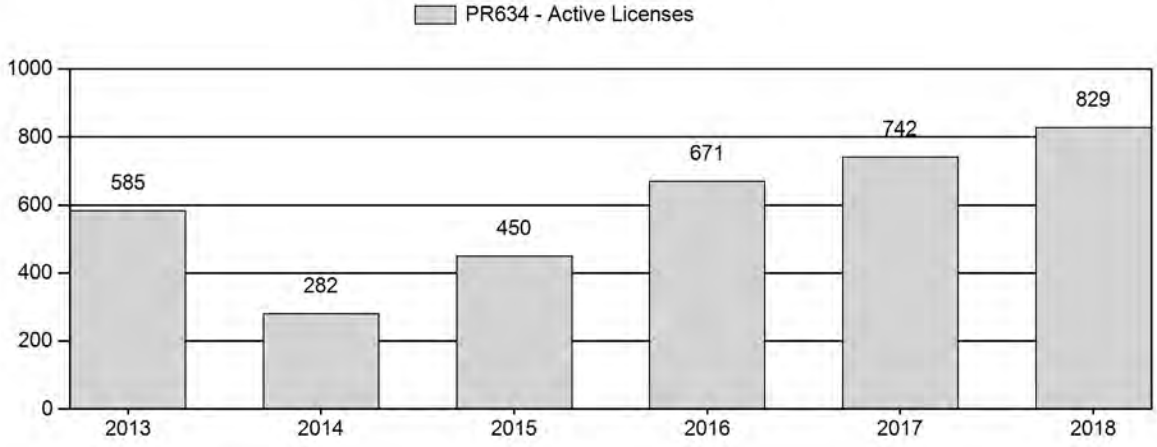
Number of Active Licenses



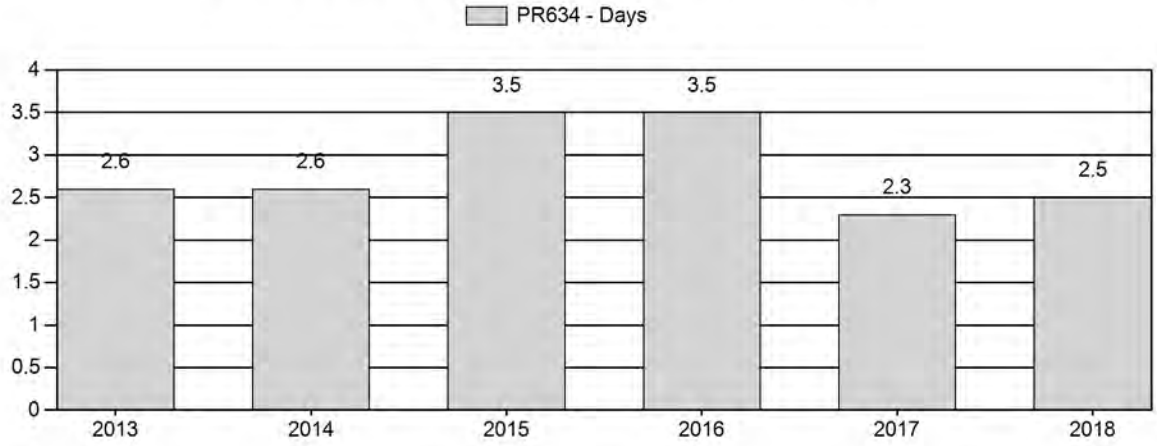
Harvest Success



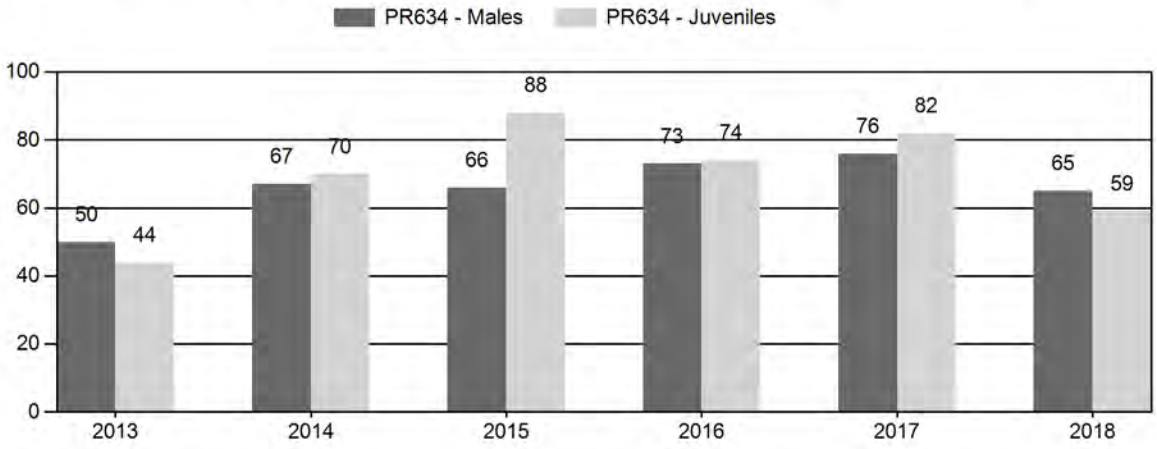
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR634 - BADWATER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	3,617	58	268	326	26%	646	51%	285	23%	1,257	1,098	9	41	50	± 5	44	± 4	29
2014	3,968	87	142	229	28%	340	42%	237	29%	806	1,678	26	42	67	± 8	70	± 9	42
2015	4,909	149	115	264	26%	403	39%	354	35%	1,021	2,362	37	29	66	± 8	88	± 9	53
2016	5,455	148	139	287	29%	394	40%	292	30%	973	2,109	38	35	73	± 8	74	± 9	43
2017	5,434	129	196	325	30%	425	39%	347	32%	1,097	2,358	30	46	76	± 8	82	± 9	46
2018	5,407	124	214	338	29%	524	45%	309	26%	1,171	1,757	24	41	65	± 7	59	± 6	36

2019 HUNTING SEASONS
BADWATER PRONGHORN (PR 634)

Hunt Area	Type	Season Dates Opens	Closes	Quota	License	Limitations
75	1	Sep. 21	Oct. 22	600	Limited quota	Any antelope
75	6	Sep. 21	Oct. 22	500	Limited quota	Doe or fawn
Archery						
75		Aug. 15	Sep. 20			Refer to section 2 of this chapter

Hunt Area	Type	Quota change from 2018
75	1	
	6	+200
Total	**1**	
	6	**+200**

Management Evaluation

Current Postseason Population Management Objective: 3,000
Management Strategy: Recreational
2018 Postseason Population Estimate: ~4,500
2019 Proposed Postseason Population Estimate: ~4,000

Management Issues

The Badwater pronghorn herd is managed toward a post-season population size objective of 3,000 antelope. The population is estimated using a spreadsheet model developed in 2012 and updated in 2018. The herd is managed for recreational opportunity. The objective was last reviewed in 2014. During the 2014 review, it was noted the new spreadsheet model appeared to track the same population trend as the previous POP-II model. However, annual population estimates tended to be about 1,000 animals higher in the new spreadsheet model. Initial attempts to increase the objective to 4,000 to compensate for the apparent higher estimates produced by the spreadsheet model were met with resistance from landowners and the BLM. When noted that leaving the objective at 3,000 would in effect mean managing for fewer antelope than in the past, a number of landowners and representatives from the BLM felt that was appropriate given long-term drought and poor habitat conditions in the area. This herd has been above objective for each year over the past 5 year period. The herd has ranged from 30% to 60% above objective. License numbers and harvest have been increased each year since 2014 to reduce the population. Antelope harvest in 2018 was 3.5 times 2014 harvest. The 2019 population model indicates this level of harvest was sufficient to reduce the population between 2017 and 2018. Subsequent harvest increases should drive this population to objective over the next couple of

years. During an internal objective review in February, 2019 personnel decided to leave the population objective and management strategy unchanged at 3,000 antelope and recreational opportunity respectively.

This pronghorn population inhabits a heavily industrialized area in central Wyoming. Much of the herd unit has been designated as a special management area emphasizing oil and gas production in both the Casper and Lander BLM RMPs. The Lander BLM is currently analyzing a proposal to develop approximately 4,500 oil/gas wells in the central part of the herd unit. Given the commodities production emphasis in the area, it is likely a significant amount of pronghorn habitat will be lost or degraded over the next 20 years.

While the herd has generally been above objective over the past 10 years, recent, significant increases in harvest appear to have begun reducing the population. This is evidenced by the modeled population decline from 2017 to 2018.

Habitat/Weather

This area has been impacted by extreme drought for much of the last decade. Virtually no vegetation grew throughout the herd unit in 2012 and 2013. In 2018 weather conditions resulted in fair herbaceous production throughout central Wyoming during the early growing season. In June, 2018 precipitation declined below average in the area. That combined with warm temperatures resulted in early curing of vegetation in the area. The arid conditions throughout mid- to late summer appear to have impacted fawn production as the fawn/doe ratio was significantly lower than each of the previous 5 years.

Field Data

The number of antelope observed along specified ground classification routes has been fairly stable over the past 3 years. In 2018 the classification sample was 1,171 antelope. The sample yielded a fawn/doe ratio of 59/100 and a buck/doe ratio of 65/100. The fawn/doe ratio was lower than the 5-year average of 72/100. The low recruitment level is likely attributable to the drought conditions from mid- to late summer resulting in early vegetation curing and poor female lactation. The 2018 buck/doe ratio of 65/100 was essentially the same as the 5-year average of 66/100 but significantly lower than the 2016 and 2017 ratios. The decline in the buck/doe ratio can be attributed to a significant increase in Type 1 licenses each of the past 3 years to increase recreational opportunity and decrease the buck/doe ratio closer to the recreational threshold of 60/100.

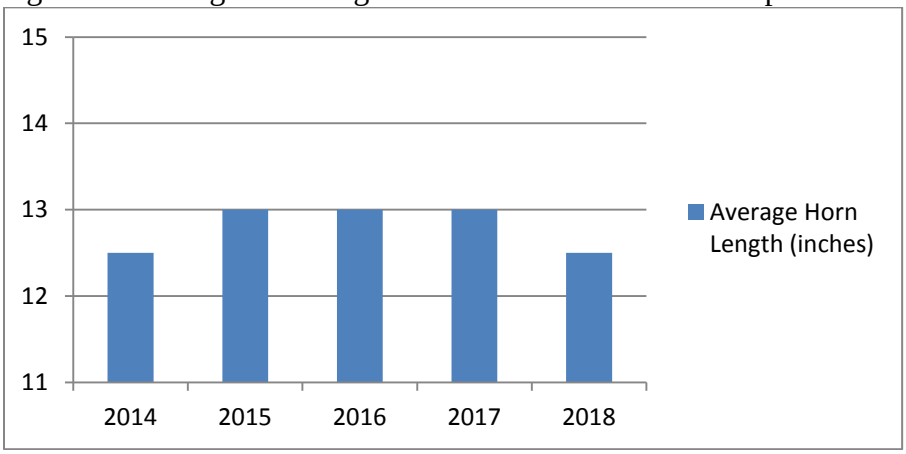
Harvest Data

As expected, with a high buck/doe ratio and a population above objective, Type 1 license success was good at 90%. This was close to the 2017 success rate of 93% as well as the 5-year average of 88%. With the exception of 2014, Type 1 license success in this herd unit has been close to or above 90% each of the last 6 years. This should not be a surprise given the high buck/doe ratios observed over the past 4 years. The decline in the buck/doe ratio from 76/100 in 2017 to 65/100 in 2018 indicates recent license increases are beginning to affect buck numbers and decrease the buck doe ratio toward recreational management objectives. Type 6 license success was also good at 95%. The days/animal statistic for Type 1 license holders was unremarkable in 2018 at 2.6 but was lower than the 5-year average of 3.2. Overall, harvest statistics indicate recreational

hunting in 2018 was good. It appears license numbers issued in 2017 decreased the buck/doe ratio in 2018. A subsequent Type 1 license increase for the 2018 season is expected to decrease the buck/doe further in 2019. If the buck/doe ratio does decline again in 2019 it will be an indication license numbers are providing adequate recreational opportunity.

In 2018 personnel collected horn length measurements on 20 male antelope in the herd unit. The average and median lengths were both 12.5 inches. The longest horn measurement of the year was 14.5 inches (Fig. 1). The average horn length was 0.5 inches less than in 2015, 2016, and 2017. Despite increased license numbers each of the past 3 years, hunters continue to harvest bucks with average horn length of 12.5 to 13 inches which is appropriate for an area with a recreational management emphasis.

Figure 1. Average horn length of field checked male antelope in Hunt Area 75.



Population

In 2012, a spreadsheet model was developed for this population. The model has behaved predictably over the years with the exception of 2015 when addition of data changed model estimates dramatically. The model appears to track population trends reliably but the actual population estimate appears questionable. The model tracks significantly higher than the 6 line-transect (LT) estimates used as anchors. Recalibrating juvenile and adult survival rates in various versions of the model does nothing to bring the end-of-year estimate closer to these estimates. LT estimates for this population tend to have very high coefficients of variation attributable to low small samples sizes and variable densities across the herd unit. Due to the high standard errors associated with the line-transect estimates the population model deviance errors are very small. These numbers are calculated by dividing the difference of the model estimate and the LT estimate by the standard error of the LT estimate. A large standard error in the denominator of this calculation results in a small population deviance value even if the difference between the model estimate and LT estimate is quite large. Since the Solver function of these models is designed to minimize the population deviance, there is little need to account for already small deviances. The bottom line is Solver has little incentive to consider even large differences between model population estimates and LT estimates and therefore, the model essentially ignores the LT estimates. Concurrently, differences in annual observed versus modeled buck/doe ratios are given undo consideration by Solver. This is not desirable in this

case since recent classification sample sizes have been well below adequate. To deal with this problem, population deviances (the difference between model and LT estimates) are multiplied by a factor of 10 in the current model. This forces the model closer to the most recent LT estimate. A correction factor of 10 was chosen because it forces the end-of-year population to model close to the most recent LT estimate. Without the correction factor, the model population is well above the confidence interval for all but one unusually high LT estimate. It should be noted, the overall population trend remains the same with or without the use of a correction factor. Also of note is the 2010 LT estimate was removed entirely from the 2018 model. This estimate was 5,256 antelope and well above the two LT estimates from 2007 and 2012 that it was bracketed by. The 2007 and 2012 estimates were 2,764 and 2,303 respectively. The model was never able to track the 2010 estimate as it was likely not representative of the population.

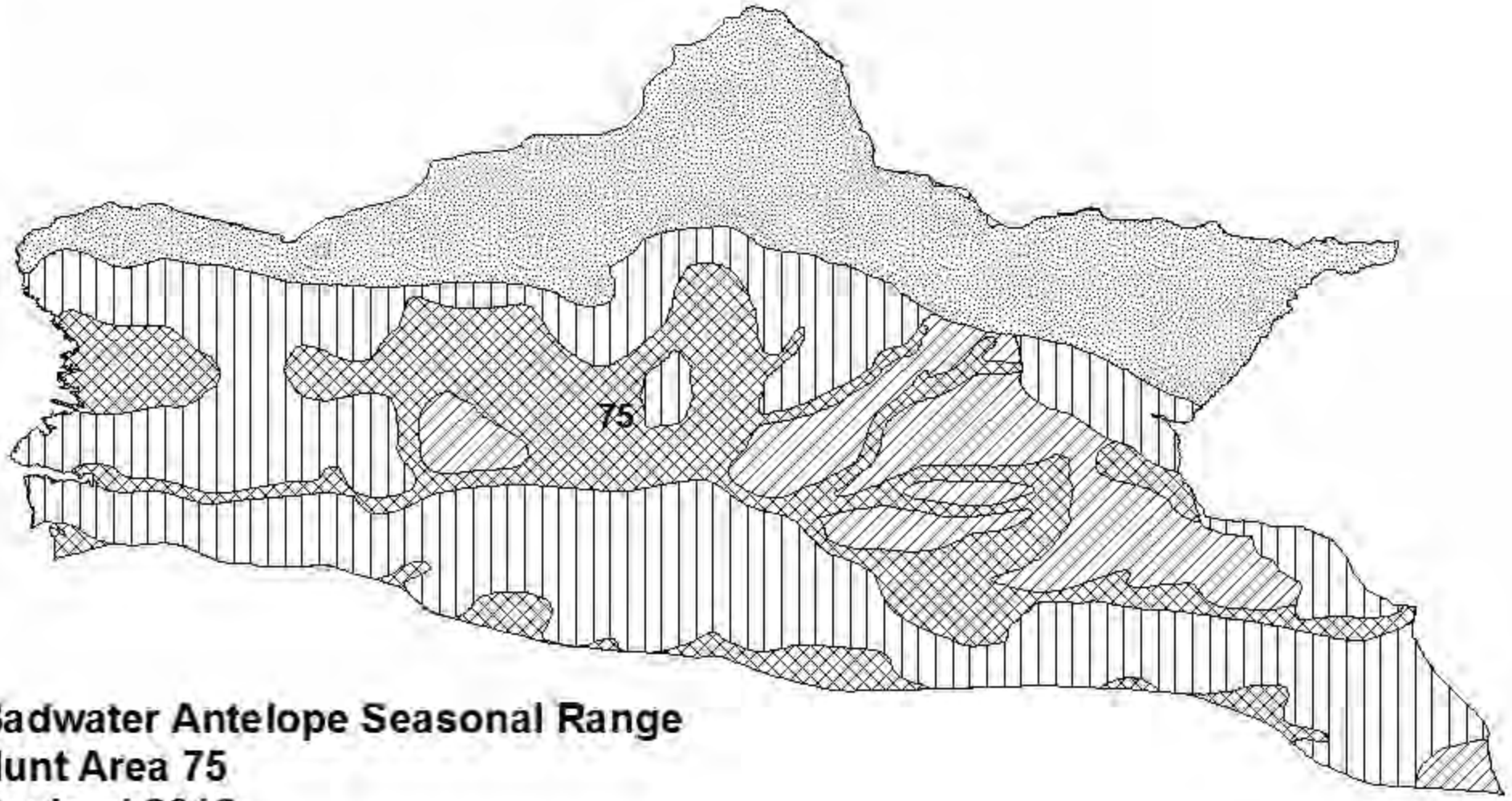
The addition of data from 2018 changed the model very little and trends remained the same as seen in the 2017 model. Similar to 2017, the TSJ/CA model was selected in 2018 to simulate the population. In 2018, the TSJ/CA model provided a substantially better fit to observed data than the SCJ/SCA model and had a lower AIC value. Although the AIC value for the TSJ/CA model was slightly higher than the CJ/CA version, the fit was substantially better.

This model version produces a population trend mirroring field personnel impressions. The model indicates the population declined significantly from 2007 through 2013. This is supported by the decreased classification samples collected along standard routes since 2010 as well as declining buck/doe ratios from 2010 through 2013. The population was predicted to be at objective in 2013 and then increased significantly in 2014. The population continued to increase through 2017 followed by a 5% decline in 2018. A significant increase in harvest pressure and below average recruitment led to the population decline in 2018. As mentioned previously, harvest statistics and classification data also indicate this population increased over the past several years but the increased harvest appears to have arrested growth. Due to the lack of survival estimates, the model is considered a fair simulation.

The last line transect survey for this herd unit was flown on May 26 and 27, 2016. The results from the 2016 survey are included in the model along with 5 previous LT estimates. With the correction factor mentioned above the model tracks closely to 4 of the LT survey estimates. This is a relatively small herd unit without substantial movement barriers and it is hypothesized some of the dramatic fluctuation in LT estimates may be due to lack of population closure.

Management Summary

It appears the increased in harvest pressure over the past 4 years is beginning to affect this herd as evidenced by the population decline in 2018 and the lower buck/doe ratio. The current buck harvest pressure is predicted to reduce the buck/doe ratio further. With the addition of 200 more Type 6 licenses in 2019 the population is predicted to decline another 11%. That said, the buck/doe ratio in the herd is still above the recreational threshold indicating there is no need to reduce Type 1 licenses. Given indications harvest pressure in 2017 was beginning to impact the buck/doe ratio, Type 1 licenses will not be increased for 2019. Given average recruitment, the population is predicted to decline by approximately 11% to 4,000 and be within 33% of objective in 2019.



Badwater Antelope Seasonal Range
Hunt Area 75
Revised 2012

CRUWYL
OUT
SSF
WYL
YRL

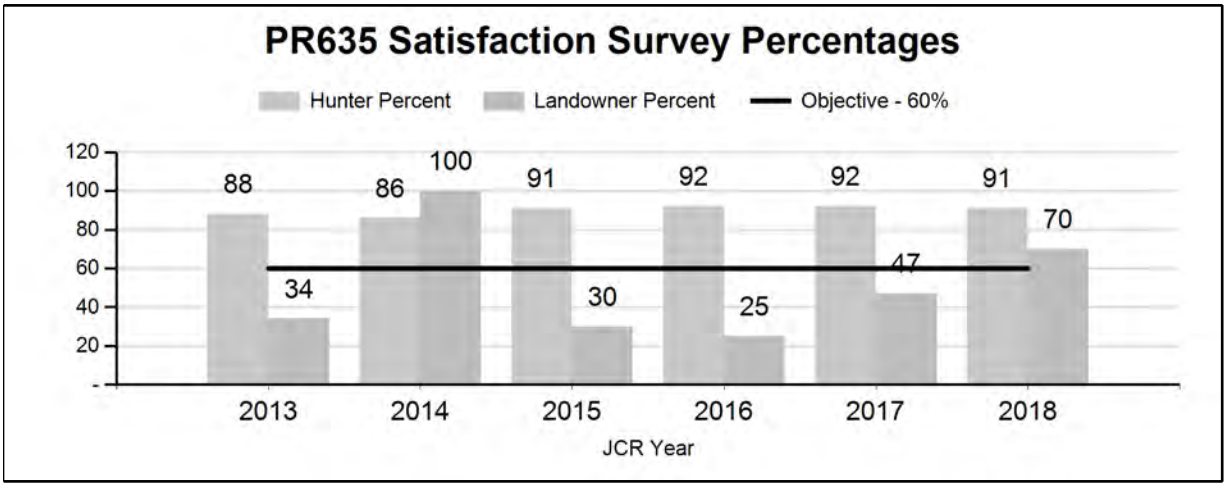
N

2018 - JCR Evaluation Form

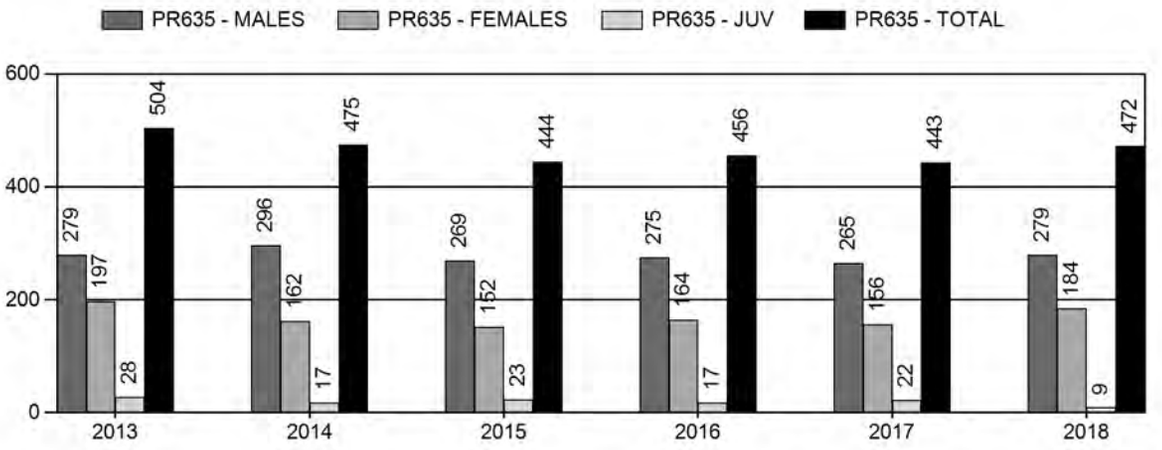
SPECIES: Pronghorn
HERD: PR635 - PROJECT
HUNT AREAS: 97, 117

PERIOD: 6/1/2018 - 5/31/2019
PREPARED BY: GREG ANDERSON

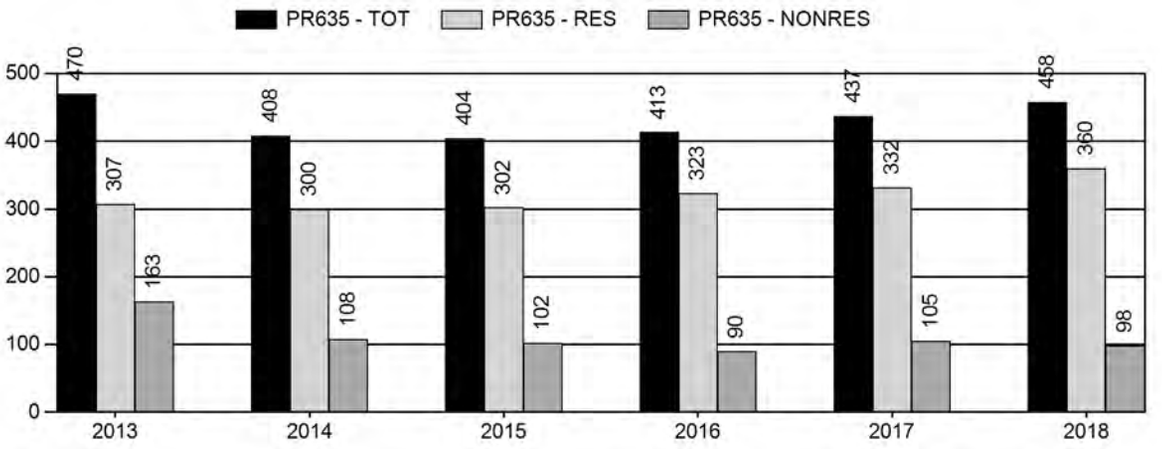
	2013 - 2017 Average	2018	2019 Proposed
Hunter Satisfaction Percent	90%	91%	90%
Landowner Satisfaction Percent	38%	70%	50%
Harvest:	464	472	550
Hunters:	426	458	500
Hunter Success:	109%	103%	110%
Active Licenses:	514	541	650
Active License Success:	90%	87%	85%
Recreation Days:	1,556	1,637	1,800
Days Per Animal:	3.4	3.5	3.3
Males per 100 Females:	54	39	
Juveniles per 100 Females	59	51	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			20%
Number of years population has been + or - objective in recent trend:			1



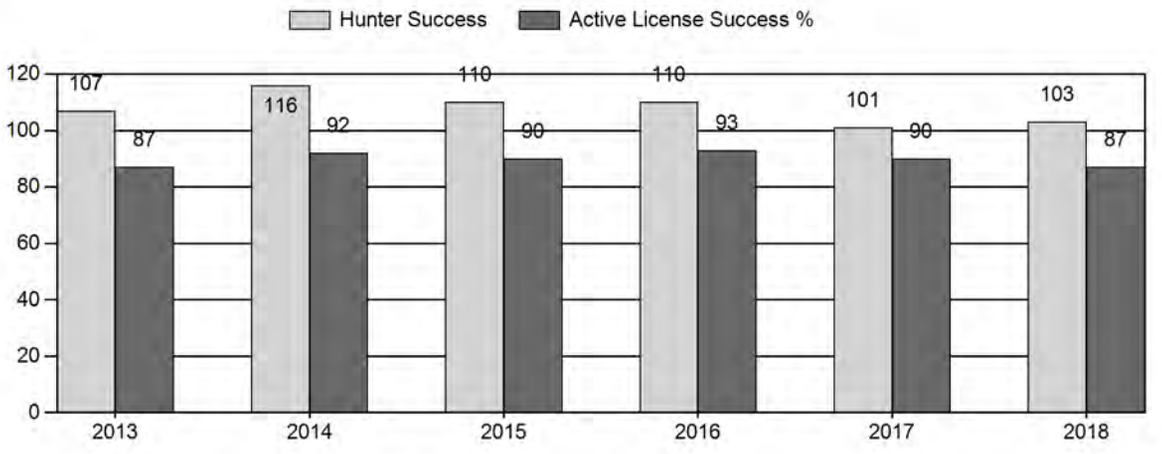
Harvest



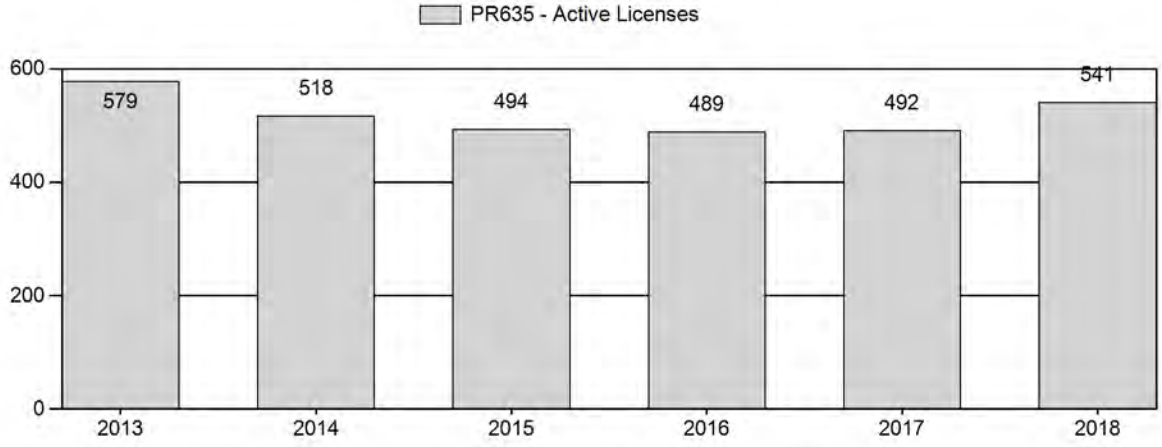
Number of Active Licenses



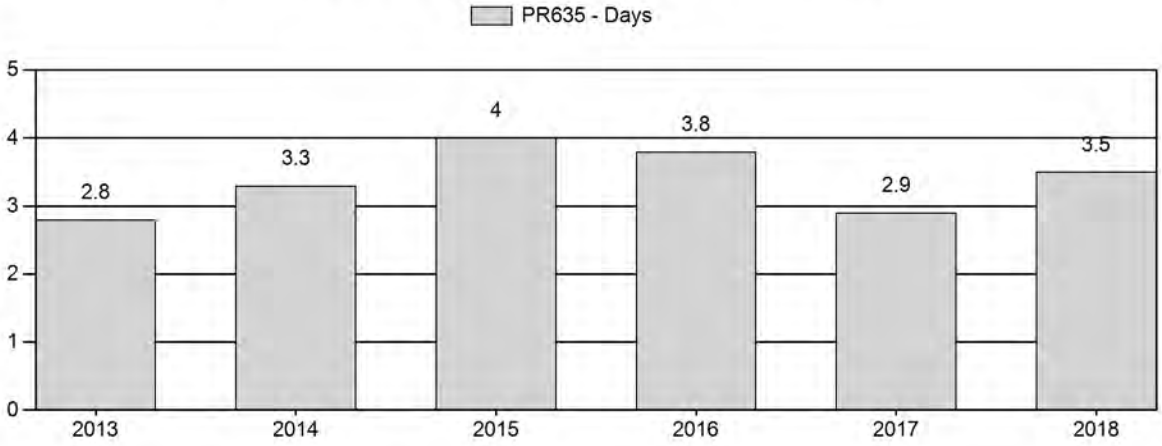
Harvest Success



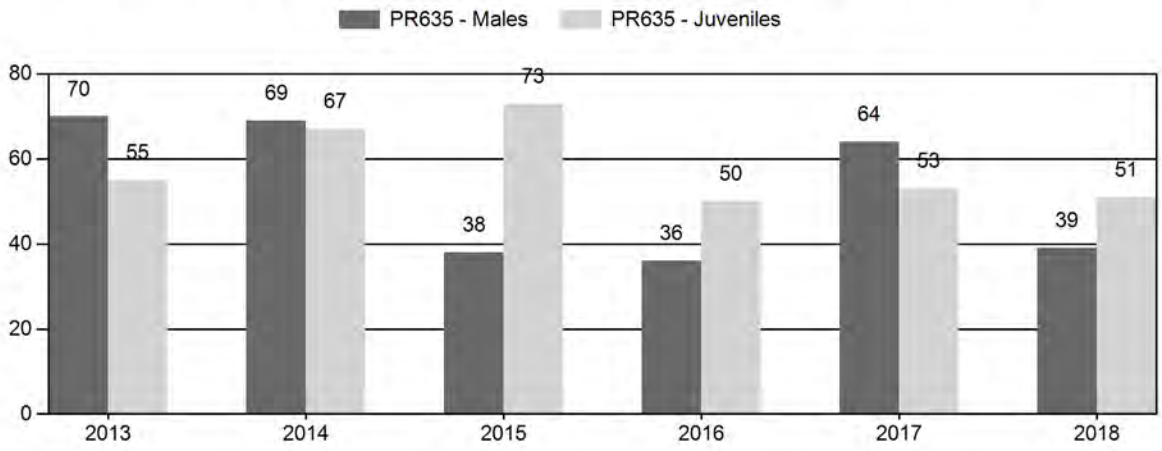
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR635 - PROJECT

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	0	28	125	153	31%	219	45%	120	24%	492	0	13	57	70	± 0	55	± 0	32
2014	0	21	62	83	29%	120	42%	80	28%	283	0	18	52	69	± 0	67	± 0	39
2015	0	26	45	71	18%	188	47%	137	35%	396	0	14	24	38	± 0	73	± 0	53
2016	0	42	33	75	19%	209	54%	104	27%	388	0	20	16	36	± 0	50	± 0	37
2017	0	37	59	96	29%	151	46%	80	24%	327	0	25	39	64	± 0	53	± 0	32
2018	0	31	51	82	20%	212	53%	108	27%	402	0	15	24	39	± 0	51	± 0	37

2019 SEASONS
PROJECT PRONGHORN (PR 635)

Hunt Area	Type	Season Dates Opens	Closes	Quota	License	Limitations
97, 117	1	Sep. 21	Oct. 22	325	Limited quota	Any antelope
97, 117	2	Aug. 15	Oct. 22	50	Limited quota	Any antelope valid in Area 97 south of U.S. Highway 26 or Wyoming Highway 134 and east of Eight Mile Road, and in all of Area 117
97, 117	6	Sep. 21	Oct. 22	225	Limited quota	Doe or fawn
97, 117	7	Aug. 15	Oct. 22	150	Limited quota	Doe or fawn valid in Area 97 south of U.S. Highway 26 or Wyoming Highway 134 and east of Eight Mile Road, and in all of Area 117
Archery						
97, 117		Aug. 15	Sep. 14			Refer to section 2 of this chapter

Hunt Area	Type	Quota change from 2018
97, 117	2	+25
	7	+125
Total		**+150**

Management Evaluation

Current Hunter/Landowner Satisfaction Management Objective: Hunter/Landowner Satisfaction 60%
Management Strategy: Private Lands
2018 Hunter Satisfaction Estimate: 91%
2018 Landowner Satisfaction Estimate: 70% (10 contacts)
Most Recent 3-year Running Average Hunter Satisfaction Estimate: 92%
Most Recent 3-year Running Average Landowner Satisfaction Estimate: 47%

Management Issues

In 2013 the Department conducted an objective review for the Project pronghorn herd unit. Previously the herd had a population objective of 400 pronghorn. The population objective was impractical because personnel were unable to collect adequate demographic data due to extensive interchange with the neighboring Wind River Reservation (WRR). Following an internal review, a public meeting and contact with numerous landowners the objective was changed in 2013 to manage for 60% hunter and 60% landowner satisfaction with a recreational management strategy. The objective was reviewed in 2018 and left unchanged as hunter/landowner satisfaction but with a private lands management strategy.

The landscape throughout this herd unit varies dramatically from irrigated grain and alfalfa fields to arid, native upland areas. The majority of the antelope population resides in close proximity to WRR boundaries near irrigated agricultural areas. This creates management challenges since more sparsely populated areas of arid public lands are easily accessible by hunters. The majority of landowners in the area allow hunting access but hunter densities are still higher in the public land portion of the herd unit where there are fewer antelope. With the exception of damage complaints from a few landowners in hunt area 117, the few landowners sampled in 2018 indicated antelope numbers are at an acceptable level.

Habitat/Weather

This herd occupies a predominantly agricultural area in central Wyoming as well as lands interspersed with the WRR. Land ownership patterns and extensive border with the WRR make it cost prohibitive to collect adequate demographic data in the herd unit. The highest densities of pronghorn are found along the northern portion of hunt area 97 and commonly move between the herd unit and the WRR. During periods of drought, this herd has typically been impacted less than surrounding populations due to the abundance of feed associated with agricultural operations. In 2018, weather conditions were conducive to average vegetative production throughout the herd unit including upland, native range. Vegetation did cure early in summer which may have limited nutrition for does raising fawns. Fall observations and field checks indicate antelope in the herd unit entered winter in average body condition.

Field/Harvest Data/Population

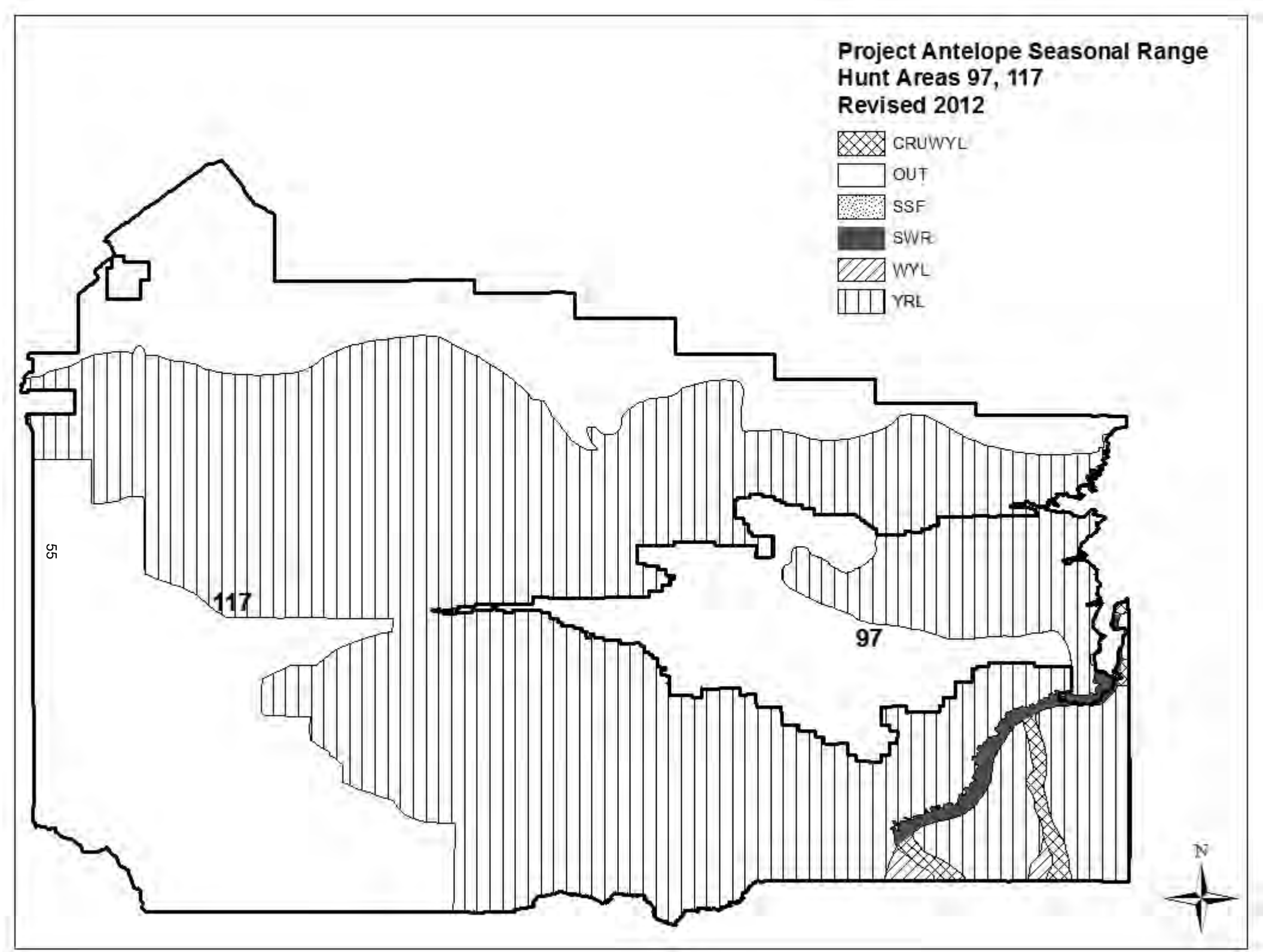
The fawn/doe ratio in hunt area 97 was 51/100 in 2018. This was lower than the 2017 ratio of 53/100 and well below the 5-year average of 60/100. Surrounding antelope areas also had low fawn/doe ratios in 2018. Since the previous winter was mild, the lower production is likely tied to dry summer conditions and early curing of vegetation that may have limited nutrition for

lactating does. The buck/doe ratio decreased from 64/100 in 2017 to 39/100 in 2018. The buck/doe ratio in this herd can fluctuate significantly year-to-year. A change of the magnitude seen between 2017 and 2018 is likely due to interchange with the WRR as opposed to actual demographic change. A similar change in the buck/doe ratio was observed between 2016 and 2017 when the ratio increased from 36/100 to 64/100. Type 1 license success is consistently high in this herd unit and was 91% in 2018. In conjunction, hunter satisfaction was 91% in 2018 and averaged 92% over the past 3 years. These figures indicate recreational hunt quality continues to be good in the herd unit.

The population is considered to be at objective in 2018. Hunter satisfaction (satisfied or very satisfied) has been quite high over the past several years and landowner satisfaction has risen steadily over the past 3 years reaching 70% in 2018. Increasing landowner satisfaction is an indication that license increases between from 2017 through 2018 had the desired effect.

Management Summary

Hunter satisfaction has been quite high over the past several years, and landowner satisfaction has increased each of the past 3 years. A higher percentage of landowners were satisfied with antelope numbers in 2018 than each of the previous 2 years. In response to increased landowner satisfaction, Type 1 and 6 licenses will remain unchanged for 2019. This will allow continued levels of recreation and prevent population growth. Type 2 and Type 7 licenses will increase to address specific, localized damage concerns. With average survival for the year but increased harvest, the population is expected to decline in 2019.


Project Antelope Seasonal Range
Hunt Areas 97, 117
Revised 2012
CRUWYL
OUT
SSF
SWR
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55
117
97
N

2018 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2018 - 5/31/2019

HERD: PR636 - NORTH FERRIS

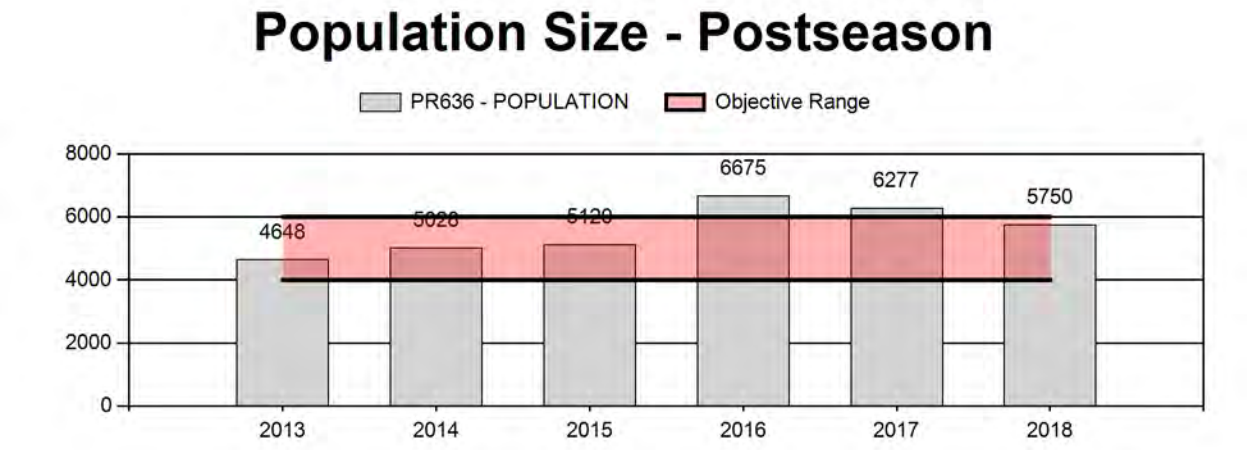
HUNT AREAS: 63
PREPARED BY: GREG HIATT

	2013 - 2017 Average	2018	2019 Proposed
Population:	5,550	5,750	5,110
Harvest:	331	672	755
Hunters:	376	675	855
Hunter Success:	88%	100%	88 %
Active Licenses:	408	766	855
Active License Success:	81%	88%	88 %
Recreation Days:	1,102	1,662	1,865
Days Per Animal:	3.3	2.5	2.5
Males per 100 Females	63	74	
Juveniles per 100 Females	71	73	

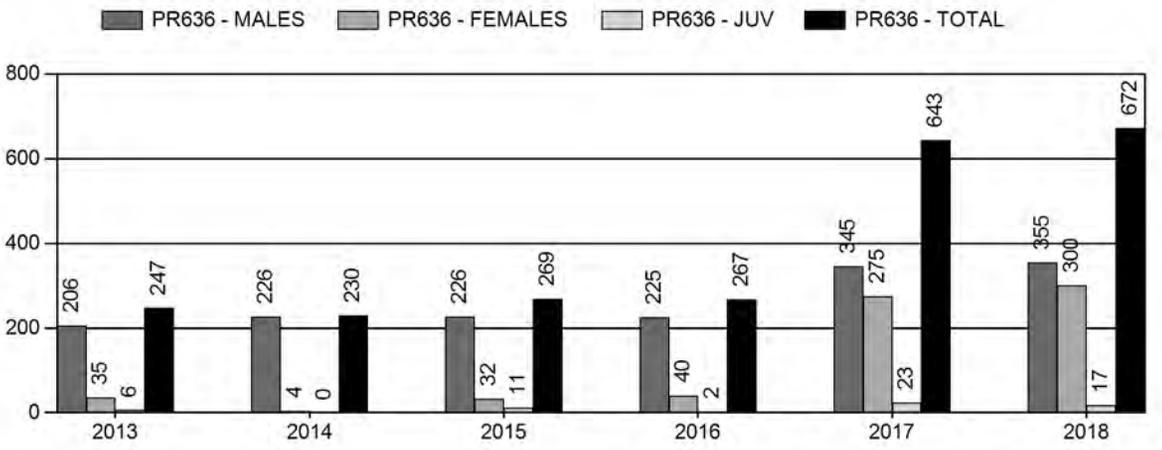
Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	15%
Number of years population has been + or - objective in recent trend:	5
Model Date:	1/28/2019

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

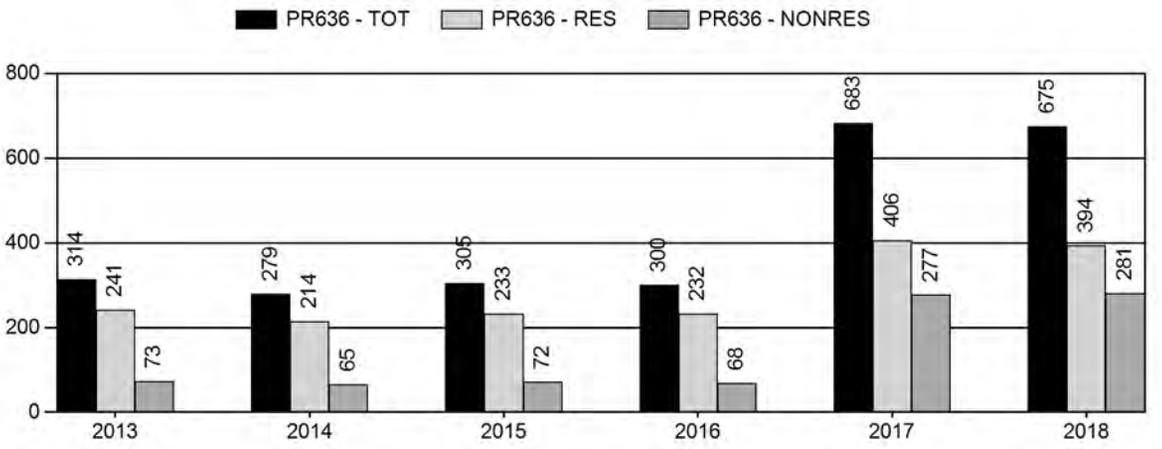
	JCR Year	Proposed
Females ≥ 1 year old:	10.9%	11.9%
Males ≥ 1 year old:	20.5%	28.6%
Total:	10.4%	12.7%
Proposed change in post-season population:	-8.4%	-8.7%



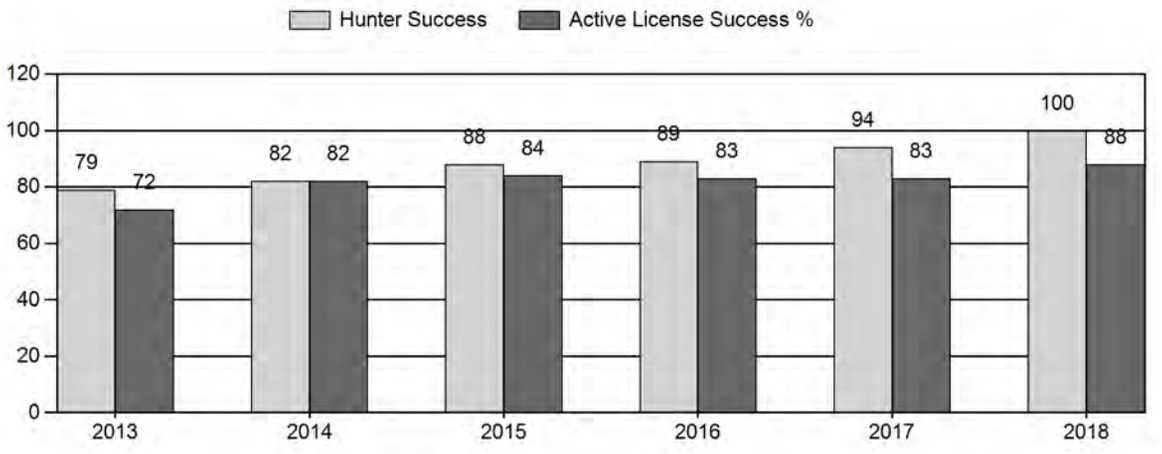
Harvest



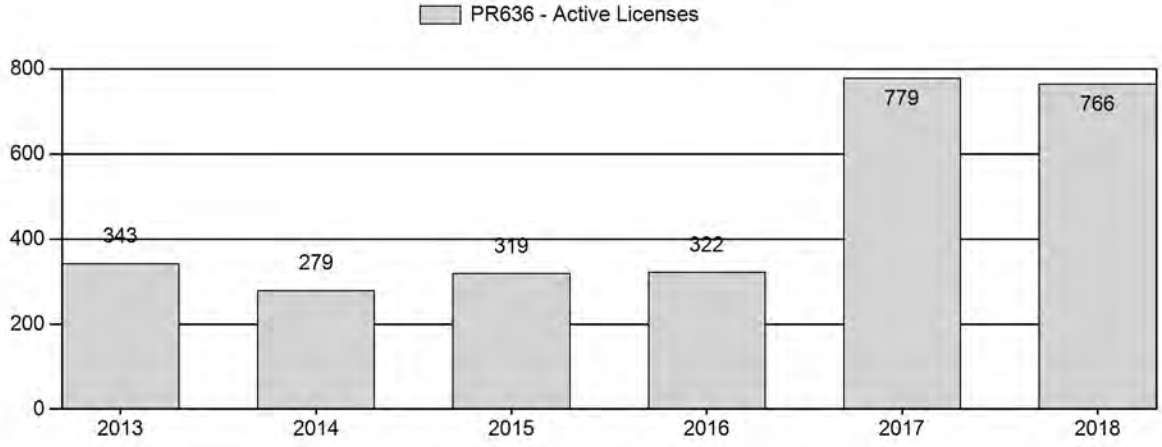
Number of Active Licenses



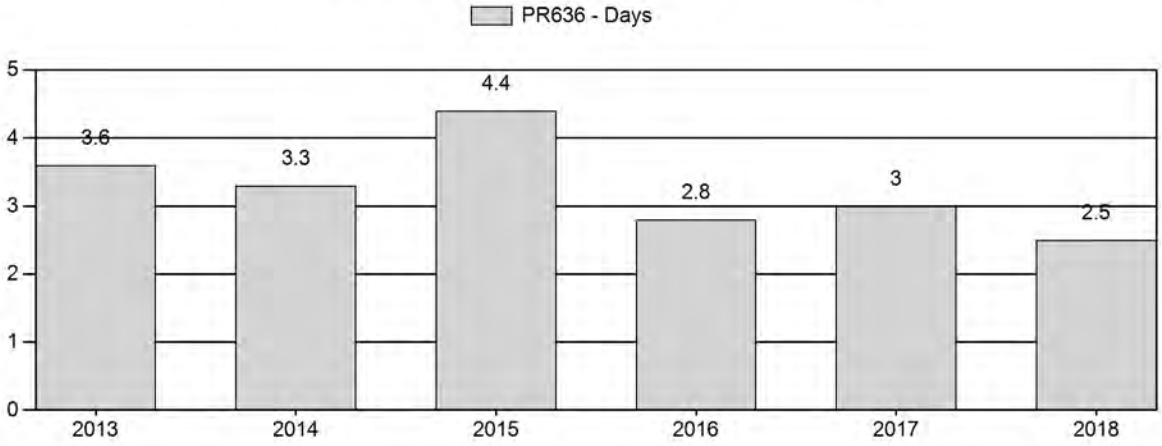
Harvest Success



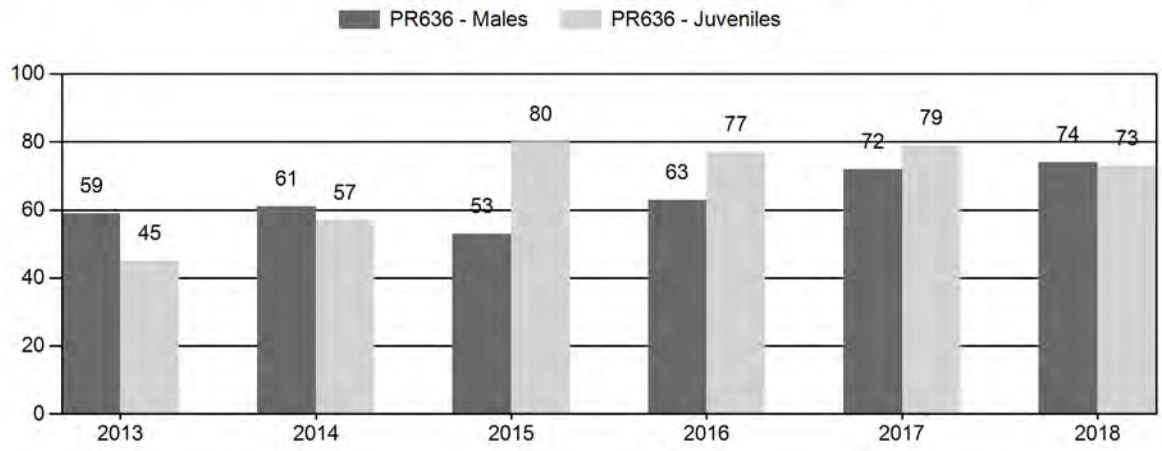
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR636 - NORTH FERRIS

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	4,920	57	216	273	29%	459	49%	205	22%	937	1,460	12	47	59	± 7	45	± 6	28
2014	5,281	72	143	215	28%	350	46%	201	26%	766	1,611	21	41	61	± 8	57	± 8	36
2015	5,420	118	273	391	23%	736	43%	587	34%	1,714	2,173	16	37	53	± 5	80	± 6	52
2016	6,970	158	338	496	26%	782	42%	606	32%	1,884	2,347	20	43	63	± 5	77	± 6	47
2017	6,985	209	384	593	29%	818	40%	643	31%	2,054	2,478	26	47	72	± 5	79	± 6	46
2018	6,500	140	413	553	30%	749	40%	550	30%	1,852	2,247	19	55	74	± 6	73	± 6	42

2019 HUNTING SEASONS
NORTH FERRIS PRONGHORN HERD (PR636)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
63	1	Sep. 21	Oct. 31	200	Limited quota	Any antelope
	2	Sep. 21	Oct. 31	350	Limited quota	Any antelope valid east of the Buzzard Road (Natrona County Road 410 – Carbon County Road 497)
	6	Sep. 21	Oct. 31	150	Limited quota	Doe or fawn
	7	Sep. 21	Oct. 31	250	Limited quota	Doe or fawn valid east of the Buzzard Road (Natrona County Road 410 – Carbon County Road 497)
Archery						
63		Aug. 15	Sep. 20			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2018
63	1	0
	2	+100
	6	0
	7	0
Herd Unit Total	**1**	**0**
	2	**+100**
	6	**0**
	7	**0**

Management Evaluation
Current Postseason Population Management Objective: 5,000
Management Strategy: Recreation
2018 Postseason Population Estimate: 5,750
2019 Proposed Postseason Population Estimate: 5,100

Herd Unit Issues

The North Ferris pronghorn herd is managed toward a post-hunt population of 5,000, an objective last publicly reviewed in 2014. The herd is in recreational management, with harvest

quotas designed to maintain pre-hunt buck:doe ratios below 60:100. Population size is estimated using a spreadsheet model developed in 2012 and updated in 2019.

A Department review in early 2019 found no compelling reason to change the 5,000 posthunt population objective. Landowner complaints about high antelope numbers have abated since the herd was reduced within the objective range and harvests were directed into the eastern half of the herd. Hunter demand for licenses in this herd remains high, but are generally obtainable with less than maximum preference points for nonresidents. A change to Special Management strategy would probably be well received by both hunters and landowners, but other herds with this management strategy are found nearby.

Hunting access has not been an issue for much of this herd unit due to the high proportion of public land, but access to some large blocks of private land has become more difficult in recent years and may affect management ability to attain adequate harvests in the future. Potential for economic wind power exists within the herd unit, but appears unlikely when other resource issues such as T&E species and sage-grouse Core Area are considered. While a few miles of fence have been modified to wildlife friendly designs, many miles of sheep-tight fences still stand in the herd unit, impeding pronghorn movements.

Losses to EHD were documented in pronghorn herds south and west of North Ferris in 2013, and reports of carcasses in Area 63 suggests the disease was present here as well. This disease may recur when suitable conditions arise.

Weather

Record precipitation in 2015 produced exceptional vegetative growth, improving fawn survival, and was followed by another wet spring in 2016 and good moisture in early 2017. High fawn production was seen again in all three years as a result. The summer of 2018 was hot and dry, lowering quantity and quality of forage production and reducing fawn production.

Condition of pronghorn going into the 2018-19 winter is expected to have been less than ideal as a result of the hot, dry summer. The 2018-19 winter had numerous extended periods of bitter cold, continuing through March. Much of the winter range was open and available until heavier snowfalls in February and March. Due to late winter weather, winter losses are expected to have been near or slightly above average.

Habitat

While no herbaceous habitat transects are established within occupied habitats of this herd unit, herbaceous forage production appeared to be exceptional in 2015, due to record precipitation, and above average in 2016 and 2017. In 2018, however, herbaceous forage production appeared to be lower than normal due to low precipitation and high temperatures. Two shrub transects have been established within this herd unit, primarily to monitor mule deer winter forage. One of these, on the Morgan Creek WHMA, was burned in the 2012 fires and the second was not read in 2018. New owners of the Pathfinder Ranch, which encompasses the north-central portion of this herd, have expressed interest in improving habitat conditions for wildlife, possibly as mitigation

for wind power projects in other parts of the state. Shrub treatment on winter ranges, adjustments of grazing use, and modification of sheep-tight fences would benefit pronghorn in this herd unit.

Field Data

Classification sample size declined slightly in 2018, and was again less than statistically desired. These data are collected from the ground along routes that have had only minor changes over the past two decades. Higher densities of pronghorn were again found in the eastern half of the area near Pathfinder Reservoir and along irrigated hayfields on the Buzzard and Sand Creek Ranches. As would be expected with the hot, dry summer, fawn production decreased, to 73:100. This was the lowest fawn:doe ratio in four years, but still well above ratios seen in the previous six years.

Following near-record fawn production in 2015 and 2016, recruitment of yearling bucks was high in 2016 and 2017, increasing the buck:doe ratio to 72:100, above the recreational maximum. In response, buck harvest was increased again beginning in 2017. Yearling recruitment remained high in 2018, further raising the buck:doe ratio to 74:100.

Harvest Data

Overall hunter success increased to 88 percent in 2018, compared to 83 percent in 2017 and 2016, with the average effort required to harvest a pronghorn decreasing from 3.0 days to 2.5 days. All of the improvement in hunter success came from the Type 1 and Type 6 license holders. Type 2 and Type 7 hunters, restricted to the eastern portion of the area, had reduced success. The dry summer conditions would be expected to concentrate pronghorn near riparian habitats in the eastern half, as was seen in previous years, so presumably the increased harvest from those licenses is having an effect on antelope densities.

Horn length measurements were collected on 12 percent of the reported buck harvest. Average horn length of field checked adult bucks from this herd was only 12.4 inches in 2018, compared to a statewide average of 12.5 inches. The longest buck checked was 14.75 inches. Of the 41 adult bucks measured in the field, only 10 were 14 inches long or longer.

Population

Population estimates suggest this herd was well above objective size in 2006 due to record high fawn survival, and harvests were increased accordingly. The current spreadsheet model predicts the increased harvests successfully reduced the herd to objective size by 2012. Harvests were reduced and the herd remained at objective for three years. Following near-record high fawn production in 2015, 2016 and 2017, the herd was again above objective, but increased harvests in 2017 and 2018 have brought the herd back within objective range.

The current model aligns well with three line-transect survey estimates, but greatly underestimates the most recent line-transect estimate. This survey was flown with a single, inexperienced observer, yielding a flat density curve which may have affected survey estimates. Hunter comments, satisfaction and harvest statistics do not support the exceptionally high numbers predicted by the 2016 line-transect estimate.

The SCJ,SCA spreadsheet model provides adequate fit with observed buck:doe ratios and has the lowest AICc value for this herd. This base model was modified to allow fawn survival to fluctuate upwards in four years preceding the exceptionally high observed yearling buck:doe ratios. Annual adult survival was predicted at 84 percent, a level slightly lower than models for some nearby pronghorn herds. Juvenile survival rate averaged 54 percent, except in the years when higher fawn survival was allowed. These annual fawn survival rates exceeded adult survival rates and as a result the model is only considered to be a "Fair" representation of the herd. The CJ,CA model had a higher AICc value and poorer fit with observed data. The TSJ,CA model also had a higher AICc value, but better fit with buck:doe ratios. Population estimates from this simpler model were much lower in 2015 and 2016, further under-estimating the most recent line-transect estimate.

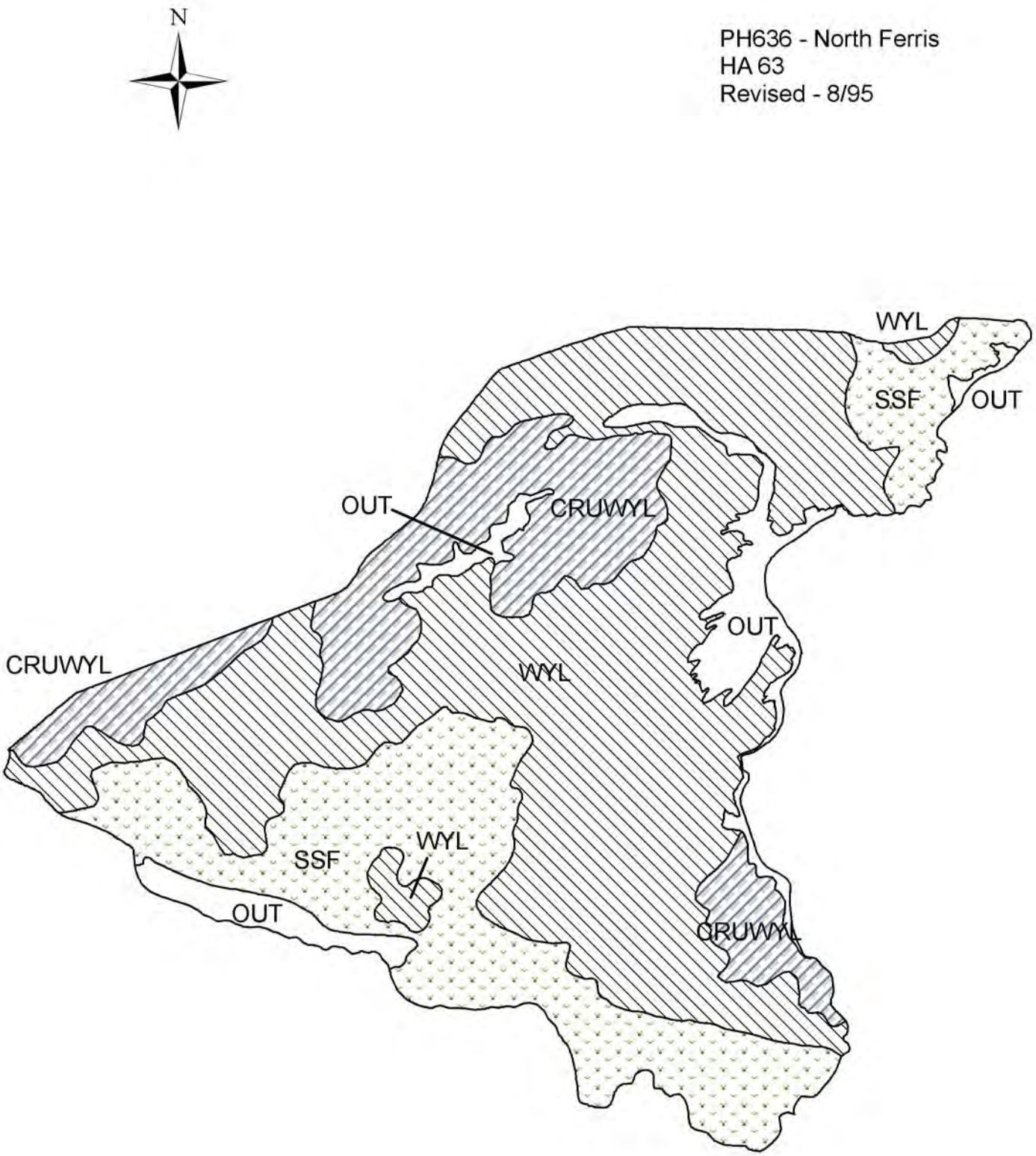
Fawn production in 2019 was projected near the 5-year average. Due to record high fawn production seen in three of those five years, this average may be overly optimistic. The model was run using a median juvenile survival for the 2018-19 winter, and predicts the herd will be within 5 percent of objective in 2019 with the proposed harvest.

Management Summary

With continued improvement in fawn production and the herd estimated to still be above objective size, increased doe harvest begun in 2017 and 2018 needs to be maintained in 2019. As in previous years, Type 2 and Type 7 licenses are issued to direct hunting pressure to the eastern portion of the herd unit where pronghorn densities are higher and most private lands are found. Quota for the Type 2 licenses is increased to take advantage of the increased supply of bucks. With average fawn production in 2019, the model predicts this increased harvest will reduce the herd to objective.

The expected harvest of roughly 380 bucks and 320 does and fawns from the 2019 license quotas should provide a significant decrease (10-15 percent) in herd size, projected to be ~5,100 at post-hunt 2019. With the herd close to objective, harvests will probably need to be reduced in future years.

Opening date is shifted 6 days to remain on the third Saturday of September, synchronizing with Area 68 to the north and other areas in the Lander Region. Closing date is the same as in the previous seven years and extends to the closing of the local deer season. Archery season uses a standardized opening date and closes the day before the opening of the regular season.


N
PH636 - North Ferris
HA 63
Revised - 8/95
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2018 - JCR Evaluation Form

SPECIES: Pronghorn
PERIOD: 6/1/2018 - 5/31/2019

HERD: PR637 - SOUTH FERRIS

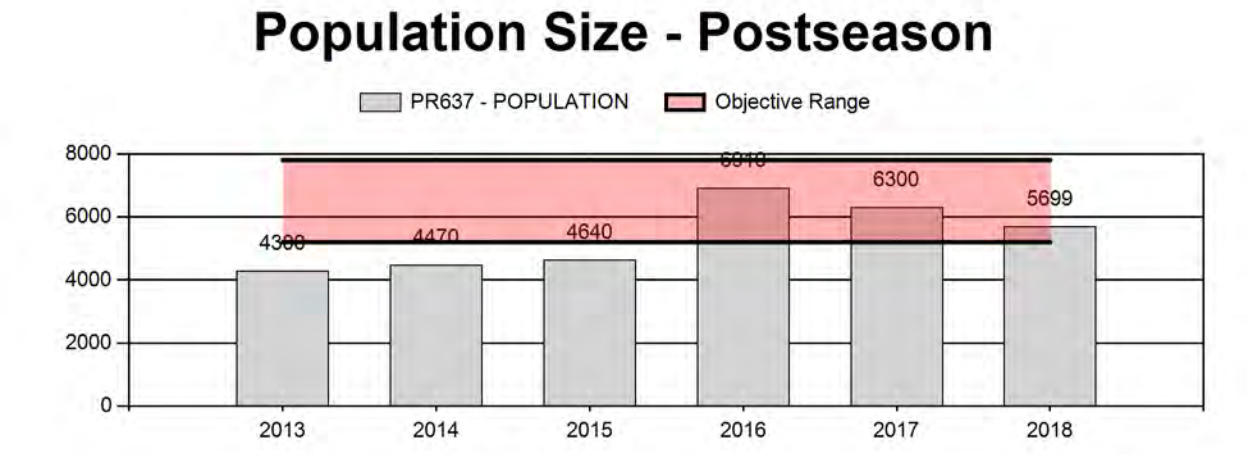
HUNT AREAS: 62
PREPARED BY: GREG HIATT

	2013 - 2017 Average	2018	2019 Proposed
Population:	5,324	5,699	5,372
Harvest:	150	259	195
Hunters:	159	261	230
Hunter Success:	94%	99%	85 %
Active Licenses:	176	295	230
Active License Success:	85%	88%	85 %
Recreation Days:	518	818	690
Days Per Animal:	3.5	3.2	3.5
Males per 100 Females	57	69	
Juveniles per 100 Females	50	34	

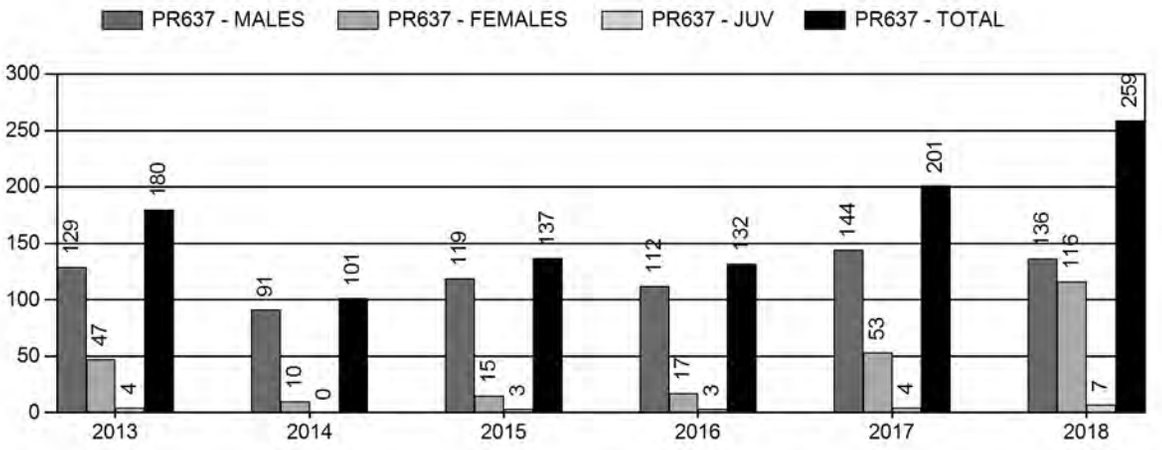
Population Objective (± 20%) :	6500 (5200 - 7800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-12.3%
Number of years population has been + or - objective in recent trend:	2
Model Date:	3/4/2019

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

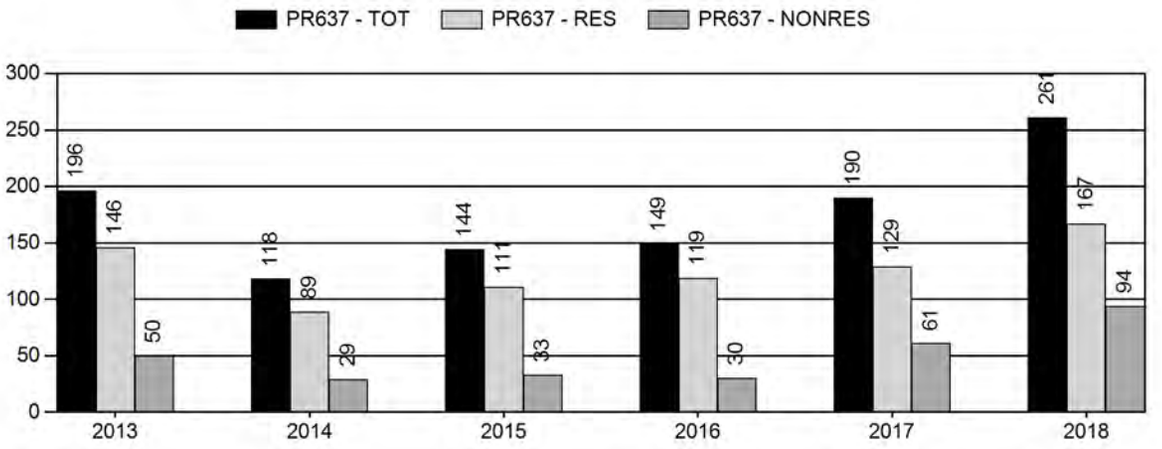
	JCR Year	Proposed
Females ≥ 1 year old:	3.6%	1.8%
Males ≥ 1 year old:	7.0%	8.1%
Total:	4.3%	3.5%
Proposed change in post-season population:	-9.5%	-5.7%



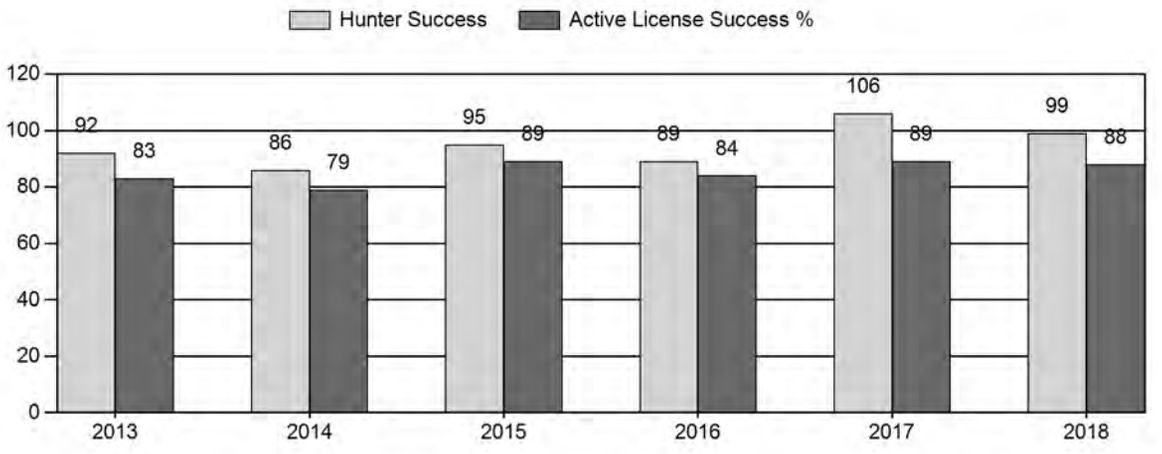
Harvest



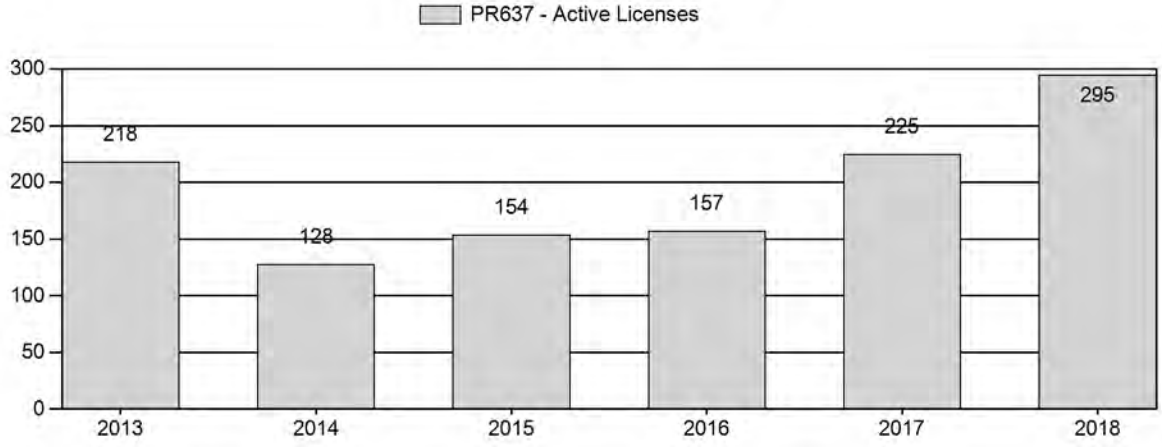
Number of Active Licenses



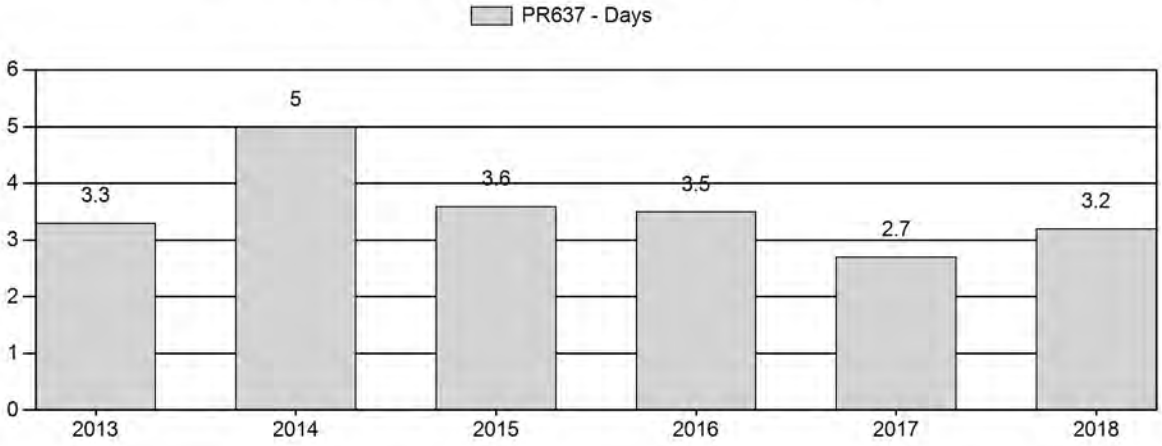
Harvest Success



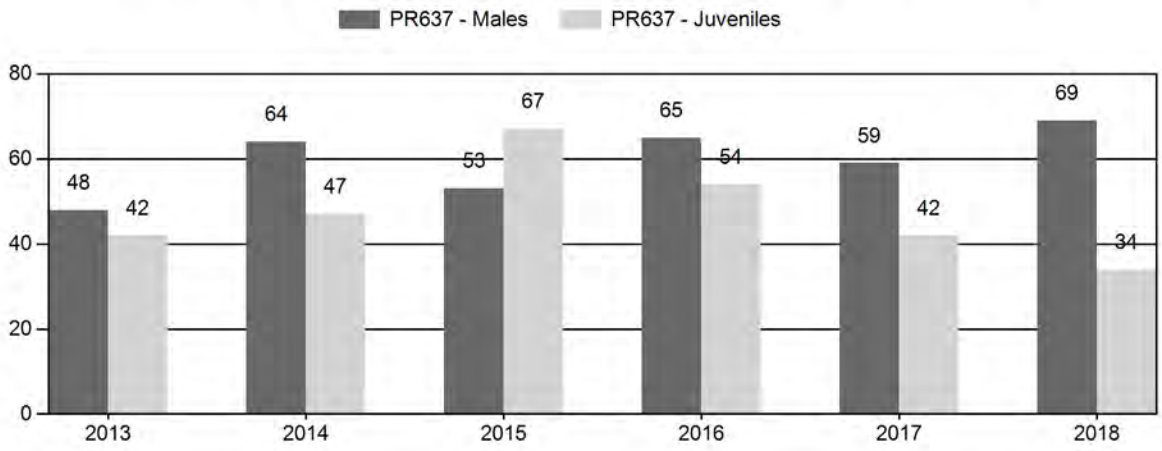
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR637 - SOUTH FERRIS

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	4,500	53	312	365	25%	766	53%	319	22%	1,450	1,145	7	41	48	± 4	42	± 4	28
2014	4,580	82	354	436	30%	686	47%	324	22%	1,446	1,638	12	52	64	± 5	47	± 4	29
2015	4,790	89	261	350	24%	661	45%	443	30%	1,454	1,711	13	39	53	± 5	67	± 6	44
2016	7,050	141	263	404	30%	620	46%	334	25%	1,358	1,868	23	42	65	± 6	54	± 5	33
2017	7,158	139	309	448	30%	753	50%	317	21%	1,518	1,588	18	41	59	± 5	42	± 4	26
2018	7,050	114	399	513	34%	746	49%	256	17%	1,515	1,880	15	53	69	± 6	34	± 4	20

2019 HUNTING SEASONS
SOUTH FERRIS PRONGHORN HERD (PR637)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
62	1	Sep. 14	Oct. 31	75	Limited quota	Any antelope
	2	Sep. 14	Oct. 31	100	Limited quota	Any antelope valid east of the Continental Divide and north of Wise Dugout Draw
	6	Sep. 14	Oct. 31	25	Limited quota	Doe or fawn valid east of the Continental Divide and north of Wise Dugout Draw
Archery						
62		Aug. 15	Sep. 13			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2018
62	1	0
	2	0
	6	-75
	7	-50
Herd Unit Total	**1**	**0**
	2	**0**
	6	**-75**
	7	**-50**

Management Evaluation
Current Postseason Population Management Objective: 6,500
Management Strategy: Recreation
2018 Postseason Population Estimate: 5,700
2019 Proposed Postseason Population Estimate: 5,470

Herd Unit Issues

The South Ferris pronghorn herd is managed toward a post-hunt population size of 6,500 pronghorn, an objective last publicly reviewed in 2014. Population size is estimated using a spreadsheet model developed in 2015 and last updated in 2019. The herd is in recreational management, with harvest quotas designed to maintain pre-hunt buck:doe ratios below 60:100.

A Department review in early 2019 found no compelling reason to change the 6,500 posthunt population objective. Landowner complaints about high antelope numbers have abated since harvests were directed into the eastern portion of the herd unit. Hunter demand for licenses in this herd remains high, generally requiring maximum preference points for nonresidents. A change to Special Management strategy would probably be well received by both hunters and landowners, but other herds with this management strategy are found nearby.

Hunter access to much of the southeastern half of the herd has been severely limited by private landowners since the mid-1990s and has resulted in buck:doe ratios and pronghorn densities greatly skewed between the northwestern and southeastern portions.

Fawn crops have only ranged from 28 to 67:100 over the past 20 years, averaging just 44:100. In addition to limited access to much of the herd, poor production and recruitment has reduced harvest levels the herd can support.

Losses to EHD were documented in this herd in 2013. By the number of reported and observed carcasses, losses appeared to be greatest along the west shore of Seminoe Reservoir, but spanned down to Rawlins and up towards Lamont. No similar mortalities were found in following years, but the presence of the disease should remain a concern whenever drought conditions arise.

Weather

Record precipitation in 2015 produced exceptional vegetative growth, improving fawn survival, and was followed by another wet spring in 2016 and good moisture in early 2017. Fawn production improved in 2015 and 2016 as a result. The summer of 2018 was hot and dry, lowering quantity and quality of forage production and again reducing fawn production.

Condition of pronghorn going into the 2018-19 winter is expected to have been less than ideal as a result of the hot, dry summer. The 2018-19 winter had numerous extended periods of bitter cold, continuing through March. Much of the winter range was open and available until heavier snowfalls in February and March, leading to documented winter mortalities along the southern border of the herd unit. Due to late winter weather, winter losses are expected to have been above average, at least in the southern portion of the herd.

Habitat

While no herbaceous habitat transects are established within occupied habitats of this herd unit, herbaceous forage production appeared to be exceptional in 2015, due to record precipitation, and appeared above normal again in 2016. Spring moisture in 2017 was also above previous drought levels, but production was poorer in 2018. Only one shrub transect has been established near this herd unit, on the Morgan Creek WHMA. This transect, used to monitor bitterbrush growth and utilization in the Seminoe Mountains, was burned in the 2012 fires.

Owners of the Pathfinder Ranch, which encompasses the north-central portion of this herd, have expressed interest in looking for opportunities for improving habitat conditions for wildlife, possibly as mitigation for wind power projects in other parts of the state. Treatment of browse on

winter ranges, adjustments of grazing use, and modification of sheep-tight fences would benefit pronghorn in this herd unit.

Field Data

Classification sample size was essentially unchanged in 2018 compared to 2017, the largest sample in five years, but was still a third less than samples seen in 2007-2011. These data have been collected on standard routes for more than 20 years for most of the herd unit, and suggest suggesting the herd is below objective size. Fawn production dropped again, to 34:100, the lowest in 10 years and comparable to that seen in 2012, a record drought year.

The buck:doe ratio rose to 69:100 from 59:100 in 2017. All of the increase came from increased numbers of mature bucks, with the yearling buck ratio declining slightly. As is typical, the buck:doe ratio was significantly higher in the eastern portion of the herd unit, where access is strictly limited. The eastern portion had a buck:doe ratio of 80:100, while the publicly accessible western portion had only 55:100. Type 2 licenses introduced in 2012 to address the disparity in buck densities between the two portions of the area have been only moderately successful, due to continued access restriction to much of the eastern portion.

Type 1 license quotas have been conservative in recent years in an effort to improve buck supply in the publicly accessible portion of the herd. Buck:doe ratios in the western portion remained stable at 55:100 in 2018 and 2017, compared to 51:100 in 2016. Buck:doe ratios for this herd have exceeded the 60:100 maximum criterion for recreational management in three of the past five years, but always due to high ratios in the east half of the herd where most antelope are unavailable to most hunters.

Harvest Data

While the eastern portion of the herd has a higher density of bucks, most of that portion of the area is checker-boarded lands and unavailable to the majority of hunters. Success for hunters with Type 1 licenses was 86 percent, while those hunting the eastern portion with Type 2 licenses had only 78 percent success. The Type 1 hunters expended an average of 4.0 days for each pronghorn harvested while effort for hunters limited to the eastern portion of the herd unit was higher at 4.3 days.

Type 7 doe/fawn licenses valid only in the Muddy Creek drainage were introduced in this area in 2013 to address complaints about high concentrations of pronghorn on irrigated fields along that creek. After five years of this targeted harvest, pronghorn use of the irrigated fields lessened and the landowner requested these licenses not be restricted to that drainage in 2018. Pronghorn use of these fields may increase if drought conditions return, but this strategy was effective in addressing that issue.

Horn length measurements were collected on 8 percent of the reported buck harvest. Average horn length of field checked adult bucks from this herd was 13.3 inches in 2018, compared to a statewide average of 12.5 inches. The longest buck measured 14.75 inches, compared to a statewide maximum of 16.75 inches. Of the 11 adult bucks measured in the field, 5 were 14 inches or longer.

Population

A line-transect survey in spring of 2016 estimated 5,482 pronghorn in this herd, and again found noticeably higher pronghorn densities in the eastern portion. The population estimate was 19 percent higher than from a similar survey three years earlier, despite declines in classification samples and hunter success. This survey was flown with a single, inexperienced observer, which may have affected survey estimates.

The TSJ,CA model for this herd aligns adequately with two line transect estimates, including close fit with the most recent in 2016, and tracks well with observed buck:doe ratios. This model has the best fit with observed herd data, but also the poorest AICc value because of the lower degrees of freedom. Adult survival is estimated at a reasonable 86 percent, while fawn survival varies widely from year to year. While arguably the best of the three model options, the model does not align with two of four line transect estimates and, as a result, the model is considered to be a "Poor" representation of the herd.

The CJ,CA model had a lower AICc value, did not track observed buck:doe ratios and only aligned with one line-transect estimate. The SCJ,SCA incorporates four years of variable survival to accommodate three severe winters and the 2012 drought, but predicts fawn survival that greatly exceeded adult survival in at least one year, which is hard to accept biologically. It aligns with three line transect survey estimates, but less closely with the most recent estimate. It does not track as closely with observed buck:doe ratios, greatly overestimates trend counts prior to 2007, and predicts a stable to growing population despite recent fawn crops below 45:100.

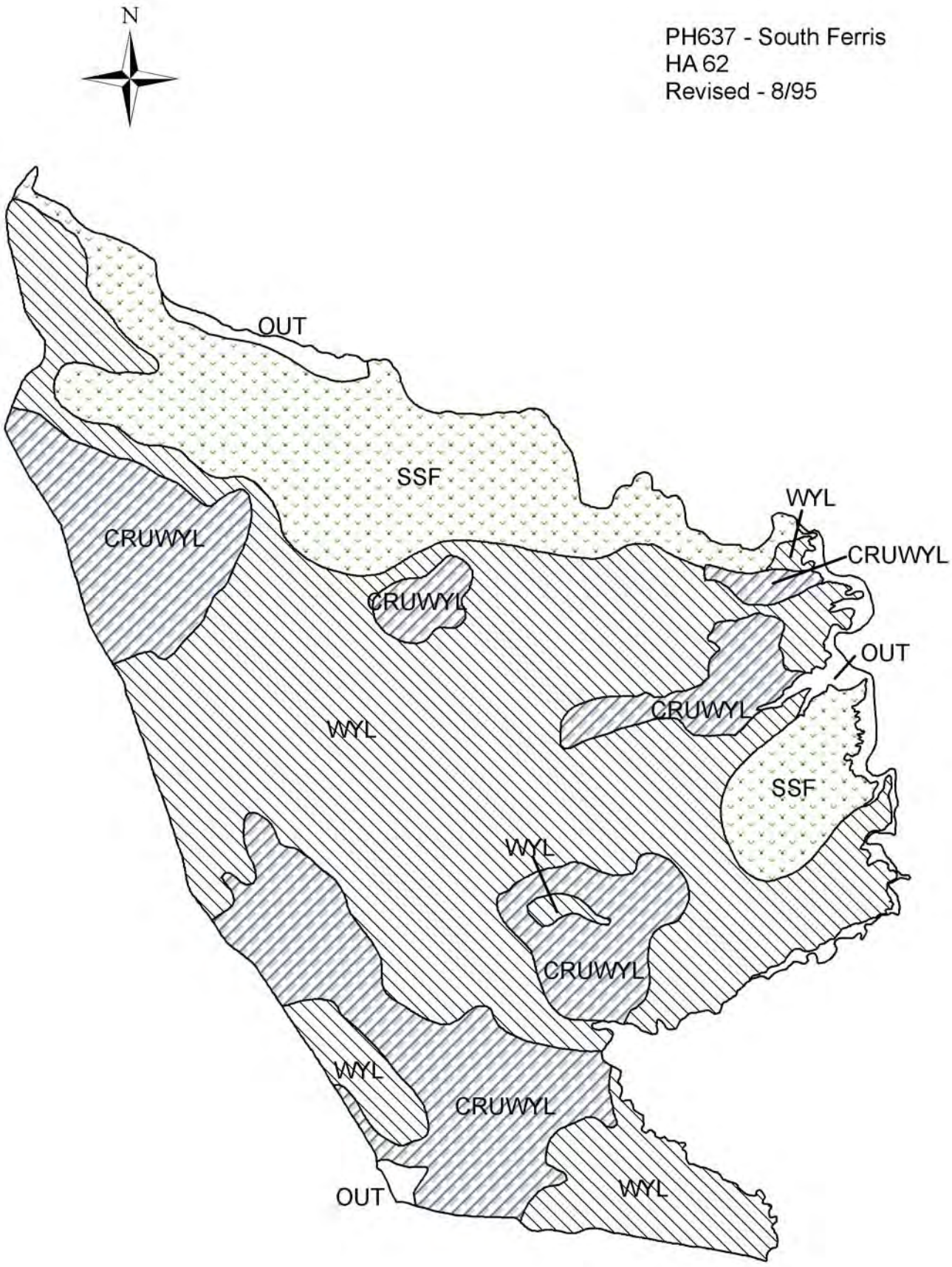
The updated TSJ,CA model predicts the herd was roughly at objective size in 2017, but dropped more than 10 percent below objective in 2018 due to exceptionally low fawn production. Assuming average fawn production in 2019 and mid-range fawn survival of 60 percent, the model predicts the herd will still decline slightly despite reduced doe harvest in 2019.

Management Summary

With the population near objective, harvests were increased in 2018 to maintain herd size. However, exceptionally low fawn production in 2019 dropped the herd below objective and harvests need to be reduced. The elevated buck:doe ratio in the eastern portion of the herd indicates there is a surplus of bucks that can be harvested in that portion, but access is still limited to most of those animals. Classification and line-transect observations suggest most doe harvest should still come from the eastern portion of the area, and the Type 6 doe/fawn licenses are designed to accomplish that. Landowners along Muddy Creek have expressed a desire to end the doe/fawn harvest directed towards their irrigated croplands, so the Type 7 licenses are not available.

With above-average winter losses, herd size is expected to decline to ~15 percent below objective even with the reduced harvest of roughly 135 bucks and 20 does and fawns from the 2019 quotas. With the herd so far below the objective midpoint, either poor winter survival or low fawn production in 2019 could require further harvest reductions in future years.

Opening date is moved back 6 days to stay on the traditional second Saturday and will synchronize with neighboring Area 61. Closing date is the same as in the previous seven years and extends to the closing of the local deer season. A standardized opening date is used for the archery season, which closes the day before the opening of the regular season.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