

2018 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR201 - Copper Mountain

HUNT AREAS: 76, 79, 114-116

PREPARED BY: Bart Kroger

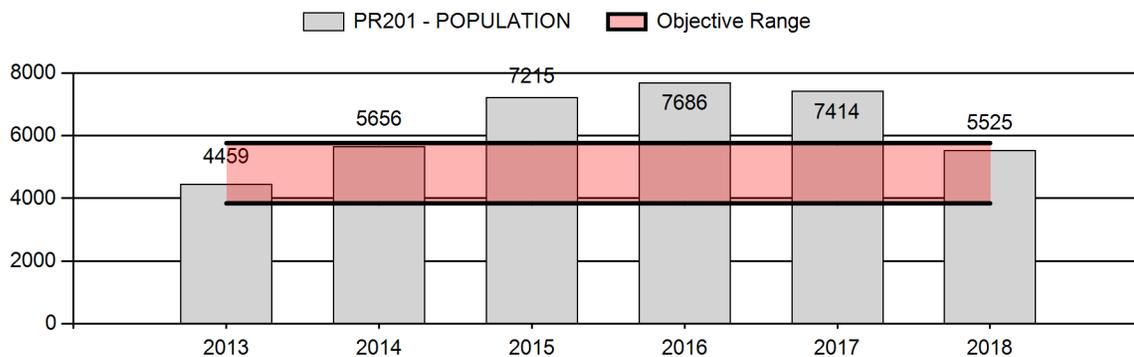
	<u>2013 - 2017 Average</u>	<u>2018</u>	<u>2019 Proposed</u>
Population:	6,486	5,525	4,139
Harvest:	858	1,049	1,175
Hunters:	888	1,014	1,150
Hunter Success:	97%	103%	102%
Active Licenses:	1,018	1,209	1,330
Active License Success:	84%	87%	88%
Recreation Days:	3,468	3,811	4,000
Days Per Animal:	4.0	3.6	3.4
Males per 100 Females	53	60	
Juveniles per 100 Females	79	62	

Population Objective (± 20%) :	4800 (3840 - 5760)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	15%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/20/2019

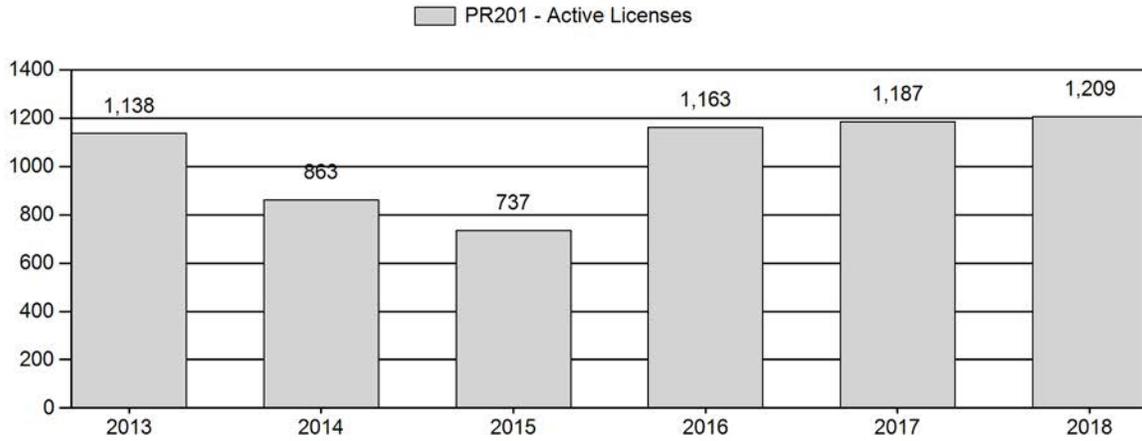
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	20%	28%
Males ≥ 1 year old:	23%	33%
Total:	16%	22%
Proposed change in post-season population:	-25%	-25%

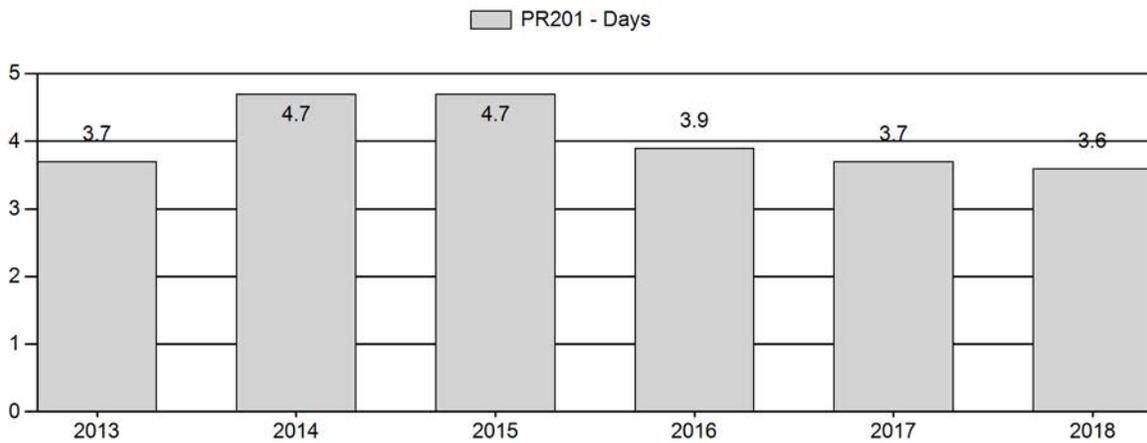
Population Size - Postseason



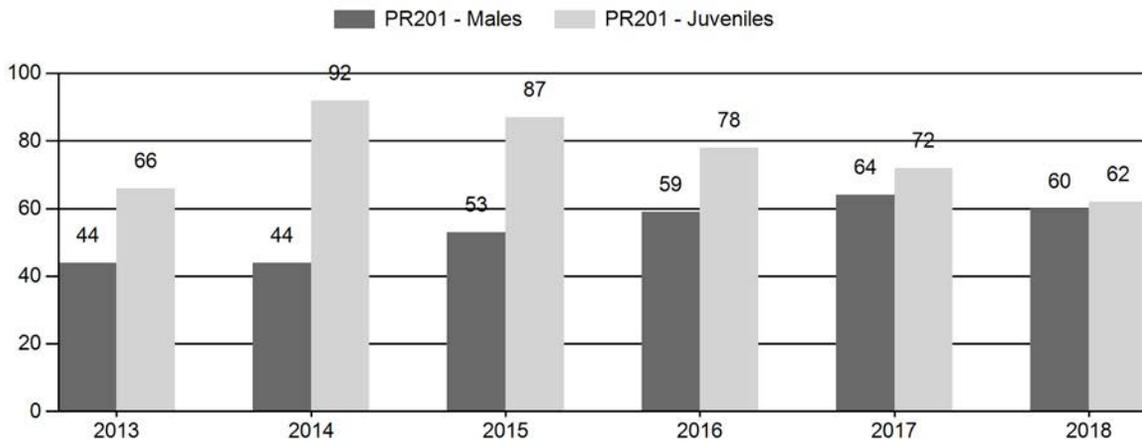
Active Licenses



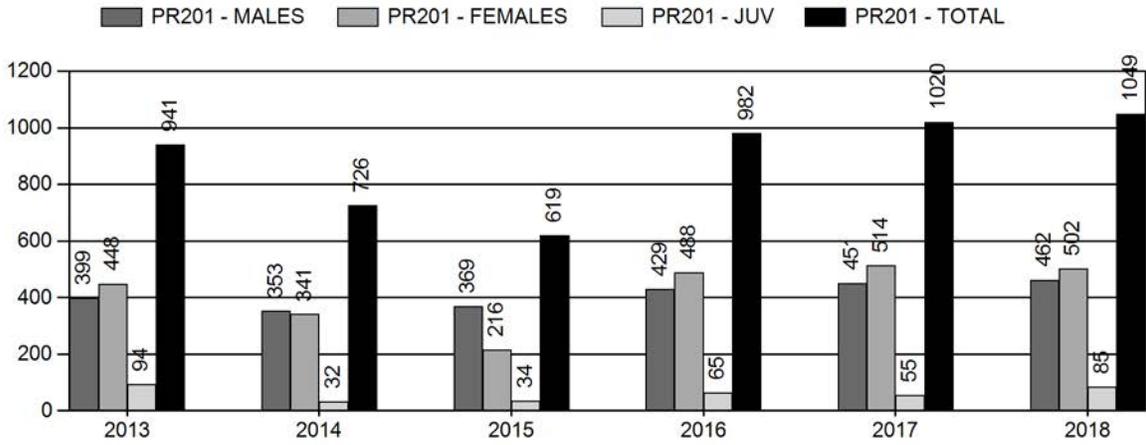
Days Per Animal Harvested



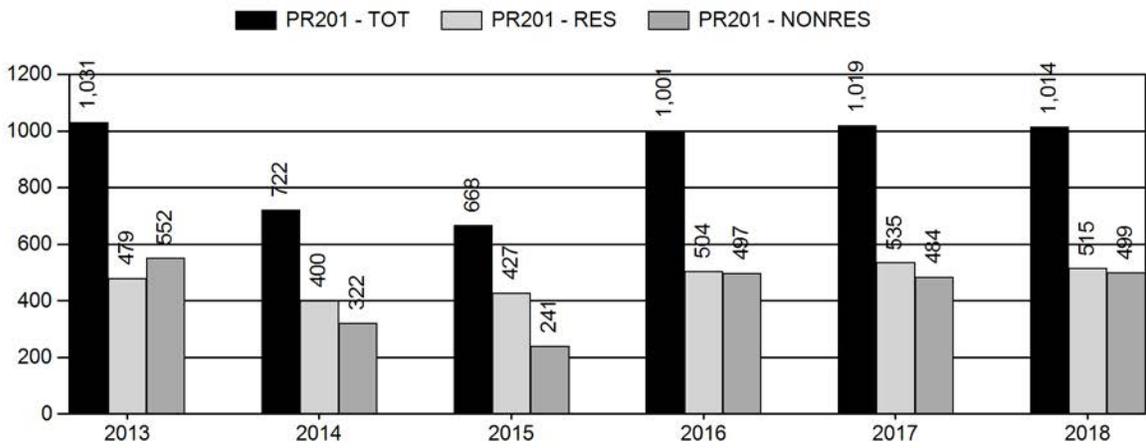
Preseason Animals per 100 Females



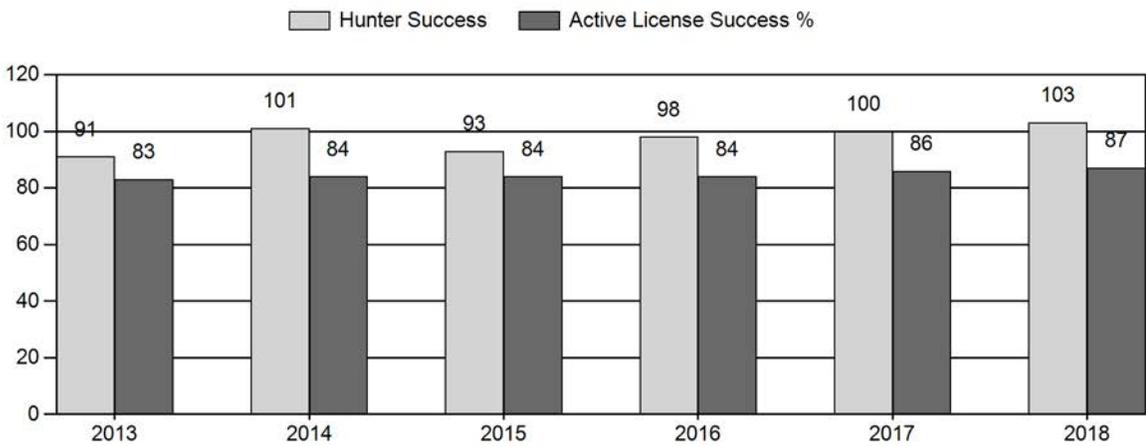
Harvest



Number of Active Licenses



Harvest Success



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR201 - Copper Mountain

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	5,495	28	43	334	21%	763	48%	503	31%	1,600	1,753	4	6	44	± 4	66	± 5	46
2014	6,454	19	38	275	19%	621	42%	572	39%	1,468	1,810	3	6	44	± 5	92	± 8	64
2015	7,896	37	79	451	22%	853	42%	738	36%	2,042	2,071	4	9	53	± 4	87	± 6	57
2016	8,766	0	0	488	25%	826	42%	643	33%	1,957	2,048	0	0	59	± 5	78	± 6	49
2017	8,536	26	99	410	27%	639	42%	463	31%	1,512	1,766	4	15	64	± 6	72	± 7	44
2018	6,679	134	315	449	27%	749	45%	463	28%	1,661	1,773	18	42	60	± 5	62	± 5	39

**2019 HUNTING SEASONS
COPPER MOUNTAIN PRONGHORN HERD (PR201)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
76	1	Oct. 1	Oct. 31	225	Limited quota	Any antelope
76	2	Aug. 15	Sep. 30	50	Limited quota	Any antelope valid within two (2) miles of the Bighorn River or south of the Buffalo Creek Road (Hot Springs County Road 5)
76	6	Aug. 15	Oct. 31	250	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land or south of the Buffalo Creek Road (Hot Springs County Road 5)
79	1	Sep. 20	Sep. 30	25	Limited quota	Any antelope valid on or within one-half (1/2) mile of irrigated land
79	6	Sep. 1	Nov. 30	75	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
79	9	Aug. 15	Sep. 30	50	Limited quota	Any antelope, archery only
114	1	Oct. 1	Oct. 31	75	Limited quota	Any antelope
114	2	Aug. 15	Sep. 30	50	Limited quota	Any antelope valid on or within one-half (1/2) mile of irrigated land
114	6	Aug. 15	Oct. 24	100	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
114	7	Oct. 25	Nov. 30	100	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
115	1	Oct. 1	Oct. 31	200	Limited quota	Any antelope
115	6	Sep. 1	Nov. 30	300	Limited quota	Doe or fawn valid east of the Nowood River or south and west of Cornell Gulch or Nowater Stock Trail (B.L.M. Road 1404)

Special Archery Season Hunt Areas	Opening Date	Limitations
76, 114, 115	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2018
76	1	+25
76	6	+50
114	1&2	+50
HU Total	1,2,6,7	+125

Management Evaluation

Current Postseason Population Management Objective: 4,800

Management Strategy: Recreational

2018 Postseason Population Estimate: 5,500

2019 Proposed Postseason Population Estimate: 4,100

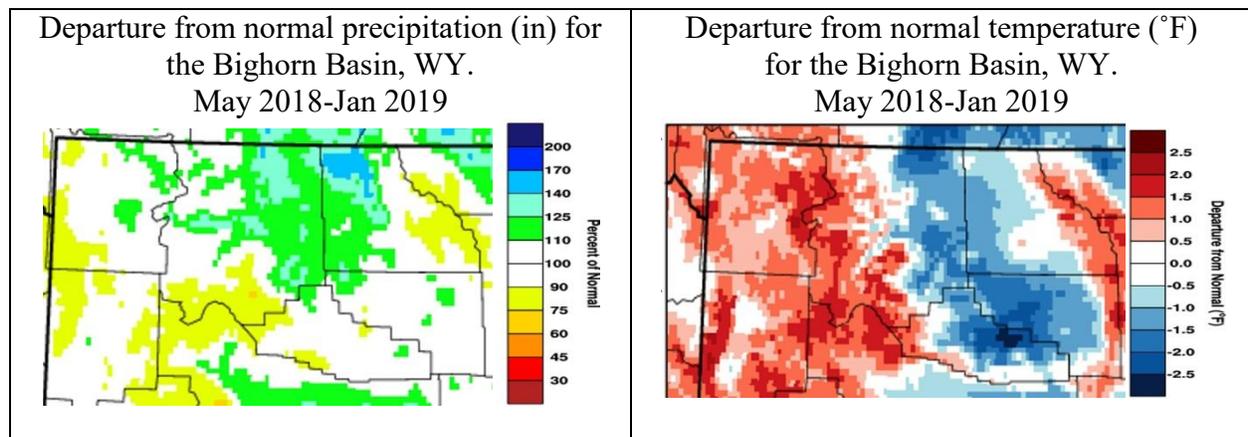
2018 Hunter Satisfaction: 92% satisfied, 5% neutral, 3% dissatisfied

Herd Unit Issues

The Copper Mountain pronghorn herd is located on the eastern side of the Bighorn Basin; stretching from Copper Mtn. on the south to the Montana state line to the north. The herd unit is about 70% public lands and 30% private lands. Much of the herd unit is supported by vast areas of cheatgrass at low elevations. Higher densities of pronghorn occur in the southern portion of herd unit along the upper slopes of Copper Mountain and the upper Nowood area along the southern Bighorn Mountain range. Pronghorn utilizing the low elevation desert country are at low densities, and in some cases are struggling to maintain numbers. Cropland damage issues occur in the western portion of the herd unit, particularly hunt areas 114 and 76. Poor habitat conditions, long-term drought, and crop damage will and continue to be major management concerns for this herd. The herd objective and management strategy were last reviewed in 2018.

Weather

Above normal precipitation occurred in the northern portions of this herd unit, while the southern portions saw about average conditions during 2018. Most precipitation during the 2018 bio-year occurred during the spring and early summer, and then fell below average during the late summer and fall periods. Below normal temperatures were mostly widespread through the herd unit during the year. Winter temperatures and snowfall have mostly been below normal for the herd unit.



Habitat

Overall, pronghorn habitat conditions in this herd unit have declined over the past several decades, mostly due to drought conditions in the 1990's, loss of sagebrush communities due to wildfires, and the invasion of cheatgrass throughout the landscape. With reduced moisture, spring green-up and annual plant growth has been minimal in most years. Lack of precipitation has also affected available water in many stock reservoirs and perennial streams. Because of these less than optimal habitat conditions, this pronghorn population will continue to remain at mostly low densities throughout the herd unit, as well as continue to seek better forage and water availability on or near agricultural croplands. Two sagebrush transects were established in this herd unit in September 2004 (Appendix A). Annual production (leader growth) for these transects has average around 2.0cm. Winter utilization remains low at about 10% for these transects.

Field Data

This year was the first attempt at using only ground surveys throughout the herd unit to obtain pre-season classification data. Better than expected sample sizes were achieved, so therefore ground surveys will continue to be used in the future. The number of pronghorn classified in 2018 was 1661, slightly below the long-term average of around 1900. Fawn ratios were 62:100 does, the lowest since 2012. In 2014, we recorded the highest fawn ratio ever for the herd at 92:100, and since then have declined back to about normal ratios. The buck ratio in 2018 was 60:100 does, which is above the long-term average of around 50:100. In fact, 2017 and 2018 were the highest buck ratios recorded for the herd in the last ten years. This was likely the result of record high fawn ratios in 2014 and 2015. Because of improved fawn production in recent years we have seen increased pronghorn numbers for the herd unit.

Harvest Data

Total harvest for this herd in 2018 was 1049 pronghorn, the highest since 2009. Because of improved fawn production and survival in 2014 and 2015, overall harvest has increased by nearly 80% due to the growth of the population. Doe/fawn harvest reflects the highest increase, and since 2014 has increased by over 150%. The increase in harvest is due in part to increasing pronghorn numbers along with increasing damage issues in hunt areas 76 and 114. Hunter effort remains favorable at around 3-4 days/harvest and hunter success remains near 100%. Overall, hunter satisfaction in 2018 was 92% satisfied.

Population

The Time-Specific Juvenile & Constant Adult Survival (TSJ, CA) spreadsheet model best represents the long-term population estimate and trends for this herd. However, this model has the highest AIC value (n=351), and the highest fit (n=232) of all the other models. The model appears to track well with past LT estimates, classification sample sizes, and mostly reflect what field personnel perceptions are of herd trends. This pronghorn population started showing improving numbers in recent years due to record high fawn ratios, which this model reflects. In fact, during February 2017 while conducting a mule deer sightability survey nearly 4,500 pronghorn were observed within the Copper Mountain herd unit boundaries, thus mirroring the 2017 end-of-biological year model estimate of around 5,000 pronghorn.

Management Summary

Because of improved pronghorn numbers in recent years, along with continued damage issues in hunt areas 76 and 114, the 2019 season will see an increased license quota of 125, including 75

any antelope tags and 50 doe/fawn tags. Although the 2019 predicted post-season population estimate will be about 15% below objective we feel the increased harvest is warranted to minimize damage and provide more hunter opportunity. The projected 2019 harvest of about 1,175 pronghorn will still keep this population within objective levels.

2018 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR204 - FIFTEENMILE

HUNT AREAS: 77, 83, 110

PREPARED BY: BART KROGER

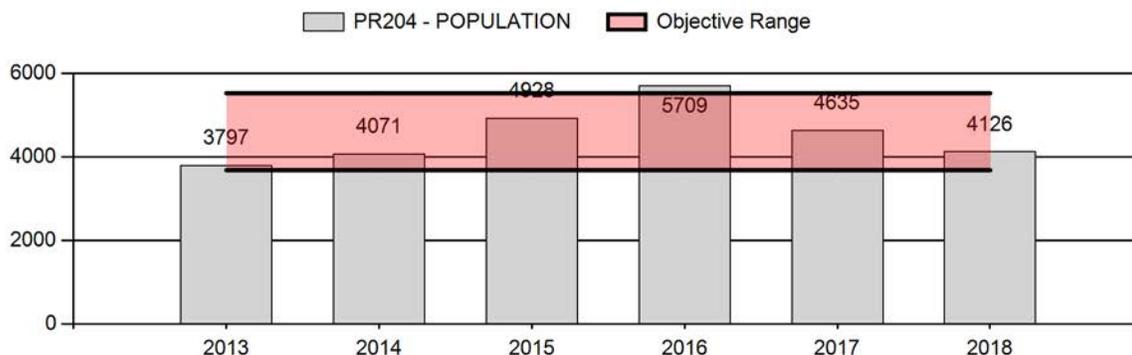
	<u>2013 - 2017 Average</u>	<u>2018</u>	<u>2019 Proposed</u>
Population:	4,628	4,126	2,214
Harvest:	779	1,103	1,300
Hunters:	777	1,006	1,200
Hunter Success:	100%	110%	108 %
Active Licenses:	886	1,172	1,400
Active License Success:	88%	94%	93 %
Recreation Days:	2,579	3,307	4,000
Days Per Animal:	3.3	3.0	3.1
Males per 100 Females	37	50	
Juveniles per 100 Females	66	58	

Population Objective (\pm 20%) :	4600 (3680 - 5520)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-10.3%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/20/2019

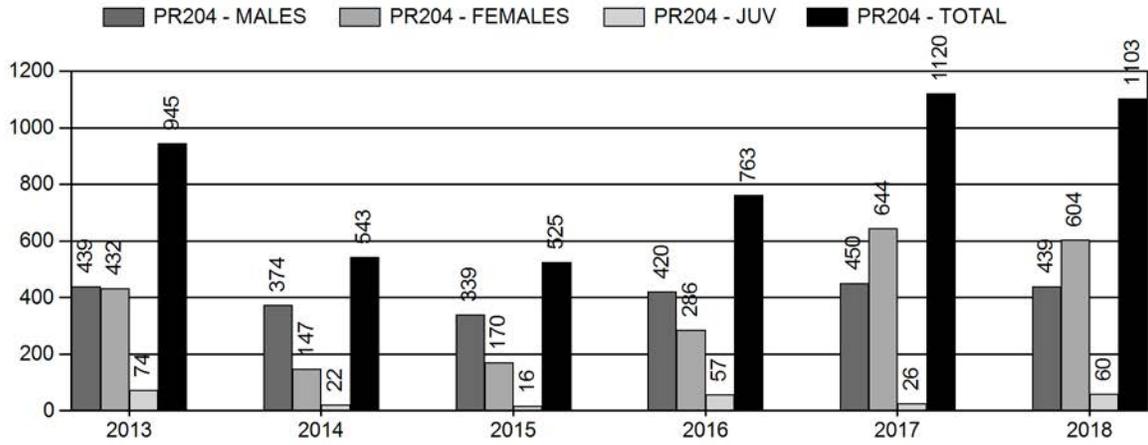
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	26%	44%
Males \geq 1 year old:	38%	71%
Total:	21%	37%
Proposed change in post-season population:	-11%	54%

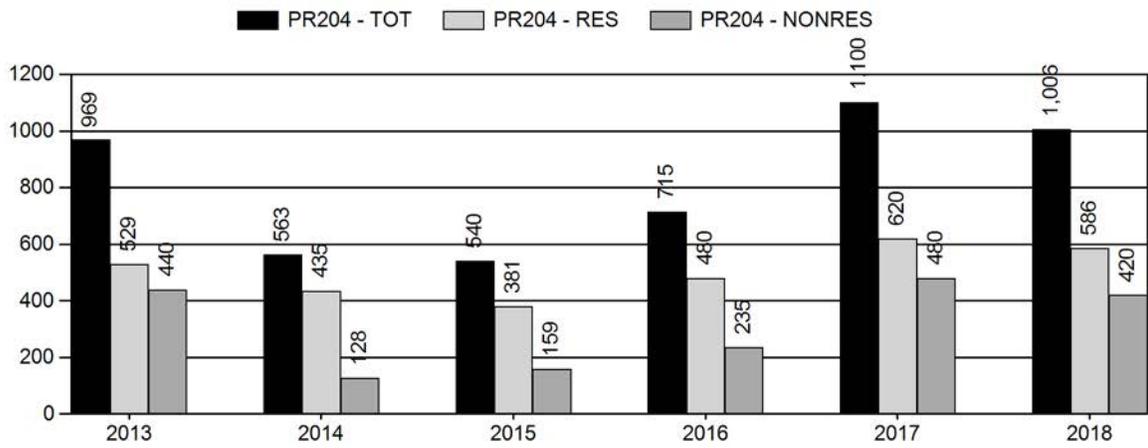
Population Size - Postseason



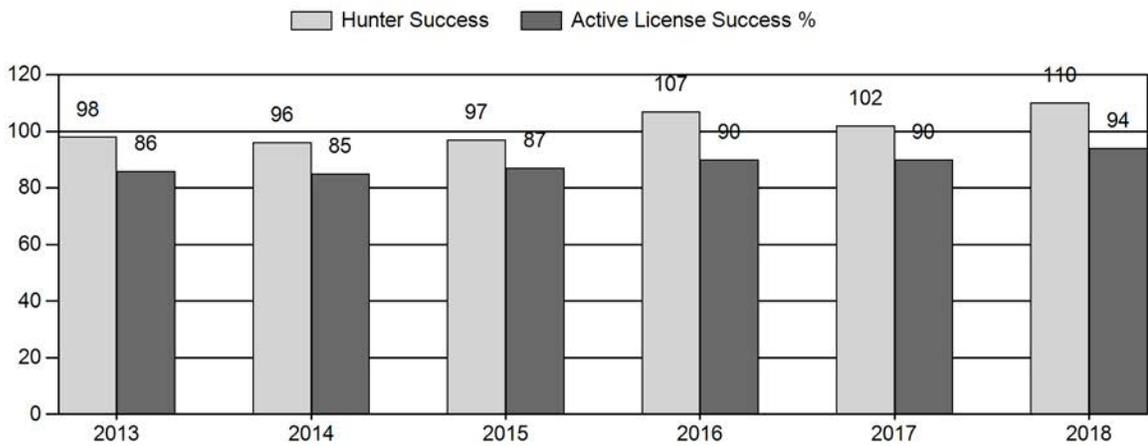
Harvest



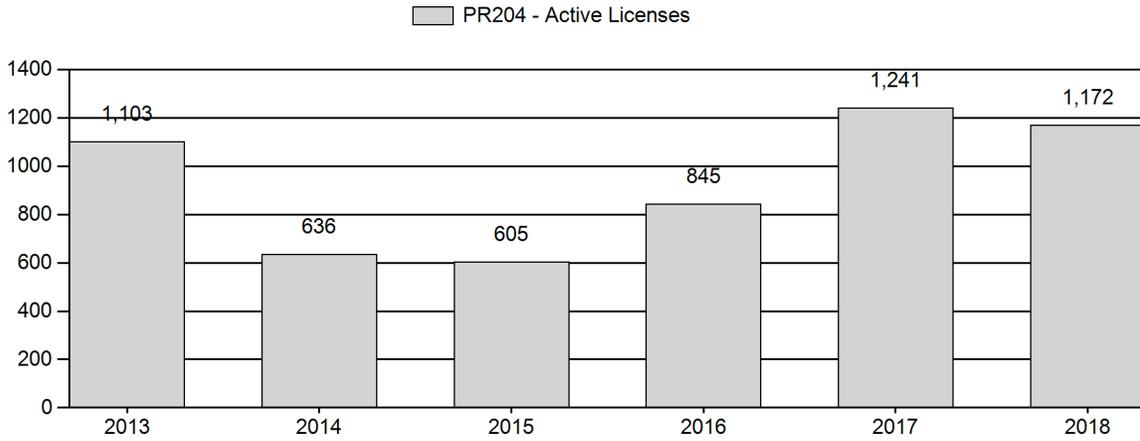
Number of Active Licenses



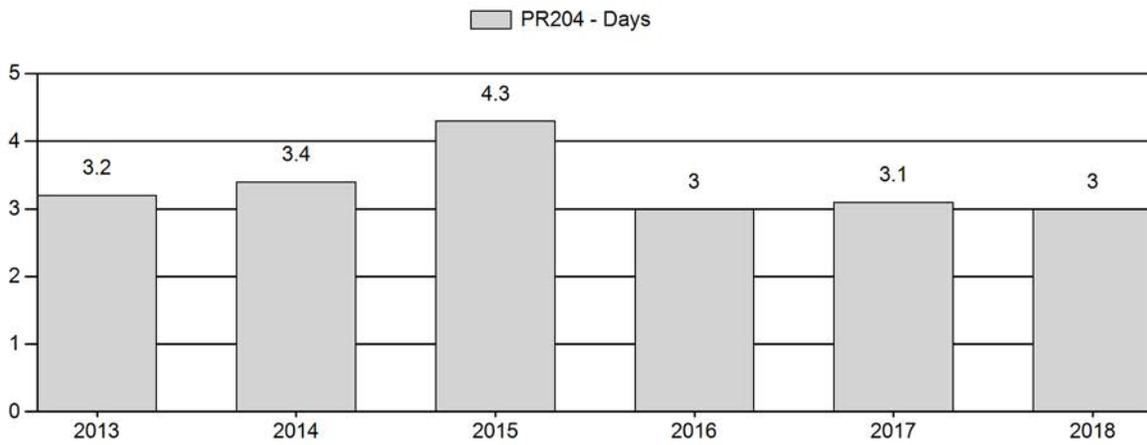
Harvest Success



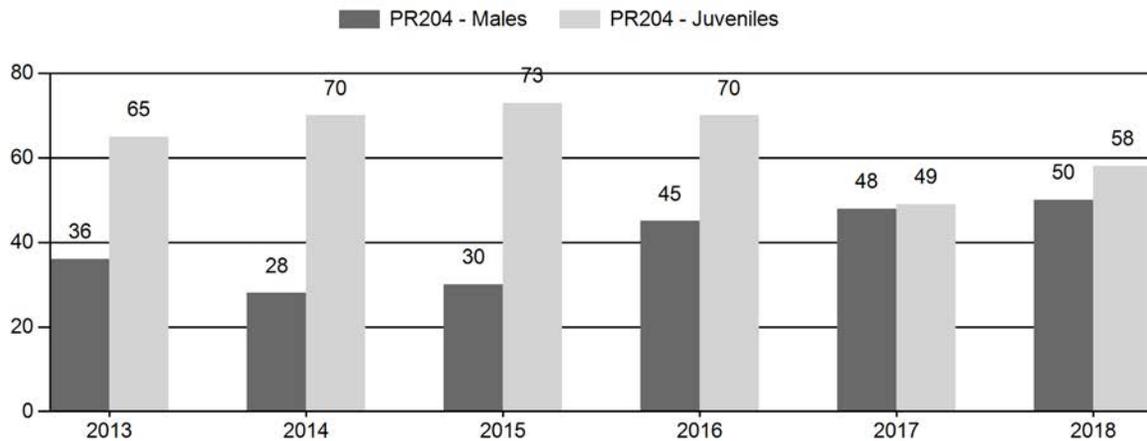
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR204 - FIFTEENMILE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	4,837	0	0	244	18%	672	50%	435	32%	1,351	1,456	0	0	36	± 4	65	± 6	47
2014	4,668	0	0	227	14%	817	51%	571	35%	1,615	1,515	0	0	28	± 3	70	± 5	55
2015	5,506	0	0	334	15%	1,122	49%	815	36%	2,271	1,368	0	0	30	± 2	73	± 4	56
2016	6,548	0	0	516	21%	1,148	46%	809	33%	2,473	1,595	0	0	45	± 3	70	± 4	49
2017	5,867	0	0	400	24%	837	51%	410	25%	1,647	1,235	0	0	48	± 4	49	± 4	33
2018	5,339	11	492	503	24%	1,015	48%	589	28%	2,107	1,488	1	48	50	± 3	58	± 4	39

**2019 HUNTING SEASONS
FIFTEEN MILE PRONGHORN HERD (PR204)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
77	1	Sep. 20	Oct. 14	125	Limited quota	Any antelope
77	2	Aug. 15	Sep. 19	50	Limited quota	Any antelope valid on or within one-half (1/2) mile of irrigated land
77	6	Aug. 15	Oct. 24	150	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
77	7	Oct. 25	Nov. 30	100	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
83	1	Sep. 20	Nov. 7	400	Limited quota	Any antelope
83	6	Aug. 15	Nov. 15	300	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land east of Wyoming Highway 120
83	7	Aug. 15	Nov. 15	300	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land west of Wyoming Highway 120
110	1	Sep. 20	Oct. 14	100	Limited quota	Any antelope
110	6	Sep. 20	Oct. 14	50	Limited quota	Doe or fawn

Special Archery Season Hunt Areas	Opening Date	Limitations
77, 83, 110	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2018
77	1&2	+50
77	6	+50
83	1	+50
110	1	+25
110	6	+25
HU Total	1&2	+125
	6&7	+75

Management Evaluation

Current Postseason Population Management Objective: 4,600

Management Strategy: Recreational

2018 Postseason Population Estimate: 4,100

2019 Proposed Postseason Population Estimate: 2,200

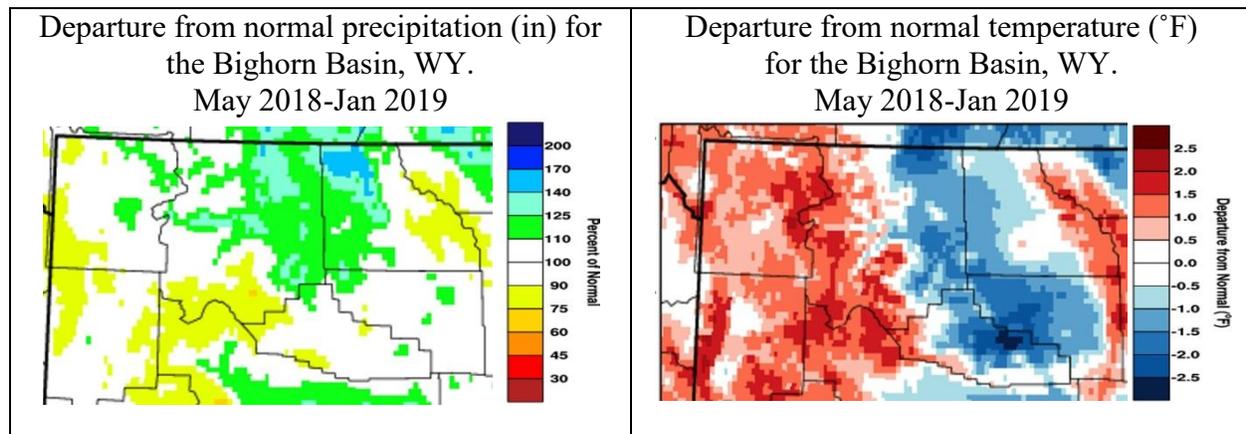
2018 Hunter Satisfaction: 93% satisfied, 5% neutral, 2% dissatisfied

Herd Unit Issues

The herd unit is about 75% public lands and 25% private lands, with the majority of the pronghorn population in hunt area 83. Pronghorn are typically wide spread through the herd unit during the summer and fall hunting periods, but will migrate to the north during the winter. Damage concerns are usually an issue in this herd unit, especially in hunt areas 77 and 83, thus the need for early hunting season dates with license limitations specific to irrigated lands. Doe/fawn harvest is usually directed toward preventing damage even when the herd is below objective levels. Poor habitat conditions, long-term drought, and crop damage will and continue to be major management concerns for this herd. The herd objective and management strategy were reviewed in 2018.

Weather

Above normal precipitation occurred in the northern portions of this herd unit, while the southern portions saw about average to below normal precipitation during 2018. Most precipitation during the 2018 bio-year occurred during the spring and early summer, and then fell below average during the late summer and fall periods. Below normal temperatures were mostly widespread through the herd unit during the year. Winter temperatures and snowfall have mostly been below normal for the herd unit, and at this time so significant winter die-offs have been observed.



Habitat

Pronghorn habitats differ significantly throughout this herd unit. In the southern portions of hunt areas 83 and 110, some pronghorn utilize subalpine mountain grasslands at nearly 11,000 feet in elevation, while pronghorn in hunt area 77 mostly utilize low elevation salt-desert shrub habitats at about 5,000 feet elevation. Overall, long-term drought conditions have affected habitat conditions in this herd unit. As in other herd units, cheatgrass has also invaded most of the mid to lower elevations of this herd unit, along with reduced available water sources because of long-term drought conditions. Most sagebrush communities continue to lack vigor, reproduction, and leader growth. Three sagebrush transects were established in this herd unit in 2004. Transect locations include 5-mile Creek, Grass Creek and Wagonhound Bench (Appendix A). Annual production of sagebrush (leader growth), continues to average about 3cm. Winter utilization of these three sagebrush transects was similar to slightly below the 7-year average of 12%.

Field Data

Aerial classification flights have annually been conducted in hunt areas 77 and 83, while ground surveys are utilized in hunt area 110. However, in 2018 aerial surveys were abandoned and ground surveys were used to collect pre-season ratios for all hunt areas. Some of the highest

fawn ratios on record for this herd unit were observed between 2013–2016, averaging around 70:100 does. Historically, fawn ratios typically average about 50:100 annually, with the 2018 ratio being 58:100. Buck ratios fluctuate annually because of missed buck groups during classification surveys, but appear to never exceed 50:100, with some years dropping to as low as 30:100. Starting in 2010, classification sample sizes began to decline from a high of around 2,000 in 2010 to a low of 1,350 in 2013. However, in 2014, 1,600 pronghorn were classified, and by 2016 nearly 2,500 were classified. In 2017 the number classified dropped to around 1,650 due to limited flight time, but in 2018 rebounded back up to 2,100.

Harvest Data

Because of increasing pronghorn numbers in recent years, along with increased damage issues, license quotas and harvest have increased by over 100% since 2014. The 2018 harvest was nearly 1,100 pronghorn, including about 660 does and fawns and 440 bucks being harvested. Hunter success has been over 100% since 2016 and hunter effort has stayed consistent at about 3.0 days/harvest. Hunters indicated a 93% satisfaction rating for 2018.

Population

The Time-Specific Juvenile & Constant Adult Survival (TSJ, CA) spreadsheet model has been used in recent years to estimate and reflect population trends for this herd. Although the model tracked well with past LT estimates and classification sample sizes, it has always been felt the model was not reflecting accurate population estimates observed in the field. Since 2013 the population has rebounded significantly due to several years of record high fawn ratios along with reduced harvest levels, yet the model only reflected moderate growth. Therefore, the model is considered a poor representation of herd dynamics, and is believed to underestimate population numbers for recent years.

Management Summary

Because of increasing pronghorn numbers, along with potential damage continuing or becoming an issue, license quotas in all hunt areas will increase for 2019. A slight increase in Type 6 license quotas will help to further reduce pronghorn numbers associated with irrigated lands, while the increase in Type 1 and 2 licenses will provide more hunter opportunity. The projected 2019 harvest of about 1300 pronghorn will most likely reduce or stabilize this population. However, the 2019 postseason estimate puts this population at about 50% below objective based on unreliable model estimates.

2018 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR205 - CARTER MOUNTAIN

HUNT AREAS: 78, 81-82

PREPARED BY: SAM STEPHENS

	<u>2013 - 2017 Average</u>	<u>2018</u>	<u>2019 Proposed</u>
Population:	7,450	7,470	7,200
Harvest:	693	811	911
Hunters:	698	785	900
Hunter Success:	99%	103%	101 %
Active Licenses:	806	911	950
Active License Success:	86%	89%	96 %
Recreation Days:	2,510	2,723	3,000
Days Per Animal:	3.6	3.4	3.3
Males per 100 Females	48	52	
Juveniles per 100 Females	57	52	

Population Objective ($\pm 20\%$) : 7000 (5600 - 8400)

Management Strategy: Recreational

Percent population is above (+) or below (-) objective: 7%

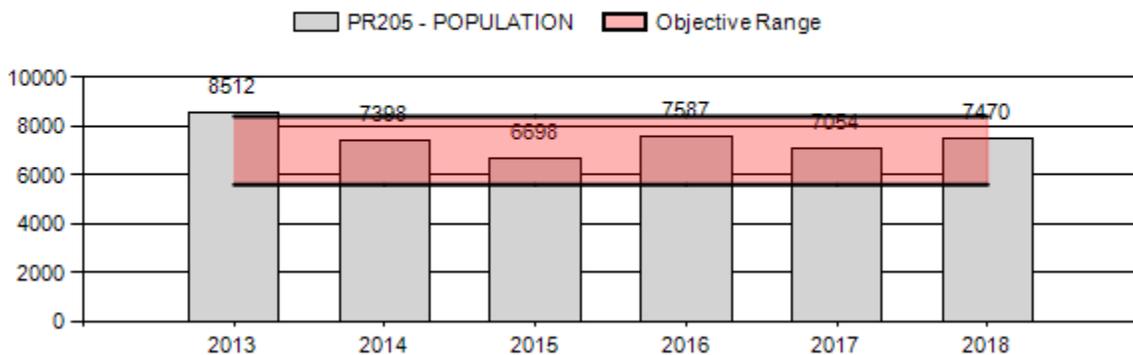
Number of years population has been + or - objective in recent trend: 5

Model Date: 02/02/2019

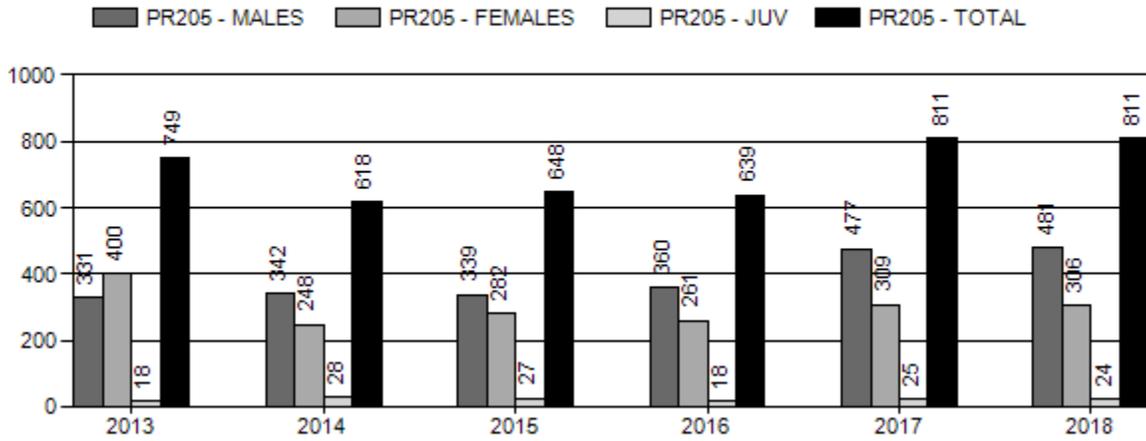
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	9%	11%
Males ≥ 1 year old:	26%	23%
Total:	10%	10%
Proposed change in post-season population:	-11%	-11%

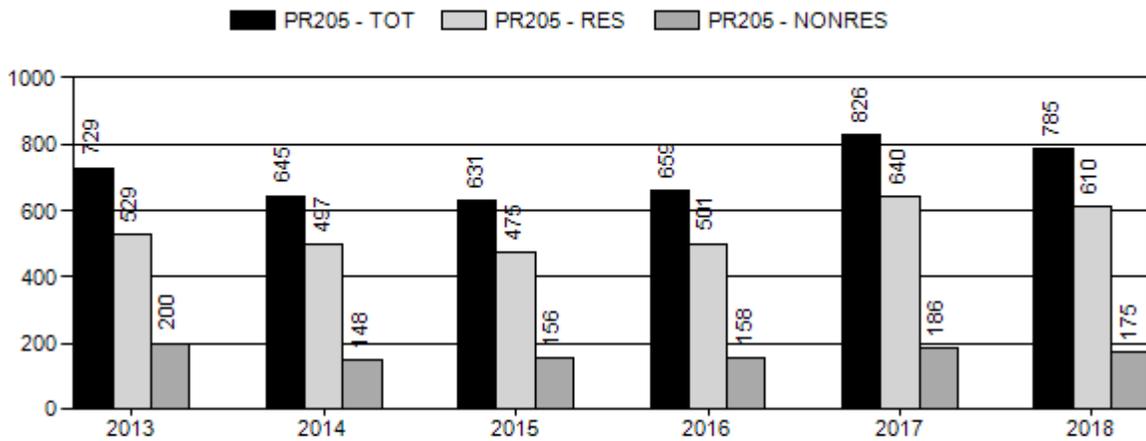
Population Size - Postseason



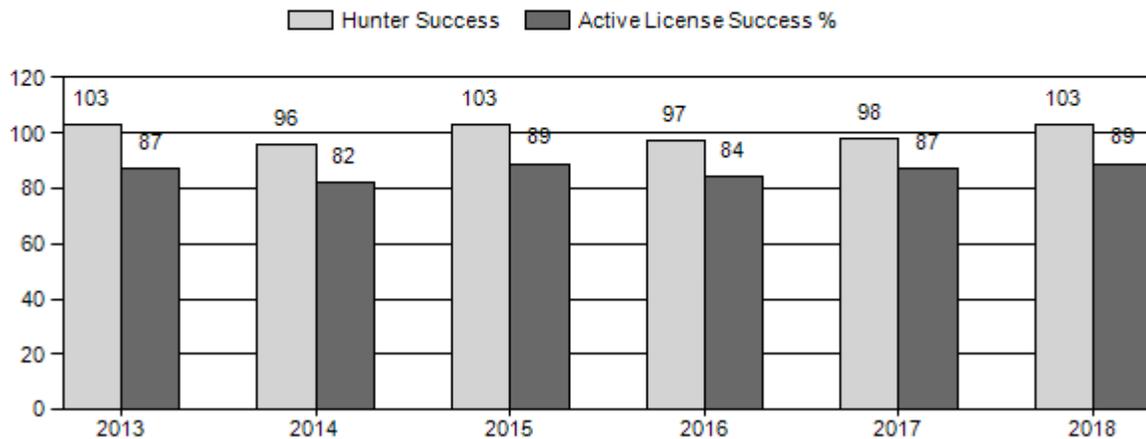
Harvest



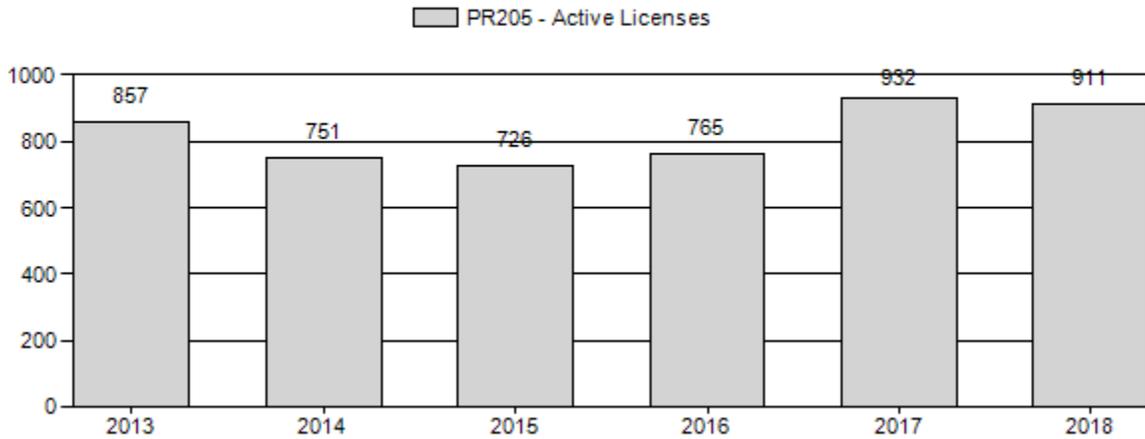
Number of Active Licenses



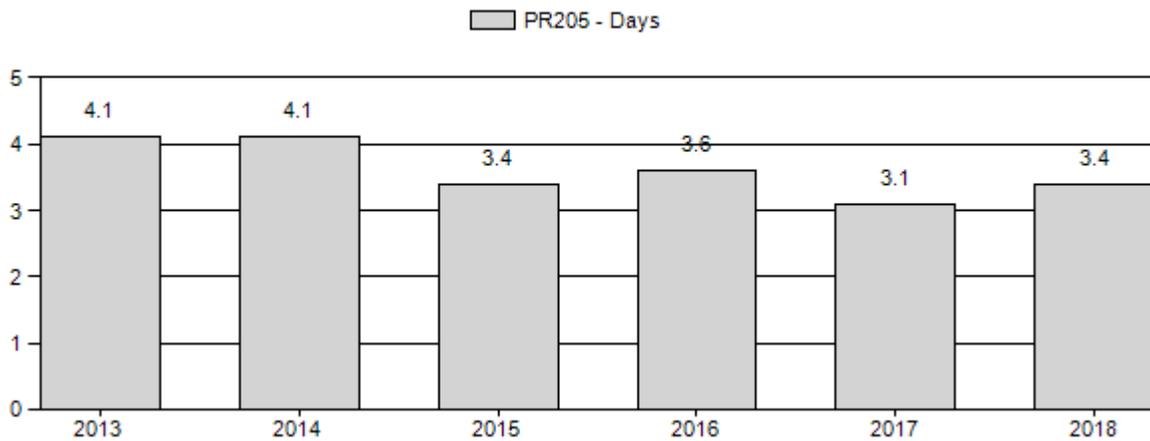
Harvest Success



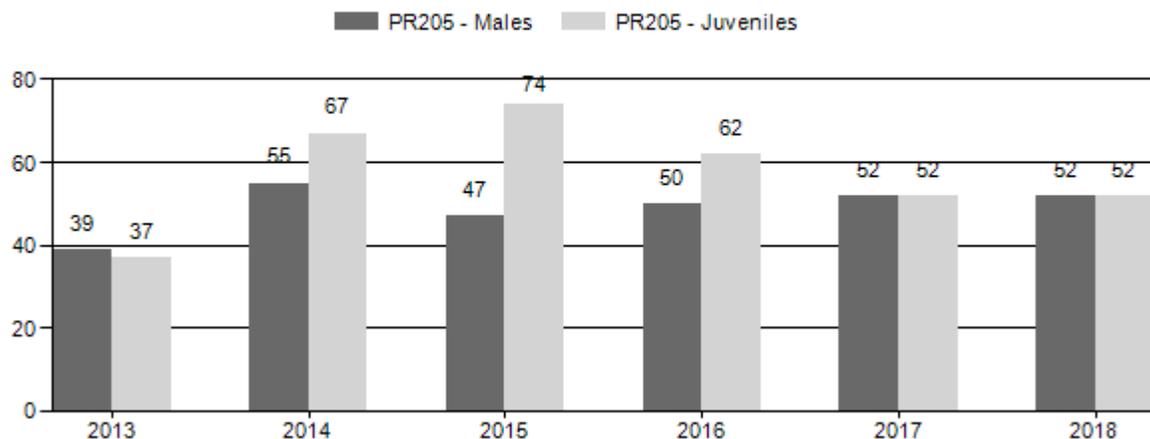
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary

for Pronghorn Herd PR205 - CARTER MOUNTAIN

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females			Young to			
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	9,336	74	302	376	22%	973	57%	358	21%	1,707	1,319	8	31	39	± 3	37	± 3	27
2014	8,078	79	278	357	25%	647	45%	433	30%	1,437	1,296	12	43	55	± 5	67	± 6	43
2015	7,411	141	264	405	21%	862	45%	638	33%	1,905	1,922	16	31	47	± 4	74	± 5	50
2016	8,289	0	0	485	24%	969	47%	599	29%	2,053	1,684	0	0	50	± 4	62	± 5	41
2017	7,946	136	448	584	25%	1,128	49%	587	26%	2,299	1,432	12	40	52	± 4	52	± 4	34
2018	8,362	117	377	494	25%	951	49%	499	26%	1,944	0	12	40	52	± 4	52	± 4	35

**2019 HUNTING SEASONS
CARTER MOUNTAIN PRONGHORN HERD (PR205)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
78	1	Sep. 20	Oct. 31	100	Limited quota	Any antelope
78	6	Sep. 1	Nov. 30	100	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
81	1	Sep. 20	Nov. 15	200	Limited quota	Any antelope
81	6	Sep. 20	Nov. 15	200	Limited quota	Doe or fawn
82	1	Sep. 20	Oct. 14	200	Limited quota	Any antelope
82	6	Aug. 15	Oct. 31	50	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land east of Wyoming Highway 120
82	7	Sep. 20	Oct. 14	125	Limited quota	Doe or fawn valid west of Wyoming Highway 120
82	8	Oct. 15	Nov. 30	100	Limited quota	Doe or fawn valid in Big Horn County

Special Archery Season Hunt Areas	Opening Date	Limitations
78, 81, 82	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota Change from 2017
78	1	-50
81	1	+25
81	6	+50
82	8	+50
Herd Unit Total	1	-25
	6	+50
	8	+50

Management Evaluation

Current Postseason Population Management Objective: 7,000

Management Strategy: Recreational

2018 Postseason Population Estimate: ~7,400

2019 Proposed Postseason Population Estimate: ~7,200

2018 Hunter Satisfaction: 92% Satisfied, 6% Neutral, 2% Dissatisfied

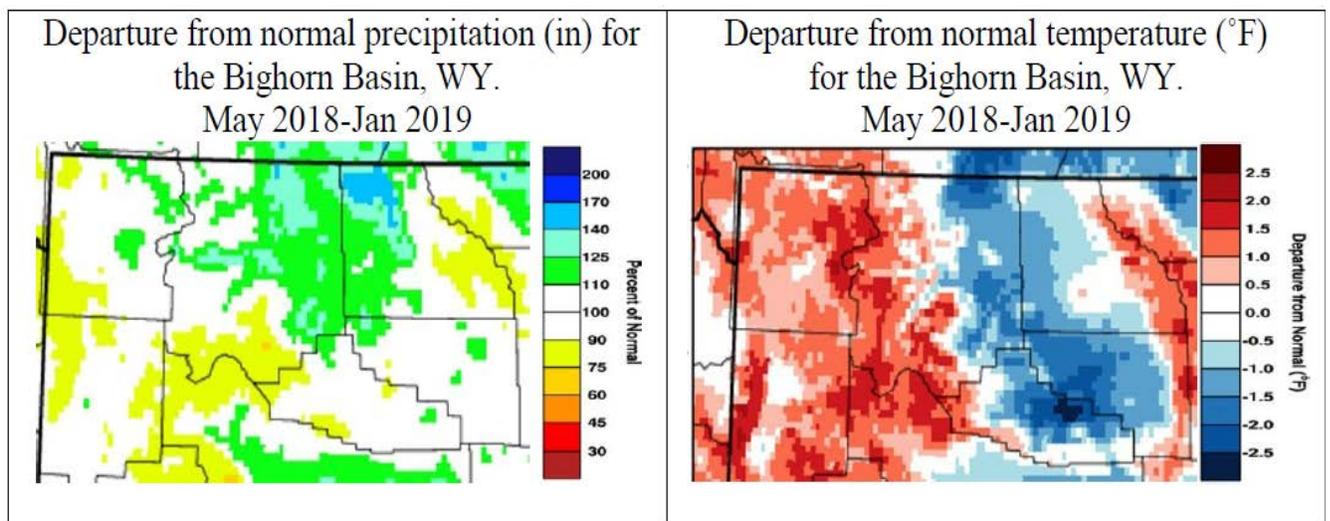
Herd Unit Issues

The Carter Mountain pronghorn herd is relatively stable although it occupies some of the poorer pronghorn habitat in the state. The 2018 spreadsheet model estimates this herd is at objective. During good precipitation years, pronghorn populations increase, which results in crop damage, especially in successive dry years. This herd unit is managed under recreational management with a post-season population objective of 7,000 pronghorn since 1984. That population goal was reviewed in 2002, 2007 and 2015. The migratory portion of this herd uses higher elevation foothills and tundra during the spring, summer, and fall. In the winter the herd heads east, crossing hunt area boundaries, to sagebrush steppe habitat in the Dry Creek Basin. Anthropogenic development into pronghorn habitat and migration routes is a concern in Hunt Area 81 near Cody and the South Fork Highway. Large (1,000+) groups of migrating pronghorn cross an active oil field and two state highways bisecting the herd unit. Wildlife-friendlier fence installed in 2016 and 2017 along both highway right-of-ways should alleviate some animal crossing concerns.

Weather

Temperature and precipitation data referenced in this section were summarized for the Bighorn Basin (Climate Division #4) by the National Oceanic and Atmospheric Administration at <https://www.ncdc.noaa.gov/cag/divisional/time-series>. Thirty-year averages constitute that spring 2018 experienced warmer temperatures and above normal precipitation. Average temperature and precipitation for summer months were both above average. During the fall of 2018, precipitation was significantly below normal and temperatures above normal. Temperatures were above normal for December and January, turning colder than average in February. Precipitation was near normal for December and January. The Carter Mountain pronghorn herd experienced a milder than normal winter in 2018-19, likely resulting in an increase of juvenile survival and increased body condition of adult females which will likely have a cascading impact to subsequent population growth in 2019.

Figure 1.



Habitat

This herd unit stretches east to west across the entire Bighorn Basin for over 60 miles, encompassing approximately 2,100 mi² (1,695 mi² is occupied habitat). Uplands are comprised of sagebrush-saltbush-grasslands, and private agricultural land is found along riparian corridors. Summer range consists of alpine grasslands and mountain meadows on Carter Mountain specifically, and sagebrush-basin-grasslands at lower elevations. Habitat quality is limited by a scarcity of moisture (≤ 12 " average annual precipitation) and poor soils producing desert-like conditions. Grazing by cattle and wild horses reduces forage for pronghorn in spring and summer. Compared to the rest of Wyoming, the Bighorn Basin is more susceptible to cheatgrass, which does not bode well for already marginal pronghorn habitat. To provide a general trend of upland shrub productivity and pronghorn browsing pressure, a sagebrush transect was established in 2004 near Dry Creek. Utilization ranges from <1 to 25%. Snow depth also influences pronghorn concentration, and subsequent utilization levels, at this site.

Field Data

We drive standardized ground survey routes each August to collect classification data. The 2018 buck ratio is 52 bucks:100 does which is about average (2013-2017=49:100). Specifically, the Hunt Area 78 buck ratio is lower (36:100) than average. The 2018 fawn ratio is 52 fawns:100 does which is slightly lower than the 5-year-average (2013-2017=58:100). Again, the Hunt Area 78 fawn ratio is significantly lower (37:100). In 2018, we classified 1,944 pronghorn, which is about average (10 year range=1,654-2,179).

Harvest Data

About 103% of hunters were successful at harvesting a pronghorn (n=811) in 2018. Success was higher than the 5-year-average (99%), but more pronghorn were harvested than average (2013-2017=693). Hunters averaged 3.4 days per harvest in 2018, less than average (2013-2017=3.7 days). Historically, average hunter success was 87% prior to 2000; and then during drought (2000-2005), success dropped to an average of 84%. After the drought, success increased to above 90%. About 92% of hunters were satisfied with their hunting experience during the 2018 season, with 6% neutral, and 2% dissatisfied. This shows an increase from 89% satisfaction in 2017.

Population

For the Carter Mountain pronghorn herd unit, we selected the Time-Specific Juvenile/Constant Adult (TSJ,CA) survival model. We chose the TSJ, CA model, because the AIC score (256) is within the same order of magnitude as the lowest AIC score (208; CJ, CA), and biologically, fawn survival varies temporally. Survival constraints matched normal criteria. This model performs *good*, and the results are biologically defensible. The TSJ,CA model estimates 7,470 pronghorn for 2018 post-season. This herd presents a modeling challenge, because a portion of the population is migratory and a portion resides on agriculture fields year-round. To estimate pronghorn abundance, we flew line-transect surveys in 2000, 2003 (2 observers), 2006, 2009, 2012, and 2016 (1 observer). Surveys with a single observer seemed to significantly change the population estimates, resulting in estimates 2-3 times higher (10,000-12,000 pronghorn) than previous estimates. Managers have low confidence in the estimated 10,000 pronghorn in 2006 and 2009. The 2016 line-transect survey (2015 bio-year) estimated 8,000 (± 902) pronghorn which matches field personnel's perceptions and tracks well with model estimates.

Management Summary

In response to decreased buck ratios in hunt area 78, we are decreasing the Type 1 quota by 50 licenses in 2019. Quota reductions of 25 and 50 licenses, for hunt area 78 type 1 and 6 respectively, made in 2018 were aimed to increase the lower buck and fawn ratios in this resident sub-population. 2019 pre-season classifications should show the impact of these proposed changes. Hunt area 81 will see a modest increase in type 1 licenses to allow more hunter opportunity. Overall, within the herd unit we plan to increase female harvest with the allocation of 100 additional doe/fawn licenses split evenly between hunt areas 81 and 82. This makes ecological sense as our population appears to be growing while slightly above objective. Habitat and landscape permeability continues to be a concern in this herd unit however recent fence improvements along highways should decrease wildlife entanglement, and help pronghorn exit the highway 120 right-of-way. Large groups of animals crossing highways still present a risk to motorists and migrating pronghorn. Plans to initiate a GPS collaring study aimed at identifying fine-scale migration patterns of Carter Mountain pronghorn are underway for the winter of 2019/20.

2018 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR207 - BADGER BASIN

HUNT AREAS: 80

PREPARED BY: TONY MONG

	<u>2013 - 2017 Average</u>	<u>2018</u>	<u>2019 Proposed</u>
Trend Count:	408	320	450
Harvest:	107	89	70
Hunters:	105	95	75
Hunter Success:	102%	94%	93%
Active Licenses:	122	109	75
Active License Success	88%	82%	93%
Recreation Days:	516	457	400
Days Per Animal:	4.8	5.1	5.7
Males per 100 Females:	45	32	
Juveniles per 100 Females	35	16	

Trend Based Objective ($\pm 20\%$)

400 (320 - 480)

Management Strategy:

Recreational

Percent population is above (+) or (-) objective:

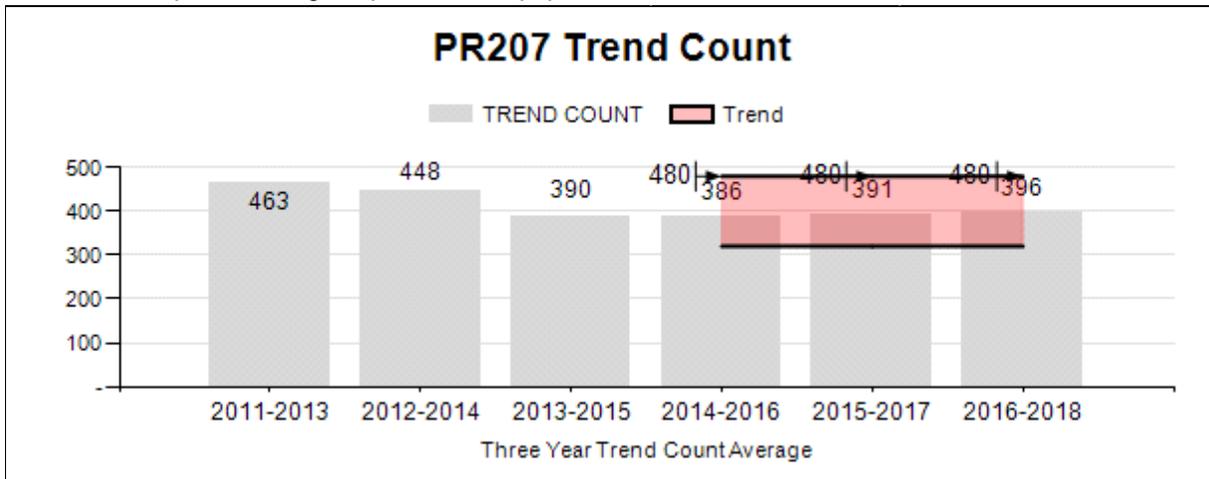
-20%

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

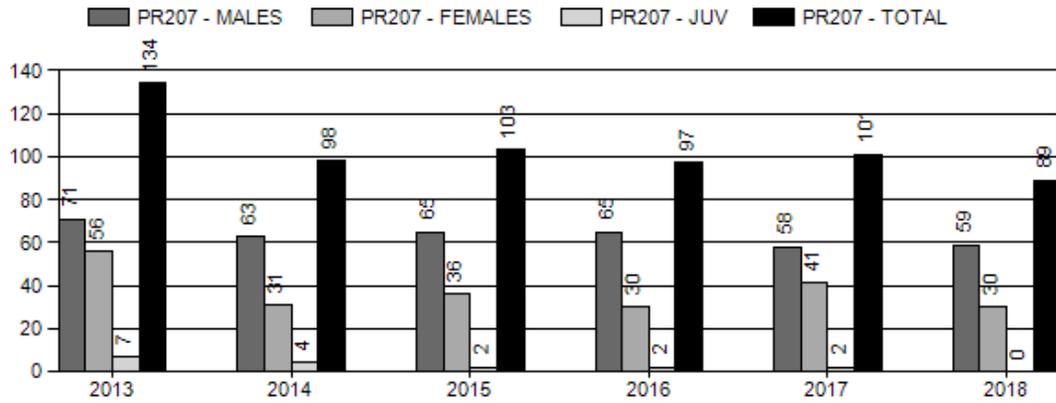
1

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

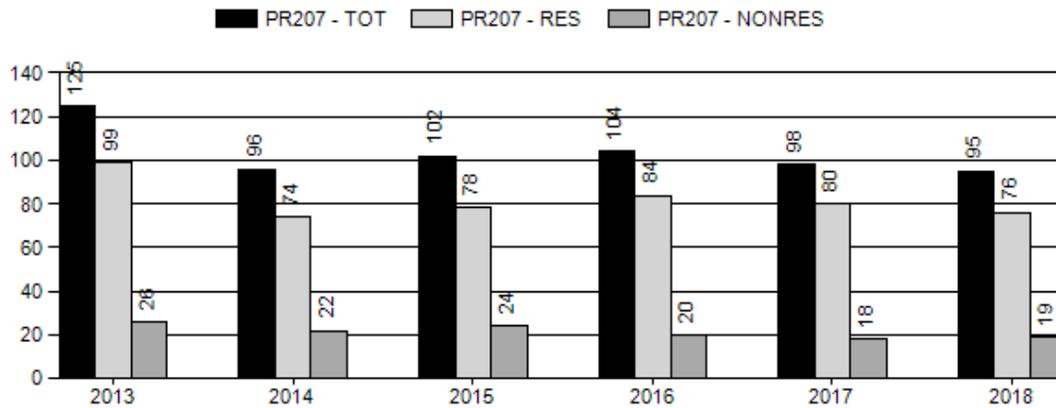
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	n/a%	n/a%
Males ≥ 1 year old:	n/a%	n/a%
Juveniles (< 1 year old):	n/a%	n/a%
Total:	n/a%	n/a%
Proposed change in post-season population:	n/a%	n/a%



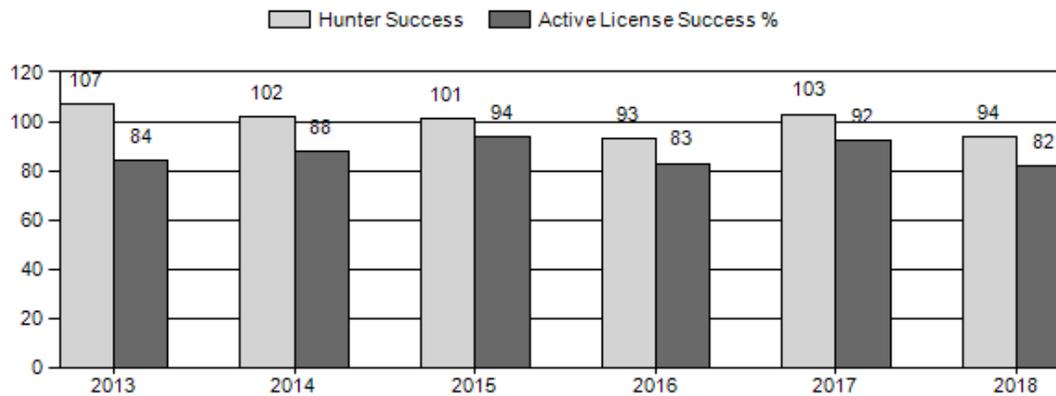
Harvest



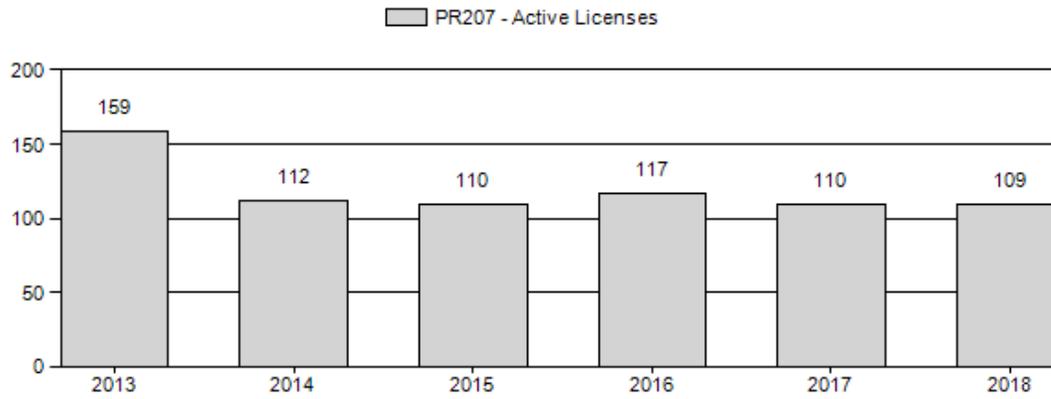
Number of Active Licenses



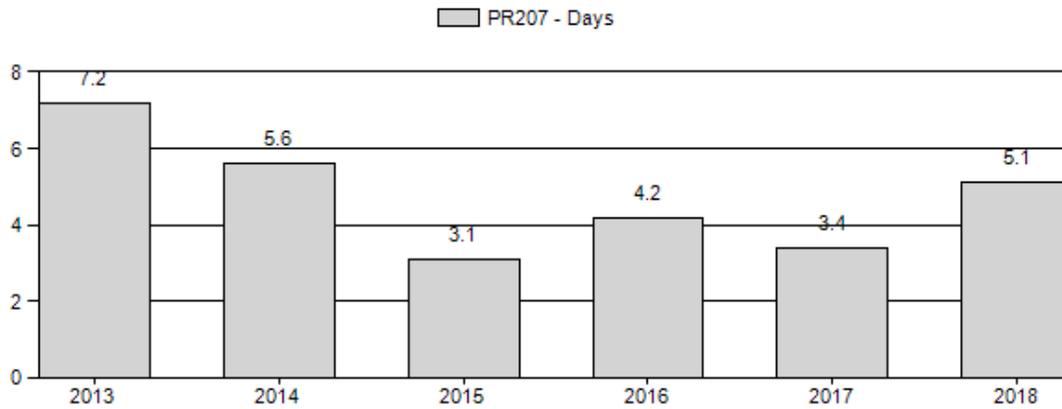
Harvest Success



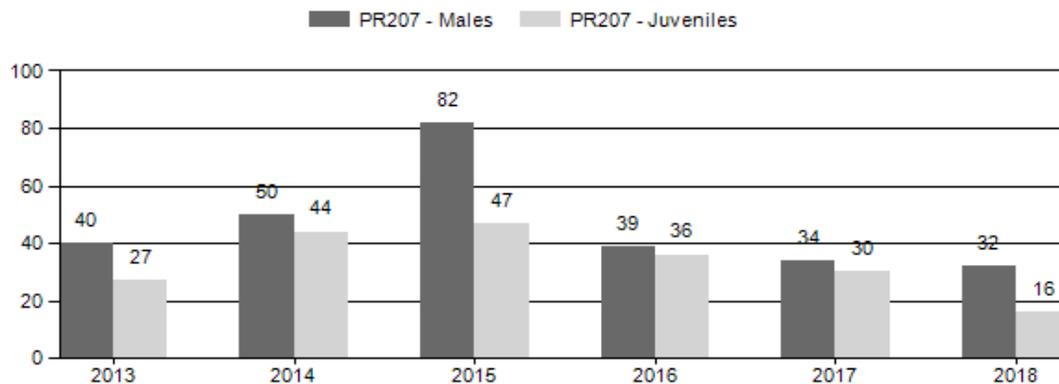
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2013 - 2018 Preseason Classification Summary																			
for Pronghorn Herd PR207 - BADGER BASIN																			
Year	MALES				FEMALE		JUVENIL		Tot		Cls		Males to 100 Females				Young to		
	Ylg	Adult	Total	%	Total	%	Total	%	Cls	Obj	Yng	Adult	Total	Int	Conf	100 Fem	Conf Int	100 Adult	
2013	36	79	115	24%	286	60%	76	16%	477	451	13	28	40	± 5	27	± 4	19		
2014	27	73	100	26%	201	52%	88	23%	389	515	13	36	50	± 8	44	± 7	29		
2015	42	69	111	36%	135	44%	63	20%	309	599	31	51	82	± 14	47	± 10	26		
2016	31	72	103	22%	262	57%	94	20%	459	480	12	27	39	± 3	36	± 3	26		
2017	17	67	84	21%	246	61%	74	18%	404	0	7	27	34	± 0	30	± 0	22		
2018	13	56	69	22%	217	68%	34	11%	320	0	6	26	32	± 0	16	± 0	12		

2013 - 2018 Trend Count Summary				
for Pronghorn Herd PR207 - BADGER BASIN				
Flight Time				
Year	Count Dates	Hours	Minutes	Number Counted
2013	Aug-13	1	0	477
2014	Aug-14	1	0	389
2015	Aug-15	1	0	305
2016	Aug-16	1	0	464
2017	Aug-17	1	0	404
2018	Aug-18	1	0	320

**2019 HUNTING SEASONS
BADGER BASIN PRONGHORN HERD (PR207)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
80	1	Sep. 20	Oct. 31	50	Limited quota	Any antelope
80	6	Sep. 20	Oct. 31	25	Limited quota	Doe or fawn

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

Hunt Area	Type	Quota change from 2018
80	1	-25
	6	-25
Total	1 & 6	-50

Management Evaluation

Current Mid-summer Trend Count Objective: 400

Management Strategy: Recreational

2018 Mid-summer Trend Count: 320

2019 Proposed Mid-summer Trend Count: 450

2018 Hunter Satisfaction: 96% Satisfied, 4% Neutral, 0% Dissatisfied

Herd Unit Issues

Badger Basin Herd Unit consists of mostly arid habitats interspersed with irrigated agricultural lands adjacent to the Shoshone River drainage. The herd has one of lowest fawn ratios statewide, and has low antelope densities throughout the large herd unit. Antelope concentrate in agricultural lands in drier years, and these areas tend to have higher levels of productivity. Recent years have seen a decrease in damage issues on these irrigated meadows, indicating a lower population than 5 years ago.

Weather

The weather conditions during the 2017/18 winter were fairly mild but the cold temps and snow hung on late into the spring which may have made early migrations difficult (Figures 1 and 2). The 2018/19 winter had been relatively mild until mid-February. We saw an increase in snow and a severe decrease in temperatures during the later part of February (Figure 3). Average precipitation levels in most of the herd unit were relatively normal throughout the year.

Figure 1. Percent of normal precipitation for Park County from January to March 2018 to show the increased precipitation during the later part of 2017/18 winter.

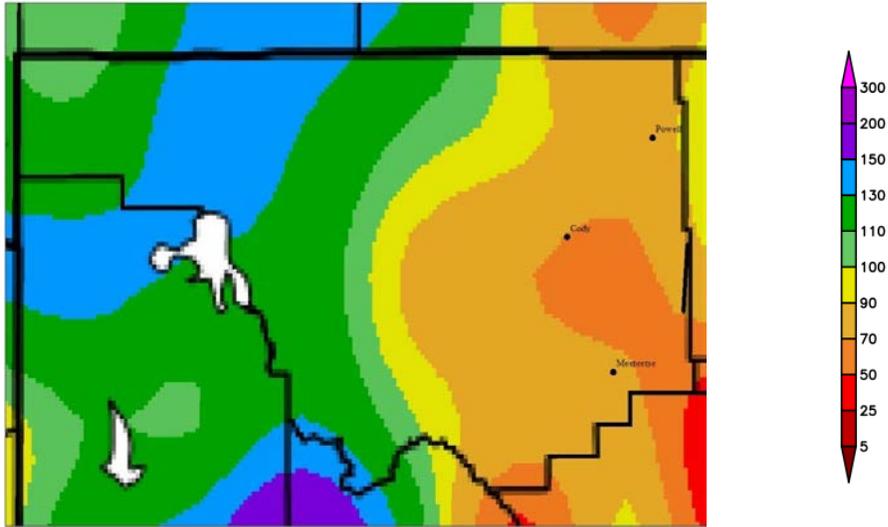


Figure 2. Departure from normal temperature for Park County from January to March 2018.

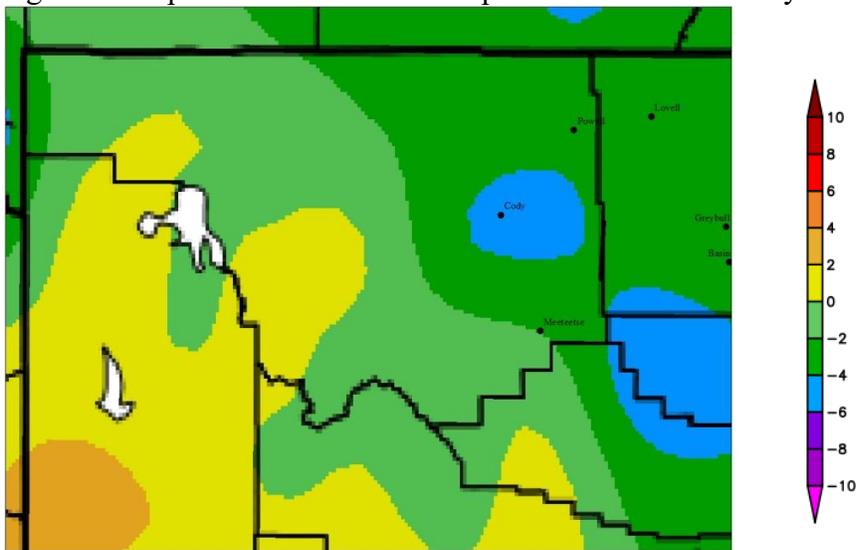
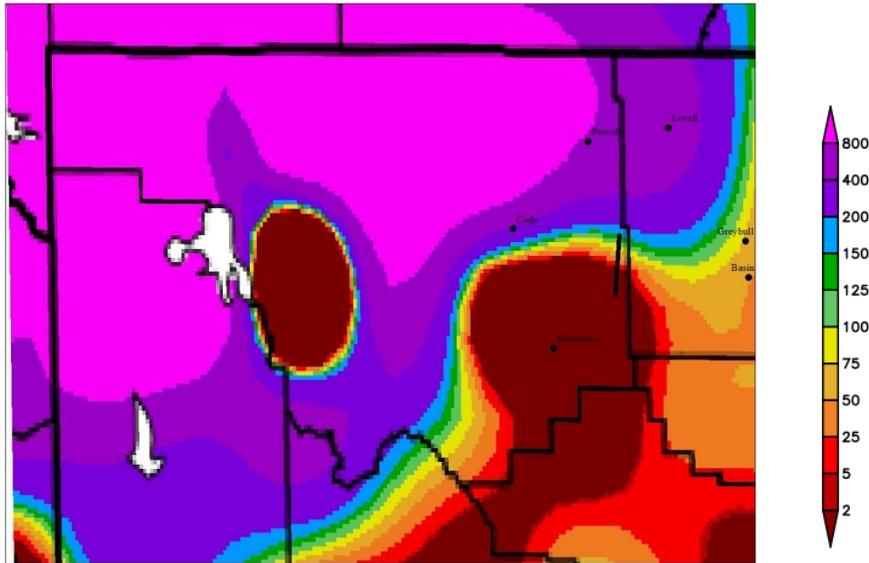


Figure 3. Percent of Normal Precipitation for Park County for February 21 to 27 2019.



Habitat

No habitat monitoring data is collected in this herd unit. A complete habitat report is included in the Cody regional appendix.

Field Data

Because these pronghorn are widely distributed throughout the herd unit in low numbers during the summer it can be difficult to obtain population demographic data. The average fawn ratio over the last 10 years (33:100 does, range 16 to 47) is lower than the previous 10 years (40:100 does, range 29 to 53) but higher than the 2018 ratio of 16:100. This ratio is the lowest we have ever seen in the herd and should be considered when formulating future seasons. The poor productivity during the last 10 years indicates either a change in moisture levels, predation or habitat quality. Due to the small sample size, buck ratios can be highly variable. Over the last 5 years, buck ratios ranged between 32:100 does and 82:100 does with an average of 47:100 does. The 2018 ratio of 32:100 is one of the lowest we have seen since 2005 and is indicative of the lower fawn ratios over the last 5 years. This data may not be reliable and better data collection methods/timing should be explored.

Harvest Data

The harvest in the Badger Basin has decreased over the last 5 years with average harvest of 98 pronghorn compared to the previous 5 years of 211. In 2018 managers saw a drop in harvest to one of the lowest seen since 2005 at 89 total pronghorn. In addition managers saw success drop from the previous year of 92% to 82%. Hunter satisfaction is high for this herd, with 96% of hunters reporting they were satisfied or very satisfied with their hunting experience despite the lower success rate.

Population

The small size of this antelope herd has made population modeling difficult to portray a believable population size, regardless of model selection. Past aerial trend counts resulted in sample sizes lower than what was counted during annual standardized classification counts. Classification totals have tracked well over time with perceived abundance, and as a result, we use a preseason trend count to track the population. We use a summer trend count objective of 400, averaged over the past three years to manage this population. The current trend count average is 396 which is within the trend count objective range but has been declining over the last 5 years.

Management Summary

Management of the Badger Basin pronghorn herd is dominated by a combination of conservative buck harvest in relatively open, public lands across the unit and allowing for damage situations to be dealt with through harvest. Complaints of damage have decreased over the last few years. There is concern that we may have decreased the population over the last several years and finding a mature buck to harvest is becoming more difficult. Hunting seasons were set in response to the decrease in population size, hunter success and recent low fawn ratios and should allow the population and buck numbers to increase or remain stable.